LUTZE
Cable Solutions for Industrial Automation North America

Control Cable
Electronic Cable
BUS and Network Cable
Motor Supply, VFD, Servo and Feedback Cable
Wire and Cable Management
Network Connectivity

LUTZE AUTOMATION
an Amphenol Company

Proudly manufacturing in the USA

WIRED FOR WHAT MATTERS

DRIVEFLEX®

MOTIONFLEX®

LÜTZE SUPERFLEX® connected

UL approvals

NFPA 79 compliant cables

Designed for the North American market

Standard size reels available in stock

We cut cable to any length compliant with "UL processed wire respooled" procedure

No minimum length required for standard items

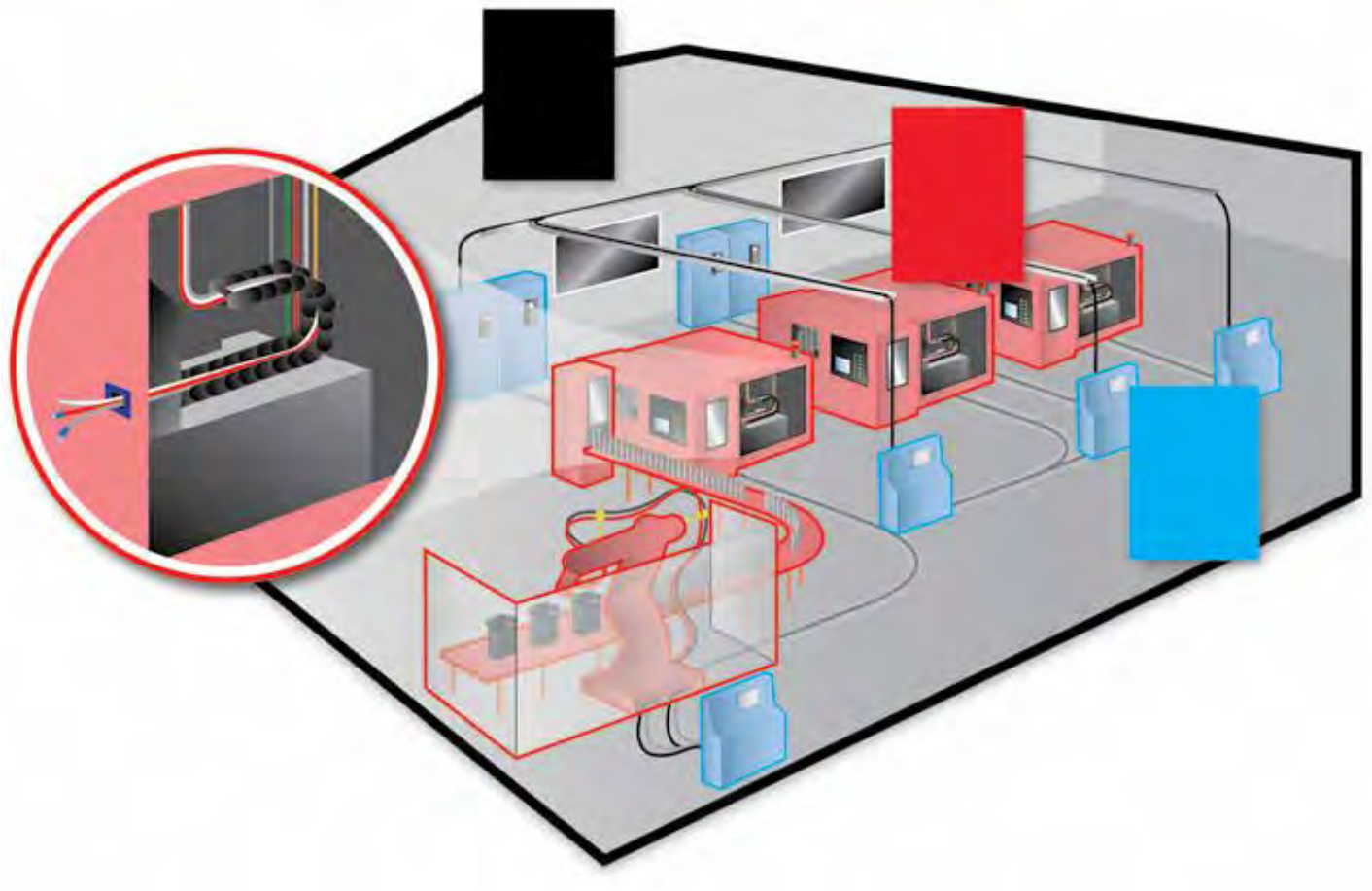
Low minimum order

Our goal is "On Time-All the Time"

LÜTZE AUTOMATION
an Amphenol Company

Efficiency in Automation

Cable • Connectivity • Cabinet • Control



Your ultimate partner in cable and connectivity products for industrial automation. Our products are designed for harsh environments and carry multiple approvals for code compliance. This gives you peace of mind and allows you to stay focused on your projects.

NEC – regulates the field level

NFPA 79 – regulates the machine level

UL 508A – regulated the cabinet level

LUTZE®

AUTOMATION

an Amphenol Company

Table of Contents

Chapter 1: Control Cables

Chapter 2: Electronic Cables

Chapter 3: BUS and Network Cables

Table of Contents

Chapter 4: Motor Supply, VFD, Servo and Feedback Cables

Table of Contents

Chapter 5: Wire and Cable Management

Chapter 6: Network Connectivity

1. Control Cables

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LUTZE SILFLEX® Control Cable PVC, Unshielded

Flexible Control and Tray Cable for Stationary Applications

Application

- Multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Oil resistant PVC jacket
- Gray jacket similar to RAL 7001

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 20 (10/30)				
A3082002	AWG20/02C*	6.6	0.260	31	6
A3082003	AWG20/03C	6.8	0.268	41	9
A3082004	AWG20/04C	7.3	0.287	49	13
A3082005	AWG20/05C	7.9	0.313	57	16
A3082007	AWG20/07C	8.5	0.335	70	22
A3082009	AWG20/09C	9.8	0.386	84	28
A3082012	AWG20/12C	10.8	0.426	110	38
A3082018	AWG20/18C	12.5	0.492	152	56
A3082025	AWG20/25C	14.3	0.564	229	79
A3082034	AWG20/34C	16.7	0.659	245	107
A3082041	AWG20/41C	19.2	0.756	296	129
A3082050	AWG20/50C	19.5	0.768	344	157
	AWG 18 (19/30)				
A3081802	AWG18/02C*	7.0	0.276	46	12
A3081803	AWG18/03C	7.5	0.296	54	18
A3081804	AWG18/04C	8.1	0.320	65	24
A3081805	AWG18/05C	8.8	0.346	82	30
A3081807	AWG18/07C	9.5	0.373	102	42
A3081809	AWG18/09C	10.8	0.425	128	54
A3081812	AWG18/12C	12.1	0.477	157	72
A3081818	AWG18/18C	14.9	0.587	240	108
A3081825	AWG18/25C	17.2	0.677	314	151
A3081834	AWG18/34C	18.9	0.744	404	205
A3081841	AWG18/41C	22.8	0.896	520	248
A3081850	AWG18/50C	23.1	0.910	630	302
	AWG 16 (26/30)				
A3081602	AWG16/02C*	7.7	0.305	53	16
A3081603	AWG16/03C	8.2	0.321	66	24
A3081604	AWG16/04C	8.7	0.347	77	32
A3081605	AWG16/05C	9.5	0.377	98	40
A3081607	AWG16/07C	10.2	0.406	122	57
A3081609	AWG16/09C	12.0	0.473	159	73
A3081612	AWG16/12C	13.4	0.527	196	98
A3081618	AWG16/18C	16.4	0.647	294	147
A3081625	AWG16/25C	19.0	0.748	391	204
A3081634	AWG16/34C	22.3	0.876	541	278
A3081641	AWG16/41C	25.0	0.983	670	335
A3081650	AWG16/50C	25.4	1.000	730	409
	AWG 14 (41/30)				
A3081402	AWG14/02C*	8.6	0.340	62	25
A3081403	AWG14/03C	8.8	0.348	87	38
A3081404	AWG14/04C	9.6	0.378	108	51
A3081405	AWG14/05C	10.4	0.410	125	64
A3081407	AWG14/07C	11.3	0.445	164	89
A3081409	AWG14/09C	13.1	0.516	213	115
A3081412	AWG14/12C	15.5	0.610	283	154
A3081418	AWG14/18C	18.2	0.715	404	231
A3081425	AWG14/25C	20.9	0.825	537	321

LUTZE SILFLEX® Control Cable PVC, Unshielded

Flexible Control and Tray Cable for Stationary Applications

Application

- Multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Oil resistant PVC jacket
- Gray jacket similar to RAL 7001

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 12 (65/30)				
A3081203	AWG12/03C	9.8	0.382	122	63
A3081204	AWG12/04C	11.1	0.437	150	84
A3081205	AWG12/05C	12.1	0.475	183	105
A3081207	AWG12/07C	14.1	0.556	255	147
A3081209	AWG12/09C	16.1	0.632	307	190
A3081212	AWG12/12C	17.9	0.706	391	254
	AWG 10 (105/30)				
A3081003	AWG10/03C	12.6	0.497	174	97
A3081004	AWG10/04C	14.6	0.573	239	130
A3081005	AWG10/05C	15.8	0.623	288	162
A3081007	AWG10/07C	17.2	0.676	359	228
	AWG 8 (168/30)				
A3080803	AWG8/03C	17.1	0.672	308	161
A3080804	AWG8/04C	18.9	0.744	398	214
A3080805	AWG8/05C	22.4	0.882	452	268
A3080807	AWG8/07C	23.5	0.926	642	377
	AWG 6 (266/30)				
A3080603	AWG6/03C	18.9	0.744	411	254
A3080604	AWG6/04C	20.8	0.820	535	339
A3080605	AWG6/05C	23.7	0.935	681	425
A3080607	AWG6/07C	26.1	1.028	876	596
	AWG 4 (413/30)				
A3080403	AWG4/03C	24.4	0.960	628	386
A3080404	AWG4/04C	26.5	1.044	816	514
A3080405	AWG4/05C	29.4	1.159	979	644
	AWG 2 (665/30)				
A3080203	AWG2/03C	28.2	1.110	954	654
A3080204	AWG2/04C	31.0	1.219	1234	874
A3080205	AWG2/05C	34.4	1.353	1514	1096

"Tray cable marked as TC-ER-JP (Joist Pull) has been evaluated by UL for pulling through structural members per the new NEC article 336.10(9)".

LUTZE SILFLEX® Control Cable (C) PVC, Shielded

Flexible Control and Tray Cable for Stationary Applications

Application
- Dual-shielded multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Construction
- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Shielded with foil tape, tinned copper braid and drain wire
- Oil resistant PVC jacket
- Gray jacket similar to RAL 7001

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 20 (10/30)				
A3092002	AWG20/02C*	7.2	0.284	46	19
A3092003	AWG20/03C	7.5	0.295	56	20
A3092004	AWG20/04C	8.0	0.315	65	25
A3092005	AWG20/05C	8.5	0.336	74	28
A3092007	AWG20/07C	9.1	0.360	92	36
A3092009	AWG20/09C	10.4	0.410	107	49
A3092012	AWG20/12C	11.4	0.450	131	56
A3092018	AWG20/18C	13.2	0.520	181	78
A3092025	AWG20/25C	15.7	0.620	246	102
A3092034	AWG20/34C	17.3	0.683	297	136
A3092041	AWG20/41C	19.8	0.780	357	164
A3092050	AWG20/50C	20.1	0.792	406	195
	AWG 18 (19/30)				
A3091802	AWG18/02C*	7.7	0.305	61	23
A3091803	AWG18/03C	8.1	0.320	71	30
A3091804	AWG18/04C	8.8	0.345	86	36
A3091805	AWG18/05C	9.3	0.368	100	44
A3091807	AWG18/07C	10.0	0.395	121	58
A3091809	AWG18/09C	11.5	0.453	143	76
A3091812	AWG18/12C	12.7	0.500	180	91
A3091818	AWG18/18C	15.5	0.609	268	131
A3091825	AWG18/25C	17.6	0.692	342	177
A3091834	AWG18/34C	19.4	0.764	405	241
A3091841	AWG18/41C	21.5	0.848	553	291
A3091850	AWG18/50C	23.7	0.934	634	346
	AWG 16 (26/30)				
A3091602	AWG16/02C*	8.4	0.331	67	31
A3091603	AWG16/03C	8.7	0.343	87	39
A3091604	AWG16/04C	9.4	0.370	102	48
A3091605	AWG16/05C	10.1	0.398	119	58
A3091607	AWG16/07C	10.9	0.430	145	75
A3091609	AWG16/09C	12.5	0.493	176	98
A3091612	AWG16/12C	14.6	0.575	239	121
A3091618	AWG16/18C	16.9	0.664	327	174
A3091625	AWG16/25C	19.6	0.757	423	233
A3091634	AWG16/34C	22.4	0.882	574	321
A3091641	AWG16/41C	25.6	1.008	686	385
A3091650	AWG16/50C	26.0	1.024	787	459
	AWG 14 (41/30)				
A3091402	AWG14/02C*	9.1	0.360	86	47
A3091403	AWG14/03C	9.5	0.375	110	57
A3091404	AWG14/04C	10.3	0.405	133	72
A3091405	AWG14/05C	11.2	0.440	154	85
A3091407	AWG14/07C	12.1	0.475	194	113
A3091409	AWG14/09C	14.6	0.576	249	146
A3091412	AWG14/12C	16.3	0.640	316	182
A3091418	AWG14/18C	18.7	0.736	425	268
A3091425	AWG14/25C	22.3	0.880	596	364

LUTZE SILFLEX® Control Cable (C) PVC, Shielded

Flexible Control and Tray Cable for Stationary Applications

Application

- Dual-shielded multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Shielded with foil tape, tinned copper braid and drain wire
- Oil resistant PVC jacket
- Gray jacket similar to RAL 7001

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 12 (65/30)				
A3091203	AWG12/03C	10.8	0.425	150	89
A3091204	AWG12/04C	11.7	0.460	182	110
A3091205	AWG12/05C	12.7	0.500	215	133
A3091207	AWG12/07C	14.6	0.574	282	183
A3091209	AWG12/09C	16.7	0.659	352	227
A3091212	AWG12/12C	18.6	0.734	444	299
	AWG 10 (105/30)				
A3091003	AWG10/03C	14.0	0.553	230	139
A3091004	AWG10/04C	15.1	0.594	270	169
A3091005	AWG10/05C	16.5	0.651	326	208
A3091007	AWG10/07C	17.9	0.706	416	277
	AWG 8 (168/30)				
A3090803	AWG8/03C	17.8	0.700	363	220
A3090804	AWG8/04C	19.4	0.762	449	275
A3090805	AWG8/05C	22.1	0.869	555	334
A3090807	AWG8/07C	24.1	0.950	720	448
	AWG 6 (266/30)				
A3090603	AWG6/03C	19.7	0.775	460	306
A3090604	AWG6/04C	22.3	0.878	591	384
A3090605	AWG6/05C	24.5	0.966	724	482
A3090607	AWG6/07C	26.7	1.052	946	659
	AWG 4 (413/30)				
A3090403	AWG4/03C	25.0	0.986	675	426
A3090404	AWG4/04C	27.4	1.077	891	591
A3090405	AWG4/05C	30.0	1.182	1075	727
	AWG 2 (665/30)				
A3090203	AWG2/03C	29.0	1.141	1030	735
A3090204	AWG2/04C	31.8	1.250	1318	959
A3090205	AWG2/05C	35.0	1.377	1600	1185

LUTZE SILFLEX® TRAY-ER PVC, Unshielded

Flexible Control and Tray Cable for Stationary Applications

Application

- Multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 20 (10/30)				
A3222002	AWG20/02C*	6.6	0.260	31	6
A3222003	AWG20/03C	6.8	0.268	41	9
A3222004	AWG20/04C	7.3	0.287	49	13
A3222005	AWG20/05C	7.9	0.313	57	16
A3222007	AWG20/07C	8.5	0.335	70	22
A3222009	AWG20/09C	9.8	0.385	84	28
A3222012	AWG20/12C	10.8	0.426	110	38
A3222018	AWG20/18C	12.5	0.492	152	56
A3222025	AWG20/25C	14.3	0.564	229	79
A3222034	AWG20/34C	16.7	0.630	245	107
A3222041	AWG20/41C	19.2	0.756	296	129
A3222050	AWG20/50C	19.5	0.768	344	157
	AWG 18 (19/30)				
A3221802	AWG18/02C*	7.0	0.276	46	12
A3221803	AWG18/03C	7.5	0.296	54	18
A3221804	AWG18/04C	8.1	0.320	65	24
A3221805	AWG18/05C	8.8	0.346	82	30
A3221807	AWG18/07C	9.5	0.373	102	42
A3221809	AWG18/09C	10.8	0.425	128	54
A3221812	AWG18/12C	12.1	0.477	157	72
A3221818	AWG18/18C	14.9	0.587	240	108
A3221825	AWG18/25C	17.2	0.677	314	151
A3221834	AWG18/34C	18.9	0.744	404	205
A3221841	AWG18/41C	22.8	0.896	520	248
A3221850	AWG18/50C	23.1	0.910	630	302
	AWG 16 (26/30)				
A3221602	AWG16/02C*	7.7	0.305	53	16
A3221603	AWG16/03C	8.2	0.321	66	24
A3221604	AWG16/04C	8.7	0.347	77	32
A3221605	AWG16/05C	9.5	0.377	98	40
A3221607	AWG16/07C	10.2	0.406	122	57
A3221609	AWG16/09C	12.0	0.473	159	73
A3221612	AWG16/12C	13.4	0.527	196	98
A3221618	AWG16/18C	16.4	0.647	294	147
A3221625	AWG16/25C	19.0	0.748	391	204
A3221634	AWG16/34C	22.3	0.876	541	278
A3221641	AWG16/41C	25.0	0.983	670	335
A3221650	AWG16/50C	25.4	1.000	730	409
	AWG 14 (41/30)				
A3221402	AWG14/02C*	8.6	0.340	62	25
A3221403	AWG14/03C	8.8	0.348	87	38
A3221404	AWG14/04C	9.6	0.378	108	51
A3221405	AWG14/05C	10.4	0.410	125	64
A3221407	AWG14/07C	11.3	0.445	164	89
A3221409	AWG14/09C	13.1	0.516	213	115
A3221412	AWG14/12C	15.5	0.610	283	154
A3221418	AWG14/18C	18.2	0.715	404	231
A3221425	AWG14/25C	20.9	0.825	537	321

LUTZE SILFLEX® TRAY-ER PVC, Unshielded

Flexible Control and Tray Cable for Stationary Applications

Application

- Multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 12 (65/30)				
A3221203	AWG12/03C	9.8	0.382	122	63
A3221204	AWG12/04C	11.1	0.437	150	84
A3221205	AWG12/05C	12.1	0.475	183	105
A3221207	AWG12/07C	14.1	0.556	255	147
A3221209	AWG12/09C	16.1	0.632	307	190
A3221212	AWG12/12C	17.9	0.706	391	254
	AWG 10 (105/30)				
A3221003	AWG10/03C	12.6	0.497	174	97
A3221004	AWG10/04C	14.6	0.573	239	130
A3221005	AWG10/05C	15.8	0.623	288	162
A3221007	AWG10/07C	17.2	0.676	359	228
	AWG 8 (168/30)				
A3220803	AWG8/03C	17.1	0.672	308	161
A3220804	AWG8/04C	18.9	0.744	398	214
A3220805	AWG8/05C	22.4	0.882	452	268
A3220807	AWG8/07C	23.5	0.926	642	377
	AWG 6 (266/30)				
A3220603	AWG6/03C	18.9	0.744	411	254
A3220604	AWG6/04C	20.8	0.820	535	339
A3220605	AWG6/05C	23.7	0.935	681	425
A3220607	AWG6/07C	26.1	1.028	876	596
	AWG 4 (413/30)				
A3220403	AWG4/03C	24.4	0.960	628	386
A3220404	AWG4/04C	26.5	1.044	816	514
A3220405	AWG4/05C	29.4	1.159	979	644
	AWG 2 (665/30)				
A3220203	AWG2/03C	28.2	1.110	954	654
A3220204	AWG2/04C	31.0	1.219	1234	874
A3220205	AWG2/05C	34.4	1.353	1514	1096

"Tray cable marked as TC-ER-JP (Joist Pull) has been evaluated by UL for pulling through structural members per the new NEC article 336.10(9)".

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

LUTZE SILFLEX® TRAY-ER (C) PVC, Shielded

Flexible Control and Tray Cable for Stationary Applications

Application

- Dual-shielded multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Shielded with foil tape, tinned copper braid and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 20 (10/30)				
A3212002	AWG20/02C*	7.2	0.284	46	19
A3212003	AWG20/03C	7.5	0.295	56	20
A3212004	AWG20/04C	8.0	0.315	65	25
A3212005	AWG20/05C	8.5	0.336	74	28
A3212007	AWG20/07C	9.1	0.360	92	36
A3212009	AWG20/09C	10.4	0.410	107	49
A3212012	AWG20/12C	11.4	0.450	131	56
A3212018	AWG20/18C	13.2	0.520	181	78
A3212025	AWG20/25C	15.7	0.620	246	102
A3212034	AWG20/34C	17.3	0.683	297	136
A3212041	AWG20/41C	19.8	0.780	357	164
A3212050	AWG20/50C	20.1	0.792	406	195
	AWG 18 (19/30)				
A3211802	AWG18/02C*	7.7	0.305	61	23
A3211803	AWG18/03C	8.1	0.320	71	30
A3211804	AWG18/04C	8.8	0.345	86	36
A3211805	AWG18/05C	9.3	0.368	100	44
A3211807	AWG18/07C	10.0	0.395	121	58
A3211809	AWG18/09C	11.5	0.453	143	76
A3211812	AWG18/12C	12.7	0.500	180	91
A3211818	AWG18/18C	15.5	0.609	268	131
A3211825	AWG18/25C	17.6	0.692	342	177
A3211834	AWG18/34C	19.4	0.764	405	241
A3211841	AWG18/41C	21.5	0.848	553	291
A3211850	AWG18/50C	23.7	0.934	634	346
	AWG 16 (26/30)				
A3211602	AWG16/02C*	8.4	0.331	67	31
A3211603	AWG16/03C	8.7	0.343	87	39
A3211604	AWG16/04C	9.4	0.370	102	48
A3211605	AWG16/05C	10.1	0.398	119	58
A3211607	AWG16/07C	10.9	0.430	145	75
A3211609	AWG16/09C	12.5	0.493	176	98
A3211612	AWG16/12C	14.6	0.575	239	121
A3211618	AWG16/18C	16.9	0.664	327	174
A3211625	AWG16/25C	19.6	0.757	423	233
A3211634	AWG16/34C	22.4	0.882	574	321
A3211641	AWG16/41C	25.6	1.008	686	385
A3211650	AWG16/50C	26.0	1.024	787	459
	AWG 14 (41/30)				
A3211402	AWG14/02C*	9.1	0.360	86	47
A3211403	AWG14/03C	9.5	0.375	110	57
A3211404	AWG14/04C	10.3	0.405	133	72
A3211405	AWG14/05C	11.2	0.440	154	85
A3211407	AWG14/07C	12.1	0.475	194	113
A3211409	AWG14/09C	14.6	0.576	249	146
A3211412	AWG14/12C	16.3	0.640	316	182
A3211418	AWG14/18C	18.7	0.736	425	268
A3211425	AWG14/25C	22.3	0.880	596	364

LUTZE SILFLEX® TRAY-ER (C) PVC, Shielded

Flexible Control and Tray Cable for Stationary Applications

Application
- Dual-shielded multi-conductor cable for tray and control applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp or wet locations

Characteristics
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 20:	300V 90C PLTC-ER 300V 90C ITC-ER 600V MTW 1000V 105C AWM
AWG 18 and larger:	600V 90C TC-ER-JP 1000V 90C WTTC 600V MTW 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res II
Approvals	UL/AWM/CE AWM Style 20886 (UL) Type MTW or DP-1 Meets NEC 336, 392, 725, 727 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL 1277 RoHS, REACH, TSCA
AWG specific approvals	
AWG 20 to AWG 14:	*2C no ER approvals
AWG 20:	PLTC-ER and ITC-ER
AWG 18 to AWG 12:	TC-ER-JP and WTTC PLTC-ER and ITC-ER
AWG 10 to AWG 2:	TC-ER-JP and WTTC

Construction
- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Shielded with foil tape, tinned copper braid and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 12 (65/30)				
A3211203	AWG12/03C	10.8	0.425	150	89
A3211204	AWG12/04C	11.7	0.460	182	110
A3211205	AWG12/05C	12.7	0.500	215	133
A3211207	AWG12/07C	14.6	0.574	282	183
A3211209	AWG12/09C	16.7	0.659	352	227
A3211212	AWG12/12C	18.6	0.734	444	299
	AWG 10 (105/30)				
A3211003	AWG10/03C	14.0	0.553	230	139
A3211004	AWG10/04C	15.1	0.594	270	169
A3211005	AWG10/05C	16.5	0.651	326	208
A3211007	AWG10/07C	17.9	0.706	416	277
	AWG 8 (168/30)				
A3210803	AWG08/03C	17.8	0.700	363	220
A3210804	AWG08/04C	19.4	0.762	449	275
A3210805	AWG08/05C	22.1	0.869	555	334
A3210807	AWG08/07C	24.1	0.950	720	448
	AWG 6 (266/30)				
A3210603	AWG06/03C	19.7	0.775	460	306
A3210604	AWG06/04C	22.3	0.878	591	384
A3210605	AWG06/05C	24.5	0.966	724	482
A3210607	AWG06/07C	26.7	1.052	946	659
	AWG 4 (413/30)				
A3210403	AWG04/03C	25.0	0.986	675	426
A3210404	AWG04/04C	27.4	1.077	891	591
A3210405	AWG04/05C	30.0	1.182	1075	727
	AWG 2 (665/30)				
A3210203	AWG02/03C	29.0	1.141	1030	735
A3210204	AWG02/04C	31.8	1.250	1318	959
A3210205	AWG02/05C	35.0	1.377	1600	1185

LUTZE SILFLEX® TRAY-ER TPE, Unshielded

Flexible Premium TPE Control and Tray Cable for Stationary Applications

Application

- Multi-conductor cable for tray applications, with exposed run (open wiring) approval
- Metal cutting equipment, machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp and wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Cold impact tested to -40°C
- Cutting oil resistant - mineral & bio/vegetable based oils *specifically tested with plant based cutting oil*
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 1000V 90C WTTC 600V MTW 600V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *no ground included
Oil resistance	Oil Res I, Oil Res II
Approvals	UL Type TC-ER *UL Type TC UL/CE (UL) Type MTW or DP-1 UL1277 WTTC Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 21270 c(UL) and CIC FT4 RoHS, REACH, TSCA
Item specific approvals	UL509 BUS Drop (only 4 or 5 conductors incl. ground)

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Extremely oil resistant TPE jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (16/30)				
A3321802	AWG18/02C*	7.0	0.276	44	10
A3321803	AWG18/03C	7.5	0.296	56	15
A3321804	AWG18/04C	8.1	0.320	67	21
A3321805	AWG18/05C	8.8	0.346	79	25
A3321807	AWG18/07C	9.5	0.373	95	35
A3321812	AWG18/12C	12.1	0.477	148	60
A3321818	AWG18/18C	14.9	0.587	217	90
A3321825	AWG18/25C	17.2	0.677	288	129
	AWG 16 (26/30)				
A3321602	AWG16/02C*	7.7	0.305	59	17
A3321603	AWG16/03C	8.2	0.321	72	25
A3321604	AWG16/04C	8.7	0.347	85	33
A3321605	AWG16/05C	9.5	0.377	100	41
A3321607	AWG16/07C	10.2	0.406	125	58
A3321612	AWG16/12C	13.4	0.527	214	100
A3321618	AWG16/18C	16.4	0.647	300	150
A3321625	AWG16/25C	19.0	0.748	396	208
	AWG 14 (41/30)				
A3321403	AWG14/03C	8.8	0.348	92	39
A3321404	AWG14/04C	9.6	0.378	108	52
A3321405	AWG14/05C	10.4	0.410	127	65
A3321407	AWG14/07C	11.3	0.445	167	92
A3321412	AWG14/12C	15.5	0.610	287	158
	AWG 12 (65/30)				
A3321203	AWG12/03C	9.8	0.382	119	62
A3321204	AWG12/04C	11.1	0.437	146	83
A3321205	AWG12/05C	12.1	0.475	182	104
A3321207	AWG12/07C	14.1	0.556	238	145
	AWG 10 (105/30)				
A3321003	AWG10/03C	11.7	0.461	178	100
A3321004	AWG10/04C	14.6	0.573	221	134
A3321005	AWG10/05C	15.8	0.623	285	167
	AWG 8 (168/30)				
A3320804	AWG8/04C	18.9	0.744	392	214
	AWG 6 (266/30)				
A3320604	AWG6/04C	20.8	0.820	552	339
	AWG 4 (413/30)				
A3320404	AWG4/4C	27.2	1.070	910	516
	AWG 2 (665/30)				
A3320204	AWG2/04C	31.1	1.225	1,391	883
	1/0 (1064/30)				
A3321/004	1/0/4C	36.4	1.435	1,871	1,338
	2/0 (1330/30)				
A3322/004	2/0/4C	39.2	1.544	2,257	1,685
	3/0 (1665/30)				
A3323/004	3/0/4C	45.6	1.794	2,982	2,156
	4/0 (2109/30)				
A3324/004	4/0/4C	48.3	1.903	3,549	2,676

LUTZE SILFLEX® (C) TRAY-ER TPE, Shielded

Flexible Premium TPE Control and Tray Cable for Stationary Applications

Application

- Dual-shielded multi-conductor cable for tray applications, with exposed run (open wiring) approval
- Metal cutting equipment, machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp and wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Cold impact tested to -40°C
- Cutting oil resistant - mineral & bio/vegetable based oils *specifically tested with plant based cutting oil*
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 1000V 90C WTTC 600V MTW 600V 105C AWM
Temperature range	-40°C - 105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res I, Oil Res II
Approvals	UL Type TC-ER UL/CE UL AWM Style 21270 (UL) Type MTW or DP-1 WTTC Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) and CIC FT4 UL1277 RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Shielded with foil tape, tinned copper braid and drain wire
- Extremely oil resistant TPE jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (16/30)				
A3311803	AWG18/03C	8.1	0.320	76	27
A3311804	AWG18/04C	8.8	0.345	87	36
A3311805	AWG18/05C	9.3	0.368	99	42
A3311807	AWG18/07C	10.0	0.395	116	54
A3311812	AWG18/12C	12.7	0.500	176	85
A3311818	AWG18/18C	15.5	0.609	264	127
A3311825	AWG18/25C	17.6	0.692	368	194
	AWG 16 (26/30)				
A3311603	AWG16/03C	8.7	0.343	92	41
A3311604	AWG16/04C	9.4	0.370	106	51
A3311605	AWG16/05C	10.1	0.398	121	61
A3311607	AWG16/07C	10.9	0.430	149	80
A3311612	AWG16/12C	14.6	0.575	254	134
A3311618	AWG16/18C	16.9	0.664	353	191
A3311625	AWG16/25C	19.6	0.757	462	256
	AWG 14 (41/30)				
A3311403	AWG14/03C	9.5	0.375	113	59
A3311404	AWG14/04C	10.3	0.405	133	74
A3311405	AWG14/05C	11.2	0.440	154	89
A3311407	AWG14/07C	12.1	0.475	200	117
A3311412	AWG14/12C	16.3	0.640	339	201
	AWG 12 (65/30)				
A3311203	AWG12/03C	10.8	0.425	148	88
A3311204	AWG12/04C	11.7	0.460	179	111
A3311205	AWG12/05C	12.2	0.480	216	134
	AWG 10 (105/30)				
A3311004	AWG10/04C	15.2	0.600	291	178

LUTZE SILFLEX® FBP, Unshielded

Flexible Control Cable for Food and Beverage Processing

Application

- Multi-conductor control cable for machine and handling devices in food, beverage and drug processing applications
- FDA sanctioned jacket material for direct food contact per 21 CFR
- Compliant with NFPA 79, Article 12.9
- Suitable for use in food contact zone, splash zone and non-contact zones

Characteristics

- Flame retardant per UL 1581 Cable Flame
- FDA compliance tested per 21 CFR 175.300
- California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986) compliant
- REACH 1907/2006/EC compliant
- RoHS Directive EU 2015/863 compliant
- Phthalate free jacket
- Low capacitance insulation
- Easy stripping and easy installation
- Easy routing and bending due to flexibility
- Resistant to most oils and fats
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Small cable diameter
- Non-wicking fillers
- Talc and silicone free
- Patented design US-11443871-B2

Technical Data

Voltage	1000V 90C UL AWM 20886
Temperature	-40°C - +90°C static
Minimum bending radius	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground; *2C no ground included
Burning behavior	Flame retardant per UL 1581 Cable Flame
Approvals & compliance	21 CFR 175.300 UL AWM Style 20886 CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- Polypropylene insulation
- Industrial grade phthalate free thermoplastic polymer jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 20 (10/30)				
A6012002	AWG20/02C*	4.9	0.193	21	6
A6012003	AWG20/03C	5.2	0.203	26	9
A6012004	AWG20/04C	5.6	0.219	31	12
A6012005	AWG20/05C	6.0	0.237	38	16
A6012007	AWG20/07C	6.5	0.255	46	22
A6012012	AWG20/12C	8.6	0.339	77	38
A6012018	AWG20/18C	9.9	0.391	110	56
A6012025	AWG20/25C	11.4	0.448	142	78
	AWG 18 (19/30)				
A6011802	AWG18/02C*	5.5	0.217	29	12
A6011803	AWG18/03C	5.8	0.229	38	18
A6011804	AWG18/04C	6.3	0.248	46	24
A6011805	AWG18/05C	6.8	0.269	55	30
A6011807	AWG18/07C	7.7	0.303	75	42
A6011809	AWG18/09C	8.9	0.349	98	54
A6011812	AWG18/12C	9.9	0.389	122	72
A6011818	AWG18/18C	11.7	0.460	176	108
A6011825	AWG18/25C	13.7	0.539	240	151
	AWG 16 (26/30)				
A6011602	AWG16/02*	6.1	0.239	35	16
A6011603	AWG16/03	6.4	0.253	47	24
A6011604	AWG16/04	7.0	0.274	58	32
A6011605	AWG16/05	7.6	0.298	70	40
A6011607	AWG16/07	8.5	0.336	95	57
A6011612	AWG16/12	11.3	0.443	157	98
A6011618	AWG16/18	13.1	0.514	224	147
A6011625	AWG16/25	15.3	0.604	305	204
	AWG 14 (41/30)				
A6011403	AWG14/03	7.9	0.310	70	38
A6011404	AWG14/04	8.5	0.336	88	51
A6011405	AWG14/05	9.3	0.367	109	64
A6011407	AWG14/07	10.6	0.419	149	89
A6011412	AWG14/12	13.8	0.542	239	154
	AWG12 (65/30)				
A6011204	AWG12/04	10.4	0.410	139	84
A6011205	AWG12/05	11.4	0.447	166	105
	AWG10 (105/30)				
A6011004	AWG10/04	13.0	0.511	205	130
	AWG8 (168/30)				
A6010804	AWG8/04C	16.2	0.636	311	214
	AWG6 (266/30)				
A6010604	AWG6/04C	18.2	0.718	453	339

LUTZE SILFLEX® FBP (C), Shielded

Flexible Control Cable for Food and Beverage Processing

Application

- Dual-shielded multi-conductor control cable for machine and handling devices in food, beverage and drug processing applications
- FDA sanctioned jacket material for direct food contact per 21 CFR
- Compliant with NFPA 79, Article 12.9
- Suitable for use in food contact zone, splash zone and non-contact zones

Characteristics

- Flame retardant per UL 1581 Cable Flame
- FDA compliance tested per 21 CFR 175.300
- California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986) compliant
- REACH 1907/2006/EC compliant
- RoHS Directive EU 2015/863 compliant
- Phthalate free jacket
- High protection against electromagnetic interference (EMI)
- Low capacitance insulation
- Easy stripping and easy installation
- Easy routing and bending due to flexibility
- Resistant to most oils and fats
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Small cable diameter
- Non-wicking fillers
- Talc and silicone free
- Patented design US-11443871-B2

Technical Data

Voltage	1000V 90C UL AWM 20886
Temperature	-40°C - +90°C static
Minimum bending radius	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Burning behavior	Flame retardant per UL 1581 Cable Flame
Approvals & compliance	21 CFR 175.300 UL AWM Style 20886 CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- Polypropylene insulation
- Shielded with foil tape, tinned copper braid with 75% optical coverage, and drain wire
- Industrial grade phthalate free thermoplastic polymer jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG20 (10/30)				
A6022003	AWG20/03C	5.9	0.233	41	20
A6022004	AWG20/04C	6.3	0.248	47	24
A6022005	AWG20/05C	6.8	0.266	53	28
A6022007	AWG20/07C	7.2	0.285	64	35
A6022012	AWG20/12C	9.4	0.369	103	55
A6022018	AWG20/18C	10.7	0.421	133	75
A6022025	AWG20/25C	12.3	0.486	174	100
	AWG 18 (16/30)				
A6021803	AWG18/03C	6.6	0.259	53	30
A6021804	AWG18/04C	7.3	0.289	67	36
A6021805	AWG18/05C	7.9	0.310	77	44
A6021807	AWG18/07C	8.5	0.333	95	57
A6021812	AWG18/12C	10.8	0.427	149	91
A6021818	AWG18/18C	12.4	0.489	202	130
A6021825	AWG18/25C	14.5	0.569	271	176
	AWG 16 (26/30)				
A6021603	AWG16/03C	7.2	0.282	66	39
A6021604	AWG16/04C	8.0	0.316	81	48
A6021605	AWG16/05C	8.6	0.340	95	57
A6021607	AWG16/07C	9.3	0.366	122	76
A6021612	AWG16/12C	12.0	0.472	187	120
A6021618	AWG16/18C	14.1	0.556	263	173
A6021625	AWG16/25C	16.2	0.639	348	240
	AWG 14 (41/30)				
A6021403	AWG14/03C	8.8	0.348	102	58
A6021404	AWG14/04C	9.5	0.374	121	73
A6021405	AWG14/05C	10.3	0.405	139	86
A6021407	AWG14/07C	11.4	0.449	179	114
A6021412	AWG14/12C	14.5	0.572	276	184
	AWG 12 (65/30)				
A6021204	AWG12/04C	11.2	0.439	172	112
A6021205	AWG12/05C	12.1	0.476	204	135
	AWG 10 (105/30)				
A6021004	AWG10/04C	13.7	0.540	384	178

These cables are flame resistant in accordance with NFPA 79 article 12.9 “Special Cables and Conductors” and meet stringent FDA food contact requirements per 21 CFR 175.300.

LUTZE SILFLEX® TRAY-ER Blue PVC, Unshielded

Flexible Control and Tray Cable with Blue Conductors for 24V Applications

Application

- Multi-conductor cable for tray applications, with exposed run (open wiring) approval
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- Blue conductors indicating 24 Volt circuits
- MTW for machine tool wiring
- TC-ER for use with cable trays without conduit, which can reduce installation costs in industrial environments
- Dry, damp and wet conditions

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Non-wicking fillers
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 600V MTW
Temperature range	-40°C - +90°C static
Bending radius min	4 x cable OD
Conductor marking	Blue with white numbers; and one green/yellow ground; No. 2 is white with a blue stripe *only two blue with white numbers and one green/yellow ground, no white with a blue stripe
Oil resistance	Oil Res I
Approvals	UL Type TC-ER UL/CE (UL) Type MTW or DP-1 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC and CIC FT4 UL1277 RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Oil resistant PVC jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (19/30)				
A3251803	AWG18/3C*	7.3	0.288	47	18
A3251805	AWG18/5C	8.6	0.337	69	30
A3251807	AWG18/7C	9.4	0.370	89	42
A3251812	AWG18/12C	12.0	0.474	143	72
A3251819	AWG18/19C	14.9	0.588	219	108
A3251825	AWG18/25C	17.4	0.686	295	150
A3251837	AWG18/37C	19.9	0.782	410	223
	AWG 16 (26/30)				
A3251603	AWG16/3C*	7.9	0.312	58	25
A3251605	AWG16/5C	9.2	0.364	91	41
A3251607	AWG16/7C	10.1	0.398	116	57
A3251612	AWG16/12C	13.9	0.547	194	98
A3251619	AWG16/19C	16.2	0.638	271	155
A3251625	AWG16/25C	18.9	0.746	379	204
	AWG 14 (41/30)				
A3251403	AWG14/3C*	8.9	0.352	82	39
A3251404	AWG14/4C	9.8	0.384	103	52
	AWG 12 (65/30)				
A3251204	AWG12/4C	10.9	0.428	137	85
A3251205	AWG12/5C	12.4	0.488	183	105

"Blue conductors are used to indicate 24V DC circuits. The cable is rated 600V TC-ER to permit installation alongside other type TC cables".

LUTZE SILFLEX® N PVC, Unshielded

Flexible Control Cable for Stationary Applications

Application

- Multi-conductor control cable for machine and plant construction, HVAC technology, assembly and production lines, and many other industrial applications
- Easy strip design especially suited for cable assemblies
- Compliant with NFPA 79, Article 12.9

Characteristics

- Most flexible design without nylon for easy stripping and easy installation
- Easy routing and bending due to flexibility
- Resistant to mineral oils, coolants and solvents
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	600V 90C AWM
Temperature range	-40°C - +90°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground; *no ground included
Burning behavior	Flame retardant per UL VW-1
Oil resistance	Oil Res II
Approvals	UL AWM Style 2587 FT4 CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC insulation
- Oil resistant PVC jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 20 (10/30)				
108349A	AWG20/02C*	5.7	0.226	27	6.5
108350A	AWG20/03C	6.0	0.235	31	10
108351A	AWG20/04C	6.5	0.255	38	12
108352A	AWG20/05C	7.2	0.282	46	16
108353A	AWG20/07C	8.8	0.345	65	22
108354A	AWG20/12C	10.8	0.424	103	38
108355A	AWG20/18C	12.8	0.505	153	56
108356A	AWG20/25C	15.0	0.592	206	88
	AWG 18 (16/30)				
108401A	AWG18/02C*	6.5	0.254	34	10
108357A	AWG18/03C	6.7	0.263	41	15
108358A	AWG18/04C	7.2	0.285	51	20
108359A	AWG18/05C	7.7	0.305	63	25
108360A	AWG18/07C	9.1	0.360	82	35
108392A	AWG18/09C	11.7	0.460	119	45
108361A	AWG18/12C	12.0	0.473	142	60
108362A	AWG18/18C	13.8	0.543	198	90
108363A	AWG18/25C	16.0	0.630	263	125
	AWG 16 (26/30)				
108391A	AWG16/02*	6.9	0.270	41	16
108372A	AWG16/03	7.4	0.290	55	24
108373A	AWG16/04	8.0	0.316	69	32
108374A	AWG16/05	8.7	0.341	84	40
108375A	AWG16/07	10.3	0.406	112	57
108393A	AWG16/09	13.0	0.511	159	73
108376A	AWG16/12	13.8	0.543	198	97
108377A	AWG16/18	15.5	0.610	274	147
108378A	AWG16/25	18.0	0.708	366	204
	AWG 14 (41/30)				
108380A	AWG14/03	8.9	0.352	82	38
108381A	AWG14/04	9.8	0.384	103	51
108382A	AWG14/05	10.9	0.430	130	63
108383A	AWG14/07	13.4	0.529	183	89
108389A	AWG14/09	16.3	0.642	246	115
108384A	AWG14/12	16.9	0.665	307	153
108385A	AWG14/18	19.7	0.774	433	230
108386A	AWG14/25	23.7	0.935	598	320

LUTZE Single Conductor Hook Up Wire, Multi-Norm

Flexible Single Conductor Hook Up Wire with UL/CE/MTW and HAR Approvals

Application

- Multi-rated single-conductor cable for wiring of cabinets and use in electrical and electronic equipment
- Suited for use in Europe (HAR) and North America (UL MTW)
- MTW for machine tool wiring

Characteristics

- Fine stranding class 5, per VDE 0295
- Very flexible for easy installation
- Talc and silicone free

Technical Data

Voltage	H05V2-K 300/500V, H07V2-K 450/750V, 600V MTW 600V 105C AWM
Test voltage	3000V
Bending radius min	Fixed: 5 x cable OD
Temperature range	Flexible -5°C - +105°C Fixed -40°C - + 105°C H05/H07 up to +90°C
Conductor stranding	Fine wire, tinned copper per VDE 0295 class 5, IEC 60228 class 5
Insulation resistance	20MΩ x km
Burning behavior	Flame retardant per UL VW-1, IEC 60332-1
Approvals	HAR: HD 21.3 S3 - H05V-K (≤ AWG 18) - H07V-K (≥ AWG 16) UL 1063 MTW Listed UL AWM 1015 RoHS, REACH, TSCA
Put ups	**AWG 19 – AWG 12** 100m (328ft) carton or ring 500m (1,640ft) reel upon request **AWG 10 and larger** Cuts of any length up to 1,000m (3,280ft) reel

Construction

- Metric conductor
- Flexible stranded tinned copper conductors
- PVC insulation according to UL 1581, class 43 heat and humidity resistant
- Conditionally resistant to oils, solvents, acids and bases

More colors and sizes upon request. Please contact us for information!

Part No.	Description Color	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 19 / 0.75 mm² H05V2-K				
A61900	Green/Yellow	2.7	0.106	9	5
A61901	Black	2.7	0.106	9	5
A61902	Blue	2.7	0.106	9	5
A61903	Brown	2.7	0.106	9	5
A61904	Red	2.7	0.106	9	5
A61914	Dark Blue	2.7	0.106	9	5
	AWG 18 / 1.0 mm² H05V2-K				
A61800	Green/Yellow	2.9	0.114	10	6
A61801	Black	2.9	0.114	10	6
A61802	Blue	2.9	0.114	10	6
A61803	Brown	2.9	0.114	10	6
A61804	Red	2.9	0.114	10	6
A61814	Dark Blue	2.9	0.114	10	6
A61844	White/Blue	2.9	0.114	10	6
	AWG 16 / 1.5 mm² H07V2-K				
A61600	Green/Yellow	3.3	0.130	14	10
A61601	Black	3.3	0.130	14	10
A61602	Blue	3.3	0.130	14	10
A61603	Brown	3.3	0.130	14	10
A61604	Red	3.3	0.130	14	10
A61605	White	3.3	0.130	14	10
A61609	Orange	3.3	0.130	14	10
A61614	Dark Blue	3.3	0.130	14	10
A61615	Blue/White	3.3	0.130	14	10
A61644	White/Blue	3.3	0.130	14	10
	AWG 14 / 2.5 mm² H07V2-K				
A61400	Green/Yellow	3.7	0.145	21	16
A61401	Black	3.7	0.145	21	16
A61402	Blue	3.7	0.145	21	16
A61403	Brown	3.7	0.145	21	16
A61404	Red	3.7	0.145	21	16
A61405	White	3.7	0.145	21	16
A61414	Dark Blue	3.7	0.145	21	16
	AWG 12 / 4.0 mm² H07V2-K				
A61200	Green/Yellow	4.3	0.169	31	25
A61201	Black	4.3	0.169	31	25
	AWG 10/ 6.0 mm² H07V2-K				
A61000	Green/Yellow	4.8	0.189	44	39
A61001	Black	4.8	0.189	44	39
	AWG 8 / 10 mm² H07V2-K				
A60800	Green/Yellow	6.8	0.267	76	64
A60801	Black	6.8	0.267	76	64

Flexible Single Conductor Hook Up Wire with UL/CE/MTW and HAR Approvals

Application

- Multi-rated single-conductor cable for wiring of cabinets and use in electrical and electronic equipment
- Suited for use in Europe (HAR) and North America (UL MTW)
- MTW for machine tool wiring

Characteristics

- Fine stranding class 5, per VDE 0295
- Very flexible for easy installation
- Talc and silicone free

Technical Data

Voltage	H05V2-K 300/500 V, H07V2-K 450/750 V, 600V 90C MTW 600V 105C AWM
Test voltage	3000V
Bending radius min	Fixed: 5 x cable OD
Temperature range	Flexible -5°C - +105°C Fixed -40°C - + 105°C H05/H07 up to +90°C
Conductor stranding	Fine wire, tinned copper per VDE 0295 class 5, IEC 60228 class 5
Insulation resistance	20MΩ x km
Burning behavior	Flame retardant per UL VW-1, IEC 60332-1
Approvals	HAR: HD 21.3 S3 - H05V-K (≤ AWG 18) - H07V-K (≥ AWG 16) UL 1063 MTW Listed UL AWM 1015 RoHS, REACH, TSCA
Put ups	**AWG 19 – AWG 12** 100m (328ft) carton or ring 500m (1,640ft) reel upon request **AWG 10 and larger** Cuts of any length up to 1,000m (3,280ft) reel

Construction

- Metric conductor
- Flexible stranded tinned copper conductors
- PVC insulation according to UL 1581, class 43 heat and humidity resistant
- Conditionally resistant to oils, solvents, acids and bases

More colors and sizes upon request. Please contact us for information!

Part No.	Description Color	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 6 / 16 mm² X07V2-K				
A60600	Green/Yellow	8.6	0.338	126	103
A60601	Black	8.6	0.338	126	103
	AWG 4 / 25 mm² H07V2-K				
A60400	Green/Yellow	10.0	0.394	180	161
A60401	Black	10.0	0.394	180	161
	AWG 2 / 35 mm² H07V2-K				
A60200	Green/Yellow	11.0	0.433	247	225
A60201	Black	11.0	0.433	247	225
	AWG 1 / 50 mm² X07V2-K				
A60100	Green/Yellow	14.0	0.551	347	322
A60101	Black	14.0	0.551	347	322
	AWG 2/0 / 70 mm² X07V2-K				
A67000	Green/Yellow	15.6	0.614	475	452
A67001	Black	15.6	0.614	475	452
	AWG 3/0 / 95 mm² X07V2-K				
A69500	Green/Yellow	17.8	0.701	629	613
A69501	Black	17.8	0.701	629	613

LUTZE MOTIONFLEX® TRAY-ER TPE, Unshielded

Flexing Control Cable for Linear and Twisting Motion Applications

Application

- Multi-conductor cable suitable for continuous motion applications with repetitive movement, linear flexing, and torsional stress
- Compatible with all major drag chain brands
- Compliant with NFPA 79 for wiring of industrial machinery
- TC-ER for use in cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Highly flexible conductor design
- Specially formulated jacket for oil resistance and easy strip
- Cold impact tested to -40°C
- Cutting oil resistant - mineral & bio/vegetable based oils *specifically tested with plant based cutting oil*
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 1000V 90C WTTC 600V MTW 600V 105C AWM
Temperature range	Moving -5°C - +90°C Fixed -40°C - +105°C
Bending radius min	Moving 10 x cable OD Fixed 4 x cable OD
Torsion angle max.	+/- 180° / 1m cable length
Conductor marking	Black with white numbers and one green/yellow ground *2C no ground included
Oil resistance	Oil Res I, Oil Res II
Approvals	UL Type TC-ER *2C UL Type TC WTTC UL/AWM/CE AWM 21270 (UL) Type MTW or DP-1 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC, CIC FT4 UL 1277 RoHS, REACH, TSCA

Construction

- AWG conductor
- Class M flexible fine wire stranded bare copper conductors
- Special low friction PVC/Nylon insulation
- Oil resistant TPE jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (41/34)				
A4221802	AWG18/02C*	6.8	0.270	38	11
A4221803	AWG18/03C	7.2	0.284	46	16
A4221804	AWG18/04C	7.7	0.304	56	21
A4221805	AWG18/05C	8.3	0.329	63	26
A4221807	AWG18/07C	9.5	0.377	90	37
A4221812	AWG18/12C	11.3	0.447	133	63
	AWG 16 (65/34)				
A4221602	AWG16/02C*	7.7	0.305	47	16
A4221603	AWG16/03C	8.2	0.324	60	25
A4221604	AWG16/04C	8.8	0.349	74	33
A4221605	AWG16/05C	9.6	0.378	91	41
A4221607	AWG16/07C	11	0.435	125	58
A4221612	AWG16/12C	13.2	0.520	185	99
	AWG 14 (104/34)				
A4221403	AWG14/03C	8.7	0.343	79	40
A4221404	AWG14/04C	9.4	0.370	99	53
A4221405	AWG14/05C	10.2	0.405	120	66
A4221407	AWG14/07C	11.9	0.470	170	92
A4221412	AWG14/12C	15.1	0.595	284	157
	AWG 12 (168/34)				
A4221203	AWG12/03C	10.7	0.423	114	63
A4221204	AWG12/04C	11.6	0.460	166	84
A4221205	AWG12/05C	12.7	0.501	179	105
A4221207	AWG12/07C	15.7	0.620	270	147
	AWG 10 (259/34)				
A4221004	AWG10/04C	14.5	0.573	225	131
A4221005	AWG10/05C	15.9	0.626	285	163

LUTZE MOTIONFLEX® (C) TRAY-ER TPE, Shielded

Flexing Control Cable for Linear and Twisting Motion Applications

Application

- Shielded multi-conductor cable suitable for continuous motion applications with repetitive movement, linear flexing, and torsional stress
- Compatible with all major drag chain brands
- Compliant with NFPA 79 for wiring of industrial machinery
- TC-ER for use in cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Highly flexible conductor design
- Specially formulated jacket for oil resistance and easy strip
- Cutting oil resistant - mineral & bio/vegetable based oils *specifically tested with plant based cutting oil*
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Cold impact tested to -40°C
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 1000V 90C WTTC 600V MTW 600V 105C AWM
Temperature range	Moving -5°C - +90°C Fixed -40°C - +105°C
Bending radius min	Moving 12 x cable OD Fixed 6 x cable OD
Torsion angle max.	+/- 130º / 1m cable length
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res I, Oil Res II
Approvals	UL Type TC-ER WTTC UL/AWM/CE AWM 21270 (UL) Type MTW or DP-1 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC, CIC FT4 UL 1277 RoHS, REACH, TSCA

Construction

- AWG conductor
- Class M flexible fine wire stranded bare copper conductors
- Special low friction PVC/Nylon insulation
- Tinned copper braid shield with >80% coverage
- Oil resistant TPE jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (41/34)				
A4211803	AWG18/03C	7.8	0.310	59	26
A4211804	AWG18/04C	8.3	0.330	70	32
A4211805	AWG18/05C	9.0	0.354	83	39
A4211807	AWG18/07C	10.2	0.405	110	52
A4211812	AWG18/12C	12.0	0.475	153	85
	AWG 16 (65/34)				
A4211603	AWG16/03C	8.6	0.340	79	42
A4211604	AWG16/04C	9.4	0.370	91	47
A4211605	AWG16/05C	10.2	0.400	113	61
A4211607	AWG16/07C	11.6	0.460	167	76
A4211612	AWG16/12C	14.7	0.580	237	132
	AWG 14 (104/34)				
A4211403	AWG14/03C	9.4	0.370	95	53
A4211404	AWG14/04C	10	0.395	116	68
A4211405	AWG14/05C	10.9	0.430	140	83
A4211407	AWG14/07C	12.7	0.500	199	119
A4211412	AWG14/12C	15.9	0.625	307	191
	AWG 12 (168/34)				
A4211203	AWG12/03C	11.3	0.445	133	80
A4211204	AWG12/04C	12.3	0.485	168	104
A4211205	AWG12/05C	14.2	0.560	224	132
A4211207	AWG12/07C	16.5	0.650	307	180
	AWG 10 (259/34)				
A4211004	AWG10/04C	15.3	0.604	263	151
A4211005	AWG10/05C	16.6	0.657	345	219

LUTZE SUPERFLEX® N PVC, Unshielded

High Flexing Control Cable for Continuous Motion Applications

Application

- Suitable for control, monitoring and instrumentation applications with continuous flexing cycles
- For flexing applications such as drag chains and other applications where linear flexing occurs
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Extremely small cable ODs due to special TPE High Glide insulation compliant with UL
- TPE/PVC combination for high performance flexing and longer cable runs
- Very flexible with superfine stranding
- Specially formulated PVC jacket per UL Class 43
- Non-wicking fillers
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe and rot resistant
- UV resistant
- Dry and wet conditions
- Talc and silicone free

Technical Data

Voltage	600V 105C AWM
Test voltage	3000V
Insulation resistance	Min 100 MΩ x km
Temperature range	Moving -15°C - +90°C Fixed -40°C - +105°C
Bending radius min	Moving 7.5 x cable OD Fixed 4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground *no ground included
Burning behavior	Flame retardant per UL VW-1, DIN EN 50265-2-1 FT1
Oil resistance	4D100C, UL Oil res 80°C and DIN EN 60811-2-1
Approvals	cUL AWM Style 2586 CE RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper super finely stranded per DIN VDE 0295 Class 6 and IEC 60228 Class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
- Optimized construction for flexing applications
- Conductors cabled with fleece wrap
- Special high strength PVC jacket per UL class 43 / VDE 0207 TM5, oil resistant
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 21 / 0.5 mm²				
A1482003	3G0.5	5.2	0.205	29	10
A1482004	4G0.5	5.6	0.220	34	13
A1482005	5G0.5	6.1	0.240	42	16
A1482007	7G0.5	7.2	0.283	58	23
A1482012	12G0.5	8.6	0.339	83	39
A1482018	18G0.5	10.3	0.406	125	58
A1482025	25G0.5	12.6	0.496	177	80
	AWG 18 / 1.0 mm²				
A1481802	2x1.0*	5.7	0.224	34	13
A1481803	3G1.0	6.1	0.240	44	19
A1481804	4G1.0	6.7	0.264	53	26
A1481805	5G1.0	7.2	0.283	65	32
A1481807	7G1.0	8.5	0.335	92	45
A1481812	12G1.0	10.6	0.417	141	77
A1481818	18G1.0	12.7	0.500	211	116
A1481825	25G1.0	15.3	0.602	291	161
A1481834	34G1.0	17.4	0.685	392	218
	AWG 16 / 1.5 mm²				
A1481603	3G1.5	7.0	0.276	59	28
A1481604	4G1.5	7.7	0.303	73	38
A1481605	5G1.5	8.4	0.331	90	47
A1481607	7G1.5	10.2	0.402	132	66
A1481612	12G1.5	12.7	0.500	203	113
A1481618	18G1.5	14.8	0.583	294	169
A1481625	25G1.5	18.2	0.717	417	235
	AWG 14 / 2.5 mm²				
A1481404	4G2.5	8.6	0.339	102	62
A1481405	5G2.5	9.7	0.382	132	77
A1481407	7G2.5	11.9	0.469	194	108
	AWG 12 / 4 mm²				
A1481204	4G4	11.0	0.433	180	112
A1481207	7G4	15.0	0.591	328	195

LUTZE SUPERFLEX® N (C) PVC, Shielded

High Flexing Control Cable for Continuous Motion Applications

Application

- Shielded multi-conductor high flexing cable suitable for control, monitoring and instrumentation applications with continuous flexing in drag chains
- Machine tools, gantry robots, conveyors and other continuous motion applications in industrial environments
- For flexing applications such as drag chains and other applications where linear flexing occurs
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Extremely small cable ODs due to special TPE High Glide insulation compliant with UL
- Sub-jacket for increased flex life in high performance flexing and long cable runs
- Very flexible with superfine stranding
- Specially formulated PVC jacket per UL Class 43
- Non-wicking fillers
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe and rot resistant
- UV resistant
- Dry and wet conditions
- Talc and silicone free

Technical Data

Voltage	600V 105C AWM
Test voltage	3000V
Insulation resistance	Min 100MΩ x km
Temperature range	Moving -15°C - +90°C Fixed -40°C - +105°C
Bending radius min	Moving 10 x cable OD Fixed 6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Burning behavior	Flame retardant per UL VW-1, DIN EN 50265-2-1 FT1
Oil resistance	4D100C, UL Oil res 80°C and DIN EN 60811-2-1
Approvals	cUL AWM Style 2586 CE RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper super finely stranded per DIN VDE 0295 Class 6 and IEC 60228 Class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
- Optimized construction for flexing applications
- Conductors cabled with fleece wrap
- PVC sub-jacket
- Tinned copper braid shield
- Special high strength PVC jacket per UL Class 43 / VDE 0207 TM5, oil resistant
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 21 / 0.5 mm²				
A1492003	(3G0.5)	6.7	0.264	53	19
A1492004	(4G0.5)	7.1	0.280	60	23
A1492005	(5G0.5)	7.8	0.307	74	28
A1492007	(7G0.5)	9.0	0.354	98	37
A1492012	(12G0.5)	10.9	0.429	141	56
A1492018	(18G0.5)	12.5	0.492	194	121
A1492025	(25G0.5)	14.7	0.579	259	164
	AWG 18 / 1.0 mm²				
A1491803	(3G1.0)	7.7	0.303	74	31
A1491804	(4G1.0)	8.4	0.331	89	39
A1491805	(5G1.0)	9.0	0.354	105	46
A1491807	(7G1.0)	10.9	0.429	151	62
A1491812	(12G1.0)	12.9	0.508	213	101
A1491818	(18G1.0)	14.7	0.579	293	145
A1491825	(25G1.0)	18.2	0.717	436	220
A1491834	(34G1.0)	20.9	0.823	585	290
	AWG 16 / 1.5 mm²				
A1491603	(3G1.5)	8.8	0.346	98	42
A1491604	(4G1.5)	9.6	0.378	118	53
A1491605	(5G1.5)	10.7	0.421	147	66
A1491607	(7G1.5)	12.4	0.488	201	90
A1491612	(12G1.5)	14.7	0.579	285	143
A1491618	(18G1.5)	17.1	0.673	369	212
A1491625	(25G1.5)	21.2	0.835	409	308
	AWG 14 / 2.5 mm²				
A1491404	(4G2.5)	11.0	0.433	146	63
A1491405	(5G2.5)	12.0	0.472	200	100
A1491407	(7G2.5)	14.0	0.551	271	134
	AWG 12 / 4 mm²				
A1491204	(4G4)	13.2	0.520	254	136

LUTZE SUPERFLEX® Plus 3000/4000 PUR, Unshielded

High Flexing Control Cable for Continuous Motion Applications

Application

- Multi-conductor cable for robots, handling equipment, machine tools, drag chains and applications with extremely rough operating conditions
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chains brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Superfine stranding per Class 6 for continuous moving applications
- Extremely small cable ODs due to special TPE High Glide insulation compliant with UL
- Reduced friction
- Highest level of resistance against cooling fluids, greases and oils
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- Dry and wet conditions
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	300/1000V 90C AWM
Temperature range	Moving -25°C - +90°C
	Fixed -40°C - +90°C
Bending radius min	Moving 7.5 x cable OD
	Fixed 4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground; *no ground included
Insulation resistance	Min 100MΩ x km
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM 21209 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 Class 6 and IEC 60228 Class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
  x: without ground conductor
- Optimized construction for flexing applications
- Conductors cabled with fleece wrap
- Extremely oil resistant PUR jacket
- Gray jacket similar to RAL 7001

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
3000 Series - 300V					
	AWG 21 / 0.5 mm²				
113032	2x0.5*	4.8	0.189	20	6
113033	3G0.5	5.0	0.197	24	10
113034	4G0.5	5.4	0.213	29	13
113035	5G0.5	5.8	0.228	33	16
113036	7G0.5	6.7	0.264	44	23
113037	12G0.5	8.0	0.315	66	40
113038	18G0.5	9.3	0.366	91	59
113039	25G0.5	11.0	0.433	122	88
	AWG 18 / 1.0 mm²				
113049	2x1.0*	5.6	0.220	28	13
113050	3G1.0	5.9	0.232	36	20
113051	4G1.0	6.4	0.252	45	26
113052	5G1.0	7.0	0.276	54	32
113053	7G1.0	8.2	0.323	73	46
113054	12G1.0	9.8	0.386	113	80
113055	18G1.0	11.4	0.449	180.9	121
113056	25G1.0	13.6	0.535	227.1	175
4000 Series - 1000V					
	AWG 18 / 1.0 mm²				
113100	2x1.0*	6.0	0.236	30	13
113101	3G1.0	6.3	0.248	39	19
113102	4G1.0	6.9	0.272	48	26
113103	5G1.0	7.5	0.295	58	32
113104	7G1.0	8.7	0.342	77	46
113105	12G1.0	10.3	0.405	119	80
113106	18G1.0	11.9	0.469	189	120
113107	25G1.0	14.7	0.579	255	176
	AWG 16 / 1.5 mm²				
113108	2x1.5*	7.0	0.276	42	19
113109	3G1.5	7.3	0.287	53	29
113110	4G1.5	7.9	0.311	67	40
113111	5G1.5	8.6	0.339	81	49
113112	7G1.5	10.3	0.406	113	68
113113	12G1.5	12.1	0.476	173	118
113114	18G1.5	14.1	0.555	255	180
113115	25G1.5	17.4	0.685	346	259
	AWG 14 / 2.5 mm²				
113117	3G2.5	8.3	0.327	74	47
113118	4G2.5	9.1	0.358	96	65
113119	5G2.5	10.1	0.398	119	82
113120	7G2.5	12.2	0.480	166	115
113121	12G2.5	15.0	0.551	264	198
113122	18G2.5	17.5	0.689	388	290

LUTZE SUPERFLEX® Plus 3100/4100 (C) PUR, Shielded

High Flexing Control Cable for Continuous Motion Applications

Application

- Shielded multi-conductor cable for robots, handling equipment, machine tools, drag chains and applications with extremely rough operating conditions
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chains brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Superfine stranding per Class 6 for continuous moving applications
- Extremely small cable ODs due to special TPE High Glide Insulation compliant with UL
- Reduced friction
- Highest level of resistance against cooling fluids, greases and oils
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe and rot resistant
- Dry and wet conditions
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	300/1000V 90C AWM
Temperature range	Moving -25°C - +90°C Fixed -40°C - +90°C
Bending radius min	Moving 7.5 x cable OD Fixed 5 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Insulation resistance	Min 100MΩ x km
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1, UL VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM 21209 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 Class 6 and IEC 60228 Class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
- Optimized construction for flexing applications
- Conductors cabled with fleece wrap
- TPE subjacket for long flex life
- Tinned copper braid shield
- Extremely oil resistant PUR jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
3100 Series - 300V					
	AWG 21 / 0.5 mm²				
113070	(3G0.5)	6.6	0.260	39	18
113071	(4G0.5)	7.0	0.276	45	23
113072	(5G0.5)	7.4	0.295	52	26
113073	(7G0.5)	8.3	0.327	64	35
113074	(12G0.5)	9.7	0.382	95	55
113075	(18G0.5)	11.0	0.433	120	89
113076	(25G0.5)	13.1	0.516	157	121
	AWG 18 / 1.0 mm²				
113087	(3G1.0)	7.8	0.307	60	31
113088	(4G1.0)	8.3	0.327	70	38
113089	(5G1.0)	9.0	0.354	83	46
113090	(7G1.0)	10.2	0.402	114	70
113091	(12G1.0)	12.1	0.476	166	109
113092	(18G1.0)	13.7	0.539	217.7	158
113093	(25G1.0)	16.0	0.623	295.7	218
4100 Series - 1000V					
	AWG 16 / 1.5 mm²				
113220	(3G1.5)	9.4	0.370	84	42
113221	(4G1.5)	10.0	0.394	100	53
113222	(5G1.5)	11.0	0.433	126	73
113223	(7G1.5)	13.0	0.512	174	99
113224	(12G1.5)	15.2	0.598	248	156
113225	(18G1.5)	17.4	0.685	308	225
113227	(25G1.5)	21.0	0.827	425	331
	AWG 14 / 2.5 mm²				
113228	(3G2.5)	10.8	0.425	120	72
113229	(4G2.5)	11.9	0.469	151	91
113230	(5G2.5)	12.9	0.508	181	111
113231	(7G2.5)	15.2	0.598	244	153
113232	(12G2.5)	17.7	0.697	351	243

2. Electronic Cables

LUTZE AUTOMATION
an Amphenol Company

LUTZE Electronic PLTC PVC, Unshielded

Flexible Electronic Cable for Stationary Applications

Application

- Multi-conductor industrial grade PLTC electronic cable
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, process instrumentation and controls
- Compliant with NFPA 79 requirements
- PLTC for installation in cable trays

Characteristics

- Flexible for easy installation
- Easy strip design
- Color coded conductors
- Specially formulated jacket for oil resistance
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Premium durability
- Extended temperature range
- Sunlight resistant
- Gas/vapor-tight sheath per UL 13
- Talc and silicone free

Technical Data

Voltage	300V
Temperature range	-40°C - +105°C
Bending radius min	4 x cable OD
Conductor marking	See tables
Burning behavior	Flame retardant per UL VW-1, FT4
Oil resistance	Oil Res II
Approvals	UL Type PLTC UL Type CM AWM 2464 80C 300V AWM I/II A/B CE Meets NEC 392, 725, 800 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 (PLTC Use Only) UL 13 RoHS, REACH, TSCA

Construction

- AWG conductor
- Flexible fine wire stranded tinned copper conductors
- SR-PVC insulation
- Oil resistant premium PVC jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 22 (19/34)				
A3032202	AWG22/2C	4.4	0.173	17	4
A3032203	AWG22/3C	4.6	0.181	21	7
A3032204	AWG22/4C	4.9	0.194	26	9
A3032206	AWG22/6C	5.7	0.223	33	14
A3032208	AWG22/8C	6.2	0.243	42	19
A3032210	AWG22/10C	7.2	0.283	53	24
A3032215	AWG22/15C	8.1	0.318	70	35
A3032220	AWG22/20C	9.0	0.353	90	47
A3032225	AWG22/25C	10.3	0.407	117	59
	AWG 20 (19/32)				
A3032002	AWG20/2C	5.0	0.195	21	7
A3032003	AWG20/3C	5.2	0.204	27	11
A3032004	AWG20/4C	5.6	0.220	33	15
A3032006	AWG20/6C	6.5	0.254	45	22
A3032008	AWG20/8C	7.2	0.282	58	30
A3032010	AWG20/10C	8.2	0.323	72	37
A3032015	AWG20/15C	9.2	0.364	99	56
A3032020	AWG20/20C	10.7	0.420	134	75
A3032025	AWG20/25C	11.7	0.461	163	94
	AWG 18 (19/30)				
A3031802	AWG18/2C	5.4	0.213	27	12
A3031803	AWG18/3C	5.7	0.223	35	18
A3031804	AWG18/4C	6.1	0.242	43	24
A3031806	AWG18/6C	7.4	0.291	63	36
A3031808	AWG18/8C	7.9	0.312	79	49
A3031810	AWG18/10C	9.1	0.359	97	61
A3031815	AWG18/15C	10.8	0.427	145	91
A3031820	AWG18/20C	11.9	0.468	185	121
A3031825	AWG18/25C	13.1	0.515	226	152
	AWG16 (26/30)				
A3031602	AWG16/2C	6.5	0.257	36	16
A3031603	AWG16/3C	6.9	0.271	48	24
A3031604	AWG16/4C	7.7	0.304	62	32
A3031606	AWG16/6C	9.1	0.357	89	49
A3031608	AWG16/8C	10.3	0.407	119	65
A3031610	AWG16/10C	11.9	0.469	149	81
A3031615	AWG16/15C	13.5	0.532	207	122
A3031620	AWG16/20C	14.9	0.587	264	163
A3031625	AWG16/25C	17.0	0.669	336	204

Color Code Table AWG 22

1-	BK	13-	WH/RD
2-	BN	14-	WH/OG
3-	RD	15-	WH/YE
4-	OG	16-	WH/GN
5-	YE	17-	WH/BU
6-	GN	18-	WH/VT
7-	BU	19-	WH/GY
8-	VT	20-	WH/BK/BN
9-	GY	21-	WH/BK/RD
10-	WH	22-	WH/BK/OG
11-	WH/BK	23-	WH/BK/YE
12-	WH/BN	24-	WH/BK/GN
		25-	WH/BK/BU

Color Code Table AWG 20, 18 & 16

1-	BK	13-	RD/GN
2-	RD	14-	RD/YE
3-	WH	15-	RD/BK
4-	GN	16-	WH/BK
5-	OG	17-	WH/RD
6-	BU	18-	WH/GN
7-	BN	19-	WH/YE
8-	YE	20-	WH/BU
9-	VT	21-	WH/BN
10-	GY	22-	WH/OG
11-	PK	23-	WH/GY
12-	TN	24-	WH/VT
		25-	WH/BK/RD

LUTZE Electronic PLTC (C) PVC, Shielded

Flexible Electronic Cable for Stationary Applications

Application

- Dual-shielded multi-conductor industrial grade PLTC electronic cable
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, process instrumentation and controls
- Compliant with NFPA 79 requirements
- PLTC for installation in cable trays

Characteristics

- Flexible for easy installation
- Easy strip design
- Color coded conductors
- Specially formulated jacket for oil resistance
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Premium durability
- Extended temperature range
- Sunlight resistant
- Gas/vapor-tight sheath per UL 13
- Talc and silicone free

Technical Data

Voltage	300V
Temperature range	-40°C - +105°C
Bending radius min	4 x cable OD
Conductor marking	See tables
Burning behavior	Flame retardant per UL VW-1, FT4
Oil resistance	Oil Res II
Approvals	UL Type PLTC UL Type CM AWM 2464 80C 300V AWM II A/B CE Meets NEC 392, 725, 800 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 (PLTC Use Only) UL 13 RoHS, REACH, TSCA

Construction

- AWG conductor
- Flexible fine wire stranded tinned copper conductors
- SR-PVC insulation
- Shielded with foil tape, tinned copper braid and drain wire
- Oil resistant premium PVC jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 22 (19/34)				
A3132202	AWG22/2C	5.0	0.198	26	11
A3132203	AWG22/3C	5.2	0.206	30	15
A3132204	AWG22/4C	5.5	0.219	35	18
A3132206	AWG22/6C	6.3	0.248	45	24
A3132208	AWG22/8C	6.7	0.264	53	30
A3132210	AWG22/10C	7.7	0.304	65	36
A3132215	AWG22/15C	8.6	0.339	85	50
A3132220	AWG22/20C	9.4	0.370	104	62
A3132225	AWG22/25C	10.7	0.424	134	77
	AWG 20 (19/32)				
A3132002	AWG20/2C	5.6	0.220	34	17
A3132003	AWG20/3C	5.8	0.229	40	22
A3132004	AWG20/4C	6.2	0.244	46	27
A3132006	AWG20/6C	7.2	0.282	62	37
A3132008	AWG20/8C	7.7	0.300	73	46
A3132010	AWG20/10C	8.7	0.340	90	55
A3132015	AWG20/15C	10.3	0.401	126	76
A3132020	AWG20/20C	11.5	0.453	157	97
A3132025	AWG20/25C	12.2	0.481	187	118
	AWG 18 (19/30)				
A3131802	AWG18/2C	5.9	0.234	40	27
A3131803	AWG18/3C	6.2	0.245	48	34
A3131804	AWG18/4C	6.7	0.262	58	41
A3131806	AWG18/6C	7.9	0.312	80	55
A3131808	AWG18/8C	8.4	0.333	97	68
A3131810	AWG18/10C	9.6	0.380	119	83
A3131815	AWG18/15C	11.4	0.448	169	117
A3131820	AWG18/20C	12.4	0.489	211	150
A3131825	AWG18/25C	13.6	0.536	254	182
	AWG16 (26/30)				
A3131602	AWG16/2C	7.3	0.288	59	32
A3131603	AWG16/3C	7.7	0.302	69	40
A3131604	AWG16/4C	8.3	0.325	83	49
A3131606	AWG16/6C	9.6	0.378	112	68
A3131608	AWG16/8C	10.9	0.428	145	86
A3131610	AWG16/10C	12.4	0.490	178	105
A3131615	AWG16/15C	14.0	0.553	240	149
A3131620	AWG16/20C	16.0	0.628	313	192
A3131625	AWG16/25C	17.5	0.690	376	236

Color Code Table AWG 22

1-	BK	13-	WH/RD
2-	BN	14-	WH/OG
3-	RD	15-	WH/YE
4-	OG	16-	WH/GN
5-	YE	17-	WH/BU
6-	GN	18-	WH/VT
7-	BU	19-	WH/GY
8-	VT	20-	WH/BK/BN
9-	GY	21-	WH/BK/RD
10-	WH	22-	WH/BK/OG
11-	WH/BK	23-	WH/BK/YE
12-	WH/BN	24-	WH/BK/GN
		25-	WH/BK/BU

Color Code Table AWG 20, 18 & 16

1-	BK	13-	RD/GN
2-	RD	14-	RD/YE
3-	WH	15-	RD/BK
4-	GN	16-	WH/BK
5-	OG	17-	WH/RD
6-	BU	18-	WH/GN
7-	BN	19-	WH/YE
8-	YE	20-	WH/BU
9-	VT	21-	WH/BN
10	GY	22-	WH/OG
11-	PK	23-	WH/GY
12-	TN	24-	WH/VT
		25-	WH/BK/RD

LUTZE Electronic PLTC PVC, Shielded

Flexible Electronic Cable for Stationary Applications

Application

- Dual-shielded multi-conductor industrial grade PLTC electronic cable
- Machine tools, machine and plant construction, HVAC technology, assembly and production lines, process instrumentation and controls
- Compliant with NFPA 79 requirements
- PLTC for installation in cable trays

Characteristics

- Flexible for easy installation
- Easy strip design
- Color coded conductors
- Specially formulated jacket for oil resistance
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Premium durability
- Extended temperature range
- Sunlight resistant
- Gas/vapor-tight sheath per UL 13
- Talc and silicone free

Technical Data

Voltage	300V
Temperature range	-40°C - +105°C
Bending radius min	4 x cable OD
Conductor marking	See tables
Burning behavior	Flame retardant per UL VW-1, FT4
Oil resistance	Oil Res II
Approvals	UL Type PLTC UL Type CM AWM 2464 80C 300V AWM II A/B CE Meets NEC 392, 725, 800 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 (PLTC Use Only) UL 13 RoHS, REACH, TSCA

Construction

- AWG conductor
- Flexible fine wire stranded tinned copper conductors, twisted in pairs
- SR-PVC insulation
- Shielded with foil tape, tinned copper braid and drain wire
- Oil resistant premium PVC jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 22 (19/34)				
A3142202	AWG22/1TP	5.0	0.198	26	12
A3142204	AWG22/2TP	6.6	0.262	42	21
A3142206	AWG22/3TP	6.9	0.273	48	26
A3142208	AWG22/4TP	7.7	0.305	60	31
A3142210	AWG22/5TP	8.3	0.329	69	37
A3142212	AWG22/6TP	9.0	0.354	79	43
A3142216	AWG22/8TP	9.6	0.379	95	54
	AWG 20 (19/32)				
A3142002	AWG20/1TP	5.7	0.224	36	18
A3142004	AWG20/2TP	7.6	0.298	58	30
A3142006	AWG20/3TP	8.0	0.313	68	38
A3142008	AWG20/4TP	8.7	0.338	80	47
A3142010	AWG20/5TP	9.3	0.365	93	55
A3142012	AWG20/6TP	10.5	0.409	113	66
A3142016	AWG20/8TP	11.3	0.439	136	84
	AWG 18 (19/30)				
A3141802	AWG18/1TP	5.9	0.234	43	27
A3141804	AWG18/2TP	8.4	0.331	72	44
A3141806	AWG18/3TP	8.8	0.348	89	57
A3141808	AWG18/4TP	9.6	0.377	105	71
A3141810	AWG18/5TP	10.9	0.431	134	85
A3141812	AWG18/6TP	11.7	0.463	153	99
A3141816	AWG18/8TP	12.6	0.497	186	125
	AWG16 (26/30)				
A3141602	AWG16/1TP	7.3	0.288	61	34
A3141604	AWG16/2TP	10.8	0.425	109	55
A3141606	AWG16/3TP	11.4	0.448	131	72
A3141608	AWG16/4TP	12.3	0.486	159	91
A3141612	AWG16/6TP	14.6	0.573	217	128
A3141616	AWG16/8TP	16.2	0.639	275	162

Color Code Table AWG 22 Pair

1-	WH&BK
2-	WH&BN
3-	WH&RD
4-	WH&OG
5-	WH&YE
6-	WH&GN
7-	WH&BU
8-	WH&VT

Color Code Table AWG 20, 18 & 16 Pair

1-	BK&RD
2-	BK&WH
3-	BK&GN
4-	BK&BU
5-	BK&BN
6-	BK&YE
7-	BK&OG
8-	RD&GN

LUTZE Electronic Actuator Sensor PVC, Unshielded

Flexible Electronic Actuator Sensor Cable for Stationary Applications

Application

- For the cabling of actuator sensor systems like IO-Link
- Sensors, actuators, digital IO hubs, and field devices used in process instrumentation and controls
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays or exposed runs without conduit
- WTTC – wind turbine tray cable rating for use in wind power generation
- PLTC-ER – power limited tray cable exposed run
- ITC-ER – instrumentation tray cable
- Dry, damp, or wet locations

Characteristics

- Flexible for easy installation
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277 & 13
- Specially formulated jacket for oil resistance
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Non-wicking fillers
- Sunlight resistant
- Flame retardant
- Direct burial (AWG 18 and larger)
- Talc and silicone free

Technical Data

Voltage	
AWG 22-20:	300V 90C PLTC-ER
	300V 90C ITC-ER
	600V MTW
	1000V 105C AWM
AWG 18-16:	600V 90C TC-ER-JP
	300V 90C PLTC-ER
	1000V 90C WTTC
	600V MTW
	1000V 105C AWM
Temperature range	-40°C - +105°C
Bending radius min	4 x cable OD
Conductor marking	See table
Oil resistance	Oil Res II
Approvals	UL/AWM/CE
	AWM Style 20886
	(UL) Type MTW or DP-1
	Meets NEC 336, 392, 725, 727
	Class I & II, Div. 2 and Class I
	Zone 2 per NEC
	501, 502, 505
	c(UL) TC and CIC FT4
	UL 1277 & 13
	RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors
- PVC/Nylon insulation
- Oil resistant PVC jacket
- Yellow jacket similar to Munsell 5y 8.5/12

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 22 (7/30)				
A1022203	AWG22/3C	6.6	0.260	34	7
A1022204	AWG22/4C	7.0	0.276	40	9
A1022205	AWG22/5C	7.6	0.300	48	11
	AWG 20 (10/30)				
A1022003	AWG20/3C	6.9	0.271	39	9
A1022004	AWG20/4C	7.4	0.292	47	12
A1022005	AWG20/5C	8.0	0.315	55	16
	AWG 18 (19/30)				
A1021803	AWG18/3C	7.5	0.295	51	18
A1021804	AWG18/4C	8.0	0.317	62	24
A1021805	AWG18/5C	8.7	0.345	76	30
	AWG16 (26/30)				
A1021603	AWG16/3C	8.1	0.321	62	24
A1021604	AWG16/4C	8.9	0.350	77	32
A1021605	AWG16/5C	9.5	0.375	92	41

Color Code Table

1- BU
2- BK
3- BN
4- WH
5- GY

"Cables without grounding conductors must have a circuit conductor re-identified as a grounding conductor in order to maintain the -ER mark acc. to UL 1277 Section 31(o) and NEC Section 250.119(c)"

LUTZE SUPERFLEX® TRONIC PUR, Unshielded

High Flexing Electronic Cable for Continuous Motion Applications

Application

- Multi-conductor cable for robots, handling equipment, machine tools, drag chains and applications with extremely rough operating conditions
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per Class 6 for continuous moving applications
- PUR jacket and TPE conductor insulation for use in extremely harsh operating conditions
- Highest level of resistance against cooling fluids, greases and oils
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe and rot resistant
- Dry, wet and damp conditions
- UV resistant
- Talc and silicone free

Technical Data

Voltage	300V	
Temperature range	Moving	-25°C - +80°C
	Fixed	-40°C - +80°C
Bending radius min	Moving	10 x cable OD
	Fixed	6 x cable OD
Conductor marking	Color coded per DIN EN 50334 or DIN 47100	
Insulation resistance	Min 100MΩ x km	
Burning behavior	Flame retardant per DIN EN 60332-2-2 IEC 60332-2-2 UL 1581 FT-2	
Halogen free	According to DIN EN 60754-1	
Oil resistance	Oil Res II	
Approvals	AWM 20549 80C 300V RoHS, REACH, TSCA	

Construction

- Metric conductor
- Bare copper super finely stranded per DIN VDE 0295 Class 6 or IEC 60228 Class 6
- TPE conductor insulation
- Layer pitch optimized
- Fleece wrap over cabled conductors
- PUR jacket, matte, adhesion-free surface
- Extremely oil resistant PUR jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 24 / 0.25 mm²				
117039	2x0.25	4.1	0.161	12	3
117040	3x0.25	4.2	0.165	14	5
117041	4x0.25	4.5	0.177	17	7
117042	5x0.25	4.8	0.189	19	8
117043	7x0.25	5.6	0.220	25	11
117044	10x0.25	6.3	0.248	33	16
117028	15x0.25	7.1	0.280	46	24
117046	18x0.25	7.6	0.299	53	29
117047	25x0.25	8.9	0.350	71	40
	AWG 22 / 0.34 mm²				
117048	2x0.34	4.3	0.169	13	6
117049	3x0.34	4.5	0.177	16	7
117050	4x0.34	4.8	0.189	19	9
117051	5x0.34	5.2	0.205	23	11
117052	7x0.34	6.0	0.236	30	15
117053	10x0.34	6.9	0.272	40	20
117029	15x0.34	7.8	0.307	56	30
117056	25x0.34	9.6	0.378	86	52

Color Code Table

1-	WH	13-	WH/GN
2-	BN	14-	BN/GN
3-	GN	15-	WH/YE
4-	YE	16-	YE/BN
5-	GY	17-	WH/GY
6-	PK	18-	GY/BN
7-	BU	19-	WH/PK
8-	RD	20-	PK/BN
9-	BK	21-	WH/BU
10-	VT	22-	BN/BU
11-	GY/PK	23-	WH/RD
12-	RD/BU	24-	BN/RD
		25-	WH/BK

LUTZE SUPERFLEX® TRONIC (C) PUR, Shielded

High Flexing Electronic Cable for Continuous Motion Applications

Application

- Shielded multi-conductor cable for robots, handling equipment, machine tools, drag chains and applications with extremely rough operating conditions
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per Class 6 for continuous moving applications
- PUR jacket and TPE conductor insulation for use in extremely harsh operating conditions
- Highest level of resistance against cooling fluids, greases and oils
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe and rot resistant
- Dry, wet and damp conditions
- UV resistant
- Talc and silicone free

Technical Data

Voltage	300V	
Temperature range	Moving	-25°C - +80°C
	Fixed	-40°C - +80°C
Bending radius min	Moving	12 x cable OD
	Fixed	6 x cable OD
Conductor marking	Color coded per DIN EN 50334 or DIN 47100	
Insulation resistance	Min. 100MΩ x km	
Burning behavior	Flame retardant per DIN EN 60332-2-2 IEC 60332-2-2 UL 1581 FT-2	
Halogen free	According to DIN EN 60754-1	
Oil resistance	Oil Res II	
Approvals	AWM 20549 80C 300V RoHS, REACH, TSCA	

Construction

- Metric conductor
- Bare copper super finely stranded per DIN VDE 0295 Class 6 and IEC 60228 Class 6
- Special TPE conductor insulation
- Layer pitch optimized
- Fleece wrap over cabled conductors
- Tinned copper braid shield, optical coverage ≥ 85 %
- PUR jacket, matte, adhesion-free surface
- Extremely oil resistant PUR jacket
- Gray jacket similar to RAL 7001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG26 / 0.14 mm²				
117092	(4x0.14)	4.7	0.185	17.5	9.5
117093	(5x0.14)	5.0	0.197	20	11.5
117094	(7x0.14)	5.7	0.224	26	14
117095	(10x0.14)	6.3	0.248	32	19
117096	(12x0.14)	6.5	0.256	36	21
117097	(18x0.14)	7.3	0.287	48	28
	AWG 24 / 0.25 mm²				
117099	(2x0.25)	4.6	0.181	18	9
117100	(3x0.25)	4.7	0.185	20	11
117101	(4x0.25)	5.0	0.197	24	13
117102	(5x0.25)	5.3	0.209	27	15
117103	(7x0.25)	6.1	0.240	34	21
117104	(10x0.25)	6.9	0.272	43	28
117105	(12x0.25)	7.0	0.276	46	36
117106	(18x0.25)	8.0	0.315	65	43
117107	(25x0.25)	9.5	0.374	85	57
	AWG 22 / 0.34 mm²				
117108	(2x0.34)	4.7	0.185	20	10
117109	(3x0.34)	4.9	0.193	23	13
117110	(4x0.34)	5.3	0.209	27	16
117111	(5x0.34)	5.6	0.220	31	19
117112	(7x0.34)	6.5	0.256	39	25
117113	(10x0.34)	7.3	0.287	50	34
117124	(15x0.34)	8.2	0.323	68	50
117115	(18x0.34)	8.6	0.339	77	54
117116	(25x0.34)	10.2	0.402	107	77

Color Code Table

1-	WH	13-	WH/GN
2-	BN	14-	BN/GN
3-	GN	15-	WH/YE
4-	YE	16-	YE/BN
5-	GY	17-	WH/GY
6-	PK	18-	GY/BN
7-	BU	19-	WH/PK
8-	RD	20-	PK/BN
9-	BK	21-	WH/BU
10-	VT	22-	BN/BU
11-	GY/PK	23-	WH/RD
12-	RD/BU	24-	BN/RD
		25-	WH/BK

LUTZE SUPERFLEX® TRONIC (C) PUR TP, Shielded

High Flexing Electronic Cable for Continuous Motion Applications

Application

- Shielded multi-conductor cable for robots, handling equipment, machine tools, drag chains and applications with extremely rough operating conditions
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per Class 6 for continuous moving applications
- PUR jacket and TPE conductor insulation for use in extremely harsh operating conditions
- Highest level of resistance against cooling fluids, greases and oils
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe and rot resistant
- Dry, wet and damp conditions
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	300V	
Temperature range	Moving	-25°C - +80°C
	Fixed	-40°C - +80°C
Bending radius min	Moving	12 x cable OD
	Fixed	6 x cable OD
Conductor marking	Color coded per DIN EN 50334 or DIN 47100 for twisted pairs	
Insulation resistance	Min 100MΩ x km	
Burning behavior	Flame retardant per DIN EN 60332-2-2 IEC 60332-2-2 UL 1581 FT-2	
Halogen free	According to DIN EN 60754-1	
Oil resistance	Oil Res II	
Approvals	AWM 20549 80C 300V RoHS, REACH, TSCA	

Construction

- Metric conductor
- Bare copper super finely stranded per DIN VDE 0295 Class 6 and IEC 60228 Class 6
- Special TPE conductor insulation
- Layer pitch optimized
- Fleece wrap over cabled conductors
- Tinned copper braid shield, optical coverage ≥ 85 %
- PUR jacket, matte, adhesion-free surface
- Extremely oil resistant PUR jacket
- Gray jacket similar to RAL 7001

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 24 / 0.25 mm²				
117170	(2x2x0.25)	6.2	0.244	30	15
117171	(3x2x0.25)	6.5	0.256	34	19
117172	(4x2x0.25)	6.8	0.268	38	23
117173	(5x2x0.25)	7.7	0.303	49	27
117177	(6x2x0.25)	8.1	0.319	54	32
117174	(8x2x0.25)	9.4	0.370	75	40
117175	(10x2x0.25)	10.5	0.413	83	53
117176	(12x2x0.25)	10.8	0.425	95	61
	AWG 22 / 0.34 mm²				
117180	(2x2x0.34)	6.5	0.256	32	17
117181	(3x2x0.34)	6.8	0.268	39	23
117182	(4x2x0.34)	7.4	0.291	47	28
117185	(8x2x0.34)	10.0	0.394	87	56
	AWG 21 / 0.5 mm²				
117190	(2x2x0.5)	7.1	0.280	40	23
117191	(3x2x0.5)	7.5	0.295	48	30
117303	(4x2x0.5)	8.3	0.327	59	38
117193	(6x2x0.5)	9.9	0.390	91	54
	AWG 19 / 0.75 mm²				
117199	(2x2x0.75)	8.3	0.327	56	32
117202	(4x2x0.75)	9.7	0.382	86	55

Color Code Table

1-	WH&BN
2-	GN&YE
3-	GY&PK
4-	BU&RD
5-	BK&VT
6-	GY/PK&RD/BU
7-	WH/GN&BN/GN
8-	WH/YE&YE/BN
9-	WH/GY&GY/BN
10-	WH/PK&PK/BN
11-	WH/BU&BN/BU
12-	WH/RD&BN/RD

LUTZE SUPERFLEX® TRONIC AS PUR, Unshielded

High Flexing Actuator Sensor Cable for Continuous Motion Applications

Application

- Termination cable for actuator sensor applications
- For continuous flexing use in drag chains or free movement in automation technology, transport and conveyor technology, machine tool manufacturing
- Full PUR jacket and TPE conductor insulation optimally suited for extremely harsh operating conditions, aggressive coolants and lubricants
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Very good alternating bending strength
- Good pressure and flexing stability
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- Weathering, ozone and UV resistant
- Salt water resistant
- Excellent coolant and lubricant resistance
- Largely resistant to oils, greases, alcohol-free benzenes and kerosene
- Talc and silicone free

Technical Data

Voltage	300V
Test voltage	3000V
Insulation resistance	Min. 100MΩ x km
Temperature range	Moving -20°C - +80°C
	Fixed -40°C - +80°C
Bending radius min	Moving 7.5 x cable OD
	Fixed 4 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-2-2 UL 1581 section VW-1 FT2
Halogen free	According to DIN EN 60754-1
Oil Resistant	UL 758 UL 4D100C DIN EN 60811-404
Approvals	UL AWM 20549 80C 300V RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
  x: without ground conductor
- Conductors color coded per EN 60947-5-2
- Layer pitch optimized
- Fleece wrap over cabled conductors
- PUR jacket, matte, adhesion-free surface
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG22 / 0.34 mm²				
117243.2000	3x0.34 BN, BU, BK	4.2	0.165	15	6.6
117244.2000	4x0.34 BN, WH, BU, BK	4.5	0.177	18	8.8
117245.2000	5x0.34 BN, WH, BU, BK, GY	4.9	0.193	22	11

With Power Supply Conductors

110872.2000	3G1.0+8x0.34 1.0: BN, BU, GNYE 0.34: WH, BK, GN, YE, GY, PK, VT, RD	8.2	0.323	67	37
110874.2000	3G1.0+16x0.34 1.0: BN, BU, GNYE 0.34: WH, GN, YE, GY, PK, RD, BK, VT, GYPK, RDBU, WHGN, BNGN, WHYE, YEBN, WHGY, GYBN	9.7	0.382	91	54

"Extra rugged actuator sensor cable for use in continuous motion applications such as drag chains".

LUTZE SUPERFLEX® TRONIC AS (C) PUR, Shielded

High Flexing Actuator Sensor Cable for Continuous Motion Applications

Application

- Shielded termination cable for actuator sensor applications
- For continuous flexing use in drag chains or free movement in automation technology, transport and conveyor technology, machine tool manufacturing
- Full PUR jacket and TPE conductor insulation optimally suited for extremely harsh operating conditions, aggressive coolants and lubricants
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- High active and passive interference resistance (EMC)
- Very good alternating bending strength
- Good pressure and flexing stability
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- Weathering, ozone and UV resistant
- Salt water resistant
- Excellent coolant and lubricant resistance
- Largely resistant to oils, greases, alcohol-free benzenes and kerosene
- Talc and silicone free

Technical Data

Voltage	300V
Test voltage	3000V
Insulation resistance	Min. 100MΩ x km
Temperature range	Moving -20°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 12 x cable OD Fixed 6 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-2-2 UL 1581 section VW-1 FT2
Halogen free	According to DIN EN 60754-1
Oil resistant	UL 758 UL 4D100C DIN EN 60811-404
Approvals	AWM 20549 80C 300V RoHS, REACH, TSCA

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG22 / 0.34 mm²				
117253.2000	(3x0.34) BN, BU, BK	4.8	0.189	24	13
117254.2000	(4x0.34) BN, WH, BU, BK	5.1	0.201	26	16
117255.2000	(5x0.34) BN, WH, BU, BK, GY	5.5	0.217	31	19

"Extra rugged actuator sensor cable for use in continuous motion applications such as drag chains".

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- Conductors color coded per EN 60947-5-2
- Layer pitch optimized
- Fleece wrap over cabled conductors
- Tinned copper braid shield, optical coverage ≥ 85 %
- PUR jacket, matte, adhesion-free surface
- Black jacket similar to RAL 9005

3. Bus and Network Cables

LÜTZE AUTOMATION
an Amphenol Company

LUTZE RS-485 (C) PVC, Shielded

Flexible RS-485 Cable for Stationary Applications

Application

- For the cabling of industrial RS-485 systems
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Sunlight Resistant
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	2500V
Impedance	120Ω ± 10Ω
Nom capacitance	
Cond. to cond.	11 pF/ft
Cond. to other	20.9 pF/ft
Temperature range	-40°C - +75°C
Bending radius min	10 x Cable OD
Burning behavior	Flame retardant per UL 1581 FT4
Approvals	CM 75C PLTC Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 RoHS, REACH, TSCA

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 22 (7/30)				
A1043701	(1x2xAWG22) WHBU/BUWH	7.1	0.281	38	14
A1043702	(1x2xAWG22+AWG22/1C) WHOG/OGWH & BUWH	8.1	0.317	51	17
A1043703	(2x2xAWG22) WHBU/BUWH & WHOG/OGWH	8.9	0.352	55	19

Construction

- AWG conductor
- Tinned copper wire
- Conductor insulation special polyolefin
- Foil shield
- Tinned copper braid shield, optical coverage ≥ 65 %
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

LUTZE PROFIBUS (C) PVC, Shielded

Flexible PROFIBUS Cable for Stationary Applications

Application

- For the cabling of industrial field bus systems like PROFIBUS DP, F.I.P.
- With solid conductor AWG22/1 for hard wiring or with stranded conductor for flexible use in stationary applications
- Automation technology, transport and conveyor technology, machine tool manufacturing
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Talc and silicone free

Technical data

Voltage	300V 600V AWM
Test voltage	1,500V, 50Hz
Impedance	150Ω ± 15Ω
Loop resistance	Solid 22/1 <110Ω/km Flexible 24/7 <175.2Ω/km
Operating capacitance	Nominal 30pF/m
Temperature range	Moving -10°C - +70°C Fixed -40°C - +75°C
Bending radius min	Moving 15 x cable OD Fixed 7.5 x cable OD
Burning behavior	Flame retardant per FT4, UL 1685, IEC 60332-3-24
Approvals	CMG 75C AWM 21694 60C 600V Meets NEC 392, 800 RoHS, REACH, TSCA

Construction

- AWG conductor
- Bare copper wire
- Conductor insulation special polyolefin
- Stranding with filler
- Foil shield
- Tinned copper braid shield, optical coverage 85% (104293 inner jacket and 70% optical coverage)
- Special thermoplastic on PVC basis
- Violet jacket similar to RAL 4001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
PROFIBUS, Flexible UL/CMG/AWM 21694 600V					
104344	(1x2xAWG24/7) RD, GN	8.0	0.315	44	17
PROFIBUS, Fast Connect UL/CMG/AWM 20201 600V					
104293	(1x2xAWG22/1) RD, GN	7.8	0.307	50	20

LUTZE SUPERFLEX® PROFIBUS (C) PUR, Shielded

High Flexing PROFIBUS Cable for Continuous Motion Applications

Application

- For the cabling of industrial field bus systems like PROFIBUS DP, SINEC L2, F.I.P.
- For continuous flexing applications in drag chain or free movement in automation technology, transport and conveyor technology, machine tool manufacturing
- Compatible with all major drag chain brands
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	1,500V, 50Hz
Impedance	150Ω ± 15Ω
Loop resistance	<165Ω/km
Operating capacitance	<30pF/m
Temperature range	Moving -30°C - +70°C
	Fixed -40°C - +80°C
Bending radius min	Moving 7.5 x cable OD
	Fixed 5 x cable OD
	Moving Fast Connect 15 x cable OD
	Fixed Fast Connect 7.5 x cable OD
Burning behavior	Flame retardant per FT1, UL 1581 VW-1 IEC 60332-1
Approvals	CMX 75C AWM 21198 80C 300V Meets NEC 392, 800 RoHS, REACH, TSCA

Construction

- AWG conductor
- Bare copper wire
- Conductor insulation special polyolefin
- Inner jacket versions with fast assembly FC
- Foil shield
- Tinned copper wire braid, optical coverage 85%, (for 104287 70% Conductor insulation)
- Special PUR
- Violet jacket similar to RAL 4001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
PROFIBUS, UL/CMX					
104265	(1x2xAWG24/19) RD, GN	8.0	0.315	37	16
PROFIBUS, Fast Connect UL/CMX					
104287	(1x2xAWG24/19) RD, GN	8.0	0.315	54	20
PROFIBUS, ET200 UL/CMX					
104275	((1x2xAWG24/19)ST+3x0.75)C RD/GN, BU, BK, GNYE	9.8	0.386	97	44

LUTZE CAN Bus (C) PVC, Shielded

Flexible CAN Bus Cable for Stationary Applications

Application

- For wiring of industrial field bus systems
- Automation technology, transport and conveyor technology, machine tool manufacturing
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Flexible for easy installation
- Talc and silicone free

Technical data

Voltage	300V	
Test voltage	1,500V	
Impedance	nom. 120Ω	
Loop resistance	AWG24/7<175.2Ω/km	
Operating capacitance	<60pF/m	
Temperature range	Moving	-10 °C - +70 °C
	Fixed	-40 °C - +75 °C
Bending radius min	Moving	15 x cable OD
	Fixed	7.5 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1	
Approvals	CMX 75C Meets NEC 392, 800 RoHS, REACH, TSCA	

Construction

- AWG conductor
- Bare copper wire
- Conductor insulation special polyolefin
- Conductors twisted pairs, cabled, foil banded
- Tinned copper braid shield, optical coverage 85%
- Jacket special PVC TM2 according to HD21.1, matte, adhesion-free surface
- Violet jacket similar to RAL 4001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
CAN Bus UL/CMX, 40 m / 131 ft max.					
104386	(1x2xAWG24/7) WH/BN	5.7	0.224	29	13
104387	(2x2xAWG24/7) WH/BN, GN/YE	7.4	0.291	46	24

LUTZE SUPERFLEX® CAN Bus (C) PUR, Shielded

High Flexing CAN Bus Cable for Continuous Motion Applications

Application

- For wiring of industrial field bus systems
- For continuous flexing applications in drag chains or free movement in automation technology, transport and conveyor technology, machine tool manufacturing
- Compatible with all major drag chain brands
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	850V
Impedance	nom. 120Ω
Operating capacitance	40pF/m
Temperature range	Moving -30°C - +70°C
	Fixed -40°C - +75°C
Bending radius min	Moving 15 x cable OD
	Fixed 7.5 x cable OD
Burning behavior	Flame retardant per
	DIN EN 60332-1-2
	IEC 60332-1
	UL 1581 section VW-1
	FT 1
Halogen free	According to
	DIN EN 60754-1
Approvals	CMX 75C
	Meets NEC 392, 800
	RoHS, REACH, TSCA

Construction

- AWG conductor
- Bare copper wire
- Conductor insulation special polyolefin
- Conductors twisted pairs or star quad cabled, foil banded
- Tinned copper braid shield, optical coverage 85%
- Special PUR jacket, matte, adhesion-free surface
- Violet jacket similar to RAL 4001

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
CAN Bus UL/CMX, 40 m / 131 ft max.					
104101	(1x2xAWG24/19) WH/BN	6.5	0.256	32	17
104001	(2x2xAWG24/19) WH/BN, YE/GN	8.4	0.330	50	23

LUTZE DeviceNet™ BUS (C) PVC, Shielded

Flexible DeviceNet™ Cable for Stationary Applications

Application

- For the wiring of industrial sensors, control devices, valves, and other equipment
- Automation technology, transport and conveyor technology, machine tool manufacturing
- Compliant with NFPA 79 requirements

Characteristics

- 2-pair cable: The pair with the smaller cross section is for the data transmission, the pair with the larger cross section is for the power supply
- High protection against electromagnetic interference (EMI)
- Flexible for easy installation
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	3000V
Impedance	120Ω ± 12Ω
Operating capacitance	< 40pF/m
Temperature range	Moving -10°C - +75°C Fixed -40°C - +75°C
Bending radius min	Moving 10 x cable OD Fixed 5 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL Vertical-Tray FT1
Approvals	CM 75C Meets NEC 392, 800 RoHS, REACH, TSC
Item specific approvals	
104281	PLTC
104280	CL2 75C

Construction

- AWG conductor
- Tinned copper wire
- Conductor insulation special polyolefin
- Both pairs shielded with foil shield, 100% coverage and drain wire
- Overall tinned copper braid shield, optical coverage 65%
- Jacket special PVC, matte, adhesion-free surface
- Gray jacket similar to RAL 7001

*TM registered trademark not associated with LUTZE

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
DeviceNet™ Thick UL/CM, PLTC					
104281	((2xAWG18)+(2xAWG16)) AWG16: RD, BK AWG18: WH, BU	12.1	0.480	136	48
DeviceNet™ Thin UL/CM, CL2					
104280	((2xAWG24)+(2xAWG22)) AWG22: RD, BK AWG24: WH, BU	7.1	0.280	49	18

LUTZE SUPERFLEX® DeviceNet™ BUS (C) PUR, Shielded

High Flexing DeviceNet™ Cable for Continuous Motion Applications

Application

- For the wiring of industrial devices, sensors and control devices
- For continuous flexing applications in drag chains or free movement in automation technology, transport and conveyor technology, machine tool manufacturing
- Compatible with all major drag chain brands
- Compliant with NFPA 79 requirements

Characteristics

- 2-pair cable: The pair with the smaller cross section is for data transmission, the pair with the larger cross section is for the power supply
- High protection against electromagnetic interference (EMI)
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	1500V
Impedance	120Ω ± 12Ω
Operating capacitance	< 40pF/m
Temperature range	Moving -20°C - +75°C
	Fixed -40°C - +75°C
Bending radius min	Moving 10 x cable OD
	Fixed 5 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT 1
Halogen free	According to DIN EN 60754-1 IEC 60754-1
Approvals	CMX 75C Meets NEC 392, 800 RoHS, REACH, TSCA

Construction

- AWG conductor
- Tinned copper wire
- Conductor insulation special polyolefin
- Both pairs shielded with foil shield, 100% coverage and drain wire
- Overall tinned copper braid shield 80%
- Jacket special PUR, matte, adhesion-free surface
- Violet jacket similar to RAL 4001

*TM registered trademark not associated with LUTZE

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
DeviceNet™ Thin UL/CMX					
104289	((2xAWG24)+(2xAWG22)) AWG22: RD, BK AWG24: WH, BU	7.0	0.276	57	19

LUTZE SINGLE PAIR ETHERNET (C) PVC, Shielded

Flexible Ethernet Cable for Stationary Applications

Application

- For the cabling of industrial Single Pair Ethernet systems
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Application in automation and smart sensor technology, transport and conveyor technology, machine tool manufacturing
- Compliant with NFPA 79 requirements
- Designed to IEC 61156-11 (40m) & IEEE 802.3cg (25m)
- PODL compatible

Characteristics

- High protection against electromagnetic interference (EMI)
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	2000V
Impedance	100Ω ± 10Ω
Loop resistance	AWG22/7 = 0.34² <110Ω/km
Operating capacitance	< 50pF/m
Temperature range	Moving -10°C - +70°C Fixed -40°C - +80°C
Bending radius min	Moving 8 x Cable OD Fixed 4 x Cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-3-24 UL 1685
Approvals	CMG 75C PLTC AWM 21695 80C 600V Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 RoHS, REACH, TSCA

Construction

- AWG conductor
- Bare copper wire
- Conductor insulation special polyolefin
- Foil shield
- Tinned copper braid shield, optical coverage ≥ 85 %
- Oil resistant PVC jacket
- Teal jacket similar to RAL 5018

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
Industrial Single Pair Ethernet, Teal					
A1040295	(1x2xAWG22/7) CMG, PLTC, AWM 21695 600V **1000BASE-T1** BU/WH	5.8	0.228	29.5	13.4

LUTZE ETHERNET Light Industrial Duty PVC

Ethernet Cable for Stationary Applications

Application

- For the cabling of industrial Ethernet systems
- Cable design for industrial environments and operating conditions with low electrical noise levels
- For interconnection of automated equipment inside the factory environment
- For stationary applications
- Compliant with NFPA 79 requirements

Characteristics

- Oil, abrasion, and sunlight resistant
- Design and approvals for machine and field level
- Talc and silicone free

Technical data

Voltage	300V 600V AWM
Test voltage	2000V
Impedance	100Ω ± 10Ω
DC resistance	Max. 9.38Ω/100m
Operating capacitance	< 56pF/m
Temperature range	-40°C - +80°C
Bending radius min	7.5 x cable OD
Burning behavior	Flame retardant per UL 1666 (Riser)
Approvals	CMR 75C CMX Outdoor 75C AWM 21695 80C 600V UL 444 -40°C Cold Bend Meets NEC 392, 800 Sun Res RoHS, REACH, TSCA
AWG specific approvals	
AWG 22:	PLTC Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505

Construction

- AWG conductor
- Bare copper wire
- Conductor insulation HDPE
- Pairs cabled with cross shaped spline
- A1040001: U/UTP unshielded
- A1040005, A1040006: F/UTP foil shield 100% coverage
- Oil resistant PVC jacket
- Teal jacket similar to RAL 5018

For further information, see Ethernet pages in the Technical Overview

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
Industrial Ethernet/Ethernet IP, Unshielded					
A1040001	4x2xAWG23/1 CMX Outdoor, CMR, AWM 21695 600V **Cat6, U/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	6.7	0.264	30	13
Industrial Ethernet/Ethernet IP, Shielded					
A1040005	(4x2xAWG23/1) CMX Outdoor, CMR, AWM 21695 600V **Cat6$_A$, F/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	8.0	0.315	43	13
A1040006	(4x2xAWG22/1) PLTC, CMX Outdoor, CMR, AWM 21695 600V **Cat6, F/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	9.3	0.368	55	16

LUTZE ETHERNET (C) PVC, Shielded

Flexible Ethernet Cable for Stationary Applications

Application

- For the cabling of industrial Ethernet systems
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Application in automation technology, transport and conveyor technology, machine tool manufacturing
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	1500V
Impedance	100Ω ± 10Ω
Loop resistance	AWG 22/1= 0,34² <110Ω/km AWG 24/7= 0,22² <165Ω/km AWG 26/7=0.14² <273Ω/km
Operating capacitance	< 50pF/m
Temperature range	Moving -5°C - +70°C Fixed -30°C - +80°C
Bending radius min	Moving 12 x Cable OD Fixed 6 x Cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-3-24 UL 1581 FT4
Approvals	CMG 75C RoHS, REACH, TSCA
Item specific certifications	104336 & 104397: CC-Link IE Field
Item specific approvals 104397 & A1040300:	PLTC-ER Wet Location
AWG 22:	PLTC AWM 600V Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505

Construction

- AWG conductor
- Bare copper wire
- Tinned copper wire (104307, 104197, 104349)
- Conductor insulation special polyolefin
- Foil shield
- Tinned copper braid shield, optical coverage ≥ 85 %
- Oil resistant PVC jacket
- Green jacket similar to RAL 6018
- Teal jacket similar to RAL 5018

For further information, see Ethernet pages in the Technical Overview

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
Industrial Ethernet/PROFINET/EtherCat, Green					
104301	(2x2xAWG22/1) CMG, PLTC, AWM 20201 600V **Cat5e, SF/UTQ** FC, PROFINET Type A WH/BU, YE/OG	6.5	0.256	44	25
104307	(2x2xAWG22/7) CMG, PLTC, AWM 20201 600V **Cat5e, SF/UTQ** FC, PROFINET Type B WH/BU, YE/OG	6.5	0.256	44	21
Industrial Ethernet/Ethernet IP, Green					
104335	(4x2xAWG26/7) CMG **Cat5e, SF/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	6.3	0.248	37	20
104336	(4x2xAWG24/7) CMG **Cat5e, SF/UTP** WHBU/BU, WHOG/OG, WH GN/GN, WHBN/BN	7.3	0.287	46	26
104338	(4x(2xAWG26/7)) CMG **Cat6$_A$, S/FTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	6.4	0.252	36	22
104397	(4x(2xAWG22/1)) CMG, PLTC-ER, AWM 2570 600V **Cat6$_A$, S/FTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	9.6	0.378	65	36
104331	(4x(2xAWG26/7)) CMG **Cat7, S/FTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	7.0	0.276	42	22
Industrial Ethernet/Ethernet IP, Teal					
104197	(2x2xAWG22/7) CMR, CMX Outdoor, PLTC, AWM 2570 600V **Cat5e, SF/UTP** WHGN/GN, WHOG/OG	7.5	0.295	43	20
104349	(4x2xAWG22/7) CMG, CMX Outdoor, PLTC, AWM 2570 600V **Cat5e, SF/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	8.6	0.338	62	32
A1040300	(4x(2xAWG22/1)) CMR, CMX Outdoor, PLTC-ER, AWM 2570 600V **Cat7, S/FTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	9.6	0.378	65	36

LUTZE MOTIONFLEX® ETHERNET (C) TPE, Shielded

Flexing Ethernet Cable for Linear and Twisting Motion Applications

Application

- For the cabling of industrial Ethernet systems
- Cable design for harsh industrial environments and operating conditions with high noise levels.
- Automation technology, material handling, conveyor technology, and industrial machinery
- Suitable for motion applications with repetitive movement, flexing, and torsional stress
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Oil, abrasion, and sunlight resistant
- Ecolab certified resistance to common cleaning agents and chemicals used in washdown procedures
- Design and approvals for machine and field level
- Flexible for easy installation
- Talc and silicone free

Technical data

Voltage	300V 600V AWM	
Test voltage	2000V	
Impedance	100Ω ± 10Ω	
DC resistance	Max 14Ω/100m	
Operating capacitance	< 56pF/m	
Temperature range	Moving Fixed	-25°C to +70°C -40°C to +80°C
Bending radius min	Moving min. Moving optimal Fixed min.	10 x cable OD 20 x cable OD 7.5 x cable OD
Torsion angle max	+/- 270° / 1m cable length	
Oil resistance	Oil Res II	
Burning behavior	Flame retardant per UL 1666 (CMR types) UL 1685 (CM types)	
Approvals	CMX Outdoor 75C AWM 2463 80C 600V UL 444 -40°C Cold Bend Sun Res RoHS, REACH, TSCA	
Item specific approvals	PLTC CMR 75C CM 75C	

Construction

- AWG conductor
- Tinned copper wire
- Conductor insulation HDPE
- SF/UTP, foil shield 100%, tinned copper braid shield 75% optical coverage
- Extremely oil resistant TPE Jacket
- Teal jacket similar to RAL 5018

For further information, see Ethernet pages in the Technical Overview

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
Industrial Ethernet/Ethernet IP					
A1040017	(2x2xAWG22/19) PLTC, ITC, CMX Outdoor, CM, AWM 2463 600V **Cat5e, SF/UTP** WHOG/OG, WHGN/GN	7.9	0.310	46	22
A1040019	(2x2xAWG24/7) CMX Outdoor, CM, AWM 2463 600V **Cat5e, SF/UTP** WHOG/OG, WHGN/GN	6.6	0.260	34	18
A1040020	(4x2xAWG24/7) CMX Outdoor, CMR, AWM 2463 600V **Cat5e, SF/UTP** WHBU/BU, WHOG/OG, WH GN/GN, WHBN/BN	7.6	0.299	46	27
A1040030	(4x2xAWG24/7) CMX Outdoor, CMR, AWM 2463 600V **Cat6$_A$, SF/UTP** WHBU/BU, WHOG/OG, WH GN/GN, WHBN/BN	8.2	0.322	48	29

LUTZE SUPERFLEX® ETHERNET (C) PUR, Shielded

High Flexing Ethernet Cable for Continuous Motion Applications

Application

- For the cabling of industrial Ethernet systems
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Applicable in automation technology, transport and conveyor technology, machine tool manufacturing
- For continuous flexing applications in drag chains or free movement
- Compatible with all major drag chain brands
- Compliant with NFPA 79 requirements

Characteristics

- High protection against electromagnetic interference (EMI)
- Talc and silicone free

Technical data

Voltage	300V
Test voltage	1500V
Impedance	100Ω ± 10Ω
Loop resistance	AWG 22/7= 0.34² <110Ω/km AWG 24/19= 0.24² <155Ω/km AWG 26/19=0.14² <280Ω/km
Operating capacitance	50pF/m
Temperature range	Moving -30°C - +70°C Fixed -40°C - +80°C
Bending radius min	Moving 12 x cable OD Fixed 6 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 FT1
Halogen free	According to DIN EN 60754-1
Approvals	Meets NEC 392, 800 RoHS, REACH, TSCA
Item specific certifications	CMX 75C AWM 21198 80C 300V CC-Link IE Field (104337)

Construction

- AWG conductor
- Bare copper wire
- Tinned copper wire (104303, 104347, 104404)
- Conductor insulation special polyolefin
- Foil shield
- Tinned copper braid, optical coverage 85%
- Oil resistant PUR jacket
- Green jacket similar to RAL 6018

For further information, see Ethernet pages in the Technical Overview

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
Industrial Ethernet/PROFINET/EtherCat					
104303	(2x2xAWG22/7) CMX **Cat5e, SF/UTQ** FC, PROFINET, Type C WH/BU; YE/OG	6.5	0.256	41	21
104401	(4x2xAWG24/7) AWM 21198 **Cat6$_A$, SF/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	8.9	0.350	59	27
Industrial Ethernet/Ethernet IP					
104337	(4×2×AWG24/19) AWM 21198 **Cat5e, S/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	7.8	0.307	46	37
104396	(4x2xAWG26/19) AWM 21198 **Cat5e, SF/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	6.7	0.264	36	19
104347	(4×2×AWG26/19) CMX **Cat6, SF/UTP** WHBU/BU, WHOG/OG, WHGN/GN, WHBN/BN	7.9	0.311	42	28
104404	(4x(2xAWG24/7)) CMX **Cat7, S/FTP** WH/BU, WH/OG, WH/GN, WH/BN	9.4	0.370	65	30

4. Motor Supply, VFD, Servo and Feedback Cables

LÜTZE AUTOMATION
an Amphenol Company

LUTZE SILFLEX® Tray-ER TPE, Unshielded

Flexible Premium TPE Power Tray Cable for Stationary Applications

Application

- Multi-conductor power cable for tray applications, with exposed run (open wiring) approval
- Metal cutting equipment, machine tools, machine and plant construction, HVAC technology, assembly and production lines, and other industrial applications
- Compliant with NFPA 79 requirements
- TC-ER for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp and wet locations

Characteristics

- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Cold impact tested to -40°C
- Cutting oil resistant - mineral & bio/vegetable based oils **specifically tested with plant based cutting oil*
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 600V MTW 1000V 90C WTTC 600V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res I, Oil Res II
Approvals	UL Type TC-ER UL/CE (UL) Type MTW or DP-1 UL1277 WTTC Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 21270 c(UL), CIC FT4 UL509 BUS Drop RoHS, REACH, TSCA

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A3321404	AWG14/04C	9.6	0.378	108	52
A3321204	AWG12/04C	11.1	0.437	146	83
A3321004	AWG10/04C	14.6	0.573	221	134
A3320804	AWG8/04C	18.9	0.744	392	214
A3320604	AWG6/04C	20.8	0.820	552	339
A3320404	AWG4/04C	27.2	1.070	910	516
A3320204	AWG2/04C	31.1	1.225	1,391	883
A3321/004	1/0/4C	36.4	1.435	1,871	1,338
A3322/004	2/0/4C	39.2	1.544	2,257	1,685
A3323/004	3/0/4C	45.6	1.794	2,982	2,156
A3324/004	4/0/4C	48.3	1.903	3,549	2,676

"Industrial duty power cable with TC-ER and Bus Drop rating for branch wiring from busways in accordance with NEC article 368.56 (B) ".

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation
- Oil resistant TPE jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

LUTZE SILFLEX® M XLPE, Unshielded

Flexible Motor Supply Cable XHHW-2 for Stationary Applications

Application
- Motor supply cable to connect power to 3-phase motors and servo drives
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics
- Flexible XLPE conductor design
- Reduced cable ODs
- High insulation resistance
- Low capacitance cable
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial

Technical Data

Voltage	600V 90C TC-ER 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC 1000V 105C AWM (≤ AWG2)
Temperature range	-40°C - +90/105°C static
Bending radius min	4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply, Flexible VFD Servo Cable, TC-ER-JP, WTTC, DP-1 (≤ AWG2) Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 20886 (≤ AWG2) Submersible Pump c(UL) TC, CIC FT4 UL 1277 CE, RoHS, REACH, TSCA

Construction
- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation type XHHW-2, Wet/Dry
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A1101404	AWG14/04C (41/30)	11.4	0.450	118	51
A1101204	AWG12/04C (65/30)	12.7	0.500	162	84
A1101004	AWG10/04C (105/30)	15.6	0.615	254	130
A1100804	AWG8/04C (168/30)	20.2	0.795	407	214
A1100604	AWG6/04C (266/30)	23.4	0.920	600	339
A1100404	AWG4/04C (420/30)	27.0	1.060	842	527
A1100204	AWG2/04C (672/30)	31.5	1.240	1,263	874
A1100104	AWG1/04C (840/30)	35.2	1.385	1,505	1,068
A1101/004	1/0/04C (1064/30)	38.1	1.500	1,835	1,363
A1102/004	2/0/04C (1344/30)	40.6	1.600	2,228	1,708
A1103/004	3/0/04C (1664/30)	43.4	1.710	2,651	2,064
A1104/004	4/0/04C (2052/30)	48.3	1.903	3,378	2,606

"XLPE insulation provides superior capacitance and impedance compared to PVC/Nylon, providing improved performance and efficiency."

LUTZE DRIVEFLEX® XLPE (C) PVC, Shielded

Flexible VFD Cable XHHW-2 for Stationary Applications

Application

- Dual-shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Type XHHW-2 insulation offering smaller ODs for general VFD applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Flexible XLPE conductor design
- Reduced cable ODs
- High insulation resistance
- Low capacitance cable
- Effective dual layer shield for EMC compliance
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER-JP 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply, Flexible VFD Servo Cable, TC-ER-JP, WTTC, DP-1 IEC 60332-3-22 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 20886 Submersible Pump (≥ AWG14) c(UL) TC, CIC FT4 UL 1277 CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation type XHHW-2, Wet/Dry
- Shielded with foil tape, tinned copper braid with ≥80% optical coverage, and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

DRIVEFLEX®

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A1061804	AWG18/04C (19/30)	10.5	0.415	108	42
A1061604	AWG16/04C (26/30)	10.8	0.425	124	54
A1061404	AWG14/04C (41/30)	11.6	0.456	154	76
A1061204	AWG12/04C (65/30)	13.0	0.51	208	118
A1061004	AWG10/04C (105/30)	16.5	0.650	320	183
A1060804	AWG8/04C (168/30)	20.6	0.81	478	279

"Small diameter general purpose VFD cable for applications with space restrictions such as conduit installations".
Meets NFPA 79, article 4.4.2.8.

1-800-447-2371

LUTZE AUTOMATION an Amphenol Company

www.lutze.com

LUTZE DRIVEFLEX® XLPE (C) 1 TSP PVC, Shielded

Flexible Composite VFD Cable XHHW-2 with one Control Pair for Stationary Applications

Application
- Dual-shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Type XHHW-2 insulation offering smaller ODs for general VFD applications
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics
- Flexible XLPE conductor design
- Reduced cable ODs
- High insulation resistance
- Low capacitance cable
- Effective dual layer shield for EMC compliance
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER-JP 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply Cable, Flexible VFD Servo Cable, TC-ER-JP, WTTC, DP-1 IEC 60332-3-22 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 20886 c(UL) TC, CIC FT4 UL 1277 CE, RoHS, REACH, TSCA

Construction
- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation type XHHW-2, Wet/Dry
  *A1071404R, A1071204R: XHHW-2, THHN (control pair)
- Shielded with foil tape, tinned copper braid with ≥80% optical coverage, and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

DRIVEFLEX®

WITH ONE SHIELDED CONTROL PAIR

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A1071804	AWG18/04C (19/30)+ 1 TSP AWG18 (19/30)	13.3	0.525	156	66
A1071604	AWG16/04C (26/30)+ 1 TSP AWG18 (19/30)	13.9	0.548	179	79
A1071404	AWG14/04C (41/30)+ 1 TSP AWG16 (26/30)	15.2	0.600	234	112
A1071404R	AWG14/04C (41/30)+ 1 TSP* AWG18 (19/30)	13.0	0.510	184	92
A1071204	AWG12/04C (65/30)+ 1 TSP AWG16 (26/30)	16.5	0.650	285	154
A1071204R	AWG12/04C (65/30)+ 1 TSP* AWG18 (19/30)	14.9	0.587	234	128
A1071004	AWG10/04C (105/30)+ 1 TSP AWG14 (41/30)	18.8	0.740	378	216
A1070804	AWG8/04C (168/30)+ 1 TSP AWG14 (41/30)	24.0	0.945	605	314

TSP = Twisted Shielded Pair

"Small diameter general purpose VFD cable for applications with space restrictions such as conduit installations".
Meets NFPA 79, article 4.4.2.8.

LUTZE DRIVEFLEX® XLPE (C) PVC, Shielded

Flexible VFD Cable RHW-2 for Stationary Applications

DRIVEFLEX®

Application

- Dual-shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Increased wall thickness insulation type RHW-2, offering lower capacitance and higher impedance making it ideal for applications with high voltage spikes and long cable runs
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Flexible XLPE conductor design
- High insulation resistance
- Low capacitance cable
- Effective dual layer shield for EMC compliance
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER-JP 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply Cable, Flexible VFD Servo Cable, TC-ER-JP, WTTC, DP-1 IEC 60332-3-22 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 20886 Submersible Pump (≥AWG14) c(UL) TC, CIC FT4 UL 1277 P-07-KA130021-MSHA CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation type RHW-2, Wet/Dry
- Shielded with foil tape, tinned copper braid with ≥80% optical coverage, and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A2161604	AWG16/04C (26/30)	12.4	0.490	149	57
A2161404	AWG14/04C (41/30)	14.2	0.560	200	80
A2161204	AWG12/04C (65/30)	15.6	0.615	262	128
A2161004	AWG10/04C (105/30)	17.8	0.700	359	186
A2160804	AWG8/04C (168/30)	23.5	0.925	603	295
A2160604	AWG6/04C (266/30)	25.7	1.010	763	425
A2160404	AWG4/04C (413/30)	29.3	1.155	1,126	632
A2160204	AWG2/04C (665/30)	34.2	1.345	1,559	997

"RHW-2 insulated VFD cable offering optimal capacitance and impedance values. Great for applications with long cable runs".
Meets NFPA 79, article 4.4.2.8.

1-800-447-2371

LUTZE DRIVEFLEX® XLPE (C) 1 TSP PVC, Shielded

Flexible Composite VFD Cable with one Control Pair for Stationary Applications

ECOLAB | Low Capacitance | RoHS

DRIVEFLEX®

Application

- Dual-shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Increased wall thickness insulation type RHW-2, offering lower capacitance and higher impedance making it ideal for applications with high voltage spikes and long cable runs
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Flexible XLPE conductor design
- High insulation resistance
- Low capacitance cable
- Effective dual layer shield for EMC compliance
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER-JP 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply Cable, Flexible VFD Servo Cable, TC-ER-JP, WTTC, DP-1 IEC 60332-3-22 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 20886 c(UL) TC, CIC FT4 UL 1277 P-07-KA130021-MSHA CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation, Wet/Dry (4C RHW-2, 1 Pair XHHW-2)
- Shielded with foil tape, tinned copper braid with ≥80% optical coverage, and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

WITH ONE SHIELDED CONTROL PAIR

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A2171604	AWG16/04C (26/30)+ 1 TSP AWG18 (19/30)	15.7	0.620	228	90
A2171404	AWG14/04C (41/30)+ 1 TSP AWG16 (26/30)	16.8	0.660	265	117
A2171204	AWG12/04C (65/30)+ 1 TSP AWG16 (26/30)	18.3	0.720	335	160
A2171004	AWG10/04C (105/30)+ 1 TSP AWG14 (41/30)	20.6	0.810	420	218
A2170804	AWG8/04C (168/30)+ 1 TSP AWG14 (41/30)	26.0	1.025	713	321
A2170604	AWG6/04C (266/30)+ 1 TSP AWG14 (41/30)	27.8	1.095	873	453
A2170404	AWG4/04C (413/30)+ 1 TSP AWG14 (41/30)	31.0	1.220	1,143	650
A2170204	AWG2/04C (665/30)+ 1 TSP AWG14 (41/30)	35.3	1.388	1,574	1,010

TSP = Twisted Shielded Pair

"RHW-2 insulated VFD cable offering optimal capacitance and impedance values. Great for applications with long cable runs".
Meets NFPA 79, article 4.4.2.8.

LUTZE DRIVEFLEX® XLPE (C) 2 TSP PVC, Shielded

Flexible Composite VFD Cable with two Control Pairs for Stationary Applications

DRIVEFLEX®

WITH TWO SHIELDED CONTROL PAIRS

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A2181604	AWG16/04C (26/30)+ 2 TSP AWG18 (19/30)	17.8	0.699	278	113
A2181404	AWG14/04C (41/30)+ 2 TSP AWG16 (26/30)	19.3	0.760	330	149
A2181204	AWG12/04C (65/30)+ 2 TSP AWG16 (26/30)	20.2	0.795	388	187
A2181004	AWG10/04C (105/30)+ 2 TSP AWG14 (41/30)	23.6	0.930	553	261
A2180804	AWG08/04C (168/30)+ 2 TSP AWG14 (41/30)	27.7	1.070	778	364

TSP = Twisted Shielded Pair

Application

- Dual-shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Increased wall thickness insulation type RHW-2, offering lower capacitance and higher impedance making it ideal for applications with high voltage spikes and long cable runs
- Compliant with NFPA 79 requirements
- TC-ER-JP for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Flexible XLPE conductor design
- High insulation resistance
- Low capacitance cable
- Effective dual layer shield for EMC compliance
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER-JP 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply Cable, Flexible VFD Servo Cable, TC-ER-JP, WTTC, DP-1 IEC 60332-3-22 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 20886 c(UL) TC, CIC FT4 UL 1277 P-07-KA130021-MSHA CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation, Wet/Dry (4C RHW-2, 2 Pairs XHHW-2)
- Shielded with foil tape, tinned copper braid with ≥80% optical coverage, and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

"RHW-2 insulated VFD cable offering optimal capacitance and impedance values. Great for applications with long cable runs".
Meets NFPA 79, article 4.4.2.8.

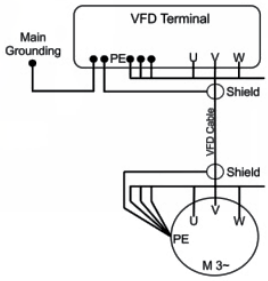
LUTZE DRIVEFLEX® XLPE (C) Symmetrical, Shielded

Flexible VFD Cable with 3 Symmetrical Grounds for Stationary Applications

ECOLAB c UL us CE

DRIVEFLEX®

Low Capacitance ✓ RoHS ✓



Application

- Dual-shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- Three insulated symmetrical ground design helps to reduce stray currents
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Type XHHW-2 insulation offering smaller ODs for general VFD applications
- Compliant with NFPA 79 requirements
- TC-ER for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Flexible XLPE conductors
- Three symmetrical, insulated grounds (PEs)
- High insulation resistance
- Low capacitance cable
- Effective dual layer shield for EMC compliance
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC
Temperature range	-40°C - +90°C static
Bending radius min	7.5 x cable OD
Conductor marking	Black with white numbers and three green/yellow ground
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply Cable, Flexible VFD Servo Cable up to 4/0 IEC 60332-3-22 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 UL Types WTTC, TC-ER Submersible Pump c(UL), CIC FT4, CE UL 1277, UL 2277 P-07-KA130021-MSHA CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation, Wet/Dry XHHW-2 (3C Power + 3C Grounds/PEs)
- Shielded with foil tape, tinned copper braid with ≥80% optical coverage, and drain wire
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

WITH THREE SYMMETRICAL GROUNDS
(3 Power + 3 Protective Earth Grounds)

Part No.	Description Power Ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A2200603	AWG6/03C (266 strands)+ AWG12/03C (50 strands)	23.9	0.941	677	432
A2200403	AWG4/03C (420 strands)+ AWG12/03C (50 strands)	26.4	1.039	872	586
A2200203	AWG2/03C (672 strands)+ AWG10/03C (80 strands)	29.3	1.155	1,230	875
A2200103	AWG1/03C (840 strands)+ AWG8/03C (128 strands)	35.2	1.385	1,600	1,121
A2201/003	1/0/03C (1064 strands)+ AWG8/03C (128 strands)	37.1	1.462	1,850	1,348
A2202/003	2/0/03C (1344 strands)+ AWG8/03C (128 strands)	39.1	1.540	2,187	1,620
A2203/003	3/0/03C (1664 strands)+ AWG6/03C (206 strands)	41.4	1.630	2,705	2,059
A2204/003	4/0/03C (2052 strands)+ AWG6/03C (206 strands)	47.8	1.880	3,336	2,461
A22025003	250MCM/03C* (2432 strands)+ AWG6/03C (206 strands)	51.6	2.032	3,815	2,851
A22035003	350MCM/03C* (3458 strands)+ AWG4/03C (322 strands)	59.4	2.340	5,153	3,993
A22050003	500MCM/03C* (4864 strands)+ AWG4/03C (322 strands)	65.8	2.589	6,803	5,397

*1000V WTTC, 600V TC-ER only

"Three symmetrical grounds design can help to reduce shaft voltage and bearing currents. This design is recommended for larger motors 40HP and up".
Meets NFPA 79, article 4.4.2.8.

LUTZE DRIVEFLEX® XLPE CONTROL TSP (C) PVC, Shielded

Twisted Shielded Pair Cable for Control Signals for Stationary Applications

Application

- Easily add control pairs to any VFD circuit
- Twisted shielded pair cable for VFD & motor applications to transmit control signals from drives to motors
- Separating control from power allows full ampacity rating of the power cable
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Compliant with NFPA 79 requirements
- TC-ER for use with cable trays without conduit and alongside power tray cables
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics

- Flexible XLPE conductor design
- High insulation resistance
- Low capacitance cable
- Effective dual layer shield for EMC compliance
- Oil resistant jacket designed for easy stripping
- Non-wicking fillers
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Sunlight resistant
- Flame retardant
- Direct burial
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 1000V 90C Flexible VFD Servo Cable 1000V 90C WTTC 1000V 105C AWM
Temperature range	-40°C - +105°C static
Bending radius min	6 x cable OD
Conductor marking	Black with white number print
Oil resistance	Oil Res II
Approvals	UL Type Flexible Motor Supply Cable, Flexible VFD Servo Cable UL Type TC-ER, WTTC Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 20886 c(UL) TC, CIC FT4 UL 1277 CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation type XHHW-2, Wet/Dry
- Each pair shielded with foil tape, drain wire, tinned copper braid with ≥80% optical coverage, then wrapped in clear foil
- Oil resistant PVC jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of pairs	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (16/30)				
A2441802	AWG18/1TSP	8.7	0.344	77	29
A2441804	AWG18/2TSP	14.0	0.550	164	58
	AWG 16 (26/30)				
A2441602	AWG16/1TSP	9.4	0.370	88	36
A2441604	AWG16/2TSP	15.5	0.610	189	73
	AWG 14 (41/30)				
A2441402	AWG14/1TSP	10.2	0.400	108	51
A2441404	AWG14/2TSP	16.6	0.655	237	102

"1000V rated control pair(s) for installation alongside VFD cable. Separating control pairs from the power conductors eliminates ampacity derating otherwise required for composite power cables per 2023 NEC 310.15(C)(1)".

LUTZE SILFLEX® M FBP, Shielded

Flexible Motor Cable for Food and Beverage Processing

Application

- Dual-shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- For machine and handling devices in food, beverage and drug processing applications
- FDA sanctioned jacket material for direct food contact per 21 CFR
- Compliant with NFPA 79, Article 12.9
- Suitable for use in food contact zone, splash zone and non-contact zones
- Thermoset XLPE insulation offers superior electrical values for VFD applications

Characteristics

- Flame retardant per UL 1581 Cable Flame
- FDA compliance tested per 21 CFR 175.300
- REACH 1907/2006/EC compliant
- RoHS Directive EU 2015/863 compliant
- Phthalate free jacket
- Low capacitance
- High protection against electromagnetic interference (EMI)
- Easy stripping and easy installation
- Easy routing and bending due to flexibility
- Resistant to most oils and fats
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Non-wicking fillers
- Talc and silicone free
- Patented design US-11443871-B2

Technical Data

Voltage	1000V 90C UL AWM 20886
Temperature	-40°C - +90°C static
Bending radius	6 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Burning behavior	Flame retardant per UL 1581 Cable Flame
Approvals	21 CFR 175.300 UL AWM Style 20886 CE, RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded tinned copper conductors for improved electrical characteristics and reduced oxidation
- Thermoset XLPE insulation type XHHW-2, Wet/Dry
- Shielded with foil tape, tinned copper braid with 80% optical coverage, and drain wire
- Industrial grade phthalate free thermoplastic polymer jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (19/30)				
A6061804	**AWG18/04C**	10.5	0.415	108	42
	AWG 16 (26/30)				
A6061604	**AWG16/04C**	10.8	0.425	124	54
	AWG 14 (41/30)				
A6061404	**AWG14/04C**	11.6	0.456	154	76
	AWG 12 (65/30)				
A6061204	**AWG12/04C**	13.0	0.51	208	118
	AWG 10 (105/30)				
A6061004	**AWG10/04C**	16.5	0.650	320	183
	AWG 8 (168/30)				
A6060804	**AWG8/04C**	20.6	0.81	478	279

These cables are flame resistant in accordance with NFPA 79 article 12.9 “Special Cables and Conductors” and meet stringent FDA food contact requirements per 21 CFR 175.300.

LUTZE SILFLEX® M (C) Motor TPE, Shielded

Flexible Motor Cable for Stationary Applications

Application

- Shielded motor supply cable to connect power to 3-phase motors and servo drives
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Improved insulation design with additional conductor stress relief layer as a power distortion suppressant
- Compliant with NFPA 79 requirements
- TC-ER for use with cable trays without conduit, which can reduce installation costs in industrial environments
- For Allen-Bradley® 2090 and other similar servo systems
- Dry, damp and wet locations

Characteristics

- Design with conductor stress relief layer helps to prevent premature cable failure
- Crush impact resistant
- Gas/vapor tight sheath per UL 1277
- Very round cable with small diameter
- Specially formulated TPE jacket for superior oil resistance
- Resistant to many mineral and vegetable based cutting oils
- Non-wicking fillers
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 600V MTW 1000V 90C WTTC 1000V 90C Flexible Motor Supply 600V 105C AWM
Temperature range	-40°C - +105°C
Bending radius min	6 x cable OD
Conductor marking	Power: brown, black, blue Ground: green/yellow Control pair: black/white
Oil resistance	Oil Res II
Approvals	UL Flexible Motor Supply Cable UL TC-ER UL/AWM/CE UL MTW WTTC UL AWM Style 20328 Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 c(UL) TC, CIC FT4 UL 1277 RoHS, REACH, TSCA

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- PVC/Nylon insulation with conductor stress relief layer
- Shielded with tinned copper braid, optical coverage 85%
- Extremely oil resistant TPE jacket
- Orange jacket similar to RAL 2003

Part No.	Description No. of conductors	OD - Ø ca. mm	OD - Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A3161604	AWG16/04C (26/30)	10.5	0.410	124	50
A3161404	AWG14/04C (41/30)	11.6	0.455	159	71
A3161204	AWG12/04C (65/30)	13.1	0.510	214	107
A3161004	AWG10/04C (105/30)	16.5	0.650	321	161
A3160804	AWG8/04C (168/30)	21.0	0.825	490	267

WITH ONE SHIELDED CONTROL PAIR

A3171604	AWG16/04C (26/30)+ 1 TSP AWG18	12.1	0.477	161	72
A3171404	AWG14/04C (41/30)+ 1 TSP AWG18	12.8	0.505	196	92
A3171204	AWG12/04C (65/30)+ 1 TSP AWG18	15.0	0.590	263	128
A3171004	AWG10/04C (105/30)+ 1 TSP AWG18	18.1	0.716	380	191
A3170804	AWG8/04C (168/30)+ 1 TSP AWG18	22.5	0.890	568	285
A3170604	AWG6/04C (266/30)+ 1 TSP AWG18	25.5	1.003	786	417
A3170404	AWG4/04C (413/30)+ 1 TSP AWG16	29.5	1.162	1119	613
A3170204	AWG2/04C (655/30)+ 1 TSP AWG16	34.1	1.340	1543	983

TSP = Twisted Shielded Pair

For standard three phase VFD applications, please refer to LUTZE DRIVEFLEX® cable series.

LUTZE SILFLEX® M (C) Motor TPE, Shielded

Hybrid Power Supply Cable for Servo Motors with Hiperface DSL® Interface

Application

- Combined power supply cable with motor supply, brake and digital feedback especially or SERVO drives in machine and plant construction, transport and conveyor technology
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Compliant with NFPA 79 requirements
- For Allen-Bradley® 2090 and other similar servo systems
- Dry, damp and wet locations

Characteristics

- Specially formulated TPE jacket for superior oil resistance
- Resistant to many mineral and vegetable based cutting oils
- Very round cable with small diameter
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Non-wicking fillers
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	1000V 90C Flexible Motor Supply
Temperature range	-40°C - +90°C
Bending radius min	6 x cable OD
Conductor marking	Motor Supply: BK, BN, BU, GN/YE Brake Pair: BK, WH Digital Feedback: WH, BU
Oil resistance	Oil Res II
Approvals	UL Flexible Motor Supply Cable CE Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 FT4 RoHS, REACH, TSCA
AWG specific approvals	
AWG 18 to AWG 14:	300V 90C PLTC-ER

Construction

- AWG conductor
- Class K flexible fine wire stranded bare copper conductors
- XLPE insulation
- PVC subjacket over Hiperface data pair
- Control pair and data element each with braided shield and foil tape
- Shielded with foil tape, tinned copper braid (optical coverage >85%), and drain wire
- Extremely oil resistant TPE jacket
- Orange jacket similar to RAL 2003

Part No.	Description No. of conductors	OD - Ø ca. mm	OD - Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A3191804	AWG18/04C (16/30) (4GAWG18+(2xAWG18)+ (2xAWG22))	14.9	0.585	209	80
A3191404	AWG14/04C (41/30) (4GAWG14+(2xAWG18)+ (2xAWG22))	16.5	0.650	260	116
A3191004	AWG10/04C (104/30) (4GAWG10+(2xAWG18)+ (2xAWG22))	18.8	0.740	373	197

For standard three phase VFD applications, please refer to LUTZE DRIVEFLEX® cable series.

LUTZE SILFLEX® (C) TPE Feedback, Shielded

Flexible Feedback Cable for Stationary Applications

Application

- Incremental encoder cable and resolver cable for tach sensor, brake sensor, speed sensor
- Cable design for harsh industrial environments and operating conditions with high noise level
- Compliant with NFPA 79 requirements
- For Allen-Bradley® and other Systems
- Dry, damp and wet conditions

Characteristics

- High protection against electromagnetic interference (EMI)
- Flexible for easy installation
- Specially formulated TPE jacket for superior oil resistance according to UL 1581
- Resistant to many mineral & vegetable based cutting oils
- Non-wicking fillers
- Extended temperature range and premium durability
- Sunlight resistant
- Talc and silicone free

Technical Data

Nominal Voltage	
A1410001:	300V 105C PLTC 600V 90C AWM
A1410002:	300V 105C CM 600V 90C AWM
Test voltage	1.5 kV
Temperature range	-40°C to + 90°C static
Bending radius min	6 x cable OD static
Burning behavior	Flame retardant per UL Vertical Tray UL VW-1
Oil resistance	Oil Res I, Oil Res II
Approvals	UL AWM Style 20626 CE RoHS, REACH, TSCA
Item specific approvals	
A1410001:	UL PLTC-ER, meets NEC 392, 725 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 Crush impact resistant Gas/vapor tight sheath per UL 13
A1410002:	UL CM, meets NEC 392, 800

Construction

- AWG conductor
- Flexible fine wire stranded tinned copper conductors
- Special PVC conductor insulation
- Conductors color-coded for specific system
- Shielded with foil tape, drain wire and tinned copper braid shield, optical coverage 85 %
- Extremely oil resistant TPE jacket
- Green jacket similar to RAL 6018

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
For Allen-Bradley® Systems and similar					
A1410001	(5x2xAWG22) BK/BKWH, RD/RDWH, GN/GNWH, GY/GYWH, OG/OGWH	10.0	0.395	102	40
A1410002	(1x2xAWG16+1x2xAWG22+ 6x2xAWG26) AWG16: GY/GYWH AWG22: OG/OGWH AWG26: BK/BKWH, RD/RDWH, GN/GNWH, BL/BLWH, BN/BNWH, YE/YEWH	11.8	0.465	143	54

LUTZE MOTIONFLEX® M (C) TPE, Shielded

Flexing Motor Cable for Linear and Twisting Motion Applications

Application
- Shielded motor supply cable to connect power to 3-phase motors, VFDs and servo drives
- Suitable for motion applications with repetitive movement, flexing, and torsional stress
- Thermoset XLPE insulation offering superior overload and short-circuit temperature
- Compliant with NFPA 79 for wiring of industrial machinery
- TC-ER for use with cable trays without conduit, which can reduce installation costs in industrial environments
- WTTC – wind turbine tray cable rating for use in wind power generation
- Dry, damp or wet conditions

Characteristics
- Highly flexible XLPE conductor design
- Reduced cable ODs
- High insulation resistance
- Low capacitance cable
- Cutting oil resistant - mineral & bio/vegetable based oils *specifically tested with plant based cutting oil*
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Crush impact resistant
- Gas/vapor-tight sheath per UL 1277
- Cold impact tested to -40°C
- Sunlight resistant
- Flame retardant
- Talc and silicone free

Technical Data

Voltage	600V 90C TC-ER 1000V 90C Flexible Motor Supply Cable 1000V 90C WTTC 600V 105C AWM
Temperature range	Moving -15°C - +80°C Fixed -40°C - +105°C
Bending radius min	Moving 12 x cable OD Fixed 6 x cable OD
Torsion angle max.	+/- 130° / 1m cable length
Conductor marking	Black with white numbers and one green/yellow ground
Oil resistance	Oil Res I, Oil Res II
Approvals	UL Type Flexible Motor Supply, TC-ER, WTTC Meets NEC 336, 392 Class I & II, Div. 2 and Class I Zone 2 per NEC 501, 502, 505 AWM 21270 c(UL), CIC FT4 UL 1277 CE, RoHS, REACH, TSCA

Construction
- AWG conductor
- Class M flexible fine wire stranded bare copper conductors
- Thermoset XLPE insulation type XHHW-2, Wet/Dry
- Shielded with tinned copper braid with 85% optical coverage
- Oil resistant TPE jacket
- Black jacket similar to RAL 9005

MOTIONFLEX®

Part No.	Description No. of conductors incl. ground	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 (41/34)				
A4061804	AWG18/04C	9.7	0.380	89	40
	AWG 16 (65/34)				
A4061604	AWG16/04C	10.8	0.425	124	55
	AWG 14 (104/34)				
A4061404	AWG14/04C	11.4	0.450	140	76
	AWG 12 (168/34)				
A4061204	AWG12/04C	13.6	0.535	197	115
	AWG 10 (259/34)				
A4061004	AWG10/04C	15.9	0.625	275	165
	AWG 8 (420/34)				
A4060804	AWG8/04C	19.7	0.775	420	259

Small diameter VFD cable for flexing and twisting applications.
Meets NFPA 79, article 4.4.2.8.

LUTZE SUPERFLEX® Plus M PUR 0.6/1kV, Unshielded

High Flexing Motor Cable for Continuous Motion Applications

Application

- Continuous flexing motor and power cable for machine tools, handling equipment and processing machines
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per Class 6 for continuous moving applications
- TPE conductor insulation
- Low capacitance
- PUR jacket
- Highest level of resistance against cooling fluids, greases and oils
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	1000V 80C AWM 0.6/1kV U_0/U
Temperature range	Moving -25°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 7.5 x cable OD Fixed 4 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Insulation resistance	Min 500MΩ x km
Burning behavior	Flame retardant per DIN EN 60322-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM Style 21223 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 Class 6 and IEC 60228 Class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
- Layer pitch optimized
- Fleece wrap over cabled conductor
- Extremely oil resistant PUR jacket
- Black jacket similar to RAL 9005

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 16 / 1.5 mm²				
111370	4G1.5	8.2	0.323	81	39
	AWG 14 / 2.5 mm²				
111371	4G2.5	10.0	0.394	96	64
	AWG 12 / 4 mm²				
111372	4G4	11.6	0.457	156	103
111545	5G4	13.0	0.512	192	130
	AWG 10 / 6 mm²				
111373	4G6	13.6	0.535	220	155
111430	5G6	14.4	0.567	269	194
	AWG 8 / 10 mm²				
111374	4G10	16.8	0.661	352	257
	AWG 6 / 16 mm²				
111375	4G16	20.4	0.803	663	411
	AWG 4 / 25 mm²				
111376	4G25	24.2	0.953	804	643
	AWG 2 / 35 mm²				
111377	4G35	30.5	1.201	1,240	901

Specifications are subject to change without prior notice

LUTZE SUPERFLEX® Plus M (C) PUR 0.6/1kV, Shielded

High Flexing Motor Cable for Continuous Motion Applications

Application

- Continuous flexing motor, servo and VFD cable
- Suitable for applications with extremely rough operating conditions and oil exposure
- For the most demanding flexing applications such as drag chains and linear flexing
- For Siemens (6FX8008) and similar systems
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per class 6 for continuous moving applications
- Reduced friction
- Low capacitance
- Highest level of resistance against cooling fluids, greases and oils
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	1000V 90C AWM 0.6/1kV U_0/U
Temperature range	Moving -25°C - +90°C Fixed -40°C - +90°C
Bending radius min	Moving 7.5 x cable OD Fixed 5 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground
Insulation resistance	Min. 500MΩ x km
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM Style 21209 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Orange jacket similar to RAL 2003

Part No.	Description No. of conductors	Siemens Designation	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 16 / 1.5 mm²					
111460.1000	(4G1.5)	1BB11*	8.7	0.343	82	56
	AWG 14 / 2.5 mm²					
111461.1000	(4G2.5)	1BB21*	10.8	0.425	128	87
	AWG 12 / 4 mm²					
111462.1000	(4G4)	1BB31*	12.2	0.480	183	130
	AWG 10 / 6 mm²					
111463.1000	(4G6)	1BB41*	14.2	0.559	252	185
	AWG 8 / 10 mm²					
111464.1000	(4G10)	1BB51*	17.6	0.693	391	302
	AWG 6 / 16 mm²					
111465.1000	(4G16)	1BB61*	21.2	0.835	603	484

*SIEMENS article designations are registered trademarks of SIEMENS AG.

LUTZE SUPERFLEX® Plus M (C) PUR 0.6/1kV, Shielded

High Flexing Composite Motor Cable for Continuous Motion Applications

Application

- Continuous flexing motor, servo and VFD cable
- Suitable for applications with extremely rough operating conditions and oil exposure
- For the most demanding flexing applications such as drag chains and linear flexing
- With one control pair for SIEMENS (6FX8008) and similar systems
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per class 6 for continuous moving applications
- Reduced friction
- Low capacitance
- Highest level of resistance against cooling fluids, greases and oils
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	1000V 90C AWM 0.6/1kV U_0/U	
Temperature range	Moving	-25°C - +90°C
	Fixed	-40°C - +90°C
Bending radius min	Moving	7.5 x OD ≤ 6AWG 10 x OD ≥ 4AWG
	Fixed	5 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground Control pair color-coded (bk, wh)	
Insulation resistance	Min. 500MΩ x km	
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1	
Halogen free	According to DIN EN 60754-1	
Oil resistance	Oil Res II	
Approvals	UL AWM Style 21209 RoHS, REACH, TSCA	

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
  x: without ground conductor
- Control pair individually shielded with foil and braid
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Orange jacket similar to RAL 2003

*SIEMENS article designations are registered trademarks of SIEMENS AG.

WITH ONE SHIELDED CONTROL PAIR

Part No.	Description No. of conductors	Siemens Designation	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 16 / 1.5 mm²					
111420.1000	(4G1.5 + (2x1.5))	1BA11*	11.6	0.457	147	100
	AWG 14 / 2.5 mm²					
111421.1000	(4G2.5 + (2x1.5))	1BA21*	13.0	0.512	184	130
	AWG 12 / 4 mm²					
111422.1000	(4G4 + (2x1.5))	1BA31*	14.7	0.579	247	171
	AWG 10 / 6 mm²					
111423.1000	(4G6 + (2x1.5))	1BA41*	16.2	0.638	316	228
	AWG 8 / 10 mm²					
111424.1000	(4G10 + (2x1.5))	1BA51*	19.7	0.776	465	353
	AWG 6 / 16 mm²					
111425.1000	(4G16 + (2x1.5))	1BA61*	23.2	0.913	662	519
	AWG 4 / 25 mm²					
111426.1000	(4G25 + (2x1.5))	BA25*	27.4	1.079	989	759

LUTZE SUPERFLEX® Plus M (C) PUR 0.6/1kV, Shielded

High Flexing Composite Motor Cable for Continuous Motion Applications

Application

- Continuous flexing motor, servo and VFD cable
- Suitable for applications with extremely rough operating conditions and oil exposure
- For the most demanding flexing applications such as drag chains and linear flexing
- With two control pairs for Indramat / Bosch Rexroth and similar systems
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per Class 6 for continuous moving applications
- Reduced friction
- Low capacitance
- Highest level of resistance against cooling fluids, greases and oils
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	1000V 90C AWM 0.6/1kV U_0/U
Temperature range	Moving -25°C - +90°C Fixed -40°C - +90°C
Bending radius min	Moving 7.5 x cable OD Fixed 5 x cable OD
Conductor marking	Black with white numbers and one green/yellow ground Control pairs number printed (5,6) (7,8)
Insulation resistance	Min 500MΩ x km
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM Style 21209 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- G: with GNYE ground conductor
- Control pairs individually shielded with foil and braid
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Orange jacket similar to RAL 2003

WITH TWO SHIELDED CONTROL PAIRS

Part No.	Description No. of conductors	Indramat Designation*	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 16 / 1.5 mm²					
111271.1000	(4G1.5+2x(2x0.75))	INK 0650*	12.2	0.480	174	104
	AWG 14 / 2.5 mm²					
111279.1000	(4G2.5+2x(2x1.0))	INK 0602*	14.6	0.575	215	147
	AWG 12 / 4 mm²					
111388.1000	(4G4+2x(2x1.0))	INK 0603*	17.0	0.669	295	197
	AWG 10 / 6 mm²					
111998.1000	(4G6+(2x1.0)+ (2x1.5))	INK 0604*	18.0	0.709	399	250
	AWG 8 / 10 mm²					
111762.1000	(4G10+(2x1.0)+ (2x1.5))	INK 0605*	21.9	0.862	568	383
	AWG 6 / 16 mm²					
111276.1000	(4G16+2x(2x1.5))	INK 0606*	25.4	1.000	827	558

*Indramat article designations are registered trademark
Specifications are subject to change without prior notice

LUTZE SUPERFLEX® Plus M (C) PUR 0.6/1kV, Shielded

High Flexing Hybrid Cable for Servo Motors with Hiperface DSL® Interface

Application

- Continuous flexing motor, servo and VFD cable
- Combined power supply cable with motor supply, brake and digital feedback
- Suitable for applications with extremely rough operating conditions and oil exposure
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per Class 6 for continuous moving applications
- Reduced friction
- Low capacitance
- Highest level of resistance against cooling fluids, greases and oils
- Ecolab certified resistance to common cleaning agents and chemicals used in food and beverage washdown procedures
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Non-wicking fillers
- Talc and silicone free

Technical Data

Voltage	1000V 90C AWM 0.6/1kV U_0/U
Temperature range	Moving -40°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 7.5 x cable OD Fixed 5 x cable OD
Conductor marking	Motor Supply: BK, BN, BU, GN/YE Brake Pair: BK, WH Digital Feedback: WH, BU
Insulation resistance	Min 500MΩ x km
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1-2 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM Style 21209 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- Control pairs and digital feedback individually shielded with tinned copper braid
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Orange jacket similar to RAL 2003

HYBRID POWER, BRAKE, AND FEEDBACK

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 18 / 1.0 mm²				
111640.1000	(4G1.0+(2×0.75)+(2×AWG22))	12.4	0.488	154	95
	AWG 16 / 1.5 mm²				
111641.1000	(4G1.5+(2×1.0)+(2×AWG22))	13.2	0.520	179	114
	AWG 14 / 2.5 mm²				
111642.1000	(4G2.5+2x(2x1.0)+(2×AWG22))	14.5	0.571	217	152
	AWG 12 / 4 mm²				
111643.1000	(4G4+2x(2x1.0)+(2×AWG22))	16.2	0.638	290	203
	AWG 10 / 6 mm²				
111644.1000	(4G6+(2x1.0)+(2×AWG22))	18.0	0.709	361	262
	AWG 8 / 10 mm²				
111645.1000	(4G10+(2x1.5)+(2×AWG22))	21.0	0.827	549	402
	AWG 6 / 16 mm²				
111646.1000	(4G16+(2x1.5)+(2×AWG22))	26.0	1.024	840	610

LUTZE SUPERFLEX® Plus M PUR 0.6/1kV, Unshielded

High Flexing Single Conductor Motor Cable for Continuous Motion Applications

Application

- Continuous flexing cable suitable for machine and device construction for transport and conveyor technology
- As motor supply or ground conductor
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per class 6 for continuous moving applications
- Very good alternating bending strength
- TPE insulation with very high break through resistance
- PUR jacket for highest level of resistance against cooling fluids, greases and oils
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Talc and silicone free

Technical Data

Voltage	1000V 80C AWM 0.6/1kV U_0/U
Test voltage	4000V
Temperature range	Moving -25°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 7.5 x cable OD Fixed 4 x cable OD
Insulation resistance	Min. 200MΩ x km
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM Style 10587 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- Extremely oil resistant PUR jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 10 / 6 mm²				
111136	1x6	7.1	0.279	61	38
	AWG 8 / 10 mm²				
111126	1x10	8.4	0.331	93	62
	AWG 6 / 16 mm²				
111127	1x16	9.8	0.386	138	99
	AWG 4 / 25 mm²				
111128	1x25	11.4	0.449	206	157
	AWG 2 / 35 mm²				
111129	1x35	13.4	0.528	290	219
	AWG 1 / 50 mm²				
111130	1x50	15.2	0.598	384	321
	2/0 / 70 mm²				
111131	1x70	16.6	0.654	526	433
	3/0 / 95 mm²				
111132	1x95	19.2	0.756	701	597

Green/Yellow Jacket

	AWG 8 / 10 mm²				
111243	1x10	8.4	0.331	93	62
	AWG 6 / 16 mm²				
111197	1x16	9.8	0.386	138	99

LUTZE SUPERFLEX® Plus M (C) PUR 0.6/1kV, Shielded

High Flexing Single Conductor Motor Cable for Continuous Motion Applications

Application

- Continuous flexing shielded cable suitable for machine and device construction for transport and conveyor technology
- As motor supply conductor
- For the most demanding flexing applications such as drag chains and linear flexing
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- Super finely stranded per class 6 for continuous moving applications
- Very good alternating bending strength
- TPE insulation with very high break through resistance
- PUR jacket for highest level of resistance against cooling fluids, greases and oils
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Talc and silicone free

Technical Data

Voltage	1000V 80C AWM 0.6/1kV U_0/U
Test Voltage	4000V
Temperature range	Moving -25°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 7.5 x cable OD Fixed 4 x cable OD
Insulation resistance	Min. 200MΩ x km
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Oil resistance	Oil Res II
Approvals	UL AWM Style 10587 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- Fleece wrap
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Black jacket similar to RAL 9005

Specifications are subject to change without prior notice

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
	AWG 10 / 6 mm²				
111288	(1x6)	7.7	0.303	77	52
	AWG 8 / 10 mm²				
111289	(1x10)	9.0	0.354	115	81
	AWG 6 / 16 mm²				
111290	(1x16)	10.4	0.409	162	121
	AWG 4 / 25 mm²				
111291	(1x25)	12.0	0.472	237	183
	AWG 2 / 35 mm²				
111292	(1x35)	14.0	0.551	323	250
	AWG 1 / 50 mm²				
111293	(1x50)	15.8	0.622	424	356

LUTZE SUPERFLEX® Plus (C) PUR Feedback, Shielded

High Flexing Feedback Cable for Continuous Motion Applications

halogen free | Low Capacitance | RoHS

Application

- Incremental encoder cable, termination cable for tach sensor, brake sensor, speed sensor
- Suitable for applications with extremely rough operating conditions and oil exposure
- For the most demanding flexing applications such as drag chains and linear flexing
- For Bosch-Rexroth and other systems
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- High resistance to electromagnetic interference (EMI)
- Special braided shield, optimized for continuous flexing
- Very good alternating bending strength
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Salt water resistant
- Excellent coolant and lubricant resistance
- Resistant to most oils, greases, alcohol-free benzenes and kerosene
- Talc and silicone free

Technical Data

Voltage	300V 80C AWM
Test voltage	2000V
Insulation resistance	Min. 200MΩ x km
Temperature range	Moving -25°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 12 x cable OD Fixed 6 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Approvals	UL AWM 20233 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- Conductors color-coded for specific system
- Layer pitch optimized
- Fleece wrap over cabled conductors
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Orange jacket similar to RAL 2003

*Bosch Rexroth article designations are registered trademarks
Specifications are subject to change without prior notice

Part No.	Description No. of conductors	INK* Description	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
For Bosch-Rexroth Systems and similar						
111749	(2×1.0+4×2×0.25) 1.0: WH, BN 0.25: BN/GN, GY/PK, BU/VT, RD/BK	INK-0209*	9.0	0.354	77	43
111780	(2x0.5+4x2x0.25) 0.5: WH, BN 0.25: BN/GN, GY/PK, BU/VT, RD/BK	INK-0448*	8.5	0.335	67	40
110940	(9×0.5) Conductor color according to DIN 47100	INK-0208*	8.8	0.346	84	50
111781	(2x0.5+2x2x0.25) 0.5: WH, BN 0.25: RD/BK, GY/PK	INK-0750*	7.6	0.299	60	28

LUTZE SUPERFLEX® Plus (C) PUR Feedback, Shielded

High Flexing Feedback Cable for Continuous Motion Applications

Application

- Incremental encoder cable, termination cable for tach sensor, brake sensor, speed sensor
- Suitable for applications with extremely rough operating conditions and oil exposure
- For the most demanding flexing applications such as drag chains and linear flexing
- For Allen-Bradley® and other systems
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- High resistance to electromagnetic interference (EMI)
- Special braided shield, optimized for continuous flexing
- Very good alternating bending strength
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Salt water resistant
- Excellent coolant and lubricant resistance
- Resistant to most oils, greases, alcohol-free benzenes and kerosene
- Talc and silicone free

Technical Data

Nominal Voltage	1000V 80C AWM
Test voltage	3000V
Insulation resistance	Min. 200MΩ x km
Temperature range	Moving -25°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 10 x cable OD Fixed 6 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Approvals	UL AWM 21223 RoHS, REACH, TSCA

Construction

- Metric conductor
- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- Conductors color-coded for specific system
- Layer pitch optimized
- Fleece wrap over cabled conductors
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Green jacket similar to RAL 6018

Part No.	Description No. of conductors	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
For Allen-Bradley® Systems and similar					
111488.2000	(5x2xAWG22) BKWH/BK, RDWH/RD, GNWH/GN, GYWH/GY, OGWH/OG	9.2	0.362	72	36
111489	(2xAWG16+2xAWG22+ 6x2xAWG26) AWG16: GY, WHGY AWG22: OG, WHOG AWG26: BKWH/BK, RDWH/RD, GNWH/GN, BNWH/BN, YEWH/YE, BUWH/BU	10.8	0.425	121	81

LUTZE SUPERFLEX® Plus (C) PUR Feedback, Shielded

High Flexing Feedback Cable for Continuous Motion Applications

Application

- Incremental encoder cable, termination cable for tach sensor, brake sensor, speed sensor
- Suitable for applications with extremely rough operating conditions and oil exposure
- For the most demanding flexing applications such as drag chains and linear flexing
- For Siemens and other systems
- Compatible with all major drag chain brands
- Compliant with NFPA 79, Article 12.9

Characteristics

- High resistance to electromagnetic interference (EMI)
- Special braided shield, optimized for continuous flexing
- Very good alternating bending strength
- Abrasion, high wear and tear resistance
- Hydrolysis, microbe, and rot resistant
- UV resistant
- Salt water resistant
- Excellent coolant and lubricant resistance
- Resistant to most oils, greases, alcohol-free benzenes and kerosene
- Talc and silicone free

Technical Data

Voltage	30V 80C AWM
Test voltage	500V
Insulation resistance	Min. 500MΩ x km
Temperature range	Moving -25°C - +80°C Fixed -40°C - +80°C
Bending radius min	Moving 12 x cable OD Fixed 6 x cable OD
Burning behavior	Flame retardant per DIN EN 60332-1-2 IEC 60332-1 UL 1581 section VW-1 FT1
Halogen free	According to DIN EN 60754-1
Approvals	UL AWM 20236 RoHS, REACH, TSCA

Construction

- Bare copper wire super finely stranded per DIN VDE 0295 class 6 and IEC 60228 class 6
- Special TPE conductor insulation
- Conductors color-coded for specific system
- Layer pitch optimized
- Fleece wrap over cabled conductors
- Tinned copper braid shield, optical coverage 85%
- Extremely oil resistant PUR jacket
- Green jacket similar to RAL 6018

Part No.	Description No. of conductors incl. ground	Siemens Designation	OD / Ø ca. mm	OD / Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
For Siemens Standard Systems 6FX8000* and similar						
111456	(4×0.5+4×2×0.38) 0.5: WHBU, WHBK, WHRD, WHYE 0.38: BK/BN, RD/OG, GN/YE, BU/VT	1BD21*	9.4	0.370	89	58
111459	(2×(0.5)+3×(2×0.14)) (0.5): BK, RD 0.14: BK/BN, RD/OG, GN/YE	1BD31*	8.7	0.343	86	46
111458	(2×0.5+3×(2×0.14)+4×0.14) 0.5: BNBU, BNRD (0.14) BK/BN, RD/OG, GN/YE 0.14: BU, GY, WHBK, WHYE	1BD41*	8.6	0.339	82	41
111457	(2×0.5+3×(2×0.14)+4×0.23+4×0.14) 0.5: BNBU, BNRD 0.23: GNBK, GNRD, BNYE, BNGY (0.14) BK/BN, RD/OG, YEGN 0.14: BU, GY, WHBK, WHYE	1BD51*	9.8	0.386	103	62
For Siemens DRIVE-CLiQ Standard Systems* and similar						
104002	(2×2×AWG24+1×2×AWG22) AWG24: PK/BU, YE/GN AWG22: RD/BK	2DC00*	7.0	0.275	65	21

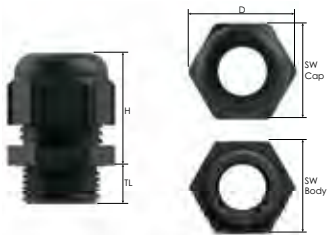
Notes

5. Wire and Cable Management

LUTZE AUTOMATION
an Amphenol Company

LUTZE TOP-T Fittings NPT

Plastic NPT



Characteristics
- Integrated strain relief
- Wide sealing and clamping range
- Easy to install
- Manufactured acc to EN 62444

Specifications

Connecting thread	NPT ANSI B1.20.1
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-30°C - +150°C / -22°F - +302°F
Protection class	IP68 EN 60529
Material	
Body	Polyamide 6
Seal	CR Chloroprene Rubber
Color	Black RAL 9005 Gray RAL 7001

Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW mm	D mm	H mm	UL R/L	PU
	BLACK								
FPNPT38B	NPT 3/8”	0.197-0.394	5-10	15	22	25	32.2	R	20
FPNPT12B	NPT 1/2”	0.394-0.551	10-14	15	27	30.9	31.9	L	20
FPNPT34B	NPT 3/4”	0.511-0.709	13-18	15	33	37.2	38.4	L	20
FPNPT10B	NPT 1”	0.709-0.984	18-25	18	42	47.1	43.3	L	20
	GRAY								
FPNPT38G	NPT 3/8”	0.197-0.394	5-10	15	22	25	32.2	R	20
FPNPT12G	NPT 1/2”	0.394-0.551	10-14	15	27	30.9	31.9	L	20
FPNPT34G	NPT 3/4”	0.511-0.709	13-18	15	33	37.2	38.4	L	20
FPNPT10G	NPT 1”	0.709-0.984	18-25	18	42	47.1	43.3	L	20
	REDUCED CLAMPING RANGE								
FPNPT38B-R	NPT 3/8”	0.118-0.276	3-7	15	22	25	32.2	R	20
FPNPT12B-R	NPT 1/2”	0.276-0.472	7-12	15	27	30.9	31.9	L	20
FPNPT34B-R	NPT 3/4”	0.354-0.630	9-16	15	33	37.2	38.4	L	20
FPNPT10B-R	NPT 1”	0.472-0.787	12-20	18	42	47.1	43.3	L	20

Item Specific Approvals
- UL Recognized (R) or UL Listed (L), as per table

Locknuts sold separately.

LUTZE TOP-T Fittings PG

Plastic PG

Characteristics
- Integrated strain relief
- Wide sealing and clamping range
- Easy to install
- Manufactured acc to EN 62444

Specifications

Connecting thread	PG DIN 40430
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-30°C - +150°C / -22°F - +302°F
Protection class	IP68 EN 60529
Material	
Body	Polyamide 6
Seal	CR Chloroprene Rubber
Color	Black RAL 9005 Gray RAL 7001

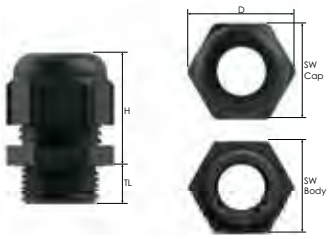
Item Specific Approvals
- UL Recognized (R) or UL Listed (L), as per table

Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW mm	D mm	H mm	UL R/L	PU
	BLACK								
FPPG7B	PG 7	0.118-0.256	3-6.5	8	15	17.0	25.3	R	50
FPPG9B	PG 9	0.157-0.315	4-8	8	19	21.7	27.4	R	50
FPPG11B	PG 11	0.197-0.394	5-10	8	22	25.0	32.2	R	50
FPPG13B	PG 13.5	0.236-0.472	6-12	10	24	27.0	32.4	L	50
FPPG16B	PG 16	0.394-0.551	10-14	10	27	30.9	31.9	L	50
FPPG21B	PG 21	0.512-0.709	13-18	11	33	37.2	38.4	L	20
FPPG29B	PG 29	0.709-0.984	18-25	11	42	47.1	43.3	L	20
FPPG36B	PG 36	0.866-1.260	22-32	13	53	59.6	52.4	L	5
FPPG42B	PG 42	1.181-1.496	30-38	13	60	67.8	54.8	L	5
FPPG48B	PG 48	1.339-1.732	34-44	14	65	72.4	54.9	L	5
	GRAY								
FPPG7G	PG 7	0.118-0.256	3-6.5	8	15	17.0	25.3	R	50
FPPG9G	PG 9	0.157-0.315	4-8	8	19	21.7	27.4	R	50
FPPG11G	PG 11	0.197-0.394	5-10	8	22	25.0	32.2	R	50
FPPG13G	PG 13.5	0.236-0.472	6-12	10	24	27.0	32.4	L	50
FPPG16G	PG 16	0.394-0.551	10-14	10	27	30.9	31.9	L	50
FPPG21G	PG 21	0.512-0.709	13-18	11	33	37.2	38.4	L	20
FPPG29G	PG 29	0.709-0.984	18-25	11	42	47.1	43.3	L	20
FPPG36G	PG 36	0.866-1.260	22-32	13	53	59.6	52.4	L	5
FPPG42G	PG 42	1.181-1.496	30-38	13	60	67.8	54.8	L	5
FPPG48G	PG 48	1.339-1.732	34-44	14	65	72.4	54.9	L	5

Locknuts sold separately.

LUTZE TOP-T Fittings Metric

Plastic Metric



Characteristics

- Integrated strain relief
- Wide sealing and clamping range
- Easy to install
- Manufactured acc to EN 62444

Specifications

Connecting thread	Metric EN 60423
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-30°C - +150°C / -22°F - +302°F
Protection class	IP68 EN 60529
Material	
Body	Polyamide 6
Seal	CR Chloroprene Rubber
Color	Black RAL 9005 Gray RAL 7001

Item Specific Approvals

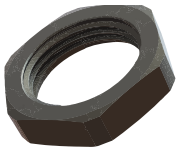
- UL Recognized (R) or UL Listed (L), as per table

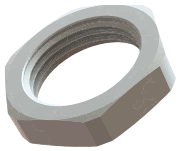
Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW mm	D mm	H mm	UL R/L	PU
	BLACK								
FPM12B	M12x1.5	0.118-0.256	3-6.5	8	15	17.0	25.3	R	50
FPM16B	M16x1.5	0.197-0.394	5-10	10	22	25.0	32.2	R	50
FPM20B	M20x1.5	0.315-0.551	10-14	10	27	30.9	31.9	L	50
FPM25B	M25x1.5	0.512-0.709	13-18	10	33	37.2	38.4	L	20
FPM32B	M32x1.5	0.709-0.984	18-25	15	42	47.1	43.3	L	20
FPM40B	M40x1.5	0.866-1.260	22-32	18	53	59.6	52.4	L	5
FPM50B	M50x1.5	1.181-1.496	30-38	18	60	67.8	54.8	L	5
FPM63B	M63x1.5	1.339-1.732	34-44	18	65	72.4	54.9	L	5
	GRAY								
FPM12G	M12x1.5	0.118-0.256	3.0-6.5	8	15	17.0	25.3	R	50
FPM16G	M16x1.5	0.197-0.394	5-10	10	22	25.0	32.2	R	50
FPM20G	M20x1.5	0.315-0.551	10-14	10	27	30.9	31.9	L	50
FPM25G	M25x1.5	0.512-0.709	13-18	10	33	37.2	38.4	L	20
FPM32G	M32x1.5	0.709-0.984	18-25	15	42	47.1	43.3	L	20
FPM40G	M40x1.5	0.866-1.260	22-32	18	53	59.6	52.4	L	5
FPM50G	M50x1.5	1.181-1.496	30-38	18	60	67.8	54.8	L	5
FPM63G	M63x1.5	1.339-1.732	34-44	18	65	72.4	54.9	L	5
	REDUCED CLAMPING RANGE								
FPM16G-R	M16x1.5	0.118-0.276	3-7	10	22	25.0	32.2	R	50
FPM20G-R	M20x1.5	0.276-0.472	7-12	10	27	30.9	31.9	L	50
FPM25G-R	M25x1.5	0.354-0.630	9-16	10	33	37.2	38.4	L	20
FPM32G-R	M32x1.5	0.472-0.787	12-20	15	42	47.1	43.3	L	20

Locknuts sold separately.

LUTZE TOP-T Locknuts Plastic

Plastic NPT, PG and Metric





Characteristics

- Flanged hexagonal locknut for secure tightening of plastic cable fittings and accessories
- Easy to install
- Flange imprinted with locknut size for easy identification

Specifications

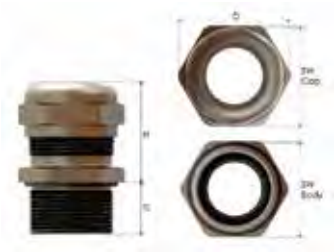
Connecting thread	NPT ANSI B1.20.1 PG DIN 40430 Metric EN 60423
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-30°C - +150°C / -22°F - +302°F
Material	Polyamide 6, 30% glass fiber reinforced
Color	Black RAL 9005 Gray RAL 7001

Specifications are subject to change without prior notice

Part No.	Thread	SW mm	D mm	H mm	PU
	NPT BLACK				
LPNPT38B	NPT 3/8”	22	25	6	50
LPNPT12B	NPT 1/2”	27	30.5	6	50
LPNPT34B	NPT 3/4”	33	37.5	6	20
LPNPT10B	NPT 1”	41	46.5	7	20
	NPT GRAY				
LPNPT38G	NPT 3/8”	22	25	6	50
LPNPT12G	NPT 1/2”	27	30.5	6	50
LPNPT34G	NPT 3/4”	33	37.5	6	20
LPNPT10G	NPT 1”	41	46.5	7	20
	PG BLACK				
LPPG7B	PG 7	19	21	5	50
LPPG9B	PG 9	22	24	5	50
LPPG11B	PG 11	24	26	5	50
LPPG13B	PG 13.5	27	29	6	50
LPPG16B	PG 16	30	33	6	50
LPPG21B	PG 21	36	39	7	20
LPPG29B	PG 29	46	50	7	20
LPPG36B	PG 36	60	66	8	10
LPPG42B	PG 42	65	73	8	10
LPPG48B	PG 48	70	78	8	5
	PG GRAY				
LPPG7G	PG 7	19	21	5	50
LPPG9G	PG 9	22	24	5	50
LPPG11G	PG 11	24	26	5	50
LPPG13G	PG 13.5	27	29	6	50
LPPG16G	PG 16	30	33	6	50
LPPG21G	PG 21	36	39	7	20
LPPG29G	PG 29	46	50	7	20
LPPG36G	PG 36	60	66	8	10
LPPG42G	PG 42	65	73	8	10
LPPG48G	PG 48	70	78	8	5
	METRIC BLACK				
LPM12B	M12x1.5	18	19.5	5	50
LPM16B	M16x1.5	22	24.2	5	50
LPM20B	M20x1.5	26	28.6	6	50
LPM25B	M25x1.5	32	35	6	50
LPM32B	M32x1.5	41	46.1	7	20
LPM40B	M40x1.5	50	55.3	7	10
LPM50B	M50x1.5	60	66.1	8	5
LPM63B	M63x1.5	75	82.5	8	5
	METRIC GRAY				
LPM12G	M12x1.5	18	19.5	5	50
LPM16G	M16x1.5	22	24.2	5	50
LPM20G	M20x1.5	26	28.6	6	50
LPM25G	M25x1.5	32	35	6	50
LPM32G	M32x1.5	41	46.1	7	20
LPM40G	M40x1.5	50	55.3	7	10
LPM50G	M50x1.5	60	66.1	8	5
LPM63G	M63x1.5	75	82.5	8	5

LUTZE TOP-T Fittings NPT

Metal NPT



Characteristics
- Integrated strain relief
- Anti-twist design
- Wide sealing and clamping range
- Easy to install
- Manufactured acc to EN 62444

Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW Cap mm	SW Body mm	D mm	H mm	UL R/L	PU
	NPT									
FMNPT38	NPT 3/8”	0.157-0.315	4-8	11.5	17	19	21.0	25.5	R	5
FMNPT12	NPT 1/2”	0.236-0.472	6-12	13	22	22	24.5	27.5	L	5
FMNPT34	NPT 3/4”	0.512-0.709	13-18	13	30	30	33.0	38.0	L	5
FMNPT10	NPT 1”	0.709-0.984	18-25	13	40	43	48.5	45.5	L	1

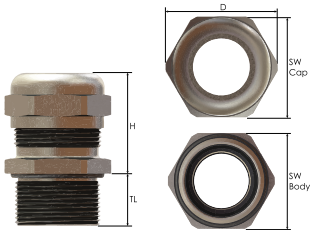
Specifications

Connecting thread	NPT ANSI B1.20.1
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-40°C - +150°C / -40°F - +302°F
Protection class	IP68 EN 60529
Material	
Body	Brass, nickel plated
Seal	CR Chloroprene Rubber
O-ring	NBR

Item Specific Approvals
- UL Recognized (R) or UL Listed (L), as per table
- Type 4X for UL Listed items

Locknuts sold separately.

Metal PG



Characteristics
- Integrated strain relief
- Anti-twist design
- Wide sealing and clamping range
- Easy to install

Specifications

Connecting thread	PG DIN 40430
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-40°C - +150°C / -40°F - +302°F
Protection class	IP68 EN 60529
Material	
Body	Brass, nickel plated
Seal	CR Chloroprene Rubber
O-ring	NBR

Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW Cap mm	SW Body mm	D mm	H mm	UL R/L	PU
	PG									
FMPG7	PG 7	0.118-0.256	3-6.5	6	14	14	15.5	24.0	R	10
FMPG9	PG 9	0.157-0.315	4-8	6	17	17	18.9	25.5	R	10
FMPG11	PG 11	0.197-0.394	5-10	6	20	20	22.0	28.0	R	10
FMPG13	PG 13.5	0.236-0.472	6-12	6.5	22	22	24.5	26.5	L	10
FMPG16	PG 16	0.394-0.551	10-14	6.5	24	24	26.5	30.0	L	5
FMPG21	PG 21	0.512-0.709	13-18	7.2	30	30	33.0	35.0	L	5
FMPG29	PG 29	0.709-0.984	18-25	8	40	40	44.5	40.5	L	5
FMPG36	PG 36	0.866-1.260	22-32	9	50	50	55.5	50.0	L	1
FMPG42	PG 42	1.181-1.496	30-38	12	58	58	64.0	51.0	L	1
FMPG48	PG 48	1.339-1.732	34-44	14	64	64	70.0	54.5	L	1

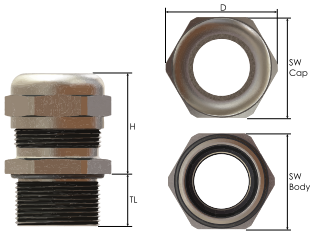
Item Specific Approvals
- UL Recognized (R) or UL Listed (L), as per table
- Type 4X for UL Listed items

Locknuts sold separately.

Specifications are subject to change without prior notice

LUTZE TOP-T Fittings Metric

Metal Metric



Characteristics
- Integrated strain relief
- Anti-twist design
- Wide sealing and clamping range
- Easy to install

Specifications

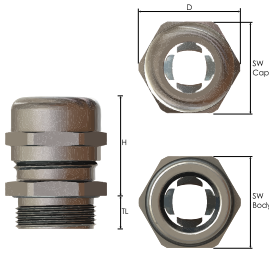
Connecting thread	Metric EN 60423
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-40°C - +150°C / -40°F - +302°F
Protection class	IP68 EN 60529
Material	
Body	Brass, nickel plated
Seal	CR Chloroprene Rubber
O-ring	NBR

Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW Cap mm	SW Body mm	D mm	H mm	UL R/L	PU
	METRIC									
FMM12	M12x1.5	0.118-0.256	3-6.5	6	14	14	15.5	24.0	R	10
FMM16	M16x1.5	0.157-0.315	4-8	7	17	18	20.0	25.5	R	10
FMM20	M20x1.5	0.236-0.472	6-12	8	22	22	24.5	26.5	L	10
FMM25	M25x1.5	0.394-0.551	10-14	8	24	27	30.0	30.0	L	10
FMM32	M32x1.5	0.512-0.709	13-18	9	30	34	37.5	35.0	L	5
FMM40	M40x1.5	0.709-0.984	18-25	9	40	43	48.5	40.5	L	1
FMM50	M50x1.5	0.866-1.260	22-32	9	50	55	61.0	50.0	L	1
FMM63	M63x1.5	1.339-1.732	34-44	14	64	68	75.0	55.0	L	1
	LONG THREAD									
FMM12-L	M12x1.5	0.118-0.256	3-6.5	12	14	14	15.5	24.0	R	10
FMM16-L	M16x1.5	0.157-0.315	4-8	12	17	18	20.0	25.5	R	10
FMM20-L	M20x1.5	0.236-0.472	6-12	12	22	22	24.5	26.5	L	10
FMM25-L	M25x1.5	0.394-0.551	10-14	12	24	27	30.0	30.0	L	10
FMM32-L	M32x1.5	0.512-0.709	13-18	15	30	34	37.5	35.0	L	5
FMM40-L	M40x1.5	0.709-0.984	18-25	15	40	43	48.5	40.5	L	1
FMM50-L	M50x1.5	0.866-1.260	22-32	15	50	55	61.0	50.0	L	1
FMM63-L	M63x1.5	1.339-1.732	34-44	18	64	68	75.0	55.0	L	1

Item Specific Approvals
- UL Recognized (R) or UL Listed (L) as per table
- Type 4X for UL Listed items

Locknuts sold separately.

Metal EMC (Electro Magnetic Compatibility), Quick Installation, Vibration Proof



Characteristics

- Adapts to different size cable shields
- 360° vibration proof shield termination
- Integrated strain relief
- Wide sealing and clamping range
- Updated design for easy installation
- Easy insertion of the cable from either end of the fitting
- Low contact resistance due to large alloy copper contacts
- Manufactured acc to EN 62444

Specifications

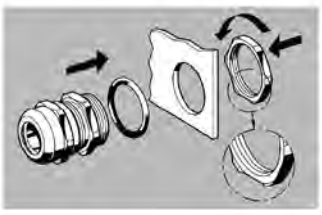
Connecting thread	Metric EN 60423 NPT ANSI B1.20.1
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-40°C - +150°C / -40°F - +302°F
Protection class	IP68 EN 60529
Material	
Body	Brass, nickel plated
Seal	CR Chloroprene Rubber
O-ring	NBR (metric) No O-ring for NPT

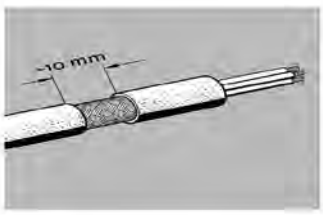
Item Specific Approvals

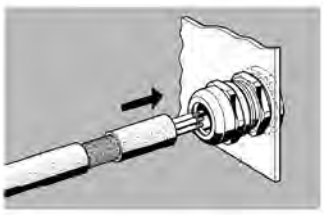
- UL Recognized (R) or UL Listed (L), as per table
- Type 4X UL Listed items

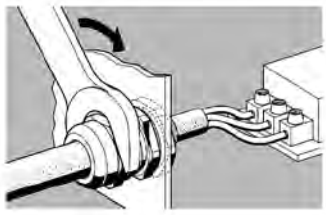
Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW Cap mm	SW Body mm	D mm	H mm	UL R/L	PU
	METRIC									
FMM16-CV	M16x1.5	0.197-0.394	5-10	6	20	20	22.0	35.0	R	5
FMM20-CV	M20x1.5	0.295-0.551	7.5-14	8	24	24	26.8	41.5	L	5
FMM25-CV	M25x1.5	0.394-0.709	10-18	8	30	30	33.0	44.5	L	5
FMM32-CV	M32x1.5	0.630-0.984	16-25	9	40	40	44.5	55.0	L	1
FMM40-CV	M40x1.5	0.866-1.260	22-32	9	50	50	55.5	62.5	L	1
FMM50-CV	M50x1.5	1.181-1.496	30-38	9	58	58	64.0	74.0	L	1
FMM63-CV	M63x1.5	1.457-2.087	37-53	10	75	75	83.0	75.0	L	1
	METRIC LONG THREAD									
FMM16-CVL	M16x1.5	0.197-0.394	5-10	10	20	20	22.0	35.0	R	5
FMM20-CVL	M20x1.5	0.295-0.551	7.5-14	10	24	24	26.8	41.5	L	5
FMM25-CVL	M25x1.5	0.394-0.709	10-18	12	30	30	33.0	44.5	L	5
FMM32-CVL	M32x1.5	0.630-0.984	16-25	15	40	40	44.5	55.0	L	1
FMM40-CVL	M40x1.5	0.866-1.260	22-32	15	50	50	55.5	62.5	L	1
FMM50-CVL	M50x1.5	1.181-1.496	30-38	15	58	58	64.0	74.0	L	1
FMM63-CVL	M63x1.5	1.457-2.087	37-53	15	75	75	83.0	75.0	L	1
	NPT									
FMNPT38-CV	NPT 3/8”	0.197-0.394	5-10	11.5	20	20	22.0	35.0	R	5
FMNPT12-CV	NPT 1/2”	0.295-0.551	7.5-14	15	24	24	26.8	41.5	L	1
FMNPT34-CV	NPT 3/4”	0.394-0.709	10-18	15	30	30	33.0	43.5	L	1
FMNPT10-CV	NPT 1”	0.630-0.984	16-25	20	40	40	44.5	54.0	L	1
FMNPT114-CV	NPT 1 ¼”	0.866-1.260	22-32	20	50	50	55.5	63.0	L	1
FMNPT112-CV	NPT1 ½”	1.181-1.496	30-38	22	58	58	64.0	73.0	L	1
FMNPT20-CV	NPT 2”	1.339-1.732	34-44	22	64	68	75.0	73.0	L	1

Locknuts sold separately.







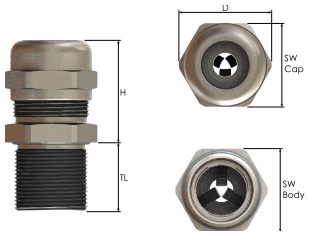


Specifications are subject to change without prior notice

Shield termination fittings with special copper alloy contacts providing excellent electrical properties and easy installation.

LUTZE TOP-T Fittings EMC Metric and NPT

Large Diameter Metal EMC (Electro Magnetic Compatibility), Quick Installation



Characteristics
- Designed for large diameter cables
- Two seal inserts for clamping range adjustment
- Adapts to different size cable shields
- 360° shield termination
- Integrated strain relief
- Wide sealing and clamping range
- Fast and easy to install
- Manufactured acc to EN 62444

Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW Cap mm	SW Body mm	D mm	H mm	UL R/L	PU
	METRIC									
FMM63-CEX	M63x1.5	1.378-1.771	35-45	20	64	68	75.0	45.0	L	1
FMM75-CEX	M75x1.5	1.812-2.440	46-62	20	80	80	89.0	53.0	L	1
FMM90-CEX	M90x1.5	2.363-2.952	60-75	20	95	95	105.0	57.0	L	1
	NPT									
FMNPT2-CEX	NPT 2”	1.378-1.771	35-45	20	64	68	75.0	45.0	L	1
FMNPT212-CEX	NPT 2-1/2”	1.812-2.440	46-62	21	80	80	89.0	56.5	L	1
FMNPT3-CEX	NPT 3"	2.363-2.952	60-75	21	95	95	105.0	65.0	L	1

Specifications

Connecting thread	Metric EN 60423 NPT ANSI B1.20.1
Temperature range	
Permanent	-40°C - +80°C / -40°F - +176°F
Intermittent	-60°C - +80°C / -76°F - +176°F
Protection class	IP68 EN 60529
Material	
Body	Brass, nickel plated
Seal	CR Chloroprene Rubber
O-ring	CR Chloroprene Rubber

Approvals
- UL Listed acc. to UL2225

Locknuts sold separately.

Specifications are subject to change without prior notice

“These fittings are designed to provide strain relief and shield termination for large diameter VFD cables. They offer a wide sealing range with three removeable sealing rings”.

LUTZE FBP Fittings Metric and NPT

Stainless Steel Hygienic Fittings for Food and Beverage Applications

Characteristics
- Designed for the demanding requirements of food, beverage, and drug processing applications
- Made with food contact approved materials in conformance with 21 CFR 177.2600
- Smooth finish prevents microbial build-up
- IP69 high-pressure washdown resistance
- Integrated strain relief
- Wide sealing and clamping range

Specifications

Connecting thread	Metric EN 60423 NPT ANSI B1.20.1
Temperature range	
Permanent	-20°C - +100°C / -4°F - +212°F
Intermittent	-40°C - +150°C / -40°F - +302°F
Protection class	Type 4X UL50E IP69 EN 60529
Material	
Body, cap and inner rings	Stainless steel EN 1.4305 / AISI 303
Clamping insert	POM
Seal	EPDM acc. to 21 CFR 177.2600
Contact spring (EMC style)	Special copper alloy

Part No.	Thread	Clamping Range Ø inches	Clamping Range Ø mm	TL mm	SW Cap mm	SW Body mm	H mm	UL R/L	PU
	METRIC								
FHM12	M12x1.5	0.118-0.255	3-6.5	6	14	7	23.5	R	1
FHM16	M16x1.5	0.196-0.393	5-10	7	18	10	26.5	R	1
FHM20	M20x1.5	0.236-0.472	6-12	8	22	13	29.5	L	1
FHM25	M25x1.5	0.472-0.669	12-17	10	28	17	32.5	L	1
	NPT								
FHNPT14	NPT 1/4"	0.118-0.255	3-6.5	10	18	7	23.5	R	1
FHNPT38	NPT 3/8"	0.196-0.393	5-10	10	22	10	27.5	R	1
FHNPT12	NPT 1/2"	0.236-0.472	6-12	11	28	13	30.5	L	1
FHNPT34	NPT 3/4"	0.472-0.669	12-17	12	35	17	33.5	L	1
	METRIC EMC								
FHM16-C2	M16x1.5	0.196-0.393	5-10	7	18	10	32.5	R	1
FHM20-C2	M20x1.5	0.236-0.472	6-12	8	22	13	35.5	L	1
FHM25-C2	M25x1.5	0.472-0.669	12-17	10	28	17	41.0	L	1
	NPT EMC								
FHNPT38-C2	NPT 3/8"	0.196-0.393	5-10	10	22	10	33	R	1
FHNPT12-C2	NPT 1/2"	0.236-0.472	6-12	11	28	13	36	L	1
FHNPT34-C2	NPT 3/4"	0.472-0.669	12-17	12	35	17	41.5	L	1

EMC Type Fittings
- 360° shield termination
- Adapts to different size cable shields
- Contact spring made of special copper alloy providing low contact resistance

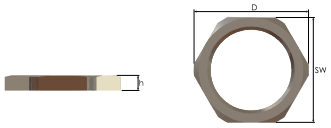
Item Specific Approvals
- UL Recognized (R) or UL Listed (L), as per table

Matching locknut included with hygienic fittings.
*SWB refers to metric hex key sizing

Specifications are subject to change without prior notice

LUTZE TOP-T Locknuts Metal

Metal Locknuts for use with NPT, PG, Metric and EMC Fittings



Characteristics
- Hexagonal locknut for secure tightening of cable fittings and accessories

Specifications

Temperature range	up to +200°C/+392°F
Material	Brass, nickel plated

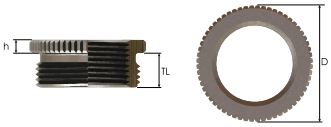
Part No.	For Thread Type	OD - Ø mm	SW mm	H mm	PU
	NPT				
LMNPT38	NPT 3/8”	26.5	24	5	5
LMNPT12	NPT 1/2”	26.5	24	5	5
LMNPT34	NPT 3/4”	37.5	34	6	5
LMNPT10	NPT 1”	46.4	42	6	5
LMNPT1014	NPT 1¼”	57.4	52	7	1
LMNPT1012	NPT 1½”	65.1	60	7	1
LMNPT20	NPT 2”	81.8	74	8	1
LMNPT2012	NPT 2 ½”	89	80	10	1
LMNPT30	NPT 3”	105.5	95	10	1
	PG				
LMPG7	PG 7	16.6	15	2.8	20
LMPG9	PG 9	20	18	2.8	20
LMPG11	PG 11	23.5	21	3	20
LMPG13	PG 13.5	25.5	23	3	20
LMPG16	PG 16	29	26	3	20
LMPG21	PG 21	35.5	32	3.5	20
LMPG29	PG 29	45	41	4	10
LMPG36	PG 36	56	51	5	10
LMPG42	PG 42	66	60	5	5
LMPG48	PG 48	70.5	64	5.5	5
	METRIC				
LMM12	M12x1.5	16.6	15	2.8	20
LMM16	M16x1.5	21	19	3	20
LMM20	M20x1.5	26.5	24	3.5	20
LMM25	M25x1.5	33	30	4	20
LMM32	M32x1.5	39.5	36	5	10
LMM40	M40x1.5	51	46	5	5
LMM50	M50x1.5	66	60	5	1
LMM63	M63x1.5	77	70	6	1
LMM75	M75x1.5	89	80	7	1
LMM90	M90x1.5	112	100	8	1
	EMC - METRIC CUTTING TEETH				
LMM12-C	M12x1.5	16.5	15	3.3	10
LMM16-C	M16x1.5	21	19	3.5	10
LMM20-C	M20x1.5	26.5	24	3.5	10
LMM25-C	M25x1.5	33	30	3.5	10
LMM32-C	M32x1.5	39.5	36	4	5
LMM40-C	M40x1.5	51	46	4.6	5
LMM50-C	M50x1.5	66	60	5.6	1

EMC Metric Locknuts with Cutting Teeth
- For secure tightening of EMC cable fittings
- To cut through paint layers or powder coatings ensuring optimal contact
- Increased vibration resistance

Specifications are subject to change without prior notice

LUTZE TOP-T Fittings Reducer

Metal PG and Metric Reducer



Characteristics
- Reduction of threaded or clearance holes to smaller thread size

Specifications

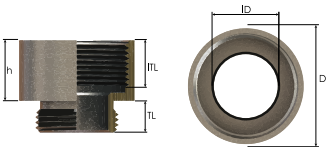
Internal/External thread	PG DIN 40430 Metric EN 60423
Temperature range	up to +200°C/+392°F
Material	Brass, nickel plated

Locknuts sold separately.

Specifications are subject to change without prior notice

Part	Thread G	Thread G1	SW mm	L mm	L1 mm
	PG				
RMPG11-7	PG 11	PG 7	20	9	6
RMPG11-9	PG 11	PG 9	20	9	6
RMPG13-9	PG 13.5	PG 9	22	9	6.5
RMPG13-11	PG 13.5	PG 11	22	9	6.5
RMPG16-9	PG 16	PG 9	24	9.5	6.5
RMPG16-11	PG 16	PG 11	24	9	6
RMPG16-13	PG 16	PG 13.5	24	9	6
RMPG21-11	PG 21	PG 11	30	10	7
RMPG21-13	PG 21	PG 13.5	30	10	7
RMPG21-16	PG 21	PG 16	30	10	7
RMPG29-16	PG 29	PG 16	39	11.5	8
RMPG29-21	PG 29	PG 21	39	11.4	8
RMPG36-21	PG 36	PG 21	50	12.4	9
RMPG36-29	PG 36	PG 29	50	12.5	9.1
RMPG42-36	PG 42	PG 36	57	14.1	10
	METRIC				
RMM16-12	M16x1.5	M12x1.5	18	9.5	6.5
RMM20-12	M20x1.5	M12x1.5	22	9.5	6.5
RMM20-16	M20x1.5	M16x1.5	22	9	6.5
RMM25-16	M25x1.5	M16x1.5	28	9	6.5
RMM25-20	M25x1.5	M20x1.5	30	11.5	8
RMM32-20	M32x1.5	M20x1.5	39	11.5	8
RMM32-25	M32x1.5	M25x1.5	39	11.5	8
RMM40-25	M40x1.5	M25x1.5	50	12.5	9
RMM40-32	M40x1.5	M32x1.5	50	12.5	9
RMM50-32	M50x1.5	M32x1.5	64	14	10
RMM50-40	M50x1.5	M40x1.5	64	14	10

Metal PG and Metric Enlargers



Characteristics

- Reduction of threaded or clearance holes to larger thread size

Specifications

Internal/External thread	PG DIN 40430 Metric EN 60423
Temperature range	up to +200°C/+392°F
Material	Brass, nickel plated

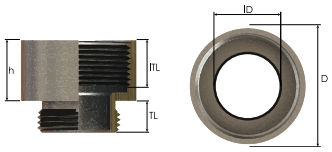
Locknuts sold separately.

Specifications are subject to change without prior notice

Part No.	Thread A	Thread B	L mm	H mm	Da mm	Di mm
	PG					
EMPG7-9	PG 7	PG 9	5	15	17	8
EMPG9-11	PG 7	PG 11	6	16.5	20	11.7
EMPG11-13	PG 11	PG 13.5	6	17.5	22	13.8
EMPG13-16	PG 13.5	PG 16	6.5	17	24	16.4
EMPG16-21	PG 16	PG 21	6.5	18.5	29.7	17.6
EMPG21-29	PG 21	PG 29	7	23	39	24
EMPG29-36	PG 29	PG 36	8	27.5	50	32
EMPG36-42	PG 36	PG 42	9	31	57	38
	METRIC					
EMM12-16	M12x1.5	M16x1.5	6	15	18	8
EMM16-20	M16x1.5	M20x1.5	6	17.6	22	12
EMM20-25	M20x1.5	M25x1.5	7	17.5	27	16
EMM25-32	M25x1.5	M32x1.5	8	19.5	34	20.5
EMM32-40	M32x1.5	M40x1.5	8	22.5	42	26

LUTZE TOP-T Fittings Adapter

Metric to NPT Adapters



Adapter METRIC to NPT Characteristics

- Adapter from metric to NPT thread

Specifications

External thread	Metric EN 60423
Internal thread	NPT ANSI B1.20.1
Temperature range	up to +200°C/+392°F
Material	Brass, nickel plated

Part No.	Thread A	Thread B	L mm	H mm	Da mm	Di mm
	METRIC TO NPT					
AMM16-12	M16x1.5	NPT 1/2”	6.5	24.5	24	11
AMM20-12	M20x1.5	NPT 1/2”	8	26	24	15
AMM25-34	M25x1.5	NPT 3/4”	8	26	30	18
AMM32-34	M32x1.5	NPT 3/4”	8	26	35	23
AMM32-10	M32x1.5	NPT 1”	8	29	37	27

Locknut sold separately

TPE Multihole Insert for use with NPT, PG, and Metric Fittings

Characteristics

- Multihole insert for two or more cables in one fitting
- Replaces the existing rubber insert to offer multiple entry points
- Suitable for plastic and metal fittings
- Solid inserts can be drilled to suit any application

Specifications

Material TPE

Specifications are subject to change without prior notice

Part No.	Replaces Standard Seal min-max mm	Outer OD mm	Number of Cables x OD mm	Height H mm
MHA0204	5-10	13.7	2 x 4.0	10.4
MHA02045	5-10	13.7	2 x 4.5	10.4
MHB0206	6-12	16	2 x 6.0	8.4
MHB0305	6-12	16	3 x 5.0	8.4
MHC0204	10-14	18	2 x 4.0	9.3
MHC0206	10-14	18	2 x 6.0	9.3
MHC0304	10-14	18	3 x 4.0	9.3
MHC0306	10-14	18	3 x 6.0	9.3
MHC0405	10-14	18	4 x 5.0	9.3
MHC0504	10-14	18	5 x 4.0	9.3
MHD0207	13-18	22.9	2 x 7.0	12.2
MHD0208	13-18	22.9	2 x 8.0	12.2
MHD0209	13-18	22.9	2 x 9.0	12.2
MHD0308	13-18	22.9	3 x 8.0	12.2
MHD0407	13-18	22.9	4 x 7.0	12.2
MHE05085	18-25	30.4	5 x 8.5	14

Light Duty Modular Cable Entry System CABLEFIX®

Characteristics

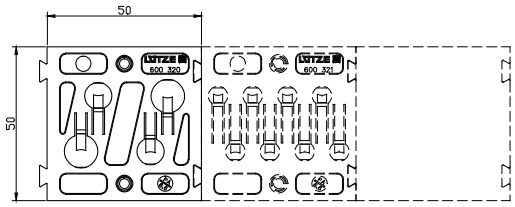
- Cables push easily into position, locks itself and it can no longer be pulled out unless the clamp is released
- Strain relief in one direction
- Integrated seal for ingress protection
- Individual cables can be easily loosened and replaced for troubleshooting, maintenance or retrofitting
- Mix & Match: interlocking seal allows for any combination of the three different CABLEFIX® versions to custom fit it to your application
- Blanking plugs included to seal unused holes

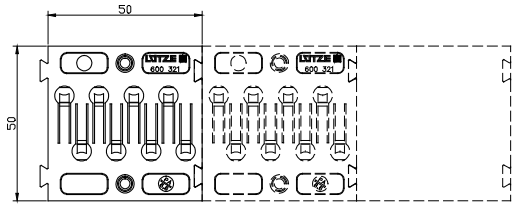
Specifications

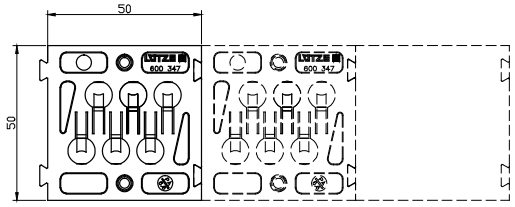
Material	Polyamide PA
Temperature range	-30°C - +70°C / 22°F - +212°F
Halogen free	Yes
Burning behavior	Polyamide plate according to UL 94 V2
Silicone free	Yes
Enclosure wall thickness	maximum 3 mm
Protection class	IP55 EN 60529
Seal	NBR60 oil resistant

Specifications are subject to change without prior notice

Part No.	Type	Dimensions WxHxD mm	Cut out W x H mm	Number of Cables x Cable OD - Ø mm
600320	1xB/V	50.0 x 50.0 x 10.0	46 x 46	2 x 6.1-8.8 + 2 x 7.8-10.7
600321	1xS/A	50.0 x 50.0 x 10.0	46 x 46	8 x 3.8-6.3
600347	1xST	50.0 x 50.0 x 10.0	46 x 46	6 x 6.3-8.9







CABLEFIX® X Cable Entry System

Type 4X ✓ Type 12/13 ✓ RoHS ✓

Characteristics

- Cables install easily by pushing the end through the seal from the front
- Strain relief in one direction
- Saves over 50% installation space and 80% installation time vs. using individual cable glands
- Easy to install: can be bolt mounted or snapped directly into enclosures with a 1.5mm wall thickness
- Integrated seals offer excellent ingress protection
- Entry points are sealed by default, eliminating the need for blanking plugs
- Standard cutout makes cabinet preparation easy and is compatible with common punches
- Mounting hardware included with all frames

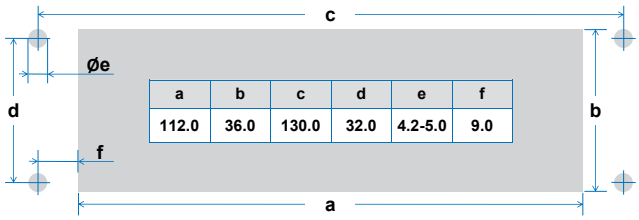
Specifications

Frame material	Polyamide (PA) with glass fiber reinforcement
Seal material	Butyl (IIR) rubber
Spacer	Chloroprene
Inner membrane	Polyurethane
Temperature range	-40°C to +80°C -40°F to +176°F
Burning behavior	HB according to UL 94
Silicone free	Yes
Protection class	UL Type 4X* UL Type 12 UL Type 13 IP65
Gasket	Polyurethane
Frame color	Black RAL 9005

*Note: UL Type 4x applies to cables with a diameter of 5.0mm and larger.

Part No.	Number of Entry Points	Dimensions WxHxD mm	Cutout W x H mm	Number of Cables x Cable OD - Ø mm
Bolt-Mounted Design (for all enclosures)				
606550	12	148.0 x 60.0 x 13.5	112 x 36	12 x 5.0-13.0
606551	23	148.0 x 60.0 x 13.5	112 x 36	23 x 4.0-8.5
606554	22	148.0 x 60.0 x 13.5	112 x 36	16 x 3.0-6.5 4 x 5.0-9.2 2 x 8.0-12.5
Snap-in Design (for enclosures with 1.5mm wall thickness)				
606561	12	148.0 x 60.0 x 13.5	112 x 36	12 x 5.0-13.0
606562	23	148.0 x 60.0 x 13.5	112 x 36	23 x 4.0-8.5

Enclosure Cutout Dimensions



a	b	c	d	e	f
112.0	36.0	130.0	32.0	4.2-5.0	9.0

Specifications are subject to change without prior notice

CABLEFIX® One Modular Cable Entry System

Type 4X ✓ Type 12/13 ✓ RoHS ✓

Characteristics

- Suitable for cables with or without pre-installed connectors
- Kits include frame, hardware, and the layered seals needed to cover entire clamping range specified for each entry point (2 seals per entry point)
- Kits simplify the specifying and ordering process by eliminating the need to order individual seals and frame components
- Easy to install, bolt mounted to a 112 x 46mm cutout
- Individual cables can be easily removed and replaced for troubleshooting, maintenance or retrofitting
- Modular multilayer seals accommodate a wide range of cable diameters
- Strong integrated strain relief
- Unused seals are closed by default, eliminating the need for blanking plugs
- Fiberglass reinforced frame withstands harsh industrial environments
- Standard cutout makes cabinet preparation easy and is compatible with common punches
- Mounting hardware included with all frames

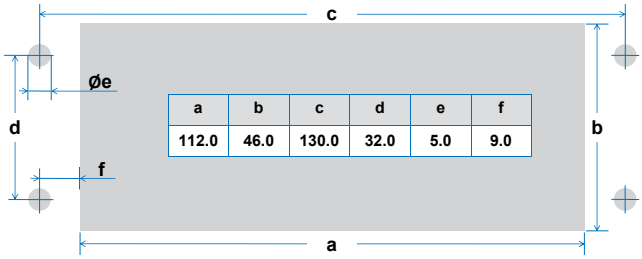
CABLEFIX® One Kits (include frame, hardware, and seals)

Part No.	Frame Type	Dimensions WxHxD mm	Cutout W x H mm	Number of Cables x Cable OD – Ø mm
606500	4	156.5 x 75.2 x 27.5	112 x 46	2 x 5.0-15.0 2 x 15.0-29.0
606501	7	156.5 x 75.2 x 27.5	112 x 46	6 x 5.0-15.0 1 x 15.0-29.0
606502	10	156.5 x 75.2 x 27.5	112 x 46	10 x 5.0-15.0

Specifications

Frame material	Polyamide (PA) with glass fiber reinforcement
Seal material	Chloroprene rubber (CR)
Temperature range	-40°C to +80°C -40°F to +176°F
Burning behavior	HB according to UL 94
Silicone free	Yes
Protection class	UL Type 4X UL Type 12 UL Type 13 IP66
Strain relief	Per EN 62444
Gasket	Polyurethane
Frame color	Black RAL 9005

Enclosure Cutout Dimensions



a	b	c	d	e	f
112.0	46.0	130.0	32.0	5.0	9.0

The maximum inside dimension of the CABLEFIX® One frame is 110mm x 41mm. At least one end of the installed cable must be able to pass through this opening.

Specifications are subject to change without prior notice

Modular Strain Relief System with Plastic or Aluminum Frame for Cable Assemblies

Characteristics

- Suitable for cables with or without pre-installed connectors
- Top loading frame allows insertion of cables with large connectors
- Modular system to accommodate a wide variety of cable diameter ranges
- Unused seals can be sealed with optional blanking plugs

Frame Specifications

Frame material	Polished aluminum or 30% fiberglass reinforced Polyamide 66 (GF30)
Protection class	IP65 EN 60529

Small (VK) Insert Specifications

Material	TPE
Temperature range	-40°C - +100°C/ -40°F - +212°F
Resistance	UV, ozone, oils and fuels, acids and dyes, solvents and salt water

Large (VG) Insert Specifications

Material	TPE
Temperature range	-40°C - +100°C/ -40°F - +212°F
Resistance	UV, ozone, oils and fuels, acids and dyes, solvents and salt water

Blanking Plug Specifications

Material	PA6 (GF15) Gray
Temperature	-40°C - +100°C/ -40°F - +212°F
Resistance	UV, ozone, oils and fuels, acids and dyes, solvents and salt water

Specifications are subject to change without prior notice

Part No.	Frame Type	Dimensions WxHxD mm	No. of Small VK Inserts	No. of Large VG Inserts
	PLASTIC			
606052	KKLR1	136 x 71 x 30	4	2
606053	KKLR2	164 x 71 x 30	6	3
	ALUMINUM			
606001	AKLR1	108 x 68 x 30	4	2
606002	AKLR2	148 x 68 x 30	6	3
606005	AKLR5	188 x 78 x 30	8	4
606007	AKLR7	188 x 118 x 30	16	8

Part No.	Type Small VK	Clamping Range Ø mm	No of Holes
606150	VK0	SOLID	0
606151	VK4	4 – 4.5	14
606152	VK5	4.5 – 5.5	8
606153	VK6	5.5 – 6.5	8
606154	VK7	6.5 – 7.5	5
606155	VK8	7.5 – 8.5	5
606156	VK9	8.5 – 9.5	3
606157	VK10	9.5 – 10.5	3
606158	VK12	10.5 – 12.5	2
606159	VK14	12.5 – 14.5	2
606160	VK16	14.5 – 16.5	2

Part No.	Type Large VG	Clamping Range Ø mm	No of Holes
606200	VG0	SOLID	0
606201	VG18	16.5 – 18.5	2
606202	VG20	18.5 – 20.5	1
606203	VG22	20.5 – 22.5	1
606204	VG24	22.5 – 24.5	1
606205	VG26	24.5 – 26.5	1
606206	VG28	26.5 – 28.5	1
606207	VG30	28.5 – 30.5	1
606208	VG32	30.5 – 32.5	1
606209	VG34	32.5 – 34.5	1

Part No.	Fits Insert Part No.	Type	OD - Ø mm	Length mm
606250	606151	BL4	4	30
606251	606152	BL5	5	30
606252	606153	BL6	6	30
606253	606154	BL7	7	30
606254	606155	BL8	8	30
606255	606156	BL9	9	30
606256	606157	BL10	10	30
606257	606158	BL12	12	30
606258	606159	BL14	14	30
606259	606160	BL16	16	30
606260	606201	BL18	18	30

Assembly of Modular Strain Relief System

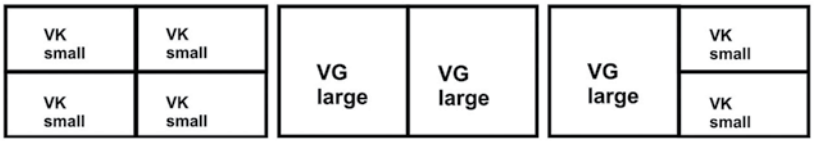
1. Choose aluminum or plastic frame.

The CABLEFIX® Vario features outstanding material characteristics for harsh industrial environments and a high sealing protection of IP65. Every frame ships with an included drill pattern for proper mounting to the cabinet.
The plastic frames are made of reinforced polyamide 66 with brass support. The aluminum version is made entirely of solid polished aluminum.
CABLEFIX® Vario offers strain relief options for cable ranges from 4.5 to 34.5mm in diameter. The versatile system is ideal for installations and retrofitting, and offers proper strain relief for already connectorized cables. This is a great advantage over conventional solutions with standard cable fittings.

2. Choose appropriate inserts for the selected frame.

Example:
606052 can hold either

- 4 inserts type VK or
- 2 inserts type VG
- 2 VK inserts replace 1 VG insert



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- The tongue and groove design makes combining different inserts quick and easy.
- The slotted design allows easy installation by sliding the assembled cables in from the side.

3. Select appropriately sized blanking plugs for unused holes.

Once all unused holes are plugged, the system provides a protection rating IP65. The rubber components do not require the use of grease, which is advantageous over other similar systems.

The advantages at a glance:

- Minimum space requirement
- Simple insertion of rubber inserts due to tongue and groove design
- Very versatile
- Allows future expansion
- Ideal for retrofitting of existing cabinets

Notes

6. Network Connectivity
Industrial Connectors and Panel Pass Through Devices

LUTZE AUTOMATION
an Amphenol Company

Panel Pass Through Devices

USB 3.0 “SuperSpeed” Panel Pass Through

Application
- Industrial USB connectivity

Characteristics
- Available with or without cord
- 8 different cord lengths
- Female / Female 1:1 or Female / Male 1:1
- Backwards compatible with USB 2.0
- Standard 22.5 mm cutout
- Easy to install

Technical Data

Temperature range	-25°C - +70°C -13°F - +158°F
Protection class	Type 2, 3R, 4, 4X, 12, 13, IP65 with cap closed, IP20 in inserted operation
Shielding	yes
Transmission performance	5 Gigabit/sec
Contact material	CuSN, gold-plated
Insulation resistance	>100 MΩ (490112)
with cord	>100 MΩ x km
Rated current	900 mA per contact
Cable OD	6.1 mm
Bending radius min	6 x cable OD
Wall mount thickness	1 – 5 mm
Dimensions (490112)	29.5 x 42.5 mm (WxD)
Dimensions (490113)	29.5 x 45 mm (WxD)
Approvals	UL

Part No.	Description	Cord Length
490112	USB 3.0 A/A F/F	N/A
490113.0030	USB 3.0 A/A F/M	0.3 m / 11.8”
490113.0060	USB 3.0 A/A F/M	0.6 m / 23.6”
490113.0080	USB 3.0 A/A F/M	0.8 m / 31.5”
490113.0100	USB 3.0 A/A F/M	1.0 m / 39.4”
490113.0150	USB 3.0 A/A F/M	1.5 m / 59.0”
490113.0200	USB 3.0 A/A F/M	2.0 m / 78.7”
490113.0300	USB 3.0 A/A F/M	3.0 m / 118.0”
490113.0500	USB 3.0 A/A F/M	5.0 m / 196.8”

RJ45 Panel Pass Through

Application
- Industrial Ethernet connectivity
- Cat5e or Cat6$_A$ available

Characteristics
- Female / Female 1:1
- Gold-plated 8 pin (4 pair) connection
- Standard 22.5 mm cutout
- Easy to install

Technical Data

Temperature range	-25°C - +70°C -13°F - +158°F
Protection class	Type 2, 3R, 4, 4X, 12, 13, IP65 with cap closed, IP20 in inserted operation
Shielding	yes
Contact material	CuSN, gold-plated
Insulation resistance	>100 MΩ
Rated current	1.5A
Wall mount thickness	1 – 5 mm
Dimensions	29.5 x 29 mm (WxD)
Approvals	UL

Part No.	Description
492075	RJ45 F/F 8/8 Cat5e
492076	RJ45 F/F 8/8 Cat6$_A$

PANELCON IP69 Panel Pass Through Devices

Application
- Industrial USB connectivity

Characteristics
- Available with or without cord
- 8 different cord lengths
- Female / Female 1:1 or Female / Male 1:1
- Backwards compatible with USB 2.0
- Standard 22.5 mm cutout
- Easy to install

Technical Data

Temperature range	-25°C - +70°C -13°F - +158°F
Protection class	IP69 with cap closed, IP20 in inserted operation
Shielding	yes
Transmission performance	5 Gigabit/sec
Contact material	CuSN, gold-plated
Insulation resistance	>100 MΩ (490112)
with cord	>100 MΩ x km
Rated current	900 mA per contact
Cable OD	6.1 mm
Bending radius min	6 x cable OD
Wall mount thickness	1 – 5 mm
Dimensions (490218)	30 x 36.5 x 44.5 mm (WxHxD)
Dimensions (490219)	30 x 49 x 44.5 mm (WxHxD)
Approvals	UL

USB 3.0 “SuperSpeed” Panel Pass Through

Part No.	Description	Cord Length
490218	USB 3.0 A/A F/F	N/A
490219.0030	USB 3.0 A/A F/M	0.3 m / 11.8”
490219.0060	USB 3.0 A/A F/M	0.6 m / 23.6”
490219.0100	USB 3.0 A/A F/M	1.0 m / 39.4”
490219.0150	USB 3.0 A/A F/M	1.5 m / 59.0”
490219.0200	USB 3.0 A/A F/M	2.0 m / 78.7”
490219.0500	USB 3.0 A/A F/M	5.0 m / 196.8”

Application
- Industrial Ethernet connectivity
- Cat5e or Cat6$_A$ available

Characteristics
- Female / Female 1:1
- Gold-plated 8 pin (4 pair) connection
- Standard 22.5 mm cutout
- Easy to install

Technical Data

Temperature range	-25°C - +70°C -13°F - +158°F
Protection class	IP69 with cap closed, IP20 in inserted operation
Shielding	yes
Contact material	CuSN, gold-plated
Insulation resistance	>100 MΩ
Rated current	1.5A
Wall mount thickness	1 – 5 mm
Dimensions	30 x 35 x 44.5 mm (WxHxD)
Approvals	UL

RJ45 Panel Pass Through

Part No.	Description
492077	RJ45 F/F 8/8 Cat6$_A$
492078	RJ45 F/F 8/8 Cat5e

RJ45 Jack Module for DIN Rail Mounting

Application

- Industrial Ethernet Cat6$_A$ connectivity
- Data transmission between the field and control cabinet
- Power over Ethernet Plus compatible

Characteristics

- Pluggable Ethernet or Profinet connections
- Field wireable connector included
- IDC - Insulation Displacement Connector
- Min. 750 insertion cycles
- Narrow housing width (18mm)
- No special tools required
- Protective port door
- Wide AWG conductor range
- Easy to install

Cat6$_A$ Jack Module with Field Wireable Connector Insert

Part No.	Description	Conductor Gauge	Color Code
490209	RJ45 – 8 pole Cat6$_A$	AWG 27/7 to AWG 22/7	T568B
490238	RJ45 – 8 pole Cat6$_A$	AWG 27/7 to AWG 22/7	T568A

Technical Data

Temperature range	-40°C - +70°C -40°F - +185°C
Protection class	IP20
Transmission performance	10 Gigabit/sec
Insulation resistance	>500 MΩ
Rated current	Max 1.0A per contact
Shielding	360°
Contact material	CuSn, gold-plated
Conductor size	AWG 27-22
Cable OD	5.5 – 9 mm
Dimensions	18.0 × 70.5 × 67.5mm (WxHxD)
Approvals	UL

Specifications are subject to change without prior notice

Field Wireable Industrial Network RJ45 Connectors

Application
- Industrial Ethernet Cat6$_A$ connectivity
- Power over Ethernet

Characteristics
- IDC - Insulation Displacement Connector
- Cable entry: straight or 90°angled
- Zinc die-cast housing
- Quick connect technology
- Field wireable
- Easy to install

Technical Data

Temperature range	-40°C - +85°C -40°F - +185°F
Protection class	IP20
Transmission performance	10 Gigabit/sec
Rated current	Max 1.0A per contact
Insulation resistance	>500 MΩ
Shielding	360º
Contact material	Spring steel 0.8 µm gold-plated
Conductor size	AWG 27-22
Cable OD	5.5 – 10 mm
Approvals	UL
Item specific certification	490151 CC-link IE Field

Specifications are subject to change without prior notice

RJ45 Plug IDC Industrial Connector Straight

Part No.	Description	Cable Cross section	Color Code
490174	RJ45 – 8 pole Cat6$_A$	Solid 24-22/1 Stranded 24-22/7,19	T568B
490175	RJ45 – 8 pole Cat6$_A$	Solid 24-22/1 Stranded 24-22/7,19	T568A
490176	RJ45 – 8 pole Cat6$_A$	Solid 26-24/1 Stranded 27-24/7, 26/19	T568B
490177	RJ45 – 4 pole Cat6$_A$	Solid 24-22/1 Stranded 24-22/7, 19	Profinet

RJ45 Plug IDC Industrial Connector 90º Angled

Part No.	Description	Cable Cross section	Color Code
490151	RJ45 – 8 pole Cat6$_A$	Solid 24-22/1 Stranded 24-22/7,19	T568B
490152	RJ45 – 8 pole Cat6$_A$	Solid 24-22/1 Stranded 24-22/7,19	T568A
490153	RJ45 – 8 pole Cat6$_A$	Solid 26-24/1 Stranded 27-24/7, 26/19	T568B
490178	RJ45 – 4 pole Cat6$_A$	Solid 24-22/1 Stranded 24-22/7, 19	Profinet

Field Wireable M12 Connectors with Push-In Technology

Application
- Actuator sensor connections
- Plant floor connectivity
- I/O connections

Characteristics
- Spring clamp push-in termination
- Solid conductors and ferrules can be terminated by simply pushing into the connector, with no tools required
- Stranded conductors are easily terminated by opening the color-coded tabs and inserting the wire
- Straight or 90° angled design
- Zinc die-cast and plastic housing
- Fast and easy connection
- Suitable for unshielded cables

Technical Data

Rated voltage	AC/DC 24V
Max voltage	4 Pole: 250V 5 Pole: 125V
Temperature range	-40°C - +85°C -40°F - +185°F
Protection class	IP65, IP67 inserted and tightened
Rated current	4A
Insulation resistance	>100 MΩ
Contact material	CuSn, gold-plated
Conductor size	AWG26-AWG18 with ferrule: AWG28-AWG20
Cable OD	4 - 8 mm
Approvals	cULus

M12 Straight, Unshielded

Part No.	Description	Coding	Poles
490190	M12 male straight	A	4
490191	M12 male straight	A	5
490192	M12 female straight	A	4
490193	M12 female straight	A	5

M12 90° Angled, Unshielded

Part No.	Description	Coding	Poles
490194	M12 male angled	A	4
490195	M12 male angled	A	5
490196	M12 female angled	A	4
490197	M12 female angled	A	5

Stranded conductors are easily terminated without tools by opening the tabs and inserting the wire:

Field Wireable M12 Connectors with Push-In Technology

Application

- Actuator sensor connections
- Field bus connections
- Industrial Ethernet connections
- Plant floor networking
- I/O connections

Characteristics

- Spring clamp push-in termination
- Solid conductors and ferrules can be terminated by simply pushing into the connector, with no tools required
- Stranded conductors are easily terminated by opening the color-coded tabs and inserting the wire
- Straight or 90° angled design
- Zinc die-cast housing
- Fast and easy connection
- Suitable for unshielded and shielded cables

Technical Data

Rated Voltage	AC/DC 24V
Max Voltage	4 Pole: 250V 5 Pole: 125V
Temperature range	-40°C - +85°C -40°F - +185°F
Protection class	IP65, IP67 inserted and tightened
Rated current	4A
Shielding	360°
Insulation resistance	>100 MΩ
Contact material	CuSn, gold-plated
Conductor size	AWG26-AWG18 with ferrule: AWG28-AWG20
Cable OD	4 - 8 mm
Approvals	cULus
Item specific applications	B-coded: PROFIBUS D-coded: PROFINET Cat5e

Specifications are subject to change without prior notice

M12 Straight, Shielded

Part No.	Description	Coding	Poles
490200	M12 male straight	A	5
490201	M12 female straight	A	5
490210	M12 male straight	B	2
490211	M12 female straight	B	2
490212	M12 male straight	D	4
490213	M12 female straight	D	4

M12 90° Angled, Shielded

Part No.	Description	Coding	Poles
490202	M12 male angled	A	5
490203	M12 female angled	A	5
490214	M12 male angled	D	4
490215	M12 female angled	D	4

7. Technical Overview

LUTZE SILFLEX®

LUTZE SILFLEX® - The Flexible Cable for Harsh Industrial Environments

LUTZE SILFLEX® cables are suitable for stationary and flexible applications without continuous linear movement (not recommended for drag chains) and allow easy installation in the field.

LUTZE SILFLEX® cables are available in control and power cable configurations.

LUTZE SILFLEX® cables are flexible for easy routing to the machine and are designed to withstand the exposure to various harsh industrial environments.

LUTZE SILFLEX® cables can be used in machine tools, machine and plant construction, industrial HVAC technology, assembly and production lines as well as many other industrial applications.

LUTZE SILFLEX® cables are silicone free and are approved by many automotive manufacturing plants.

LUTZE MOTIONFLEX® – One Cable for Many Applications

LUTZE MOTIONFLEX® cables are suitable for moderate drag chain applications as well as motion applications with repetitive movement, flexing and torsional stress.

LUTZE MOTIONFLEX® cables can be used in automation technology, material handling, conveyer technology, and industrial machinery.

LUTZE MOTIONFLEX® cables provide a high quality TPE jacket for resistance to many physical and chemical environmental hazards.

LUTZE MOTIONFLEX® cables carry multiple approvals for use in facility wiring, cable tray, on-machine, and in-cabinet. In addition, they are UL listed for machine and field wiring.

LÜTZE SUPERFLEX®
connected

LUTZE SUPERFLEX® sets Industry Standards: Longevity, Reliability, Flexibility

LUTZE offers a variety of high flexing cables specifically designed for use in continuous motion applications such as drag chains.

LUTZE SUPERFLEX® and LUTZE SUPERFLEX® Plus cables include high flexing control and motor supply cables, as well as electronic and network cables. LUTZE SUPERFLEX® cables are compatible with all major drag chain brands.

LUTZE SUPERFLEX® PVC is designed for moderate to higher performance flexing in short to medium length drag chains. LUTZE SUPERFLEX® PVC is offered with PVC or High Glide TPE insulation and with specially formulated PVC jacket.

LUTZE SUPERFLEX® Plus PUR is designed for high performance flexing or longer drag chains. LUTZE SUPERFLEX® Plus PUR cables are manufactured with premium materials such as High Glide TPE insulation and PUR jackets for high performance applications in modern high speed machine tools.

All high flexing cables require special handling and installation techniques which are different from those of standard flexible control cables. To ensure the longest possible life span for your cable, it is important to follow installation procedures precisely.

LUTZE MOTIONFLEX® Linear and Torsional Flexing Cable Cycle Ratings

Modern day automation requires the use of specially designed cables, constructed for various motion profiles. The lifetime of cables in automation environments, highly depends on the mechanical parameters of the application, but also on proper handling and installation of the cable.

Cable Type	Traveling distances	Bending Radius	Speed	Acceleration	Cycles
LUTZE MOTIONFLEX® TRAY-ER TPE					
Unshielded & Shielded cables with special PVC/Nylon Insulation, TPE jackets	> 3 ft / 1m	> 10 Ø	< 5 m/s	< 10 m/s²	5,000,000
LUTZE MOTIONFLEX® M (C) TPE					
Unshielded & Shielded cables with XLPE Insulation, TPE jackets	> 3 ft / 1m	> 10 Ø	< 5 m/s	< 10 m/s²	5,000,000
LUTZE MOTIONFLEX® ETHERNET (C) TPE					
Shielded cables with special HDPE Insulation, TPE jackets	> 3 ft / 1m	> 20 Ø	< 5 m/s	< 10 m/s²	10,000,000
	> 3 ft / 1m	> 10 Ø	< 5 m/s	< 10 m/s²	1,000,000

LUTZE MOTIONFLEX® Torsional Flexing

Cable Type	Cable length	Torsion angle	Speed	RPM	Cycles
LUTZE MOTIONFLEX® TRAY-ER TPE					
Shielded cables with special PVC/Nylon Insulation, TPE jackets	> 3 ft / 1m	≤ 120°	< 1 m/s	> 50	2,000,000
Unshielded cables with special PVC/Nylon Insulation, TPE jackets	> 3 ft / 1m	≤ 180°	< 1 m/s	> 50	2,000,000
LUTZE MOTIONFLEX® M (C) TPE					
Shielded cables with special XLPE Insulation, TPE jackets	> 3 ft / 1m	≤ 120°	< 1 m/s	> 50	2,000,000
LUTZE MOTIONFLEX® ETHERNET (C) TPE					
Shielded cables with special HDPE Insulation, TPE jackets	> 3 ft / 1m	≤ 270°	< 1 m/s	> 50	3,000,000

The data in this table shows actual application parameters and accomplished cycles in independent tests. Flexing cycle performance can only be compared by looking at all the data. A rating of “millions of operations” is meaningless if the distance, speed and bend radius is unknown.

LUTZE SUPERFLEX® High Flexing Cable Cycle Ratings

The demanding mechanical requirements in drag chains require the use of specially designed cables, constructed for continuous flexing. The lifetime of cables in drag chains highly depends on the mechanical parameters of the application, but also on proper handling and installation of the cable.

Cable Type	Traveling distances	Bending Radius	Speed	Acceleration	Cycles
LUTZE SUPERFLEX® PLUS PUR					
Unshielded cables with special TPE or High Glide Insulation, PUR or TPE jackets	< 16 ft / 5 m	> 10 Ø	< 3 m/s	< 5 m/s²	20,000,000
	< 67 ft / 20 m	> 7 Ø	< 5 m/s	< 10 m/s²	10,000,000
	< 328 ft / 100 m	> 7 Ø	< 5 m/s	< 10 m/s²	2,000,000
LUTZE SUPERFLEX® PLUS (C) PUR					
Shielded cables with special TPE or High Glide Insulation, special sub-jackets, and PUR or TPE jackets	< 16 ft / 5 m	> 12 Ø	< 3 m/s	< 5 m/s²	20,000,000
	< 67 ft / 20 m	> 10 Ø	< 5 m/s	< 10 m/s²	10,000,000
	< 328 ft / 100 m	> 10 Ø	< 5 m/s	< 10 m/s²	2,000,000
LUTZE SUPERFLEX® PVC					
Unshielded cables with special TPE or High Glide Insulation, PVC and Alloy jackets e.g. A148 series	< 16 ft / 5 m	> 12 Ø	< 3 m/s	< 5 m/s²	10,000,000
	< 49 ft / 15 m	> 10 Ø	< 5 m/s	< 10 m/s²	5,000,000
LUTZE SUPERFLEX® PVC (C)					
Shielded cables with special TPE or High Glide Insulation, fleece wrap or sub-jackets PVC and Alloy jackets e.g. A149 series	< 16 ft / 5 m	> 15 Ø	< 3 m/s	< 5 m/s²	10,000,000
	< 49 ft / 15 m	> 12 Ø	< 5 m/s	< 10 m/s²	5,000,000

The data in this table shows actual application parameters and accomplished cycles in independent tests. Flexing cycle performance can only be compared by looking at all the data. A rating of “millions of operations” is meaningless if the distance, speed and bend radius is unknown.

LUTZE SUPERFLEX® Plus M (C) PUR UL Servo 0,6/1 kV, per SIEMENS®* standard

acc. to SIEMENS MOTION-CONNECT 800PLUS*

Traveling distances	Bending Radius	Speed	Acceleration
< 10 ft / 3 m	> 10 Ø	< 5 m/s	< 50 m/s²
< 16 ft / 5 m	> 10 Ø	< 5 m/s	< 30 m/s²
< 32 ft / 10 m	> 10 Ø	< 5 m/s	< 15 m/s²
< 49 ft / 15 m	> 10 Ø	< 5 m/s	< 10 m/s²
< 164 ft / 50 m	> 10 Ø	< 5 m/s	< 5 m/s²

*registered trademark not associated with LUTZE

Handling & Installation LUTZE SUPERFLEX® – Quick Overview

1. Selecting Cables for Continuous Motion Applications in Drag Chains

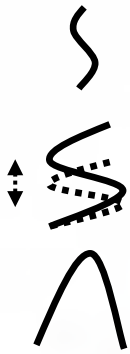
We recommend special high flexing cables such as LUTZE SUPERFLEX® cables, for use in C-tracks to ensure long life times:

- LUTZE SUPERFLEX® cable is proven to be compatible with all major brands of drag chains.
- LUTZE SUPERFLEX® PVC is designed for moderate flexing in short to medium length drag chains.
- LUTZE SUPERFLEX® Plus PUR is designed for high performance flexing or longer drag chains.

High Flexing Cables such as LUTZE SUPERFLEX® cables are different from standard flexible cables:

Standard Flexible Cables – LUTZE SILFLEX®

- Low number of strands per conductor
- longer pitch layering
- designed as a pliable cable for easy routing and installation



Static

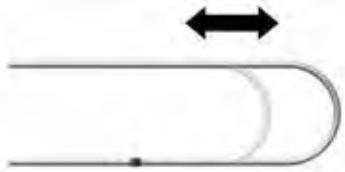
Periodical Free Flexing

Bend & Route

- no central core
- mostly PVC as insulation material
- foil shield or braid shield
- jacket material depends on application

High Flexing Cables – LUTZE SUPERFLEX®

- high number of super fine strands per conductor
- short pitch layering
- conductors are cabled without back twist
- higher quality of materials
- slower and more complex manufacturing process on high-end equipment
- designed for linear constant motion



- central core for single layer construction
- special PVC or TPE as insulation material
- tinned copper braid shield
- high abrasion resistant jacket material such as PUR

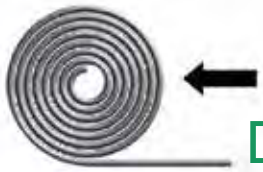
Handling & Installation LUTZE SUPERFLEX® – Quick Overview

2. Correct Handling of LUTZE SUPERFLEX® Cables

- When unreeling the cable, do not change the bend direction. The cable has to go on the new reel in the same direction it came off the reel. Low and equal tensile force during spooling!

DO ✓ DO NOT ✗

- Ring put ups require careful uncoiling by rolling the ring upright over the floor.



DO ✓

- Do not twist the cable when unwinding. Always unwind straight from spool.

DO NOT ✗

3. Correct Installation of LUTZE SUPERFLEX® Cables

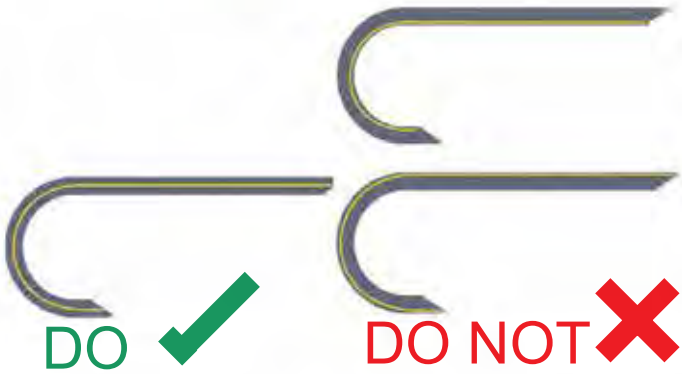
- Cable retains bend from reel. Do not flex against original bend or relax cable for 24 hrs by laying it flat.

DO ✓ DO NOT ✗

- Try to ensure balanced weight distribution. If you have more than one heavy cable, we recommend installing the heavy cables evenly to each side of the drag chain.

- Use dividers horizontally and vertically to separate the drag chain into separate cavities. Install just one cable per separated cavity. If absolutely necessary, two small or a small and a big cable can share a cavity.

- Observe the minimum bending radius for optimum performance. Make sure that all cables are length- adjusted and run in the neutral zone.



DO ✓ DO NOT ✗

For further information please visit: www.lutze.com/superflex

BUS and Network Cables

BUS and Network cables

BUS-Systems have become a very vital part of factory automation and it is hard to imagine automation without them. Besides hardware and software components, passive components such as bus cables and connectors play an important role for reliable function of the system. Bus cables must comply with all electrical parameters of the particular system. There is no universally applicable bus cable as the individual requirements are too diverse.
LUTZE offers robust, industrial grade fieldbus and network cables for the most commonly used systems worldwide. These cables are being offered for stationary and flexible applications as well as continuous moving applications in drag chains.

Systems:

PROFIBUS

PROFIBUS is the most common Bus System used in Europe in the area of automated manufacturing.

PROFIBUS DP

This PROFIBUS variant, optimized through increased transmission speed and low installation cost, was especially designed for the communication between automation systems and decentralized peripheral devices in the field range. PROFIBUS DP substitutes the conventional parallel data communication with 24V or 0-20 mA. LUTZE PROFIBUS cables meet the specification for PROFIBUS DP type A according to EN 50254. PROFIBUS DP and PROFIBUS FMS use the same transmission technology as well as a unified BUS protocol. Both variants can be operated simultaneously on one cable.

PROFIBUS Fast Connect®

These cables have an optimized radial, symmetrical construction and can facilitate the application of special tools. Thereby, bus connector plugs are able to be assembled in a fast and installation-friendly way.

CAN-Bus

CAN-Bus is specified according to ISO 11898. Primarily designed for automotive applications CAN-Buses are used today for the exchange of digital information, Controller Area Network (CAN) for faster data transfer/data exchange.

DeviceNet™

DeviceNet™ is a service related network, based on the proven CAN-Technology for fast data exchange. The configuration consists of thick cable (aka Trunk cable) and thin cable (aka drop cable). The use of high flexing cables in drag chains is likewise possible. DeviceNet™ has been standardized by Open DeviceNet™ Vendor Association (ODVA) and is the leading bus system for industrial automation in North America.

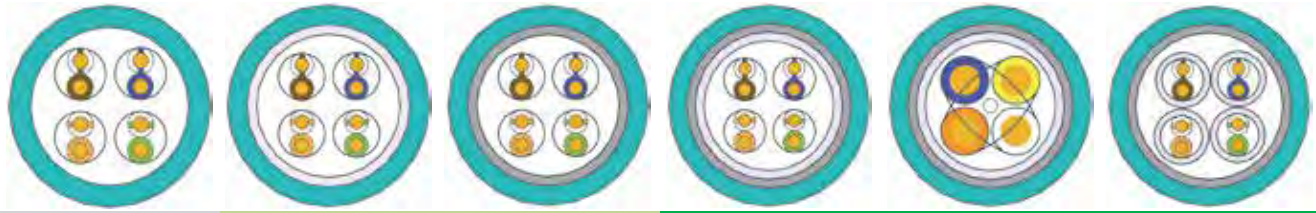
Industrial Ethernet

Ethernet is the most commonly used communication technology. The Ethernet Standard allows for a remarkable increase in the bandwidth, from 12 Mbits/s for a bus system, to up to 10Gbit/s. In the office world the Ethernet standard has already established itself as the standard technology, however the requirements for wiring systems and active components in the industrial environment differ greatly from those in an office environment. On one hand the infrastructure must be more robust; and on the other hand, criteria such as real time application require special IT solutions. Consequently, this has resulted in the development of various proprietary systems such as PROFINET, EtherCAT, Modbus TCP and Powerlink with system specific components which may not be compatible with others. A structured Ethernet cabling according to EN 50173-3 should support each proprietary system. LUTZE offers Industrial Ethernet solutions in light duty, standard duty and continuous flexing versions. Many options include UL 600V AWM and UL Type PLTC approvals for easy deployment in industrial applications.

LUTZE Ethernet Cables

We recommend shielded industrial Ethernet cable for use in industrial environment to ensure secure connectivity. Motors and other electrical noise producing devices are often located in close proximity to network cabling. EMI (Electro Magnetic Interference) and RFI (Radio Frequency Interference) can distort data transmission on copper-based network cable. To lessen or eliminate interference, called alien-crosstalk, the use of shielded industrial cable and connectors is recommended.

Ethernet cable types available from LUTZE:



U/UTP	F/UTP	S/UTP	SF/UTP	SF/UTQ	S/FTP
Resistance to Electromagnetic Interference					
low	moderate	moderate	high	high	high

Correct Handling and Installation of Network Copper Cable

Do not subject cable to tension
Do not kink the cable
Do not bend the cable more than 90º (See individual specifications for bending radius)
Strip the cable as short as possible
Do not crush cable when fastening
Do not untwist the conductor pairs by more than 0.5 inch
Terminate the shielding according to ANSI/TIA/EI 568-B, K.6.2.3 or manufacturer's instructions

Key for Twisted Pair Cables according to ISO/IEC-11801 (2002)E

XX/YZZ		
XX for the outer shielding	/ **Y** for the pair shielding	**ZZ** for the pair arrangement
U = unshielded	/ **U =** unshielded	**TP =** twisted pair (regular)
F = foiled shield	/ **F =** foiled shield	**TQ =** quad pair (star quad)
S = braided shield	/ **S =** braided shield	
SF = braided and foiled shield		

For shielded cables to be effective against EMI/RFI, the shield should be properly terminated at both ends and continuous for the complete channel (ANSI/TIA/EI 568-B, K.6.2.3).

PROFINET SF/UTQ (Star Quad Design) and Termination

The star quad is a low-impedance Ethernet cable configuration that does not use twisted pairs. This design is commonly used in PROFINET and EtherCAT networks. Four conductors are twisted on a common axis, and the conductors across from each other make a pair.

In **Figure 1** the pairs are as follows:

Pair 1:
Conductor A ⟷ Conductor D

Pair 2:
Conductor B ⟷ Conductor C

Figure 1

Other terminations than in Figure 1 can lead to interference, decreased connectivity or no connectivity at all.

Pin Assignment and Installation

RJ45 is the most common Ethernet connector and is available in both shielded and unshielded designs.
All eight pins of the RJ45 connector are used for 1000 Mbit/s (4-pair transmission). Four pins are used for 10/100 Mbit/s (2-pair transmission).

According to the EN 50173 standard, two color codes are defined for installation: T568A and T568B. It makes no difference which color code is used, however the same code should be used consistently throughout the entire installation. Mixing up the two color codes can result in malfunctions.

Pin assignment RJ45 - Color code according to EN 50173 – hard wiring:

ETHERNET cables							
Star Quad			Regular Twisted Pair				
PIN#	100BASE-TX	Color code	10BASE-T, 100BASE-TX	1000BASE-T		Color code T568A	Color code T568B
1	Transmit+	yellow	Transmit+	BI_DA+	(bidirectional)	WH/GN	WH/OG
2	Transmit-	orange	Transmit-	BI_DA-	(bidirectional)	GN	OG
3	Receive+	white	Receive+	BI_DB+	(bidirectional)	WH/OG	WH/GN
4	-		-	BI_DC+	(bidirectional)	BU	BU
5	-		-	BI_DC-	(bidirectional)	WH/BU	WH/BU
6	Receive-	blue	Receive-	BI_DB-	(bidirectional)	OG	GN
7	-		-	BI_DD+	(bidirectional)	WH/BN	WH/BN
8	-		-	BI_DD-	(bidirectional)	BN	BN

Ethernet Categories and Classes

	PROFINET	Cat5e	Cat5e	Cat6	$Cat6_A$	Cat7
Class	D	D	De	E	Ea	F
Construction	Star Quad (AWG 22)	2 pair	4 pair	4 pair	4 pair	4 pair
Speed	10/100 Mbit/s	10/100 Mbit/s	10/100/1000 Mbit/s	10/100/1000 Mbit/s	10/100/1000/10000 Mbit/s	10/100/1000/10000 Mbit/s
LAN Applications (max.)	10BASE-T (2 pair) 100BASE-TX (2 pair)	10BASE-T (2 pair) 100BASE-TX (2 pair)	10BASE-T (2 pair) 100BASE-TX (2 pair) 1000BASE-T (4 pair)	10BASE-T 100BASE-TX 1000BASE-T 10GBASE-T	10BASE-T 100BASE-TX 1000BASE-T 10GBASE-T	10BASE-T 100BASE-TX 1000BASE-T 10GBASE-T
Nominal impedance	100 Ohm	100 Ohm	100 Ohm	100 Ohm	100 Ohm	100 Ohm
Bandwidth	100 MHz	100 MHz	100 MHz	250 MHz	500 MHz	600 MHz
Max. length	328 ft (10BASE-T) 328 ft (100BASE-TX)	328 ft (10BASE-T) 328 ft (100BASE-TX)	328 ft (10BASE-T) 328 ft (100BASE-TX) 328 ft (1000BASE-T)	328 ft (10BASE-T) 328 ft (100BASE-TX) 328 ft (1000BASE-T)	328 ft (10BASE-T) 328 ft (100BASE-TX) 328 ft (1000BASE-T) 328 ft (10GBASE-T)	328 ft (10BASE-T) 328 ft (100BASE-TX) 328 ft (1000BASE-T) 328 ft (10GBASE-T)
Category compatibility	Cat5e	Cat5e	Cat5e	Cat5e	Cat5e, Cat6	Cat5e, Cat6, $Cat6_A$
ISO/IEC standard	-	ISO/IEC 11801	ISO/IEC 11801	ISO/IEC 11801	Amendment 1 to ISO/IEC 11801	ISO/IEC 11801
ANSI/TIA standard	-	ANSI/TIA-568-B	ANSI/TIA-568-C.2	ANSI/TIA-568-C.2	ANSI/TIA-568-C.2	Not recognized

LUTZE Ethernet Cable and Connector Selection Guides

Ethernet Cable Selection Guide

Category	Application Type	Cable Construction	Part Number	Shielding	AWG Size	OD (mm)	NEC 800 Listings	UL Type PLTC	AWM 600V	Outdoor Rated	Jacket Color
Cat5e	Static	Star Quad	104301*	SF/UTQ	22	6.5	CMG	●	●		Green
			104307*	SF/UTQ	22	6.5	CMG	●	●		Green
		2-Pair	104197	SF/UTP	22	7.5	CMX, CMR	●	●	●	Teal
		4-Pair	104349	SF/UTP	22	8.6	CMX, CMR	●	●	●	Teal
			104335	SF/UTP	26	6.3	CMG				Green
			104336	SF/UTP	24	7.3	CMG				Green
	Flexing	Star Quad	104303*	SF/UTQ	22	6.5	CMX				Green
		2-Pair	A1040017	SF/UTP	22	7.9	CM, CMX	●	●	●	Teal
			A1040019	SF/UTP	24	6.6	CM, CMX		●	●	Teal
		4-Pair	104337	S/UTP	24	7.8	N/A				Green
			104396	SF/UTP	26	6.7	N/A				Green
			A1040020	SF/UTP	24	7.6	CMX, CMR		●	●	Teal
Cat6	Static	4-Pair	A1040001	U/UTP	23	6.7	CMX, CMR		●	●	Teal
			A1040006	F/UTP	22	9.3	CMX, CMR	●	●	●	Teal
	Flexing		104347	SF/UTP	26	7.9	CMX				Green
Cat6A	Static	4-Pair	A1040005	F/UTP	23	8.0	CMX, CMR		●	●	Teal
			104338	S/FTP	26	6.4	CMG				Green
			104397	S/FTP	22	9.6	CMG	-ER	●		Green
	Flexing		104401**	SF/UTP	24	8.9	N/A				Green
			A1040030	SF/UTP	24	8.2	CMX, CMR		●	●	Teal
Cat7	Static	4-Pair	104331	S/FTP	26	7.0	CMG				Green
			A1040300	S/FTP	22	9.6	CMX, CMR	-ER	●	●	Teal
	Flexing		104404	S/FTP	24	9.4	CMX				Green

*Meets PROFINET Star Quad specification **Meets PROFINET 4-pair specification

Ethernet RJ45 Connector Selection Guide

Part number	AWG	Straight RJ45 Connectors				90° Angled RJ45 Connectors			
		T568B 490174	T568A 490175	T568B 490176	Profinet 490177	T568B 490151	T568A 490152	T568B 490153	Profinet 490178
A1040001	23	●	●			●	●		
A1040005	23	●	●			●	●		
A1040006	22	●	●			●	●		
A1040017	22	●	●			●	●		
A1040019	24	●	●			●	●		
A1040020	24	●	●			●	●		
A1040030	24	●	●			●	●		
A1040300	22	●	●			●	●		
104197	22	●	●			●	●		
104301	22				●				●
104303	22				●				●
104307	22				●				●
104331	26			●				●	
104335	26			●				●	
104336	24	●	●			●	●		
104337	24	●	●			●	●		
104338	26			●				●	
104347	26			●				●	
104349	22	●	●			●	●		
104396	26			●				●	
104397	22	●	●			●	●		
104401	24	●	●			●	●		
104404	24	●	●			●	●		

M12 Connectors – Overview

M12 connectors are ruggedized circular connectors with a 12-mm locking thread for secure terminations in factory automation. These style connectors can be used in a variety of automation applications such as for actuators, sensors, Fieldbus, and industrial ethernet protocols. There are many different versions of M12s that designed and optimized for specific applications. It is important when specifying an M12 connector to choose the correct pin count and connector coding. This ensures a proper and secure connection between the connector and its terminal.

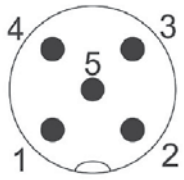
Common M12 Codes and Applications

A-coded	Actuator-sensor plug connections for systems such as DeviceNet, IO Link, and Profibus
B-coded	Fieldbus connections for systems such as Profibus and Interbus
D-coded	Industrial Ethernet up to 100 Mbit for systems such as Profinet, Ethernet/IP, and EtherCat
X-coded	$Cat6_A$ Industrial Ethernet for high-speed 10 Gbit networks

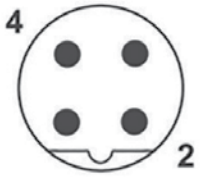
Common M12 Connector Layouts

Male Connectors

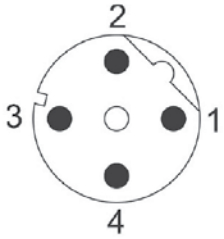
A-coded



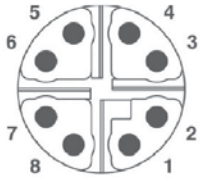
B-coded



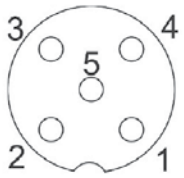
D-coded

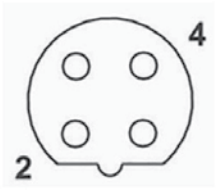


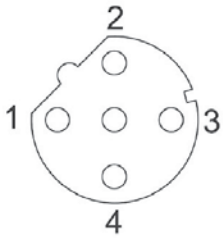
X-coded

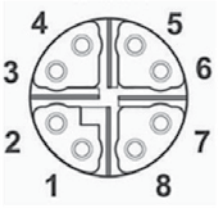


Female Connectors









LUTZE M12 Connector Pin Color Coding

M12 4 Pole Color Coding

PIN#	A-Coded	D-Coded Profinet	D-Coded Ethernet
1	BN	YE	WH/OG
2	WH	WH	WH/GN
3	BU	OG	OG
4	BK	BU	GN

M12 5 Pole Color Coding

PIN#	A-Coded	A-Coded CAN	B-Coded Profibus	B-Coded Interbus
1	BN	Shield	NC*	YE
2	WH	RD	GN	GN
3	BU	BK	NC*	GY
4	BK	WH	RD	PK
5	GY	BU	NC*	BN

*Pins 1, 3, and 5 are non-contact and unusable

M12 8 Pole Color Coding

PIN#	A-Coded	A-Coded Ethernet
1	WH	WH/BU
2	BN	WH/BN
3	GN	BN
4	YE	OG
5	GY	WH/GN
6	PK	WH/OG
7	BU	BU
8	RD	GN

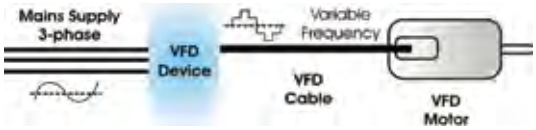
LUTZE M12 Connector Selection Guide

Coding	Terminal Type	Pole Number	Male/Female	Part Number	Shielded	Straight or Angled
A-Coded	Push-In Spring Clamp	4 Poles	Male	**490190**		Straight
				490194		90˚ Angled
			Female	**490192**		Straight
				490196		90˚ Angled
		5 Poles	Male	**490191**		Straight
				490195		90˚ Angled
				490200	●	Straight
				490202	●	90˚ Angled
			Female	**490193**		Straight
				490197		90˚ Angled
				490201	●	Straight
				490203	●	90˚ Angled
B-Coded	Push-In Spring Clamp	2 Poles	Male	**490210**	●	Straight
			Female	**490211**	●	Straight
D-Coded	Push-In Spring Clamp	4 Poles	Male	**490212**	●	Straight
				490214	●	90˚ Angled
			Female	**490213**	●	Straight
				490215	●	90˚ Angled

LUTZE DRIVEFLEX® VFD and Servo Motor Cables

A Variable Frequency Drive (VFD) is a device designed for alteration of a motor's rotational speed by changing the frequency and the voltage of the electrical power supplied to it. In this manner, the rotational speed can be adjusted within a wide range from standstill to above the nominal rotation speed at 60 hertz.

The second main feature of a VFD is that it offers motor torque control. To avoid overload of the motor, the torque has to decrease when running the motor at higher speeds and vice versa. In VFD applications the constant frequency of 60 hertz in a sinusoidal waveform is altered into a variable frequency as shown in the illustration.



The use of VFD technology poses high demands on the cable connecting the motor to the drive. Standard 600V control cable does not meet the requirements of VFD applications, thus causing operating malfunctions and may result in premature cable failure. High switching frequencies and harmonic waves cause high capacitive charging current and overvoltage spikes well beyond the 600V rating of standard control cables. These problems put tremendous stress on cables and the stress increases even further the longer the distance between drive and motor.

Another stress factor is called "corona discharge effect". Insulated conductors have very small gaps between the copper strands and the insulation material caused by the irregular surface of stranded conductors. This can lead to an uncontrolled corona discharge across these gaps and break down the insulation over time. This problem is well known in medium voltage applications. Therefore, thermoset XLPE insulation is frequently used in medium voltage applications due to its inherent resistance to corona discharge.

Our internal and external tests have proven that PVC/Nylon insulation commonly used in power tray cables is prone to failure due to corona discharge in 480V VFD applications. With each corona discharge (or partial discharge) the thermoplastic PVC/Nylon insulation is stressed, and pitting occurs. Once the pitting has reached a certain threshold, the microarc will develop into a full short circuit and the cable will be destroyed. This process will occur quicker if the cable lead length from drive to motor is long and moisture is present. Cable failure due to corona discharge is very dangerous, as the operator will typically receive no warning other than nuisance trips, if any at all, before a catastrophic cable failure occurs.

LUTZE offers a premium solution to address the different requirements for VFD and motor cable:

LUTZE DRIVEFLEX® VFD and Servo Cable
A premium solution with thermoset XLPE insulation

XLPE is an insulation material with very low capacitance offering superior electrical characteristics for use as a VFD cable, especially in long cable runs. The XLPE insulation is a thermoset material with a very high voltage breakdown level, thus inherently addressing the corona discharge effect and making it the premium insulation for any type of drive application. XLPE insulation is recommended by most drive manufacturers, and LUTZE DRIVEFLEX® exceeds the VFD cable requirements by Rockwell* as stated in the "Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives" document. The extra thick insulation offers a nominal voltage rating of 1000V 90°C per UL Flexible VFD & Servo cable specifications. The insulation is designed to withstand even higher voltage spikes and power distortions that can commonly occur in VFD applications. A foil and braid shield combination with drain wire ensures compliance with EMC requirements. LUTZE DRIVEFLEX® XLPE is the most flexible XLPE cable in its class - offering easy stripping & installation, thus saving time and money.

DRIVEFLEX® has also been evaluated as flexible VFD and Servo cable and is UL listed for use on drives and servos, as well as tray cable exposed run (TC-ER). The DRIVEFLEX® cable family includes many different configurations compatible with many standard drive and servo systems.

For more information, please visit www.driveflex.com.

DRIVEFLEX®

LUTZE offers a wide range of cables especially designed for motor supply applications

Unshielded Motor Supply Cable

For any standard motor supply application without the use of VFDs, and where shielding is not required, we recommend the use of **LUTZE SILFLEX® Tray-ER TPE, Unshielded** cables with PVC/Nylon insulation. These cables are available in sizes up to 4/0 and offer superior flexibility paired with ruggedness due to the premium TPE jacket. These power tray cables offer the ability to be installed within and outside the cable tray due to the TC-ER and MTW ratings in accordance with NEC article 336.

For any submersible VFD applications where EMI is less of a concern and water ingress protection is paramount, **LUTZE DRIVEFLEX® HYDRO XLPE PVC, Unshielded** cables are recommended. These cables are constructed with a water blocking separator tape and are rated for submersible pump applications. XLPE insulation is utilized to create a cable that can deal with many of the issues created by VFDs. These cables are unshielded for better compatibility with isolated pumps where installing a shielded cable is less feasible. These cables are UL multi-listed type Flexible Motor Supply / Flexible VFD Servo Cable and type TC-ER Power Tray cables.

Flexible Motor Supply and Variable Frequency Drives (VFD, VSD)

For any motor supply application involving an AC Variable Frequency Drive, we recommend **LUTZE DRIVEFLEX®** cables with **XLPE** insulation. These cables have very low capacitance, high impedance and high voltage breakthrough resistance. XLPE insulation is the superior choice for VFD applications with pulse width modulation (PWM) to cope with high voltage spikes and power distortions from the VFD output. These cables are UL multi-listed type Flexible Motor Supply / Flexible VFD Servo Cable and type TC-ER Power Tray cables.

LUTZE DRIVEFLEX® XLPE (C) PVC, Shielded A106 with XLPE Insulation Type XHHW-2
Small diameter flexible VFD & Motor Supply Cable with 4 conductors including one full size ground. Suitable for all generic drive applications with classic three phase wiring and for any direct, reversing or soft starter application.

LUTZE DRIVEFLEX® XLPE (C) 1 TSP PVC, Shielded A107 with XLPE Insulation Type XHHW-2
Small diameter flexible VFD & Motor Supply Cable with 4 conductors including one full size ground, plus one twisted shielded pair for feedback. Suitable for servo systems such as Rockwell*, Siemens* etc., which require one control pair.

LUTZE DRIVEFLEX® XLPE (C) PVC, Shielded A216 with XLPE Insulation Type RHW-2/XHHW-2
Flexible VFD & Motor Supply Cable with 4 conductors including one full size ground. Low capacitance design allowing for longer cable runs. Suitable for all generic drive applications with classic three phase wiring.

LUTZE DRIVEFLEX® XLPE (C) 1 TSP PVC, Shielded A217 with Insulation Type RHW-2/XHHW-2
Flexible VFD & Motor Supply Cable with 4 conductors including one full size ground, plus one twisted shielded pair for feedback. Low capacitance design allowing for longer cable runs. Suitable for servo systems such as Rockwell*, Siemens* etc., which require one control pair.

LUTZE DRIVEFLEX® XLPE (C) 2 TSP PVC, Shielded A218 with Insulation Type RHW-2/XHHW-2
Flexible VFD & Motor Supply Cable with 4 conductors including one full size ground, plus two twisted shielded pairs for feedback. Suitable for servo systems such as Rockwell*, Indramat* etc., which require two control pairs.

LUTZE DRIVEFLEX® XLPE (C) Symmetrical Grounds PVC, Shielded A220 with Insulation Type XHHW-2
Flexible VFD & Motor Supply Cable with 3 symmetrical grounds. The symmetry in the conductor design reduces motor frame voltage induced by high motor current. Symmetrical ground cable is recommended by ABB* and Rockwell* for larger horsepower motors.

Flexing Cable for Servo Systems and Motion Control

For any continuous moving applications utilizing servo drives, we recommend our special low capacitance cables with TPE or LUTZE High Glide Insulation (HGI) based on polypropylene, including **LUTZE SUPERFLEX® PLUS M (C) PUR UL SERVO 0,6/1 kV** for high flexing applications in drag chains and **LUTZE MOTIONFLEX® M** cables for motor applications with moderate linear flexing, torsion, and free-flexing movement.

*registered trademarks not associated with LUTZE

UL Ratings for Cables

Product approvals in the USA are typically conducted by National Recognized Testing Laboratories (NRTL). The NRTLs are determined by the Occupational Safety and Health Administration (OSHA). You can find a list of the current NRTLs on www.osha.gov. LUTZE primarily uses Underwriters Laboratories (UL) to certify products. UL (USA) and CSA (Canada) have an agreement that allows the usage of one approval for both USA and Canada.

There are two main certification classes available for cables:

Certification	Logo	Meaning
UL Recognized		“UL Recognized“ signifies that the product is rated as a component. A component is a part of an application. Cables with an “Appliance Wiring Material“ (AWM per Standard 758) are always “recognized“. Typically these cables are already installed on the machine when it ships.
UL Listed		“UL Listed“ signifies a cable as actually tested and proven for a specific use. This way the cable has to match the UL Standards and the requirements of the National Electric Code (NEC). Typically, cables with a UL Listing are used for field wiring in North America.

UL Listing type	Description	Meaning
CM	Communication	Cables for data communication per UL category DUZX and NEC 800
CMG	Communication General	Cables for data communication per UL category DUZX and NEC 800
CMX	Communication Residential	Cables for data communication with restrictions per UL category DUZX and NEC 800
CMX Outdoor	Communication Residential	Type CMX cable may be marked "Outdoor" to indicate its suitability for installation outdoors on dwellings
CMR	Communication Riser	Cables for data communication in vertical shafts per UL category DUZX and NEC 800
PLTC	Power Limited Tray Cable	Cables for tray applications per UL category QPTZ and NEC 725
PLTC-ER	Power Limited Tray Cable	Exposed Run Cables for tray applications per UL category QPTZ and NEC 725 (exposed use possible)
ITC	Instrumentation Tray Cable	Instrumentation cables for tray applications per UL category NYTT and NEC 727
ITC-ER	Instrumentation Tray Cable Exposed Run	Instrumentation cables for tray applications per UL category NYTT and NEC 727 (exposed use possible)
TC	Power and Control Tray Cable	Power and control cables for tray applications per UL category QPOR and NEC 336
TC-ER	Power and Control Tray Cable, Exposed Run	Power and control cables for tray applications per UL category QPOR and NEC 336 (exposed use possible)
TC-ER-JP	Power and Control Tray Cable, Exposed Run, Joist Pull	TC-ER cable that is suitable for pulling through structural members is marked “JP” per NEC article 336.10(9)
Bus Drop	Bus Drop Cable	Bus drop cable to create branches from busways per NEC 368.56 (B)
MTW	Machine Tool Wire	Single or multi conductor control cables for Machine Tool Wiring per UL category ZKHZ and NEC 670
Flexible Motor Supply	Flexible Motor Supply Cable	Power cables for motor and variable frequency drive applications per UL category ZJFH
Flexible VFD and Servo	Flexible VFD and Servo Cable	Power cables for motor and variable frequency drive applications per UL category ZJFH
WTTC	Wind Turbine Tray Cable	Power and control cables for wind turbine applications per UL category ZGZN

This list only shows the common UL Listings for typical applications in the field of automation and does not represent a complete overview of the available UL Listings.
It is possible to combine different UL Listings in one cable. LUTZE offers a variety of cables with UL Listings for various industrial applications.

NFPA 79 Requirements for Appliance Wiring Material

NFPA 79 is the Electrical Standard for Industrial Machinery in the USA. The NFPA 79 is a standard published by the National Fire Protection Agency, the same agency that publishes the National Electric Code (a.k.a. NEC or NFPA 70).

NFPA 79 Chapter 12 “Conductors, Cables and Flexible Cords” and Chapter 13 “Wiring Practices” address the majority of cable related topics.

A common concern in automation applications is the use of Appliance Wiring Material (AWM) per UL Subject 758 versus UL Listed cables such as UL Type TC-ER or many other listed types.

The NFPA 79 has special provisions addressing safe wiring practices for industrial machinery, such as machine tools, described in article 12.9. This text was introduced with the 2012 edition, allowing the use of appliance wiring material (AWM) to be used with industrial machinery but is limited with special provisions. The use of such cable had been prohibited under the 2007 edition, and this restriction had caused a lot hardship for many machine manufacturers using AWM. This has been resolved since 2012 with the introduction of article 12.9 Special Cables and Conductors.

NFPA 79 still mainly makes references to “Listed” cable. These cables carry a National Recognized Testing Laboratory (NRTL) listed logo such as the “UL Listed” logo. It should be noted that cables can have dual or multi ratings and carry both marks UL Recognized and UL Listed along with other marks.

Permitted for all applications:

Appliance Wiring Material is regulated by UL 758 and carries the UL Recognized logo.

Since 2012 permitted for special applications:

In order to use Appliance Wiring Material on industrial machinery and be compliant with NFPA 79, the cable must accommodate the provisions stated in article 12.9 “Special Cables and Conductors” of the NFPA 79 standard.

It is sufficient to comply with one of the three conditions in section 12.9.2 instead of having to meet their requirements in combination. For example:

1. It is permissible to use AWM cable or conductors if part of a listed assembly has been identified for the intend use.
2. Or it is permissible to use AWM cable or conductors where the AWM has been identified for use with approved equipment and is used in accordance with the equipment manufacturer’s instructions.
   One example would be a servo drive system with a cable assembly made per the servo drive system manufacturer’s specification and installed per the manufacturer’s instructions.
3. Or it is permissible to use AWM cable or conductors where its construction meets all applicable requirements of Section 12.2 through Section 12.6 with some modifications. These modifications set requirements in terms of construction, flame resistance, insulation and voltage ratings as well as marking and print legends for clear identification. This will allow those types of AWM cables which are suitable for industrial use by their nature. However, it will control the misuse of AWM cables which do not meet industrial application requirements, e.g. voltage rating, insulation thickness, oil resistance, etc.

All LUTZE AWM cables are designed for use in industrial environments and the AWM style and voltage rating is clearly marked on each cable jacket, therefore all LUTZE AWM cables can be used in applications governed by the NFPA 79 standard. For field installation it will still be safest to rely on cable that is UL Listed and verified for the intended use as required by the NEC (NFPA 70). UL Listed cable will make it easier to evaluate a machine in the field and will therefore remain a prominent choice for most machine builders in the USA. UL Listed cable will also eliminate the need for documentation that the use of AWM cable may require.

Please contact your LUTZE representative with questions regarding our offering of UL Listed and UL Recognized cables to help you be compliant with the latest standards for industrial machinery.

LUTZE offers many listed types, including MTW, TC-ER, PLTC and CM marks. Cables with these markings are considered listed types and are always permitted to be used in NFPA 79 compliant applications, as well as in applications per NEC.

NFPA 79 Requirements for VFD Cables

NFPA 79 Chapter 4 “General Requirements and Operating Conditions” describes the general requirements and conditions for the operation of the electrical equipment of the machine.

The relevant section regarding VFD cable can be found in article 4.4.2.8 “Circuits Supplied from Power Conversion Equipment” which addresses the proper selection of insulation materials and/or cables to be used with power conversion equipment such as VFDs and servo drives. VFDs and servos utilizing Pulse Width Modulation (PWM) technology typically create power distortions leading to harmonics, voltage spikes and overcurrent issues. This section aims to bring awareness to a potential safety concern regarding the use of thermoplastic wiring such as PVC or PVC/Nylon commonly used in power and control tray cables which are not designed as VFD or motor supply cables under such conditions.

NFPA 79 article 4.4.2.8 “Circuits Supplied from Power Conversion Equipment” describes two requirements to safely operate a VFD which is crucial for drives operating at 480V or higher. Conductors and equipment must be identified as suitable for the electrical power characteristics and in accordance with all manufacturer’s instructions.

NFPA 79 provides additional guidance in annex A.12.1.1(5) which describes typical operating conditions that may cause some insulated circuit conductors (e.g., thermoplastic) to be susceptible to breakdown from arcing if considerations are not made to mitigate them. This includes the consideration of power conversion equipment output voltage, current, and frequency; as well as the length, dielectric strength and spacing of conductors.

A safety concern may exist when thermoplastic wiring materials are being used and many drive manufacturers instructions specify against the use of such wiring. Most thermoplastic insulation types have difficulty to withstand the output voltages and currents from a VFD utilizing pulse width modulation over time. Thermoplastic insulation, such as PVC/Nylon which commonly used in power tray cables, can create problems, for example, in moist environments or in longer cable runs between VFD and motor. The dielectric properties of PVC cause high cable capacitance leading to high charging currents; the low voltage breakthrough resistance can lead to corona discharge and the potential for shorting out the cable. Additionally, thermoplastic PVC can melt and be deformed when exposed to excessive heat generated by short circuits or overloads.

Insulation types “RHH, RHW, RHW-2, XHH, XHHW, or XHHW-2” all are thermoset Insulation types per UL 44 which have strong dielectric properties and will not melt. These are common designations translating as follows:

XLPE	Cross Linked Polyethylene is a thermoset insulation material
RHH	Rubber High Heat resistant
RHW	Rubber Heat and Water resistant
RHW-2	Rubber Heat and Water resistant 90°C dry and 90°C wet locations
XHH	Crosslinked (Polyethylene) High Heat resistant
XHHW	Crosslinked (Polyethylene) High Heat and Water resistant
XHHW-2	Crosslinked (Polyethylene) High Heat and Water resistant 90°C dry and 90°C wet locations

Informational note: Even though the “R” stands for “Rubber”, the designation includes other thermoset materials such as XLPE, SBR, CPE and others.

Designations such as THHN (Thermoplastic High Heat resistant, Nylon coated) or any designation beginning with T is considered thermoplastic material and should be avoided unless the equipment manufacturer specifically permits them.

All products within the DRIVEFLEX® series are made with XLPE insulation of type XHHW-2 or RHW-2 depending on model.

Ampacity per NFPA 79 (2021 Edition)

12.5.1 The ampacities of conductors shall not exceed the corresponding temperature values given in Table 12.5.1 before any correction factors for ambient temperature or adjustment factors for the number of current-carrying conductors have been applied.

Table 12.5.1: Conductor Ampacity Based on Copper Conductors with 60°C (140°F), 75°C (167°F), and 90°C (194°F) Insulation in an Ambient Temperature of 30°C (86°F)

Conductor Size	Ampacity		
(AWG)	60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)
30	–	0.5	0.5
28	–	0.8	0.8
26	–	1	1
24	2	2	2
22	3	3	3
20	5	5	5
18	7	7	14
16	10	10	18
14	15	20	25
12	20	25	30
10	30	35	40
8	40	50	55
6	55	65	75
4	70	85	95
3	85	100	115
2	95	115	130
1	110	130	145
1/0	125	150	170
2/0	145	175	195
3/0	165	200	225
4/0	195	230	260
250	215	255	290
300	240	285	320
350	260	310	350
400	280	335	380
500	320	380	430
600	355	420	475
700	385	460	520
750	400	475	535
800	410	490	555
900	435	520	585
1000	455	545	615

Notes: (1) Conductor types listed in section 12.3.1 of *NFPA 79* shall be permitted to be used at the ampacities listed in this table.
(2) The source for the ampacities in this table is Table 310.15(B)(16) of *NFPA 70*.

Correction Factors

Table 12.5.5(a) Ambient Temperature Correction Factors

For ambient temperatures other than 30 °C (86 °F), multiply the allowable ampacity by the appropriate factor shown below.

	Correction Factor	Correction Factor	Correction Factor
Ambient Temperature (°C)	60 °C	75 °C	90 °C
21-25	1.08	1.05	1.04
26-30	1.00	1.00	1
31-35	0.91	0.94	0.96
36-40	0.82	0.88	0.91
41-45	0.71	0.82	0.87
46-50	0.58	0.75	0.82
51-55	0.41	0.67	0.76
56-60	–	0.58	0.71
61-70	–	0.33	0.58
71-80	–	–	0.41

Table 12.5.5(b) Adjustment Factors for More Than Three Current-Carrying Conductors in a Raceway or Cable

Number of Current-Carrying Conductors	Percent of Values in Table 12.5.5(a) as Adjusted for Ambient Temperature if Necessary
4-6	80
7-9	70
10-20	50
21-30	45
31-40	40
41 and above	35

Example: Application with a LUTZE DRIVEFLEX® XLPE (C) 1 TSP PVC, Shielded with control pair and an ambient temperature of 43 °C and a required ampacity of 34 Ampere.

1. Factor ambient temperature: 0.87
2. Percentage factor current carrying conductors: 80

55 A x 0.87 x 0.8 = 38 A > 34 A
Our recommendation is a AWG8 + 1 TSP AWG14,
Item no. A2170804

Note: The given values are reference numbers to calculate the required cable sizes. LUTZE Inc. is not responsible for the conformity of the values provided by the NFPA.

Ampacity per NFPA 79 (2021 Edition)

Calculation of the max. ampacity (Based on “NEC 2023 Edition”)

Allowable Ampacities of Insulated Conductors Rated 0 Through 2000 Volts, 60°C - 90°C (140°F - 194°F), with Not More Than Three Current Carrying Conductors in Raceway, Cable or Earth (Directly Buried), Based on Ambient Temperature of 30°C (86°F)*
(Based on Table 310.16)

	Temperature Rating of Conductor		
	60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)
Copper size AWG or kcmil	Types TW, UF	Types RHW, THHW, THW, THWN, XHHW, XHWN, USE, ZW	Types TBS, SA, SIS, FEP, FEPB, MI, PFA, RHH, RHW-2, THHN, THHW, THW-2, THWN-2, USE-2, XHH, XHHW, XHHW-2, XHWN, XHWN-2, XHHN, Z, ZW-2
18**	–	–	14
16**	–	–	18
14**	15	20	25
12**	20	25	30
10**	30	35	40
8	40	50	55
6	55	65	75
4	70	85	95
3	85	100	115
2	95	115	130
1	110	130	145
1/0	125	150	170
2/0	145	175	195
3/0	165	200	225
4/0	195	230	260
250	215	255	290
350	260	310	350
500	320	380	430
750	400	475	535

* Refer to 310.15(B)(1) for the ampacity correction factors where the ambient temperature is other than 30°C (86°F)
** Refer to 240.4(D) for conductor overcurrent protection limitations

Correction Factors

Ambient temperature (Based on Table 310.15(B)(1)(1)
For ambient temperatures other than 30 °C (86 °F), multiply the allowable ampacities shown above by the appropriate factor shown below.

Ambient temp. °C	60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)
21-25 (70-77 °F)	1.08	1.05	1.04
26-30 (78-86 °F)	1	1	1
31-35 (87-95 °F)	0.91	0.94	0.96
36-40 (96-104 °F)	0.82	0.88	0.91
41-45 (105-113 °F)	0.71	0.82	0.87
46-50 (114-122 °F)	0.58	0.75	0.82
51-55 (123-131 °F)	0.41	0.67	0.76
56-60 (132-140 °F)	–	0.58	0.71
61-65 (141-149 °F)	–	0.47	0.65
66-70 (150-158 °F)	–	0.33	0.58
71-75 (159-167 °F)	–	–	0.50
76-80 (168-176 °F)	–	–	0.41
81-85 (177-185 °F)	–	–	0.29

Number of current carrying conductors (Based on Table 310.15(C)(1))
Adjustment factors for more than three current carrying conductors in raceway or cable.

Number of Current-Carrying Conductors	Percent of Values in Tables 310.16 Through Table 310.19 as Adjusted for Ambient Temperature if Necessary
1-3	100
4-6	80
7-9	70
10-20	50
21-30	45
31-40	40
40 and more	35

Number of conductors is the total number of conductors in the raceway or cable adjusted in accordance with 310.15 (E) and (F)

Example: Application with a LUTZE DRIVEFLEX® XLPE (C) 1 TSP PVC, Shielded with control pair and an ambient temperature of 43 °C and a required ampacity of 34 Ampere.

1. Factor ambient temperature: 0.87
2. Percentage factor current carrying conductors: 80

55 A x 0.87 x 0.8 = 38 A > 34 A
Our recommendation is a AWG8 + 1 TSP AWG14,
Item no. A2170804

Note: The given values are reference numbers to calculate the required cable sizes. LUTZE Inc. is not responsible for the conformity of the values provided by the NEC.

Simplified Motor, VFD and Servo Cable Selection by Horsepower (HP) rated at 75°C

Part#		Amps	AWG (POWER)	230V-3 Ø	460V-3 Ø	575V-3 Ø
A1061804	4C	-	18 AWG	Up to 5 Amps See NEC 430.22(G)†		
A2161604 A1061604	4C	-	16 AWG	Up to 8 Amps See NEC 430.22(G)†		
A2161404 A1061404	4C	20	14 AWG	5 HP	10 HP	10 HP
A2161204 A1061204	4C	25	12 AWG	5 HP	10 HP	15 HP
A2161004 A1061004	4C	35	10 AWG	10 HP	20 HP	25 HP
A2160804 A1060804	4C	50	8 AWG	10 HP	30 HP	30 HP
A2160604 A2200603	4C 3C	65	6 AWG	15 HP	40 HP	50 HP
A2160404 A2200403	4C 3C	85	4 AWG	25 HP	50 HP	60 HP
A2160204 A2200203	4C 3C	115	2 AWG	30 HP	60 HP	75 HP
A2200103	3C	130	1 AWG	40 HP	75 HP	100 HP
A2201/003	3C	150	1/0	40 HP	75 HP	100 HP
A2202/003	3C	175	2/0	50 HP	100 HP	125 HP
A2203/003	3C	200	3/0	60 HP	125 HP	150 HP
A2204/003	3C	230	4/0	60 HP	150 HP	150 HP
A22025003	3C	255	250 kcmil	75 HP	150 HP	200 HP
A22035003	3C	310	350 kcmil	100 HP	200 HP	250 HP
A22050003	3C	380	500 kcmil	100 HP	250 HP	300 HP

Number of current carrying conductors is three (3) + green/yellow ground(s)

Part#		Amps	AWG (POWER)	230V-3Ø	460V-3 Ø	575V-3 Ø
A1071804	4C+1TSP	-	18 AWG	Up to 5 Amps See NEC 430.22(G)†		
A2171604 A1071604	4C+1TSP	-	16 AWG	Up to 8 Amps See NEC 430.22(G)†		
A2171404 A1071404	4C+1TSP	16	14 AWG	3 HP	7.5 HP	10 HP
A2171204 A1071204	4C+1TSP	20	12 AWG	5 HP	10 HP	10 HP
A2171004 A1071004	4C+1TSP	28	10 AWG	7.5 HP	15 HP	20 HP
A2170804 A1070804	4C+1TSP	40	8 AWG	10 HP	20 HP	30 HP
A2170604	4C+1TSP	48	6 AWG	10 HP	25 HP	30 HP
A2170404	4C+1TSP	68	4 AWG	20 HP	40 HP	50 HP
A2170204	4C+1TSP	92	2 AWG	25 HP	50 HP	60 HP

Number of current carrying conductors is five (5) + 1 green/yellow ground

Part#		Amps	AWG (POWER)	230V-3Ø	460V-3 Ø	575V-3 Ø
A2181604	4C+2TSP	-	16 AWG	Up to 8 Amps See NEC 430.22(G)†		
A2181404	4C+2TSP	14	14 AWG	3 HP	7.5 HP	10 HP
A2181204	4C+2TSP	17.5	12 AWG	3 HP	10 HP	10 HP
A2181004	4C+2TSP	24.5	10 AWG	5 HP	10 HP	15 HP
A2180804	4C+2TSP	35	8 AWG	10 HP	20 HP	25 HP

Number of current carrying conductors is seven (7) + 1 green/yellow ground

Notes:
Type of Motor is design B
Class of Service is continuous
Duty-Cycle Service is continuous
Conductor is copper 75°C
Ambient temperature is 26-30°C
Values are based on 2023 NEC 430.250 multiplied x 1.25
Ampacities are based on 2023 NEC 310.16, 75°
Cables with Signal pair(s) have been de-rated in accordance to 2023 NEC 310.15(C)(1)

*All values given are calculated based on 2023 NEC. For actual amperage consult your Motor/Drive manual and your local code restrictions. This guideline is simplified in order to select cable sizes. This document has no legal meaning, the interpretation of the NEC code has to be verified by the Authority Having Jurisdiction (AHJ).

†NEC430.22(G) may permit the use of 18 AWG and 16 AWG conductors provided specific circuit protection, overcurrent protection, and overload protection is utilized as described in (G)(1) or (G)(2).

Simplified Motor, VFD and Servo Cable Selection by Horsepower (HP) at 90°C

Part#		Amps	AWG (POWER)	230V-3 Ø	460V-3 Ø	575V-3 Ø
A1061804	4C	14	18 AWG	Up to 5 Amps See NEC 430.22(G)†		
A2161604 A1061604	4C	18	16 AWG	Up to 8 Amps See NEC 430.22(G)†		
A2161404 A1061404	4C	25	14 AWG	5 HP	10 HP	15 HP
A2161204 A1061204	4C	30	12 AWG	7.5 HP	15 HP	20 HP
A2161004 A1061004	4C	40	10 AWG	10 HP	20 HP	30 HP
A2160804 A1060804	4C	55	8 AWG	15 HP	30 HP	40 HP
A2160604 A2200603	4C 3C	75	6 AWG	20 HP	40 HP	50 HP
A2160404 A2200403	4C 3C	95	4 AWG	25 HP	50 HP	60 HP
A2160204 A2200203	4C 3C	130	2 AWG	40 HP	75 HP	100 HP
A2200103	3C	145	1 AWG	40 HP	75 HP	100 HP
A2201/003	3C	170	1/0	50 HP	100 HP	125 HP
A2202/003	3C	195	2/0	60 HP	125 HP	150 HP
A2203/003	3C	225	3/0	60 HP	150 HP	150 HP
A2204/003	3C	260	4/0	75 HP	150 HP	200 HP
A22025003	3C	290	250 kcmil	75 HP	150 HP	200 HP
A22035003	3C	350	350 kcmil	100 HP	200 HP	250 HP
A22050003	3C	430	500 kcmil	125 HP	250 HP	350 HP

Number of current carrying conductors is three (3) + green/yellow ground(s)

Part#		Amps	AWG (POWER)	230V-3Ø	460V-3 Ø	575V-3 Ø
A1071804	4C+1TSP	11	18 AWG	Up to 5 Amps See NEC 430.22(G)†		
A2171604 A1071604	4C+1TSP	14	16 AWG	Up to 8 Amps See NEC 430.22(G)†		
A2171404 A1071404 A1071404R	4C+1TSP	20	14 AWG	5 HP	10 HP	10 HP
A2171204 A1071204	4C+1TSP	24	12 AWG	5 HP	10 HP	15 HP
A2171004 A1071004	4C+1TSP	32	10 AWG	7.5 HP	15 HP	20 HP
A2170804 A1070804	4C+1TSP	44	8 AWG	10 HP	25 HP	30 HP
A2170604	4C+1TSP	60	6 AWG	15 HP	30 HP	40 HP
A2170404	4C+1TSP	76	4 AWG	20 HP	40 HP	50 HP
A2170204	4C+1TSP	104	2 AWG	30 HP	60 HP	75 HP

Number of current carrying conductors is five (5) + 1 green/yellow ground

Part#		Amps	AWG (POWER)	230V-3Ø	460V-3 Ø	575V-3 Ø
A2181604	4C+2TSP	12.5	16 AWG	Up to 8 Amps See NEC 430.22(G)†		
A2181404	4C+2TSP	17.5	14 AWG	3 HP	10 HP	10 HP
A2181204	4C+2TSP	21	12 AWG	5 HP	10 HP	10 HP
A2181004	4C+2TSP	28	10 AWG	7.5 HP	15 HP	20 HP
A2180804	4C+2TSP	38.5	8 AWG	10 HP	20 HP	25 HP

Number of current carrying conductors is seven (7) + 1 green/yellow ground

*All values given are calculated based on 2023 NEC. For actual amperage consult your Motor/Drive manual and your local code restrictions. This guideline is simplified in order to select cable sizes. This document has no legal meaning, the interpretation of the NEC code has to be verified by the Authority Having Jurisdiction (AHJ).

Notes:
Type of Motor is design B
Class of Service is continuous
Duty-Cycle Service is continuous
Conductor is copper 90°C
Ambient temperature is 26-30°C
Values are based on 2023 NEC 430.250 multiplied x 1.25
Ampacities are based on 2023 NEC 310.16, 90°
Cables with Signal pair(s) have been de-rated in accordance to 2023 NEC 310.15(C)(1)

†NEC430.22(G) may permit the use of 18 AWG and 16 AWG conductors provided specific circuit protection, overcurrent protection, and overload protection is utilized as described in (G)(1) or (G)(2).

Conductor Stranding according to DIN VDE 0295/IEC 60228

Cross section mm²	Conversion to AWG (nominal)	Fine stranded conductor class 5 per VDE 0295	Superfine stranded conductor class 6 per VDE 0295	Conductor resistance (Ω/km)
0.14	26	-	18x0.10	138
0.25	24	14x0.15	32x0.10	79
0.34	22	19x0.15	42x0.10	56
0.38	22	12x0.20	21x0.15	-
0.50	21	16x0.20	28x0.15	40.1
0.75	19	24x0.20	42x0.15	26.7
1.00	18	32x0.20	56x0.15	20.0
1.50	16	30x0.25	84x0.15	13.7
2.50	14	50x0.25	140x0.15	8.21
4	12	56x0.30	224x0.15	5.09
6	10	84x0.30	192x0.20	3.39
10	8	80x0.40	320x0.20	1.95
16	6	128x0.40	512x0.20	1.24
25	4	200x0.40	800x0.20	0.795
35	2	280x0.40	1120x0.20	0.565
50	1	400x0.40	705x0.30	0.393
70	2/0	356x0.50	990x0.30	0.277
95	3/0	485x0.50	1340x0.30	0.210
120	4/0	614x0.50	1690x0.30	0.164
150	250 kcmil	765x0.50	2123x0.30	0.132
185	350 kcmil	944x0.50	1470x0.40	0.108
240	450 kcmil	1225x0.50	1905x0.40	0.0817
300	550 kcmil	1530x0.50	2385x0.40	0.0654

The number of strands is non-binding and may vary slightly to meet specified wire resistance. The VDE 0296 determines only the maximum diameter of the single wire that is required for compliance with the maximum wire resistance at 20°C.

Conductor Stranding to ASTM B174 (172)

Comparison Class M, K, (B) and conversion AWG to metric

Size AWG	Size Metric (actual) mm²	Class K AWG 30	Class M AWG 34	Class B (for comparison only)
22	≈ 0.324	7	16	-
20	≈ 0.52	10	26	7
18	≈ 0.82	16	41	7
16	≈ 1.32	26	65	7
14	≈ 2.08	41	104	7
12	≈ 3.31	65	168	7
10	≈ 5.26	104	259	7
9	≈ 6.32	133	336	7
8	≈ 8.39	168	420	7
7	≈ 10.55	210	532	7
6	≈ 13.29	266	665	7
5	≈ 16.77	336	836	7
4	≈ 21.15	420	1,064	7
3	≈ 26.69	532	1,323	7
2	≈ 33.62	665	1,666	7
1	≈ 42.41	836	2,107	19
1/0	≈ 53.4	1,064	2,646	19
2/0	≈ 67.4	1,323	3,325	19
3/0	≈ 85	1,666	4,265	19
4/0	≈ 107	2,107	5,320	19
250	≈ 127	2,499	6,384	37
350	≈ 178	3,458	8,806	37
500	≈ 254	5,054	12,691	37

Class K is constructed with AWG30 wires and Class M with AWG34 wires.

Conductor Marking According to DIN 47100

No. Base/ring colors	No. Base/ring colors	No. Base/ring colors	No. Base/ring colors
1 white WH	16 yellow/brown	31 green/blue	46 brown
2 brown BN	17 white/gray	32 yellow/blue	47 green
3 green GN	18 gray/brown	33 green/red	48 yellow
4 yellow YE	19 white/pink	34 yellow/red	49 gray
5 gray GY	20 pink/brown	35 green/black	50 pink
6 pink PK	21 white/blue	36 yellow/black	51 blue
7 blue BU	22 brown/blue	37 gray/blue	52 red
8 red RD	23 white/red	38 pink/blue	53 black
9 black BK	24 brown/red	39 gray/red	54 violet
10 violet VT	25 white/black	40 pink/red	55 gray/pink
11 gray/pink	26 brown/black	41 gray/black	56 red/blue
12 red/blue	27 gray/green	42 pink/black	57 white/green
13 white/green	28 yellow/gray	43 blue/black	58 brown/green
14 brown/green	29 pink/green	44 red/black	59 white/yellow
15 white/yellow	30 yellow/pink	45 white	60 yellow/brown

Conductor Marking According to DIN 47100 for Twisted Pairs (TP)

Pair No. Conductor A & B	Pair No. Conductor A/B	Pair No. Conductor A/B	Pair No. Conductor A/B
1 white & brown	4 blue & red	7 white/green & brown/green	10 white/pink & pink/brown
2 green & yellow	5 black & violet	8 white/yellow & yellow/brown	11 white/blue & brown/blue
3 gray & pink	6 gray/pink & red/blue	9 white/gray & gray/brown	12 white/red & brown/red

Color Chart for Hook Up Wire

Color	Abbreviation	LUTZE Color No.	RAL No.
Green/yellow	GN/YE	00	6018/1021
Black	BK	01	9005
Blue	BU	02	5015
Brown	BN	03	8003
Red	RD	04	3000
White	WH	05	9010
Gray	GY	06	7001
Purple (violet)	VT	07	4001
Pink	PK	08	3015
Orange	OG	09	2003
Yellow	YE	10	1021
Green	GN	11	6018
Dark blue	DBU	14	5010
Blue/white	BU/WH	15	5015/9010
White/blue	WH/BU	44	9010/5015
Red/White	RD/WH	45	3000/9010
Teal			5021

Conductor Marking for LUTZE Electronic Cables

Electronic PLTC A313, A303

AWG 22				AWG 20, 18 and 16			
1-	Black			1-	Black		
2-	Brown			2-	Red		
3-	Red			3-	White		
4-	Orange			4-	Green		
5-	Yellow			5-	Orange		
6-	Green			6-	Blue		
7-	Blue			7-	Brown		
8-	Purple			8-	Yellow		
9-	Gray			9-	Purple		
10-	White			10-	Gray		
11-	White	Black		11-	Pink		
12-	White	Brown		12-	Tan		
13-	White	Red		13-	Red	Green	
14-	White	Orange		14-	Red	Yellow	
15-	White	Yellow		15-	Red	Black	
16-	White	Green		16-	White	Black	
17-	White	Blue		17-	White	Red	
18-	White	Purple		18-	White	Green	
19-	White	Gray		19-	White	Yellow	
20-	White	Black	Brown	20-	White	Blue	
21-	White	Black	Red	21-	White	Brown	
22-	White	Black	Orange	22-	White	Orange	
23-	White	Black	Yellow	23-	White	Gray	
24-	White	Black	Green	24-	White	Purple	
25-	White	Black	Blue	25-	White	Black	Red

Electronic TP PLTC A314

AWG 22			AWG 20, 18 and 16		
1-	White	Black	1-	Black	Red
2-	White	Brown	2-	Black	White
3-	White	Red	3-	Black	Green
4-	White	Orange	4-	Black	Blue
5-	White	Yellow	5-	Black	Brown
6-	White	Green	6-	Black	Yellow
7-	White	Blue	7-	Black	Orange
8-	White	Purple	8-	Red	Green

Chemical Resistance of PVC, TPE and PUR Cable Jackets

Inorganic	Concentration	PVC	TPE	PUR
Alum	c.s.	+	+	
Aluminum salts	ec.	+	+	+
Ammonia, a	10 %	+	+	+
Ammonium acetate, a	ec.	+	+	
Ammonium carbonate, a	ec.	+	+	-
Ammonium chloride, a	ec.	+	+	+
Barium salts	ec.	+	+	+
Boric acid	100 %	+	+	O
Calcium chloride, a	c.s.	+	+	O
Calcium chloride, a	10 % and 40 %			+
Calcium nitrate, a	c.s.	+	+	
Chrome salts, a	c.s.	+	+	+
Potassium carbonate, a (potash)		+	+	
Potassium chlorate, a	c.s.	+	+	
Potassium chloride, a	c.s.	+	+	O
Calcium dichromate, a		+	+	
Calcium iodide, a		+	+	
Calcium nitrate, a	c.s.	+	+	+
Potassium permanganate, a		O	O	-
Potassium sulfate, a		+	+	+
Copper salts, a	c.s.	+	+	+
Magnesium salts, a	c.s.	+	+	O
Sodium carbonate, a (natron)		+	+	O
Sodium bisulfate, a		+	+	
Sodium chloride, a (common salt)		+	+	+
Sodium thiosulfate, a (fixing salt)		+	+	O
Nickel salts, a	c.s.	+	+	+
Phosphoric acid	50 %	+	+	-
Mercury	100 %	+	+	+
Mercury salts, a	c.s.	+	+	+
Nitric acid	30 %	-	-	-
Hydrochloric acid	concentrated	-	-	-
Sulfur	100 %	+	+	+
Sulfur dioxide	gaseous	+	+	O
Carbon disulfide		-	-	-
Hydrogen sulfide		+	+	-
Sea water		+	+	+
Silver salts, a		+	+	+
Hydrogen peroxide, a	3 %	+	+	+
Zinc salts, a		+	+	-
Tin (II) chloride		+	+	

Organic	Concentration	PVC	TPE	PUR
Ethyl alcohol	100 %	-	-	-
Formic acid	30 %	-	-	-
Benzine/Benzene		-	O	+
Succinic acid, a	c.s.	+	+	-
Acetic acid	20 %	O	O	O
Hydraulic oil		-	*	O*
Isopropyl alcohol	100 %	-	-	O
Kerosene			O	O
Machine oil		O*	O*	+*
Methyl alcohol, a	100 %	O	O	O
Mineral oil, depending on type (ASTM)			*	*
Oxalic acid, a	c.s.	+	+	
Paraffin oil			+	+
Plant oils and greases		O/+*	+*	+*
Cutting oil		O*	O/+*	+
Tartaric acids, a		+	+	
Citric acid		+	+	

Legend: ec. = each concentration
c.s. = cold saturated
a = aqueous
* = depending on the additive in oil results may vary greatly
+ = resistant
O = conditionally resistant
- = unstable

Disclaimer: The information is to be used ONLY as a guide in selecting equipment for appropriate chemical compatibility. Before permanent installation, test the equipment with the chemicals and under the specific conditions of your application. LUTZE Inc. makes no guarantee or representation as to the completeness or accuracy thereof, and disclaims all liability for any loss or damage resulting from use or reliance upon any information, recommendations or suggestions contained herein.

LUTZE SILFLEX® FBP Material Compatibility

Chemical Compatibility of LUTZE SILFLEX® FBP Cable Jackets

Cleaning Agent	Description	Recommended Dilution	Relative pH	LUTZE SILFLEX® FBP
Bleach	Solvent	5%	11.3	+
Hydrogen Peroxide	Solvent	35% - 45%	4.6 – 4.8	+
RELEASE QF-BNP PLUS™	Solvent	3%	13.4	+
QUORUM CLEAR V™	Sanitizer	N/A	7.73	O
ChemTreat CP2100™	Solvent	N/A	12.2	+
ChemTreat CP2202™	Solvent	3% – 10%	9.5	+
ChemTreat CP1100™	Solvent	N/A	1.2	O
ChemTreat CP3250™	Solvent	N/A	11.9	+
STER-BAC QUAT™	Sanitizer	N/A	6 – 10	+
AC-55-5 RED™	Solvent	2%	0.9 – 1.1	+
EXELERATE CIP™	Solvent	N/A	13.9	+
OCTAVE™	Sanitizer	N/A	1	+
CONQUEST™	Solvent	2.5%	13.2	+
ENFORCE LP™	Solvent	N/A	13.9	+
FOAM-SHINE™	Solvent	N/A	0.5 – 1.0	+
Envirocid Plus™	Solvent	2%	0.9 – 11	+
XY-12-P™	Sanitizer	N/A	12.5	+
P3-Topactive DES™	Disinfectant	3%	2 – 3	+
P3-Topactive LA™	Solvent	N/A	10.7 – 11	+
P3-Topax 56™	Solvent	N/A	0.7 – 1.2	O
P3-Topax 66™	Disinfectant	5%	13 – 14	+
P3-Topax 91™	Disinfectant	N/A	8 – 8.5	+

Legend: + = resistant
O = conditionally resistant
- = unstable

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LUTZE Jackets with Ecolab® Testing

Ecolab® Cleaning Agent	Description	Dilution	LUTZE SILFLEX® FBP
P3-Topax 66™	Alkaline-chlorine Disinfectant	5%	+
Topaz LD1™	Alkaline Foam Detergent	5%	+
Topaz AC5™	Acid Foam Detergent	5%	+
P3-Topactive DES™	Acid Foam Disinfectant	3%	+*
P3-Topax 990™	Neutral Foam Disinfectant	3%	+

Legend: + = resistant
O = conditionally resistant
- = unstable
* = slight jacket discoloring may occur after prolonged exposure

Ingress Protection (IP) Class Designation according to EN 60529

The protection of electrical equipment through corresponding enclosure is specified with code letters and code numbers. This protection class designation consists of the letters "IP" and two code numbers from 0 to 8. The first code number stands for the protection against contact and foreign substances, the second number specifies the degree of protection against water.
The higher the respective code number is, the higher the offered protection. The protection class for each product is specified in the respective technical information.

For example:

IP 65	**Code letter IP**	**IP**	
	First code number	**6**	**corresponds to: Protection against entrance of dust**
	Second code number	**5**	**corresponds to: Protection against sprayed water**

For protection against contact and foreign substances

First code number	Protection scope designation	Explanation
0	No protection	No special protection of persons from accidental contact with standing or moving parts under voltage. No protection of the equipment against entry of solid foreign substances.
1	1 Protection against foreign substances > 50 mm	Protection against accidental contact of large area surfaces of standing and internally moving parts under voltage, e.g. with the hand, but no protection against intentional access to these parts. Protection against entry of solid foreign substances with a diameter larger than 50 mm.
2	Protection against foreign substances > 12 mm voltage	Protection against contact by the fingers of standing or internally moving parts under voltage. Protection against entry of solid foreign substances with a diameter larger than 12 mm.
3	Protection against foreign substances > 2.5 mm tools	Protection against contact of standing or internally moving parts under voltage with, wires or similar of a thickness larger than 2.5 mm. Protection against entry of solid foreign substances with a diameter larger than 2.5 mm.
4	Protection against foreign substances > 1 mm	Protection against contact of standing or internally moving parts under voltage with tools, wires or similar of a thickness larger than 1 mm. Protection against entry of solid foreign substances with a diameter larger than 1 mm.
5	Protection against dust accumulation	Full protection against contact of standing or internally moving parts under voltage. Protection against dust accumulation. The entry of dust is not fully prevented but the dust may not enter in such quantities that the functioning is impaired.
6	Protection against dust accumulation	Full protection against contact of standing or internally moving parts under voltage. Protection against entry of dust.

For water protection

Second code number	Protection scope designation	Explanation
0	No protection	No special protection.
1	Protection against vertically falling dripping water	Water drops that fall vertically may not have any damaging effect.
2	Protection against dripping water falling at an angle	Water drops that fall at an arbitrary angle of up to 15° to vertical may not have any damaging effect.
3	Protection against sprayed water	Water that falls in an arbitrary angle up to 60° to vertical may not have a damaging effect.
4	Protection against splashed water	Water that is splashed from all directions against the equipment may not have a damaging effect.
5	Protection against water projected from a nozzle	Water projected from a nozzle that is aimed at the equipment from all directions may not have any damaging effect.
6	Protection against flooding	Water may not enter into the equipment in damaging amounts during temporary flooding (e.g. by heavy seas)
7	Protection against immersion	Water may not enter in damaging amounts if the equipment is immersed in water for the defined pressure and time conditions.
8	Protection against submersion	Water may not enter in damaging amounts if the equipment is submerged in water for the defined pressure and indefinite amount of time.
9	Protection against high temperature water jets	Water may not enter in damaging amounts if the equipment is subjected to predefined high temperature, high pressure water jets from four angles for three minutes.

Enclosure Type Ratings According to UL 50E and NEMA 250-2003

In the United States the protection level of electrical enclosures is standardized using Type ratings, which have been defined by the National Electrical Manufacturers Association (NEMA). These ratings specify the level of protection that a complete enclosure provides against foreign objects such as dust and fibers, liquids, coolants, and corrosive agents. Enclosures are rated based on the complete enclosure installation, including pass-through devices, ports, and entry points when properly installed.

For protection against contact and foreign substances

Type Rating	Description
Type 1	Constructed for indoor use to provide a degree of protection to personnel against access to hazardous parts and to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt).
Type 2	Constructed to meet the requirements of Type 1 and to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (dripping and light splashing).
Type 3	Constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow); and that will be undamaged by the external formation of ice on the enclosure.
Type 3R	Constructed to meet the requirements of Type 3 but does not include protection against windblown dust.
Type 3S	Constructed to meet the requirements of Type 3 and for which the external mechanism(s) remain operable when ice laden.
Type 4	Constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); and that will be undamaged by the external formation of ice on the enclosure.
Type 4X	Constructed to meet the requirements of Type 4 with an additional level of protection against corrosion.
Type 6	Constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (hose directed water and the entry of water during occasional temporary submersion at a limited depth); and that will be undamaged by the external formation of ice on the enclosure.
Type 6P	Constructed to meet the requirements of Type 6 with an additional level of protection against corrosion.
Type 12	Constructed (without knockouts) for indoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and circulating dust, lint, fibers, and flyings); and to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (dripping and light splashing).
Type 12K	Constructed (without knockouts) for indoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and circulating dust, lint, fibers, and flyings); and to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (dripping and light splashing).
Type 13	Constructed to meet the requirements of Type 12 and to provide a degree of protection against the spraying, splashing, and seepage of oil and non-corrosive coolants.

Thread Tables for LUTZE Cable Fittings - NPT, PG, Metric

NPT	Pitch mm	Outside Diameter mm	Number of Threads per Unit Length	Clearance Hole mm
NPT 3/8”	1.411	17.055	18	17.0
NPT 1/2”	1.814	21.223	14	22
NPT 3/4”	1.814	26.568	14	29
NPT 1”	2.209	33.227	11.5	33.5
NPT 2”	2.209	60.091	11.5	60.8
NPT 2 ½”	3.175	72.699	8	73.5
NPT 3”	3.175	88.609	8	89.4

PG to DIN 40430	Pitch mm	Outside Diameter mm	Core Diameter mm	Clearance Hole mm
PG7	1.270	12.5	11.28	12.7
PG9	1.410	15.2	13.86	15.4
PG11	1.410	18.6	17.26	18.8
PG13	1.410	20.4	19.06	20.7
PG16	1.410	22.5	21.16	22.8
PG21	1.588	28.3	26.78	28.6
PG29	1.588	37.0	35.48	37.4
PG36	1.588	47.0	45.48	47.5
PG42	1.588	54.0	52.48	54.5
PG48	1.588	59.3	57.78	59.8

Metric to EN 60423	Pitch mm	Outside Diameter mm	Core Diameter mm	Clearance Hole mm
M12x1.5	1.5	12	10.5	12.2
M16x1.5	1.5	16	14.5	16.2
M20x1.5	1.5	20	18.5	20.2
M25x1.5	1.5	25	23.5	25.2
M32x1.5	1.5	32	30.5	32.2
M40x1.5	1.5	40	38.5	40.2
M50x1.5	1.5	50	48.5	50.2
M63x1.5	1.5	63	61.5	63.2
M75X1.5	1.5	75	73.5	75.5
M90X1.5	1.5	90	80	90.2

Torque Recommendations for LUTZE Cable Fittings - Plastic and Metal Dome Nuts

Nominal Size	Recommended Torque in Nm Plastic	Recommended Torque in Nm Metal
NPT 3/8”	2.5	4.5
NPT 1/2”	3.0	5
NPT 3/4”	5.0	7.0
NPT 1”	5.0	7.0
PG7	2.5	6.25
PG9	3.75	6.25
PG11	3.75	6.25
PG13.5	3.75	6.25
PG16	5.0	7.5
PG21	7.5	10.0
PG29	7.5	10.0
PG36	7.5	10.0
PG42	7.5	10.0
PG48	7.5	10.0
M12x1.5	1.0	5
M16x1.5	2.5	5
M20x1.5	4.0	7.5
M25x1.5	6.0	10
M32x1.5	7.0	15
M40x1.5	7.5	18
M50x1.5	8.0	20
M63x1.5	9.0	20

Torque Recommendations for LUTZE Cable Fittings – EMC Style

Nominal Size	Recommended Torque in Nm Body (Dome Nut)	Recommended Torque in Nm locknut
NPT 3/8”	6.5	-
NPT 1/2”	8.0	-
NPT 3/4”	16.0	-
NPT 1”	22.0	-
M12x1.5	5.5	3
M16x1.5	6.5	4
M20x1.5	8.0	5.5
M25x1.5	16.0	6
M32x1.5	22.0	6
M40x1.5	42.0	12
M50x1.5	42.0	18
M63x1.5	43.0	25

Torque Recommendations for LUTZE Cable Fittings –CEX Style

Nominal Size	Recommended Torque in Nm Body (Dome Nut)			Recommended Torque in Nm locknut
	3 seal rings	**2 seal rings**	**1 seal ring**	
NPT 2”	190 ± 3	125 ± 3	140 ± 3	-
NPT 2 1/2”	130 ± 3	125 ± 3	120 ± 3	-
NPT 3”	123 ± 3	115 ± 3	107 ± 3	-
M63x1.5	190 ± 3	125 ± 3	140 ± 3	25 ± 2.5
M75x1.5	130 ± 3	125 ± 3	120 ± 3	30 ± 2.5
M90x1.5	123 ± 3	115 ± 3	107 ± 3	35 ± 2.5

The specified values are recommended for achieving the protection class IP68 at 5 bar. Please choose the suitable torque for the material and cable application. The actual crush resistance of each cable must be considered and you may have to significantly reduce the torque. The values shown are for reference only.

LUTZE Part Number Index

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LUTZE Part Number Index

Notes

Notes

LUTZE Product Overview

Cable Solutions

LUTZE specializes in flexible and continuous motion industrial control, power and network cables, such as LUTZE SILFLEX®, LUTZE SUPERFLEX®, MOTIONFLEX® flexing and twisting cables and DRIVEFLEX® VFD cables, for various applications in industrial automation.

LUTZE SILFLEX® FBP cables meet both UL and FDA requirements providing an innovative patented solution for food and beverage processing applications.

Wire and cable management components such as CABLEFIX® X and CABLEFIX® One cable entry systems complement the offering for industrial automation.

Connectivity Solutions

In addition to industrial flexible and continuous motion cables, LUTZE offers servo cable assemblies according to SIEMENS 6FX, Allen-Bradley® 2090 and Bosch Rexroth Indramat standards.

Cabinet Solutions

LUTZE *Air*STREAM wiring system saves space, time and cost. *Air*STREAM is an aluminum frame that replaces the traditional back panel and wire duct for mounting and wiring of electrical components in a control enclosure. It shortens wiring times and improves heat dissipation within the cabinet to enhance component longevity.

Control Solutions

LUTZE offers DIN rail mountable compact power supplies, industrial Ethernet switches, LCIS relays, and LOCC-Box electronic circuit breakers.

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