

**CABLE SERIES 155331-9xxx**  
**Servo Motor - Feedback Cables - UL AWM recognized - PUR jacket**  
**UL US Style 21223 (80°C / 600V)**

**1 CONSTRUCTION DATA**

**1.1 CONDUCTOR:**

Bare copper strand; according to EN 13602 - ETP1; stranding according to DIN VDE 0295, EN60228 Class 6  
Stranded lay compliant with UL 758.

**1.2 WIRE STRUCTURE:**

Signal				
Nominal section (mm <sup>2</sup> )	AWG	Stranding (nbr of wires x wire diameter in mm)	Diameter of stranded core (mm)	Max Resistance Ref. std. IEC 60344 (Ω/km)
0.14	26	19x0.10	0.50	145.8
0.25	24	32x0.10	0.62	85.8
0.38	22	19x0.16	0.80	54.8
Power				
Nominal section (mm <sup>2</sup> )	AWG	Stranding (nbr of wires x wire diameter in mm)	Diameter of stranded core (mm)	Max Resistance Ref. std. IEC 60344 (Ω/km)
0.50	21	28x0.15	0.93	42.3
1.00	18	56x0.15	1.30	20.8

**1.3 INSULATION:**

Thermoplastic Elastomer compound; Max Insulation resistance >600 GΩxkm (IEC60189-1&IEC60885-1 or EN50289-1-4); nominal hardness 50 Shore D; according to UL758

**1.4 INSULATION DIAMETER**

Signal		
Nominal section (mm <sup>2</sup> )	Nominal Ø (mm)	Nominal thickness (mm)
0.14	0.90	0.20
0.25	1.10	0.24
0.38	1.20	0.20
Power		
Nominal section (mm <sup>2</sup> )	Nominal Ø (mm)	Nominal thickness (mm)
0.50	1.45	0.26
1.00	1.85	0.28

**1.5 ASSEMBLY (see Annex #1, #2, #3, #4)**

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## 2 TECHNICAL DATA

### 2.1 ELECTRICAL:

Voltage rating	600 Vrms
Voltage test on core	2000 Vrms x 1min (IEC60885-1)

### 2.2 TEMPERATURE:

Temperature range (fixed)	-50 °C to +90°C (10'000h ISO6722 pending)
Temperature range (flex)	-40°C to +80°C (free motion without periodic recurrence and forced guidance)
Temperature range (drag chain)	-35°C to +60°C

### 2.3 CHEMICAL:

Oil resistance	UL758/UL2556/EN50363-10-2 (7days @100°C - IRM902 oil)
Free of FCKW, Silicone and Pb	yes
Halogen free	yes (IEC60754-1 EN50267-2-1 VDE0472-815)

### 2.4 PHYSICAL:

UV resistant	yes (UL1581/2556– 300h)
Max installation pulling force	50N
Bending radius (fixed)	>7,5xOD
Bending radius (flex)	>12xOD
Bending radius (drag chain)	>15xOD (up to 2Mio @ 20°C in freely suspended chain)*
Torsion @ 20°C	optimal recommended ±30°/m *

\*Default criterium of the norm-bendings is electrical failure due to conductor breakage or conductor short-circuit. Extreme sheath adhesion is not a default criterium since it cannot be influenced by the cable manufacturer (e.g. through big abrasion between cable and chain, non-suitable chain construction or wrong installation of cable in the chain).

### 2.5 FLAME:

UL Vertical Flame Test	pass
UL VW-1, CSA FT-1	pass
IEC 60332-1/2	pass

## 3 COMPLIANCE

Accordance to:	<ul style="list-style-type: none"> <li>2006/95/CE; 2004/108/CE; 2011/65/CE (RoHS)</li> <li>UL/CSA (UL AWM Style 21223, use: external interconnection of electronic equipment)</li> <li>NFPA79-2012 circumstances mentioned in Chapter 12</li> </ul>
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## 4 PRINTING & PACKAGE

Printing text	Ink-jet type; conform to UL758
Package	available in different packaging sizes (refer to Annex #1, #2, #3, #4)

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**ANNEX 1**

**(4x2x0.25 + 2x1.00)C**

mm <sup>2</sup>	AWG	N° of cond	O.D. (mm)	Jkt color	Pack. size	Packaging composition	Standard order n°	Sketch*
(4x2x0,25+2x1,00)C	(4x2xAWG24+2xAWG18)C	10 (8+2)	8,80	Orange	S	1x200m	1553319001	
				Orange	M	1x500m	1553319002	
				Orange	L	1x1000m	1553319003	

\*Colour and Sequence  
 Colour: **Power**=White-Brown  
**Signal**=(Red-Black)- (Gray-Pink)-(Green-Brown)-(Violet-Blue)  
 Sequence: for packaging size L: colors clockwise exit drum (as in sketch)  
 for packaging size S and M; colors counterclockwise

**Signal pair**

Cores stranded in four pairs.

**Total assembly**

Power Cores and Signal Pairs stranded together, fillers may be used for a better roundness.

**Tape**

Wrap over assembly.

**Braid Shield**

Tin copper wire, nominal optical coverage 85%.

**Tape**

Wrap over shield.

**Jacket**

Polyurethane (PUR, TPU), ether base, Halogen free, nominal hardness 90 Shore A; Silicone, Pb,Cd,Hg & FCKW free; according to UL758.

For overall diameter, jacket and cores colors refer to table above.

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**ANNEX 2**

**(3x(2x0.14)D + 2x(0.50)D)C**

mm <sup>2</sup>	AWG	N° of cond	O.D. (mm)	Jkt color	Pack. size	Packaging composition	Standard order n°	Sketch*
(3x(2x0.14)D + 2x(0.50)D)C	(3x(2xAWG26)D + 2x(AWG21)D)C	8 (6+2)	9,00	Green	S	1x200m	1553319004	
				Green	M	1x500m	1553319005	
				Green	L	1x1000m	1553319006	

\*Colour and Sequence

Colour: **Power**= Black and Red;

**Signal pairs**= (Yellow-Green) jacketed in black numbered in white 1  
(Black-Brown) jacketed in black numbered in white 2  
(Red-Orange) jacketed in black numbered in white 3

Sequence: for packaging size L: colors clockwise exit drum (as in sketch)  
for packaging size S and M; colors counterclockwise

**Signal pair**

Cores stranded in three pairs with tape over, shield spiral wrap type (tin copper wire) nominal optical coverage 95%.  
Each pairs jacketed in TPE-E.

**Power pair**

Cores shield spiral wrap type (tin copper wire), nominal optical coverage 95%, Each cores jacketed in TPE-E.

**Total assembly**

Power pair and Signal pairs stranded together, fillers may be used for a better roundness.

**Tape**

Wrap over assembly.

**Braid Shield**

Tin copper wire, nominal optical coverage 85%.

**Tape**

Wrap over shield.

**Jacket**

Polyurethane (PUR, TPU), ether base, Halogen free, nominal hardness 90 Shore A; Silicone, Pb,Cd,Hg & FCKW free; according to UL758.

For overall diameter, jacket and cores colors refer to table above.

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**ANNEX 3**

**(4x2x0.38+4x0.50)C**

mm <sup>2</sup>	AWG	N° of cond	O.D. (mm)	Jkt color	Pack. size	Packaging composition	Standard order n°	Sketch*
(4x2x0,38+4x0,50)C	(4x2xAWG22+4xAWG21)C	12 (8+4)	9,50	Green	S	1x200m	1553319007	
				Green	M	1x500m	1553319008	
				Green	L	1x1000m	1553319009	

\*Colour and Sequence  
 Colour: **Power**= White/Black-White/Red-White/Blue-White/Yellow  
**Signal**= (Blue-Violet)-(Yellow-Green)-(Black-Brown)-(Red/Orange)  
 Sequence: for packaging size L: colors clockwise exit drum (as in sketch)  
 for packaging size S and M; colors counterclockwise

**Signal pair**  
 Cores stranded in four pairs.

**Total assembly**  
 Power Cores and Signal Pairs stranded together, fillers may be used for a better roundness.

**Tape**  
 Wrap over assembly.

**Braid Shield**  
 Tin copper wire, nominal optical coverage 85%.

**Tape**  
 Wrap over shield.

**Jacket**  
 Polyurethane (PUR, TPU), ether base, Halogen free, nominal hardness 90 Shore A; Silicone, Pb,Cd,Hg & FCKW free; according to UL758.  
 For overall diameter, jacket and cores colors refer to table above

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**ANNEX 4**

**(3x(2x0.14)D+2x0.50+4x0.14+4x0.25)C**

mm <sup>2</sup>	AWG	N° of cond	O.D. (mm)	Jkt color	Pack. size	Packaging composition	Standard order n°	Sketch*
(3x(2x0,14)D+2x0,50 + 4x0,14+4x0,25)C	(3x(2xAWG26)D+2xAWG21 + 4xAWG26+4xAWG24)C	16 (6+2+4+4)	10,00	Green	S	1x100m	1553319010	
				Green	M	1x500m	1553319011	
				Green	L	1x1000m	1553319012	

\*Colour and Sequence

Colours: Power (2x0.50)=Brown/Blue-Brown/Red

Signal 3x(2x0.14)=(Brown-Black) jacketed in black numbered in white 1  
(Yellow-Green) jacketed in black numbered in white 2  
(Red-Orange) jacketed in black numbered in white 3

Signal 4x0.14=(Gray-White/Black-White/Yellow-Blue)

Signal 4x0.25=(Green/Red-Green/Black-Brown/Yellow-Brown/Gray)

Sequence: for packaging size L: colors clockwise exit drum (as in sketch)  
for packaging size S and M; colors counterclockwise

**Signal pair**

Six cores 0.14mm<sup>2</sup> twisted in three pairs with tape over, shield spiral wrap type (tin copper wire) nominal optical coverage 95% . Each pairs jacketed in TPE-E  
Four cores 0.25mm<sup>2</sup> stranded in quad  
Four cores 0.14mm<sup>2</sup> stranded in quad

**Power pair**

Cores stranded in a pair

**Total assembly**

Power Core and Signal Pairs stranded together, fillers may be used for a better roundness.

**Tape**

Wrap over assembly

**Braid Shield**

Tin copper wire, nominal optical coverage 85%

**Tape**

Wrap over shield

**Jacket**

Polyurethane (PUR, TPU), ether base, Halogen free, nominal hardness 90 Shore A; Silicone, Pb,Cd,Hg & FCKW free; according to UL758.

For overall diameter, jacket and cores colors refer to table above

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