

High-Intensity 100 000cd Aviation Light

ICAO High-Intensity Type B 100 000cd
NVG Compliant Infrared 850nm Light

OBELUX
AVIATION LIGHTS

Obelux Oy, Kutomatie 6 B, 00980 Helsinki FINLAND | The information in this document is subject to change without notice.

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Optical Characteristics:

- ▶ 100 000 cd Flashing @ Day
- ▶ 20 000 cd Flashing @ Twilight
- ▶ 2 000 cd Flashing @ Night
- ▶ Infrared 850nm
- ▶ Colour aviation WHITE
- ▶ Horizontal radiation pattern 360°
- ▶ Vertical beam 3°

Specifications met:

ICAO International Standards and Recommended Practices: Aerodromes Annex 14 Volume 1, 8th Edition, July 2018, Chapter 6: High-intensity Type B. Fulfils the Recommendations Section in Table 6-3.

Transport Styrelsen TSFS 2020:88
Luftfartstilsynet FOR-2014-07-15-980



High-Intensity 100 000cd Aviation Obstruction Light

LED Aviation Obstruction Lights

Obelux high-intensity light is designed for marking tall structures such as wind turbines, chimneys, masts, and towers. The product offers unique features such as fault monitoring, photocell and switcher incorporated in the light. Obelux uses a unique environmentally friendly optical solution which minimizes light pollution to the neighbourhood.

Key Features

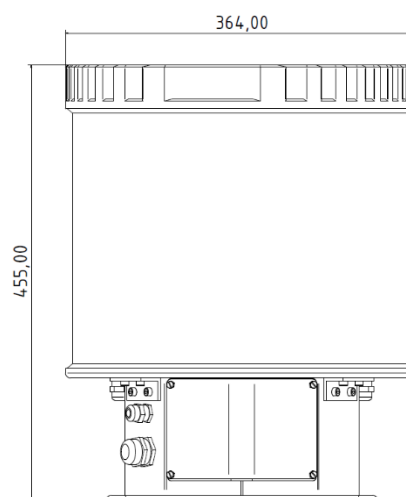
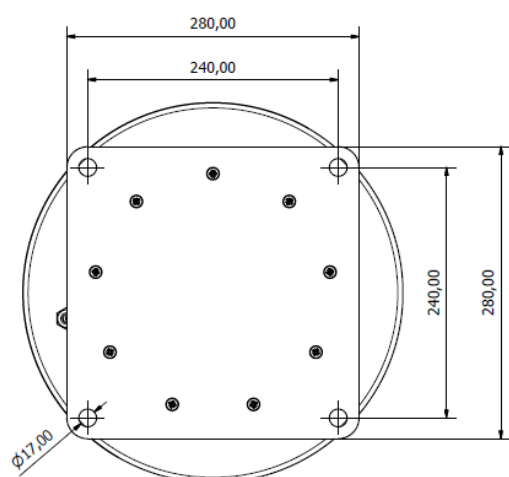
- ▶ Based on LED technology
- ▶ 100 000cd WHITE flashing light
- ▶ Photocell and fault monitoring
- ▶ GPS synchronization available
- ▶ NVG compliant infrared 850nm light
- ▶ Both stand-alone and ModBUS operations available
- ▶ More than 20 years of design lifetime
- ▶ Dimmable for 100% / 30% / 10%
- ▶ Hot start for radar controlled systems
- ▶ 5-year warranty

Electrical Characteristics

- ▶ Operating voltage 230 V_{AC}
- ▶ Constant power input by active PFC
- ▶ Flash rates: 20fpm, 40fpm
- ▶ Meets standards
 - EMC (Emissions): EN 61000-6-4
 - EMC (Immunity): EN 61000-6-2
- ▶ Power consumption (40 fpm)
 - 200W @ Day (with heating max. 240W)
 - 50W @ Twilight
 - 20W @ Night

Mechanical Characteristics

- ▶ Anodised marine grade aluminium body
- ▶ Glass cover
- ▶ EMC cable glands M16 and M25
- ▶ Product Degree of protection IP65
- ▶ Two ventilation caps IP44
- ▶ Operating temperature range -40...+55 °C
- ▶ Mounting pattern 240x240 mm, Ø17 holes
- ▶ Height 455 mm, diameter 364 mm
- ▶ Weight 27 kg



Order code:	Output:	ICAO:	Infrared:	Heating (CCV):	Operating voltage:	GPS sync.	Photocell and Fault monitoring:	Packing dimensions:
H100IR230I	100 000 cd	HI Type B	Yes	No	230 V _{AC}	No	Yes	600x400x400 mm, 32kg
H100IR230A	100 000 cd	HI Type B	Yes	No	230 V _{AC}	No	Yes	600x400x400 mm, 32kg
H100IR230GI	100 000 cd	HI Type B	Yes	No	230 V _{AC}	Yes	Yes	600x400x400 mm, 32kg
H100IR230GA	100 000 cd	HI Type B	Yes	No	230 V _{AC}	Yes	Yes	600x400x400 mm, 32kg
H100IRCCV230I	100 000 cd	HI Type B	Yes	Yes	230 V _{AC}	No	Yes	600x400x400 mm, 32kg
H100IRCCV230A	100 000 cd	HI Type B	Yes	Yes	230 V _{AC}	No	Yes	600x400x400 mm, 32kg
H100IRCCV230GI	100 000 cd	HI Type B	Yes	Yes	230 V _{AC}	Yes	Yes	600x400x400 mm, 32kg
H100IRCCV230GA	100 000 cd	HI Type B	Yes	Yes	230 V _{AC}	Yes	Yes	600x400x400 mm, 32kg

I = ModBUS operation with Obelux Control Panel, Local controller, or similar
 A = Stand-alone operation

Option: Angle of the peak of the beam above the horizontal (+0°, +1°, +2° and +3°)
 Example: H100IRCCV230GI (aiming angle +0°)
 H100IRCCV230GIB (aiming angle +1°)
 H100IRCCV230GIC (aiming angle +2°)
 H100IRCCV230GID (aiming angle +3°)

Installation instructions

Mount the device to the selected mounting point using quality made fasteners. Level the light using spirit level (bubble level) if the mounting point is not already levelled. Tighten bolts & nuts. Obelux recommends 100 Nm tightening torque for M12 hot-dipped 8.8 bolts with suitable washer between bolt and mounting plate.

When the service hatch is open, check that there is no inflow of water (incl. hail and snow) into the cabinet.

Photocell direction

Make sure the photocell is pointed away from any buildings or light sources including other aviation lights. Check photocell location from Figure 1. In wind turbine application it is also recommended to point the photocell away from the blades if possible.

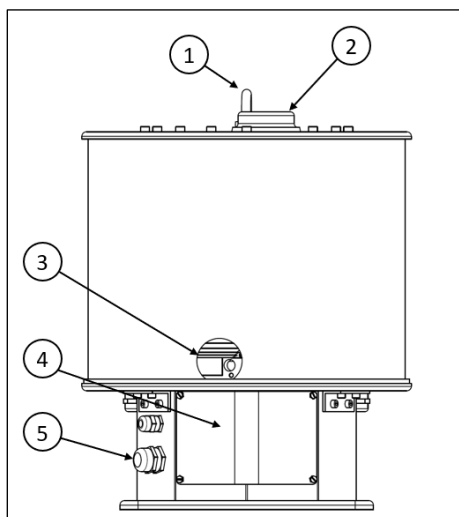
Cabling

Route power and data cables using cable gland(s). Connect the cable wires securely to appropriate connectors. Place the hatch plate (door) properly in its place and securely tighten all screws. Make sure that all unused glands or gland holes are sealed. Follow the illustration below to achieve desired EMC protection.



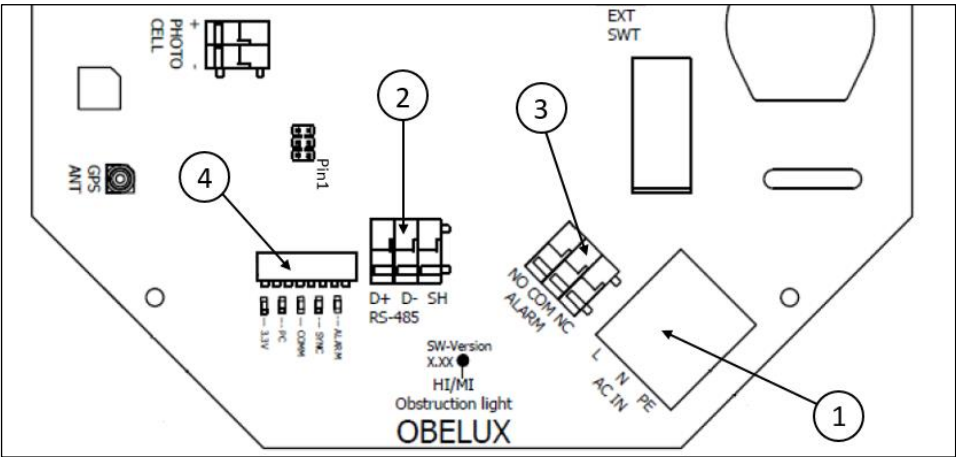
Please follow these instructions when routing cable via a cable gland:

1. Partially expose the braided screen by removing the outer sheath of the cable at a length of approx. 10 mm.
2. Insert the cable through the dome nut and the gland body until the contact spring is pressed against the braided screen.



1. Lug (for lifting the light)
2. GPS antenna
3. Location of photocell
4. Service access hatch
5. Cable glands

1. Figure 1



1 Power Input

Connectors for input voltage.

Mark	Description	Information
L	Live terminal	Connect mains power live to this connector. Colour typically brown.
N	Neutral terminal	Connect mains power neutral to this connector. Colour typically blue.
PE	Protective earth	Connect protective earth to connector. PE line is typically indicated with yellow/green shield on the wire.

Connectors are spring lever type.

Conductor cross-section: 0,2 – 6 mm²

2 RS485 Input

Connectors for RS-485 network (bus) input.

Mark	Description	Information
D+	Data +	RS485 non-inverting pin
D-	Data -	RS485 inverting pin
SH	Shield	Shield

Connectors are spring lever type.

Conductor cross-section: 0,2 – 4 mm²

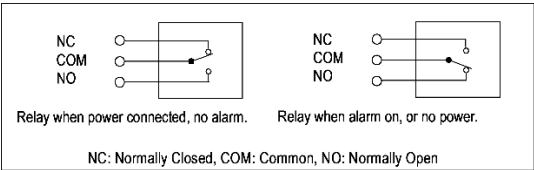
3 Alarm Relay Output

Mark	Description	Information
NO	Normally Open	In alarm, connected with COM
COM	Common	Common relay contact
NC	Normally Connected	During normal operations, connected with COM

Unused alarm relay connectors can be left floating i.e., no wiring there is required.

Connectors are spring lever type.

Conductor cross-section: 0,2 – 4 mm²



4 Configuration DIP switches

Used to configure light settings or to set Modbus address.

Configuring Obelux high-intensity lights

The light can be configured between two different operating modes. In **Stand-alone** mode, the light operation is configured with DIP switches. No additional controllers are needed. In **Modbus** mode, the light is being controlled with an additional Obelux controller. This selection is done with DIP8. DIP switches are numbered 1-10, the lowest number (1) being on the leftmost edge of the red/white DIP switch block looked from service access door.

DIP switch		Stand-alone (A) or Modbus (I)
8		
off		Stand-alone (A)
on		Modbus (I)

Modbus mode

The light is in Modbus mode when the DIP 8 is on. In this mode, the light is being controlled with a Obelux Controller. Configuration DIP switches 1-4 are used to give the light RS485 bus address. Always start the numbering from one on the same bus. Duplicate addresses on the same bus are not allowed.

DIP	DIP	DIP	DIP	
1	2	3	4	Modbus Address
off	off	off	off	Address 01
on	off	off	off	Address 01
off	on	off	off	Address 02
on	on	off	off	Address 03
off	off	on	off	Address 04
on	off	on	off	Address 05
off	on	on	off	Address 06
on	on	on	off	Address 07
off	off	off	on	Address 08
on	off	off	on	Address 09
off	on	off	on	Address 10
on	on	off	on	Address 11
off	off	on	on	Address 12
on	off	on	on	Address 13
off	on	on	on	Address 14
on	on	on	on	Address 15

RS-485 bus should be terminated with on-board 120ohm resistors on both ends of this communications bus. Turn on DIP10 only from the last light on the bus.

Stand-alone mode

The light is in stand-alone mode when the DIP 8 is off. In this mode, the light operation is configured with DIP switches. No additional controllers are needed.

DIP switch		Flashing frequency
1	2	
off	off	RESERVED
on	off	20fpm
off	on	40fpm
on	on	RESERVED

This setting changes the flashing frequency of the light. White and IR lights flash with same frequency.

DIP switch		Test mode 2 (Photocell)
3		
off		Test mode off
on		Photocell test mode on. (Test Mode DIP 7 must also be set on)

Test mode 2 speeds up the transition between the day and night modes to few seconds. Normally this takes several minutes.

DIP switch		Test mode (IR)
4		
off		Test mode off
on		White light off. Only IR light on. (Test Mode DIP 7 must also be set on)

DIP switch		Test mode (White)
5		
off		Test mode off
on		White led Steady in 5% power. IR Off. (Test Mode DIP 7 must also be set on)

Addendum A: Pre-attached cable (HAN6)

Cable specification:

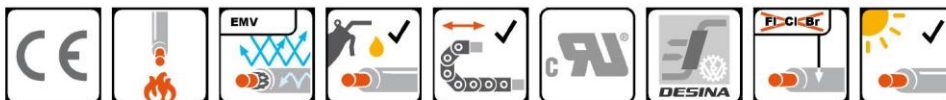
SERVO cable FACAB EFK SERVO-CP acc. to Siemens Standard 6FX8008+



Specification/standard:	UL/CSA
conductor material:	bare copper
conductor construction:	fine stranded class 6
insulation:	polypropylen
screen:	Cu-braid, tinned
screen coverage:	85 %
sheathing material:	polyurethan
colour of outer sheath:	orange RAL 2003 (DESINA)
flame retardant:	VDE 0482-332-1-2/IEC 60332-1
halogen free:	DIN EN 50267/IEC 60754
oil resistant:	EN 60811-2-1
max. operating temperature, fixed:	-50 - +80 °C
temperature, moved/during installation:	-40 - +80 °C
bending radius, fixed installation:	5 x DA
bending radius, moved application:	7,5 x DA
Bending cycles, max.:	5 Mio.
Moving distance, max.:	100 m
nominal voltage U₀:	600 V
nominal voltage U:	1 kV
test voltage:	4 kV
core identification:	acc. to Siemens specification

Application: Low capacity connection cable between servo controller and frequency driven motor. For application in machine tools and drag chains with medium mechanical stress. Please pay attention to our instructions for the use of drag-chain cables.

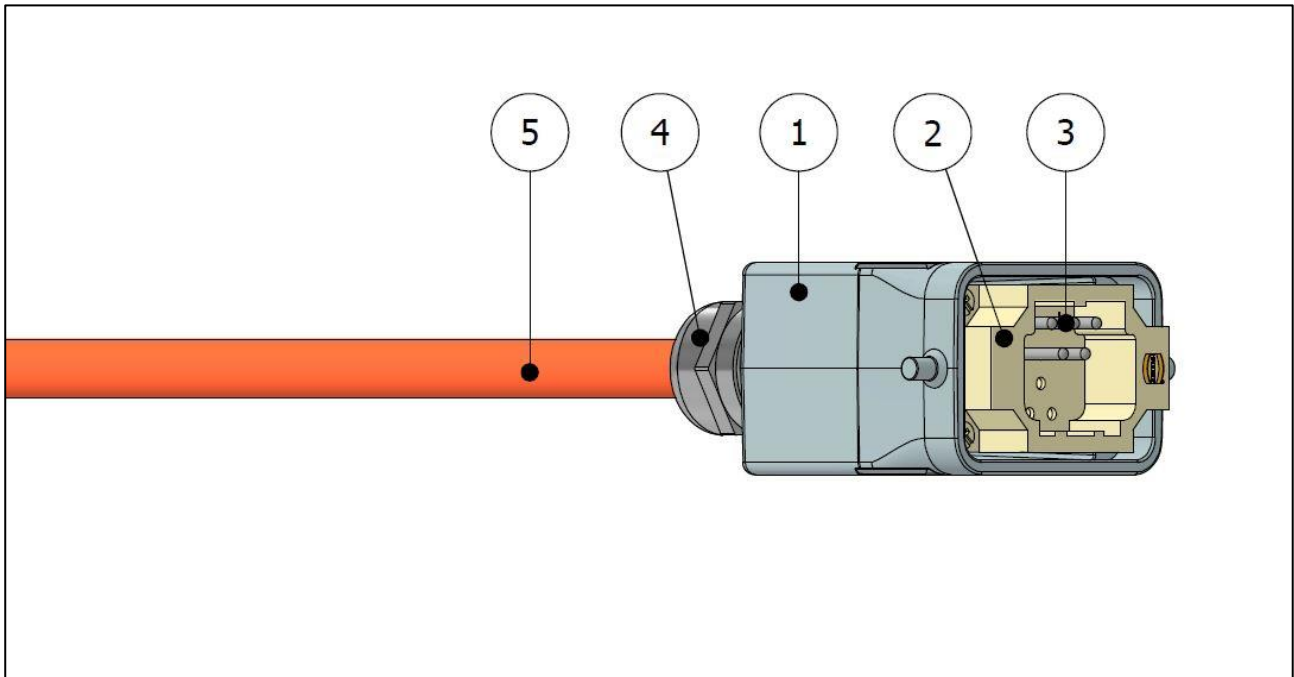
Additional information: Siemens part numbers (6FX...) are registered trade marks of Siemens AG and used only as reference.



The products and information presented here are for technical calculation only. They are subject to technical progress and in no way represent the ability of shipment. Outer diameters are approximately.

p/n	part name	D _A [mm]	G [kg]	Cu [kg/km]	p/n	part name	D _A [mm]	G [kg]	Cu [kg/km]
035291	[4G25] 0,6/1 kV OR cUL - 6FX8008-1BB25	25,4	1523	1100	035298	[4G6+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA41	16,8	540	365
035292	[4G35] 0,6/1 kV OR cUL - 6FX8008-1BB35	28,6	2080	1510	035299	[4G10+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA516FX8008-1BA5	19,9	782	560
035293	[4G50] 0,6/1 kV OR cUL - 6FX8008-1BB50	33,4	2710	2130	035300	[4G16+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA616FX8008-1BA6	22,5	1101	816
035294	[4G70] 0,6/1 kV OR cUL - 6FX8008-1BB70	42,5	4123	3025	035301	[4G25+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA256FX8008-1BA2	26,2	1490	1172
035295	[4G1,5+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA116FX8008-1BA1	11,6	244	163,5	035302	[4G35+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA356FX8008-1BA3	29,8	2015	1595
035296	[4G2,5+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA21 6FX8008-1BA21	13,4	310	189	035303	[4G50+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA50	34	2754	2214
035297	[4G4+(2X1,5)] 0,6/1 kV OR cUL - 6FX8008-1BA316FX8008-1BA3	14,8	408	260,5					
DA	outer diameter								
G	weight								
Cu	copper								

Connector parts:



- | | | |
|-------------|--|----------------|
| 1. Housing: | HAN HC2 Pegs Top Entry M25 | 19 30 006 0446 |
| 2. Insert: | HAN EE 10pos Male Crimp | 09 32 010 3001 |
| 3. Crimp: | Contact HAN E Male Ag 1,5mm ² | 09 33 000 6104 |
| 4. Gland: | M25x1.5 EMC | |
| 5. Cable: | Servo 4G1,5+(2x1,5) | |

Connector pinouts:

Alarm Relay		Modbus	
Pin number:	Designation:	Pin number:	Designation:
1	L	1	L
2	N	2	N
3	NO	3	D+
4	COM	4	D-
5	NC	5	SH
6	-	6	-
7	-	7	-
8	-	8	-
9	-	9	-
10	-	10	-
PE	PE	PE	PE

Order code:

Syntax for order code: **[Light unit name]-[Cable length]-[Connector type]**
For "Alarm Relay" pinout: Choose stand-alone model (=A)
For "Modbus" pinout: Choose modbus model (=I)

Example: H100IRCCV230GAB-2.70M-HAN6 (Alarm Relay, 2,7m cable with HAN6 connector)
Example: H100IRCCV230GIB-2.70M-HAN6 (Modbus, 2,7m cable with HAN6 connector)

Addendum B: Pre-attached cable (open ended)

Cable specification:

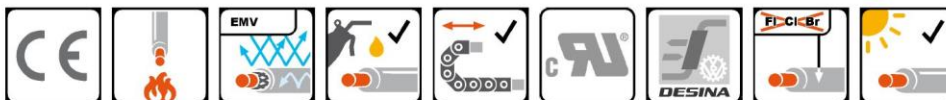
SERVO cable FACAB EFK SERVO-CP acc. to Siemens Standard 6FX8008+



Specification/standard:	UL/CSA
conductor material:	bare copper
conductor construction:	fine stranded class 6
insulation:	polypropylen
screen:	Cu-braid, tinned
screen coverage:	85 %
sheathing material:	polyurethan
colour of outer sheath:	orange RAL 2003 (DESINA)
flame retardant:	VDE 0482-332-1-2/IEC 60332-1
halogen free:	DIN EN 50267/IEC 60754
oil resistant:	EN 60811-2-1
max. operating temperature, fixed:	-50 - +80 °C
temperature, moved/during installation:	-40 - +80 °C
bending radius, fixed installation:	5 x DA
bending radius, moved application:	7,5 x DA
Bending cycles, max.:	5 Mio.
Moving distance, max.:	100 m
nominal voltage U₀:	600 V
nominal voltage U:	1 kV
test voltage:	4 kV
core identification:	acc. to Siemens specification

Application: Low capacity connection cable between servo controller and frequency driven motor. For application in machine tools and drag chains with medium mechanical stress. Please pay attention to our instructions for the use of drag-chain cables.

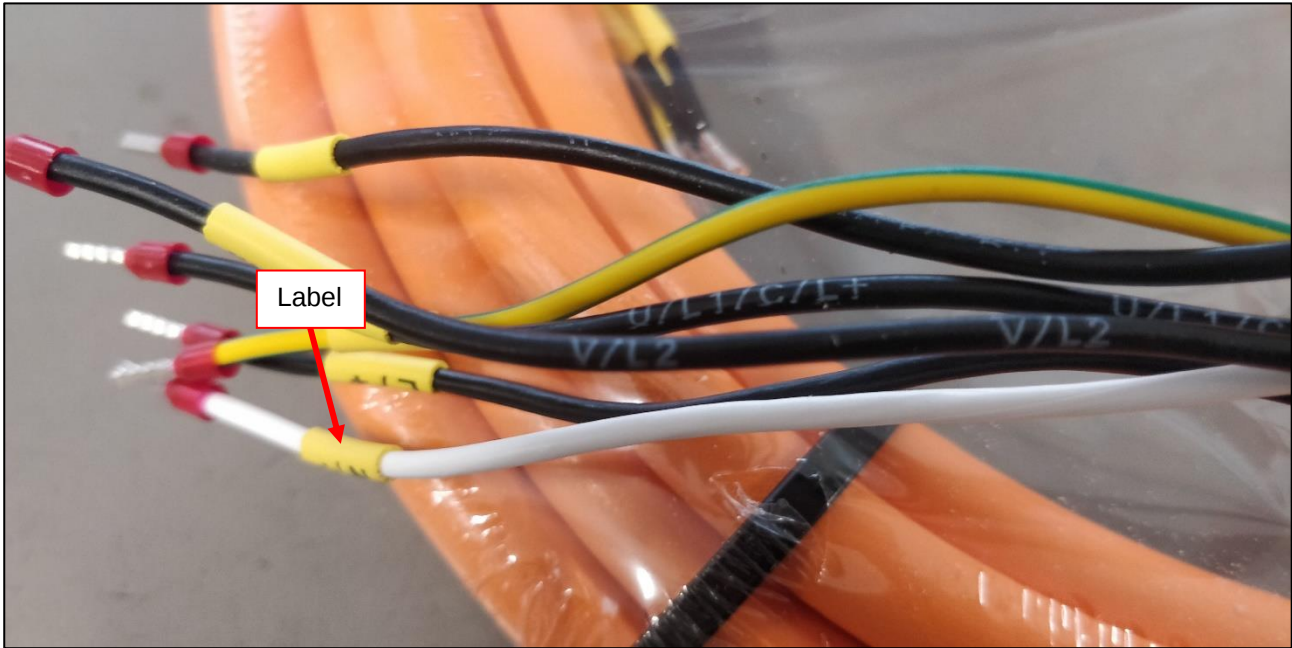
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DA	outer diameter								
G	weight								
Cu	copper								

Wire designations:



Alarm Relay		Modbus	
Label:	Designation:	Label:	Designation:
L / +	L	L / +	L
N / -	N	N / -	N
PE	PE	PE	PE
NO	NO	D+	D+
COM	COM	D-	D-
NC	NC	SH	SH

Order code:

Syntax for order code: **[Light unit name]-[Cable length]**
For “Alarm Relay” wiring: Choose stand-alone model (=A)
For “Modbus” wiring: Choose modbus model (=I)

Example: H100IRCCV230GAB-5.0M (Alarm Relay, 5,0m cable)
Example: H100IRCCV230GIB-5.0M (Modbus, 5,0m cable)