

Basler Accessories



Technical Specification

POWER-I/O-PLC+ CABLE, HRS 6P/OPEN, 10 M

Order Numbers

2000034084

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Contacting Basler Support Worldwide

Europe, Middle East, Africa

Basler AG
An der Strusbek 60–62
22926 Ahrensburg
Germany

Tel. +49 4102 463 515
Fax +49 4102 463 599

support.europe@baslerweb.com

The Americas

Basler, Inc.
855 Springdale Drive, Suite 203
Exton, PA 19341
USA

Tel. +1 610 280 0171
Fax +1 610 280 7608

support.usa@baslerweb.com

Asia-Pacific

Basler Asia Pte. Ltd.
35 Marsiling Industrial Estate Road 3
#05–06
Singapore 739257

Tel. +65 6367 1355
Fax +65 6367 1255

support.asia@baslerweb.com

www.baslerweb.com

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1 Introduction

The Power-I/O-PLC+ cables with Hirose 6-pin connector and open end feature an integrated PLC+ electronic board.

The key feature of this board is that it is able to adjust input voltage levels coming from PLC devices (up to 24 V) to the TTL voltage levels required by the camera (0 to 5 V). [Table 1](#) contrasts these different voltage levels.

In addition, the PLC+ electronic board protects the power supply of the camera as well as the input lines of the camera against the following:

- Reverse polarity
- Turn-on voltage spikes
- Positive or negative overvoltage spikes

The cables also offer protection of the signal transmission as well as the power supply against EMI and ESD. This is achieved by means of twisted pair cables in which each pair of wires carries just one signal: one wire carries the signal itself and the other is the signal's own return conductor.

Camera I/O Signal Voltage	PLC+ Cable Input Voltage	Description
Max. 24 VDC	Max. 24 VDC + 10 %	Operating voltage limit.
0–1.4 VDC	0–8.4 VDC	Voltage indicates a logical 0.
>1.4–2.2 VDC	>8.4–10.4 VDC	Logical state is undefined.
>2.2 VDC	>10.4 VDC	Voltage indicates a logical 1.

Table 1: Voltage Requirements

2 Technical Data

Order Number	Description	Applicable Cameras
2000034084	Power-I/O Cable for PLC with HRS 6-pin connector and open end, 10 m	ace GigE <ul style="list-style-type: none"> ■ Only suitable for use with opto-coupled IO lines. ace USB 3.0 <ul style="list-style-type: none"> ■ Only suitable for use with opto-coupled IO lines. ■ Take additional safety measures. See note on page 4.

Table 2: Cable Type

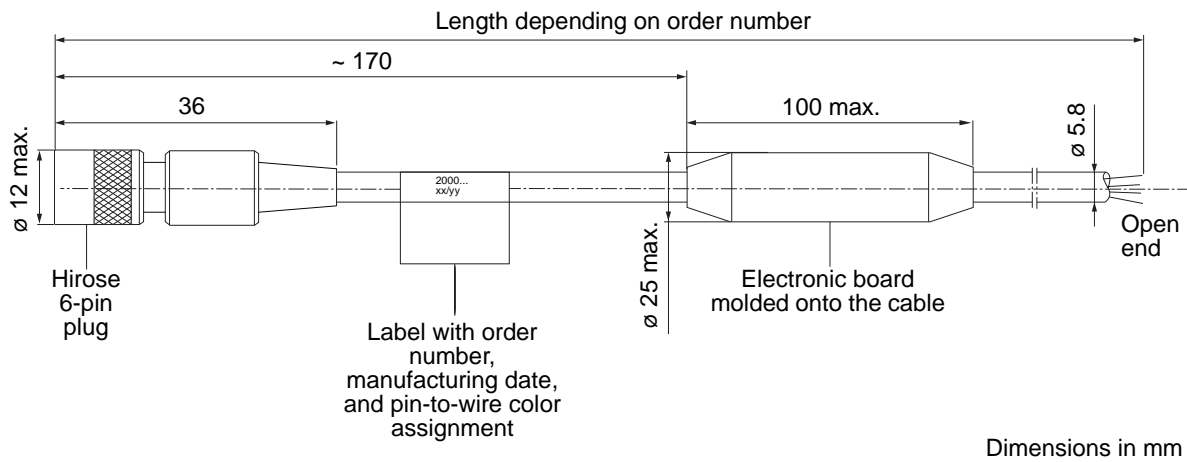





Fig. 1: Cable Overview

	 CAUTION
	<p>Personal Injury Hazard and Risk of Damage to Camera in Case of Short Circuits</p> <p>Short circuits may cause an extreme rise in temperature of the camera's housing. This may damage the camera and may also lead to personal injuries, e.g., burns if touching the housing. In the worst case, the overheating may cause a fire.</p> <p>In order to prevent that, you should take additional measures to limit the current flowing through each individual wire during a short circuit. The maximum current allowed is 2 A. There are two ways how to do this:</p> <ul style="list-style-type: none"> ■ Using a fuse ■ Using a limited power supply


Wiring Information

	<p>The shading in Table 3 indicates which wires form twisted pairs inside the cable. (x) means that the wire is connected internally to pin x.</p>
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Pin Number	Wire Color	ace GigE	ace USB 3.0
1	Brown	Camera Power	Used for providing additional safety measures.
2	Pink	Opto-isolated IN (Line1)	Opto-isolated IN (Line1)
(5)	Gray	Opto-isolated IN Ground (Line1)	Opto-isolated IN Ground (Line1)
4	Yellow	Opto-isolated OUT (Out1)	Opto-isolated OUT (Out1)
(5)	Green	Opto-isolated OUT Ground (Out1)	Opto-isolated OUT Ground (Out1)
6	White	Camera Power Ground	Used for providing additional safety measures.

Table 3: Wiring Information

For more details, see the respective camera user's manual.

	<p>Safety Measures When Using Cable with ace USB 3.0 Cameras</p> <p>Make an electrical connection between the brown and the white wire, e.g., by soldering. Insulate the connection from the other wires.</p>
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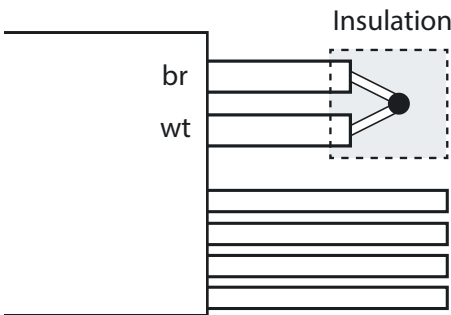


Fig. 2: Connection Between the Brown and the White Wire

Physical Specifications

Camera-Side Connector	Hirose 6 pin (HR10A-7P-6S (73))
Host-Side Connector	None, open end
Cable Cross-Section	3 x 2 x 0.14 mm ² (close to AWG 26)
Cable Diameter	5.8 mm
Wire Insulation	PVC
Outer Jacket	PVC
Minimum Bending Radius	34.8 mm (6 x cable diameter), fixed installation
Maximum Bending Cycles	None (fixed installation only)
Suitable for Drag Chain Applications	No
Suitable for Robotics Applications	No

Table 4: Physical Specifications

Electrical Specifications

Nominal Operating Voltage	See Table 1 on page 1
Maximum Operating Voltage	See Table 1 on page 1
Wire Resistance	≤142 Ω/km

Table 5: Electrical Specifications

Environmental Specifications

Operating Temperature Range	-25–80 °C (not moving)
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Table 6: Environmental Specifications

Plug Specifications

Durability	>1000 mating cycles
Contact Resistance	max. 10 mΩ
Contact Plating	Silver
Protection Rating	IP 40
Plug Insulation Material	Polyamide/PBT

Table 7: Plug Specifications

General Information

CE Conformity	Yes (RoHS included)
Warranty	1 year
UL Conformity	No

Table 8: General Information



The cables are intended for use with the cameras specified in [Table 2](#) only.

Read the respective user's manual including the safety warnings before connecting the cable to the camera. The user's manual also contains further information about pin assignments, power requirements, as well as comprehensive information about installing and using the camera.

You can download the user's manual and related documents for your camera free of charge from the Basler website: www.baslerweb.com

Revision History

Doc. ID Number	Date	Changes
DG00139701000	22 Sep 2015	Initial release of this document.
DG00139702000	14 Apr 2016	Added note in Table 2 that cable is not recommended for use with GPIO.
DG00139703000	15 May 2017	Added information for using the cable with ace USB 3.0 cameras in Table 2 on page 2 and Table 3 on page 3 . Added note about additional safety measures on page 4 . Added Fig. 2 on page 4 . Updated RoHS information in Table 8 on page 5 .
DG00139704000	29 Aug 2017	Added warning about additional short circuit protection on page 3 .

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