

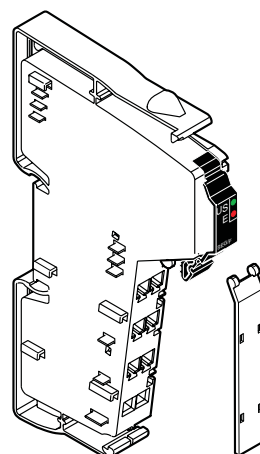
IB IL 24 SEG/F (-PAC)

Inline Segment Terminal With Fuse

AUTOMATIONWORX

Data Sheet
5656_en_03

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Description

The terminal is designed for use within an Inline station. The segment terminal is used to create a protected partial circuit (segment circuit) within the main circuit. The terminal is not used to supply power and therefore has no elements for protection against polarity reversal and surge voltage.

Features



This terminal does not have an INTERBUS protocol chip and therefore is not an INTERBUS device.

- Automatic creation of a segment circuit within the main circuit
- Segment circuit protected by internal fuse
- Diagnostic indicator



This data sheet is only valid in association with the IL SYS INST UM E user manual or the Inline system manual for your bus system.



Make sure you always use the latest documentation.
It can be downloaded at www.download.phoenixcontact.com.
A conversion table is available on the Internet at
www.download.phoenixcontact.com/general/7000_en_00.pdf.



This data sheet is valid for the products listed on the following page:

IB IL 24 SEG/F (-PAC)

Ordering Data

Products

Description	Type	Order No.	Pcs./Pkt.
Inline segment terminal with fuse, including accessories (connector and labeling field)	IB IL 24 SEG/F-PAC	2861373	1
Inline segment terminal with fuse, without accessories	IB IL 24 SEG/F	2727747	1



One of the connectors listed in the following is needed for the complete fitting of the IB IL 24 SEG/F terminal.

Accessories

Description	Type	Order No.	Pcs./Pkt.
Connector for Inline power and segment terminals (black, w/o color print)	IB IL SCN-PWR IN	2727462	10
Connector for Inline power and segment terminals (with color print)	IB IL SCN-PWR IN-CP	2727637	10
Fuse	SI 5 x20 6,300 A T	5030512	

Documentation

Description	Type	Order No.	Pcs./Pkt.
"Automation Terminals of the Inline Product Range" user manual	IL SYS INST UM E	2698737	1
"Configuring and Installing the INTERBUS Inline Product Range" user manual	IB IL SYS PRO UM E	2743048	1

Technical Data

General Data

Housing dimensions (width x height x depth)	12.2 mm x 120 mm x 71.5 mm
Weight	44 g (without connector), 59 g (with connector)
Ambient temperature (operation)	-25°C to +55°C
Ambient temperature (storage/transport)	-25°C to +85°C
Permissible humidity (operation/storage/transport)	10% to 95% according to DIN EN 61131-2
Air pressure (operation/storage/transport)	70 kPa to 106 kPa (up to 3000 m above sea level)
Degree of protection	IP20 according to IEC 60529
Class of protection	Class 3 according to VDE 0106, IEC 60536
Connection data for Inline connector	
Connection method	Spring-cage terminals
Conductor cross-section	0.2 mm ² to 1.5 mm ² (solid or stranded), 24 - 16 AWG

24 V I/O Supply

Power is supplied in the bus coupler or in the power terminal.

Connections for the supply voltage are not required on the segment terminal. The corresponding terminal points are only provided for testing purposes.

Transmission Speed

Can be used in Inline stations with a transmission speed of either 500 kbps or 2 Mbps

Permissible Total Current in the Potential Jumpers of the Main and Segment Circuit

Nominal current of the terminal	6.0 A
Maximum permissible value	8.0 A



The terminal is delivered with a 6.3 A slow-blow fuse. In the event of an increased total current in the potential jumpers U_M and U_S the user must protect the circuit by using higher rated fuses. Please note the information for the selection of fuses given on page 5.

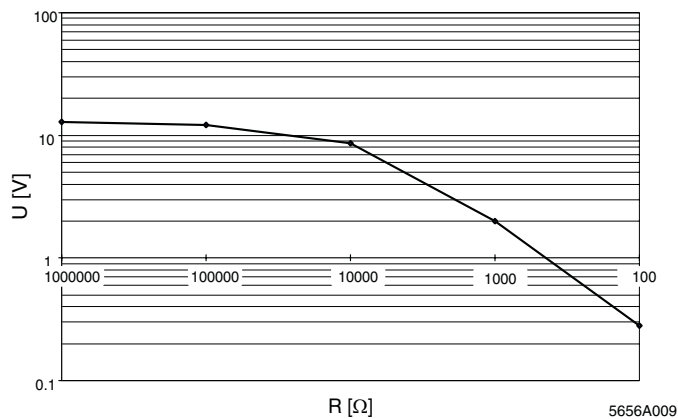
Characteristic Curve of the Voltage in the Segment Circuit With Blown Fuse



Note that power is not disconnected in the main circuit even after the fuse has blown! Observe the characteristic curve.

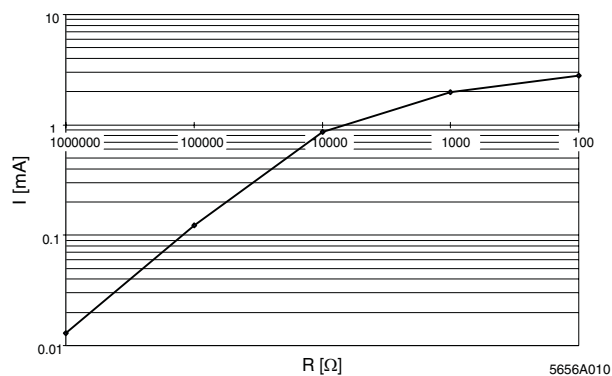
Load Resistance (Ω)	Typical Output Voltage (V)	Typical Current (mA)
1000000	12.80	0.013
100000	12.21	0.122
10000	8.60	0.86
1000	1.99	1.99
100	0.28	2.8

Typical Output Voltage in Relation to the Resistance in the Segment Circuit



U [V] Output voltage in V
R [Ω] Resistance in Ω

Typical Output Current in Relation to the Resistance in the Segment Circuit



I [mA] Output current in mA
R [Ω] Resistance in Ω

Power Dissipation

Formula to Calculate the Power Dissipation of the Electronics

$$P_{TOT} = 0.180 \text{ W} + I_S^2 \times R_F$$

Where

P_{TOT} Total power dissipation in the terminal

I_S Load current in the segment circuit

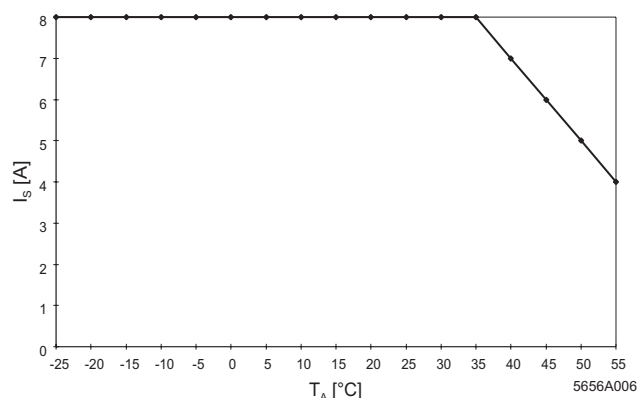
R_F Resistance of the fuse

The resistance of the fuse R_F is approximately 50 mΩ for a 6.3 AT fuse.

Derating of the Load Current in the Segment Circuit

Ambient Temperature T_A in °C	Load Current in the Segment Circuit I_S in A
55°C	4.0 A
45°C	6.3 A

Permissible Load Current in the Segment Circuit in Relation to the Ambient Temperature



I_S [A] Load current in the segment circuit in A
 T_A [°C] Ambient temperature in °C

Safety Equipment

Overload/short circuit in segment circuit

Fuse 5 x 20 with 6.3 A slow-blow



Fuses with other values can also be used. The maximum fuse value is 8 A.



Note for the selection of fuses:

For fuses with a value greater than 2 A, only slow-blow fuses may be used.

Surge voltage

Protective elements in the power terminal or the bus coupler

Protection against polarity reversal

Protective elements in the power terminal or the bus coupler

Electrical Isolation/Isolation of the Voltage Areas



To provide electrical isolation between the logic level and the I/O area, it is necessary to supply these areas via the bus coupler or via the bus coupler and a power terminal from separate power supply units. Interconnection of the power supply units in the 24 V area is not permitted. Please also pay attention to GND/PE connections on the power supply units (see also user manual).

Common Potentials

The 24 V main voltage, 24 V segment voltage, and GND have the same potential. FE is a separate potential area.

Separate Potentials in the System Consisting of Bus Coupler/Power Terminal and I/O Terminal

- Test Distance

5 V supply incoming remote bus / 7.5 V supply (bus logic)

5 V supply outgoing remote bus / 7.5 V supply (bus logic)

7.5 V supply (bus logic) / 24 V supply (I/O)

24 V supply (I/O) / functional earth ground

- Test Voltage

500 V AC, 50 Hz, 1 min

500 V AC, 50 Hz, 1 min

500 V AC, 50 Hz, 1 min

500 V AC, 50 Hz, 1 min

Error Messages to the Higher-Level Control or Computer System

None

Approvals

Information on current approvals can be found on the Internet at www.download.phoenixcontact.com.

Local Diagnostic and Status Indicators and Terminal Point Assignment

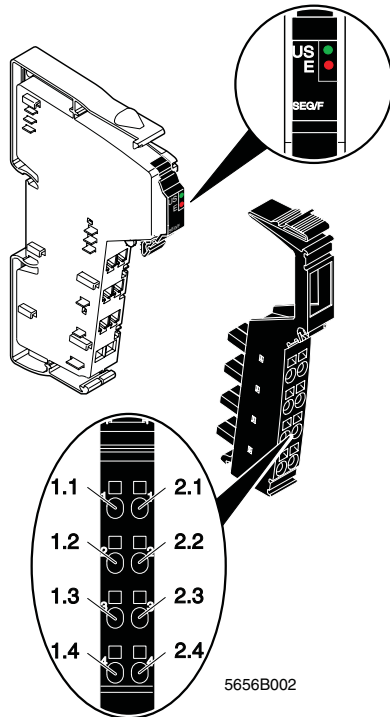


Figure 1 Terminal with appropriate connector

Local Diagnostic Indicators

Desig.	Color	Meaning
US	Green	24 V voltage (in segment circuit U_S ; prior to fuse)
E	Red	Fuse in the segment terminal (in segment circuit U_S)



A blown fuse is indicated by diagnostic indicator E (the E LED lights up).

Function Identification

Black

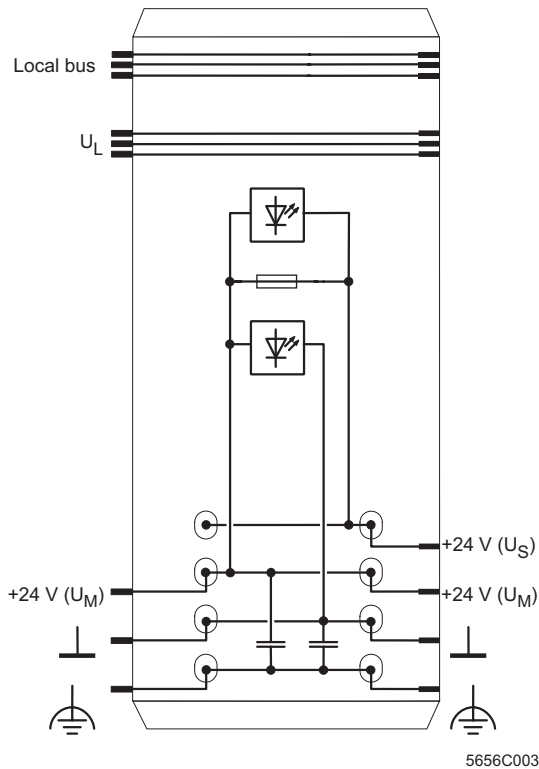
Terminal Point Assignment



The terminal points are **only** provided for measuring purposes. Voltage is supplied via a bus terminal or a power terminal.

Terminal Point	Assignment
1.1, 2.1	Segment voltage U_S (after the fuse)
1.2, 2.2	Main voltage U_M
1.3, 2.3	GND of the supply voltages
1.4, 2.4	FE connection

Internal Circuit Diagram



Key:



LED



Fuse



Capacitive connection to functional earth ground (FE)



Other symbols used are explained in the IL SYS INST UM E user manual or in the Inline system manual for your bus system.

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Figure 2 Internal wiring of the terminal points