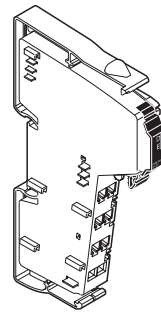


IB IL 24 PWR IN/2F-DF IB IL 24 PWR IN/2F-DF-PAC

Inline Power Terminal
With Fuse and Diagnostics



Data Sheet

06/2004

7047A001



The IB IL 24 PWR IN/2F-DF and IB IL 24 PWR IN/2F-DF-PAC only differ in the scope of supply (see "Ordering Data" on page 11). Their function and technical data are identical.

For greater clarity, the Order Designation IB IL 24 PWR IN/2F-DF is used throughout this document.



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

Function

The terminal is designed for use within an Inline station.

The terminal supplies 24 V supply voltage to the main circuit (U_M) and automatically provides the 24 V supply voltage to the segment circuit (U_S).

The terminal has protection against polarity reversal and surge voltage.

The internal fuse protects the main and segment circuit.

This terminal has an LED for bus diagnostics and occupies two input data bits, which are used to indicate the presence of the supply voltage and the state of the fuse.

Features

- Supply of the 24 V main voltage U_M
- Provision of the 24 V segment voltage U_S
- Main and segment circuit protected by an internal fuse
- Diagnostic indicators
- This terminal is an INTERBUS device.

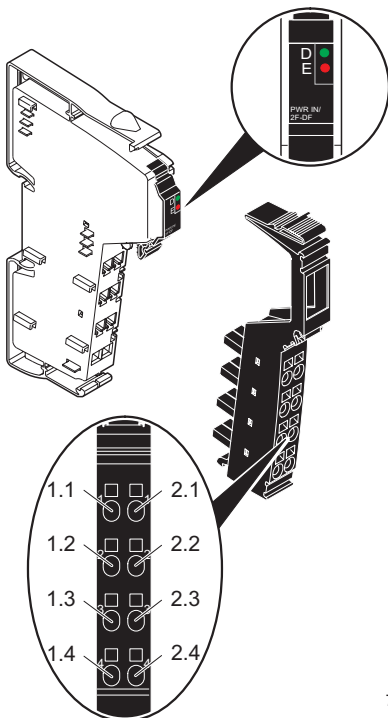


Figure 1 IB IL 24 PWR IN/2F-DF with appropriate connector

Function Identification

Black

7047A002

Local Diagnostic Indicators

| Des. | Color | Meaning |
|--|--------------|--|
| D | Green | Bus Diagnostics |
| | | ON: INTERBUS is active |
| | | Flashing: |
| | | 0,5 Hz Communications power present, INTERBUS not active |
| | | 2 Hz I/O error, if the fuse is blown or missing. |
| | | 4 Hz Communications power present, local bus error |
| OFF: Communications power not present, INTERBUS not active | | |
| E | Red | Fuse |
| | | OFF: Fuse OK |
| | | ON: Fuse has blown |



If the fuse is missing or has blown, an I/O error message is sent to the higher-level control or computer system.



A blown or missing fuse is indicated by both LED diagnostic indicators. The red E LED lights up and the green D LED flashes at 2 Hz.

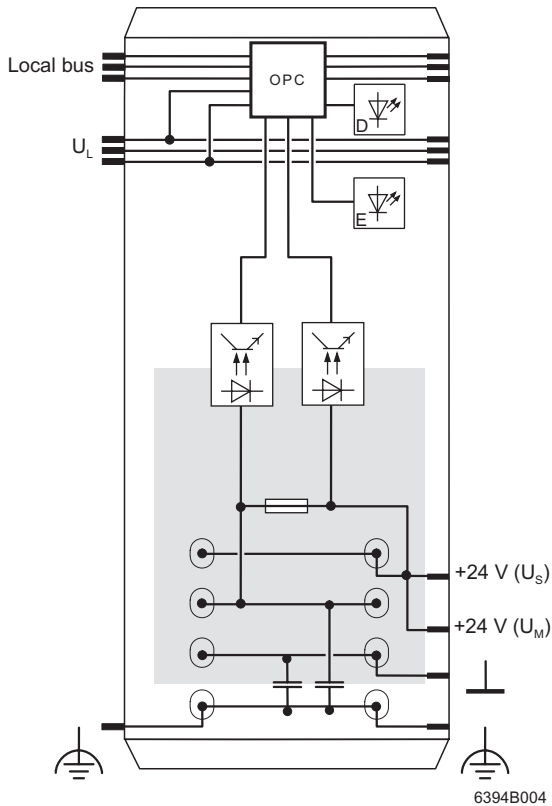
Terminal Point Assignment

| Terminal Point | Assignment |
|----------------|---|
| 1.1, 2.1 | Measuring points for the segment circuit U_S |
| 1.2, 2.2 | Supply points for the main circuit U_M (+24 V) These terminal points are connected with each other and with the potential jumper of the main supply U_M via the fuse. The potential jumpers of the main circuit U_M and the segment circuit U_S (both protected) have a combined current carrying capacity of 6.3 A. |
| 1.3, 2.3 | Ground contact (GND) for main and segment circuit The reference potential is directly routed to the potential jumper and is, at the same time, ground reference for the main and segment voltages. |
| 1.4, 2.4 | FE connection The contacts are directly connected with the potential jumper and the FE springs on the bottom of the housing. The terminal is grounded when it is snapped onto a grounded DIN rail. |
| | Terminal points 1.2 and 1.3 are connected with a capacitor to FE. |







**Observe the current carrying capacity**

The maximum total current flowing through the potential jumpers must not exceed 6.3 A.

Internal Circuit Diagram



Key:

-  INTERBUS protocol chip (bus logic including voltage conditioning)
-  LED with information on the indicator designation "D" or "E" (see page 2)
-  Optocoupler
-  Fuse
-  Capacitive connection to functional earth ground (FE)
-  Electrically isolated area

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

Figure 2 Internal wiring of the terminal points

Connection Example



The 24 V supply in the main and segment circuit is protected by the internal fuse.



Most I/O terminals are supplied from the segment circuit.

This voltage is automatically provided at the IB IL 24 PWR IN/2F-DF terminal.

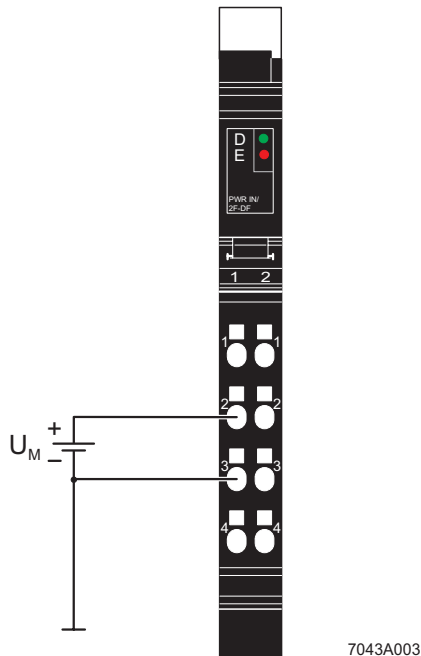


Figure 3 Typical connection of the supply voltage U_M



To ensure maximum current carrying capacity, use a power connector to connect the cables (see page 11). In these connectors, the adjacent terminal points 1.2 and 2.2, and 1.3 and 2.3 are jumpered internally.

Programming Data/ Configuration Data

INTERBUS

| | |
|-------------------------|---|
| ID code | BE _{hex} (190 _{dec}) |
| Length code | C2 _{hex} |
| Process data channel | 2 bits |
| Input address area | 2 bits |
| Output address area | 0 bits |
| Parameter channel (PCP) | 0 bits |
| Register length (bus) | 2 bits |

Other Bus Systems



For the programming data of other bus systems, please refer to the appropriate electronic device data sheet (GSD, EDS). Up-to-date information can be found on the Internet at www.phoenixcontact.com.

Process Data

Assignment of the IN Process Data Words





The IN process data only maps the status of the fuse and the main voltage.

| (Byte.bit) view | | 0.1 | 0.0 |
|-----------------|---|-----|-----|
| Assignment | Main voltage U_M is present, fuse is OK | 1 | 1 |
| | Main power U_M present, fuse blown or missing | 1 | 0 |
| | Main power U_M not present, fuse blown or missing | 0 | 0 |




For the assignment of the illustrated (byte.bit) view to your control or computer system, please refer to the DB GB IBS SYS ADDRESS data sheet, Order No. 90 00 99 0.


Technical Data

| General Data | |
|---|--|
| Order Designation | Order No. |
| | IB IL 24 PWR IN/2F-DF 28 63 78 2 IB IL 24 PWR IN/2F-DF-PAC 28 63 77 9 |
| Housing dimensions (width x height x depth) | 12.2 mm x 120 mm x 71.5 mm (0.480 x 4.724 x 2.815 in.) |
| Weight | 44 g (without connectors) |
| Operating mode | Process data mode with 2 bits |
| Transmission speed | 500 kbps |
| Permissible temperature (operation) | -25°C to +55°C (-13°F to +131°F) |
| Permissible temperature (storage/transport) | -25°C to +85°C (-136°F to +185°F) |
| Permissible humidity (operation) | 75% on average, 85% occasionally |
|  | In the range from -25°C to +55°C (-13°F to +131°F) appropriate measures against increased humidity (> 85%) must be taken. |
| Permissible humidity (storage/transport) | 75% on average, 85% occasionally |
|  | For a short period, slight condensation may appear on the outside of the housing if, for example, the terminal is brought into a closed room from a vehicle. |
| Permissible air pressure (operation) | 80 kPa to 106 kPa (up to 2,000 m [6,562 ft.] above sea level) |
| Permissible air pressure (storage/transport) | 70 kPa to 106 kPa (up to 3,000 m [9,843 ft.] above sea level) |
| Degree of protection | IP20 according to IEC 60529 |
| Class of protection | Class 3 according to VDE 0106, IEC 60536 |
| Interface | |
| Local bus interface | Through data routing |

| Power Consumption | |
|--------------------------------------|-------------------------|
| Communications power U_L | 7.5 V DC |
| Current consumption at U_L | 25 mA, maximum |
| Power consumption at U_L | 0.19 W, maximum |
| Main voltage U_M | 24 V DC (nominal value) |
| Nominal current consumption at U_M | 4.0 A (nominal value) |

| Supply of the Module Electronics Through the Bus Terminal (U_L) | |
|---|---------------------------|
| Connection method | Through potential routing |

| 24 V I/O Supply (Main Circuit U_M) | | |
|---|---|--|
| Connection | +24 V Ground (GND) | Terminal points 1.2 and 2.2 Terminal points 1.3 and 2.3 |
| Rated value | | 24 V DC |
| Tolerance | | -15% / +20% |
| AC component | | 5% |
| Permissible range | | 19.2 V to 30 V |
| Permissible current | | 6.3 A, maximum |
| Voltage supply requirements | | The power terminal must be supplied from a new power supply unit to create an electrically isolated area. Protect the 24 V power supply with an external fuse. |
|  | The power supply unit must be able to supply 4 times (400%) the nominal current of the external fuse. | |

| Permissible Total Current in the Potential Jumpers of the Main and Segment Circuit/ Nominal Current of the Terminal | | |
|--|--|--|
| Permissible total current in the potential jumpers | 6.3 A | |
| Nominal current of the terminal | 4.0 A | |
| Tolerance | +10% | |
|  | The terminal is delivered with a 6.3 A slow-blow fuse. With 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 8. | |

Power Dissipation

Formula to Calculate the Power Dissipation of the Electronics

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

Where

P_{TOT} Total power dissipation in the terminal

I_M Load current in the main circuit

R_F Resistance of the fuse

The resistance of fuse R_F for a 6.3 AT fuse is approximately 12 mΩ.

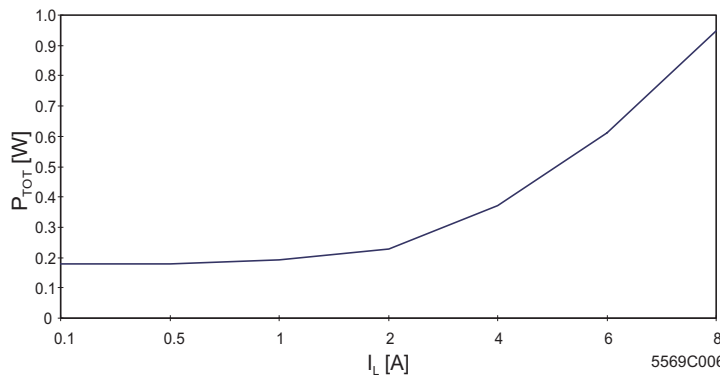
The power dissipation of the electronics for a theoretical maximum current of 6.3 A (nominal current = 4.0 A) is calculated as follows:

$$\begin{aligned} P_{TOT} &= 0.18 \text{ W} + 39.69 \text{ A}^2 \times 0.012 \text{ } \Omega \\ &= 0.66 \text{ W} \end{aligned}$$

Power Dissipation of the Housing (P_{HOU})

$P_{HOU} = 0.7 \text{ W}$ in the total permissible ambient temperature range

Typical Power Dissipation of the Electronics Depending on the Load Current in the Main Circuit







P [W] Power dissipation in W
 I_L [A] Load current in the main circuit in A

This test was carried out with a 6.3 AT fuse.

Derating of the Load Current in the Segment Circuit


No derating

| Safety Equipment | |
|--|--|
| Overload/short circuit in the main circuit and in the segment circuit | Fuse 5 x 20 with 6.3 A, slow-blow |
|  | Fuses with other values can also be used. The maximum fuse value may not exceed 6.3 A. |
|  | Note for the selection of fuses: Only use slow-blow fuses for fuses with higher rating than 2 A. |
| Surge voltage | Yes, suppressor diode for voltage limitation between terminal points 1.1 and 1.3, and terminal points 1.2 and 1.3 |
| Polarity reversal | Yes; diode connected in parallel as protection against polarity reversal |
|  | The power supply unit must be able to supply 4 times (400%) the nominal current of the internal fuse. |
| Electrical Isolation | |
|  | To provide electrical isolation between the logic level and the I/O area, it is necessary to supply these areas via the bus terminal or via the bus terminal 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 Terminal/Power Terminal and I/O Terminal | |
| - Test Distance | - Test Voltage |
| 5 V supply incoming remote bus / 7.5 V supply (bus logic) | 500 V AC, 50 Hz, 1 min. |
| 5 V supply outgoing remote bus / 7.5 V supply (bus logic) | 500 V AC, 50 Hz, 1 min. |
| 7.5 V supply (bus logic)/24 V supply (I/O) | 500 V AC, 50 Hz, 1 min. |
| 24 V supply (I/O)/functional earth ground | 500 V AC, 50 Hz, 1 min. |

Error Messages to the Superior Control System

I/O error message if fuse blown or missing

Ordering Data

| Description | Order Designation | Order No. |
|---|---------------------------|------------|
| Power terminal with fuse and diagnostics; including connectors and labeling field | IB IL 24 PWR IN/2F-DF-PAC | 28 63 77 9 |
| Power terminal with fuse and diagnostics | IB IL 24 PWR IN/2F-DF | 28 63 78 2 |
|  <p>One of the listed connectors is needed for the complete fitting of the IB IL 24 PWR IN/2F-DF terminal.</p> | | |
| Connector for voltage supply (black, with color print); pack of 10 | IB IL SCN-PWR IN-CP | 27 27 63 7 |
| Connector for voltage supply (black, w/o color print); pack of 10 | IB IL SCN-PWR IN | 27 27 46 2 |
| Fuse | SI 5 x 20 6,300 A T | 50 30 51 2 |
| "Configuring and Installing the INTERBUS Inline Product Range" user manual | IB IL SYS PRO UM E | 27 43 04 8 |



Make sure you always use the latest documentation. It can be downloaded at www.phoenixcontact.com.

Phoenix Contact GmbH & Co. KG
 Flachsmarktstr. 8
 32825 Blomberg
 Germany



+ 49 - (0) 52 35 - 3-00



+ 49 - (0) 52 35 - 3-4 12 00



www.phoenixcontact.com



Worldwide Locations:

www.phoenixcontact.com/salesnetwork

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9