

# PROFIBUS Module for XBT GT

Quick reference guide  
Kurzanleitung  
Instruction de service  
Guía de referencias rápidas  
Guida di riferimento rapido  
《快速参考指南》

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## Safety Instructions

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### **DANGER**

DANGER indicates an imminently hazardous situation which, if not avoided **will result** in death or serious injury.

### **WARNING**

WARNING indicates a potentially hazardous situation which, if not avoided, **can result** in death, serious injury, or equipment damage.

### **CAUTION**

CAUTION indicates a potentially hazardous situation, which, if not avoided, **can result** in personal injury or equipment damage.

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**DISCLAIMER**

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

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## Presentation

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The Profibus DP Slave unit XBTZGPDP is a UL/c-UL listed (UL File No. E182139, UL File No. E220851).

This product conforms to the following standards:

- UL 508

Industrial Control Equipment.

- UL 1604

Standard for Electrical Equipment for using in Class I and Class II, Division 2 and Class III, Hazardous (Classified) Locations.

- CAN/CSA-C22.2, No. 14-95M (c-UL Listed)

Industrial Control Equipment.

- CAN/CSA-C22.2, No. 213-M1987 (c-UL Listed)

Non-incendive Electrical Equipment for use in Class I, Division 2 Hazardous Locations.

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## UL 1604/CSA-C22.2 No.213 – Compliance and Handling Cautions

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# DANGER

### RISK OF EXPLOSION

- Power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods - Article 501- 4(b) of the National Electrical Code, NFPA 70 within the United States and in accordance with section 18-152 of the Canadian Electrical Code for units installed within Canada.
- Suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations or Non-Hazardous Locations,
- Do not perform substitution of components that may impair compliance to Class I, Division 2.
- Confirm that the location is not subject to any risk of explosion before connecting or disconnecting equipment, replacing or wiring modules.
- Confirm that the power supply has been turned OFF before disconnecting equipment, replacing or wiring modules, or confirm that the location is not subject to the risk of explosion.
- This unit must only be mounted in this manufacturer's UL listed Class 1, Division 2, Groups A, B, C and D panels.

**Failure to follow this instruction will result in death or serious injury.**



## **⚠ CAUTION**

### **RISK OF EQUIPMENT DAMAGE**

- The XBT GT unit's rear face is not approved as an enclosure. When building the XBT GT unit into an end-user product, be sure to use an enclosure that satisfies the standards as the end-user product's overall enclosure.
- The XBT GT unit must be used indoors only.
- Install and operate the XBT GT unit with its front panel facing outwards.
- If the XBT GT is mounted so as to cool itself naturally, install it in a vertical panel. It is recommended that the XBT GT unit should be mounted at least 100 mm (3.94 in.) away from any other adjacent structures or machine parts. The temperature must be checked on the final product in which the XBT GT unit is installed.

**Failure to follow this instruction can result in injury or equipment damage.**

### **CE Marking**

The profibus DP Slave unit is a CE marked product that conforms to EMC directives. EN55011 Class A and EN61000-6-2.

For detailed CE marking information, please ask your local Profibus DP Slave unit distributor.

CE Marking regulations requires the attachment of a Ferrite core (included) to the Profibus cable being used.



## Specifications

Detailed below the are specifications and dimensions of the Profibus DP Slave unit.

### Electrical Specifications

Items	Specifications
Rated Voltage	5 VDC +/- 5 % (supplied by the XBT GT unit)
Power Consumption	Less than 2.4 W
Voltage Endurance	500 VAC 20 mA for 1 minute
Insulation Resistance	More than 500 VDC 100 MΩ

### Environmental Specifications

Items	Specifications
Operating Temperature	0 °C ...+ 50°C (32 °F...122 °F)
Storage Temperature	-20 °C...+ 60 °C (-4°F ... 140°F)
Ambient Humidity	10 % ... 90 % RH (Wet bulb temperature: 39 °C (102.2 °F) max. - no condensation)
Storage Humidity	10 % ... 90 % RH (Wet bulb temperature: 39 °C (102.2 °F) max. - no condensation)
Dust	Less than 0.1 mg/m <sup>3</sup> No electrically conductive dusty conditions
Atmosphere	Free of corrosive gas.
Pollution Degree	Pollution Degree 2

Items	Specifications
Atmosphere (Altitude)	800...1114 hPa (Height: at an altitude of less than 2000 m (6,562 Ft))
Vibration Resistance	Complies with JIS B 3502, IEC 61131- 2 When vibration is not continuous: 10...57 Hz 0.075 mm 57...150 Hz 9.8 m/s <sup>2</sup> When vibration is continuous: 10...57 Hz 0.035 mm 57...150 Hz 4.9 m/s <sup>2</sup> 10...25 Hz X, Y, Z directions for 10 times (80 min.)
Impact Resistance	Complies with JIS B 3502, IEC61131-2 (147 m/s <sup>2</sup> to twice X, Y, Z each direction)
Noise Immunity (via noise simulator)	Noise Voltage: 1200 Vp-p Pulse Duration: 1 μs Rise Time: 1 ns
Electrostatic Discharge Immunity	Contact Electrical Discharge 6 kV (complies with IEC 61000-4-2 Level3)

## Structural Specification

Item	Specifications
Installation Method	Screw fixing
Cooling Method	Natural air cooling
Weight	Approx 500 g (1.1 lb)
External Dimensions	W88.2 mm (3.47 in.) x H91 mm (3.58 in.) x D21.1 mm (0.83 in.) (excluding protection and connector parts)

## Performance Specifications

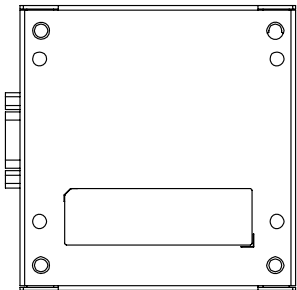
Items	Specifications								
Number of connectable units	Max. 32 units/segment (without repeaters) Max. 125 units\segments (with repeaters)								
Range of exchange numbers	1 - 125								
Transmission channel configuration	Bus configuration (Multi drop)								
Transmission channel	Bus transmission channel: Twisted pair cable with shield (Extension of whole channel depends upon the transmission speed)								
Transmission method	Half-duplex transmission, Serial transmission and comply with EIA RS-485								
Transmission setting	Data length: 8 bits Parity: Even number Stop bit: 1 bit								
Baud rate (bps)/ Transmission length (m)	9.6 K	19.2 K	93.75 K	187.7 K	500 K	1.5 M	3 M	6 M	12 M
	1200 m (3937 ft)			1000 m (3280 ft)	400 m (1312 ft)	200 m (656 ft)	100 m (328 ft)		
Encoding Method	NRZ (Non Return Zero) method								
I/O points	Input-Output: 1 to 112 words								

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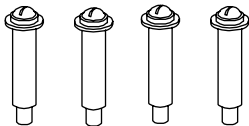
## Package Content

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The following items are included in the Profibus unit's package. Before using the Profibus unit, please confirm that all the items listed here are present.



Profibus DP Slave Unit



Screws x 4



User Manual (This Manual)

This unit has been carefully packed, with special attention to quality. Should you find anything damaged or missing, please contact your local distributor

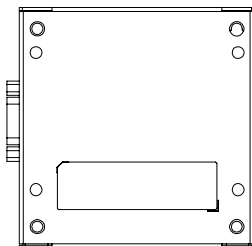
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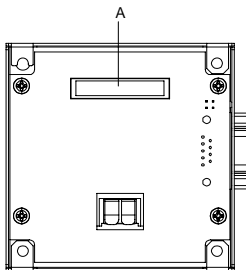
**Part Names and Functions**

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The following describes the name and function of each part.

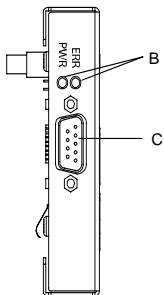


Front



Rear

**A:** XBT GT connector. For connection to the expansion interface of an XBT GT.

**B: Status LED**

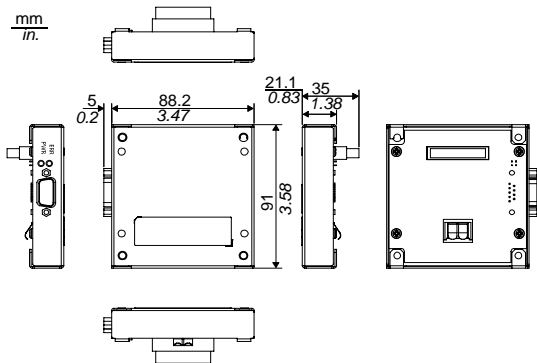
LED	XBT GT Status
PWR Green (illuminated)	Normal operation
ERR Red (illuminated)	When a communication error occurs, the LED is illuminated.

**C: Profibus Interface Connectors.** For connection to a Profibus lead or user fabricated cable.



## Profibus Unit External Dimensions

The following illustration shows the external dimensions of the Profibus DP Slave unit.





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## Installing the Profibus Unit

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# ⚠ DANGER

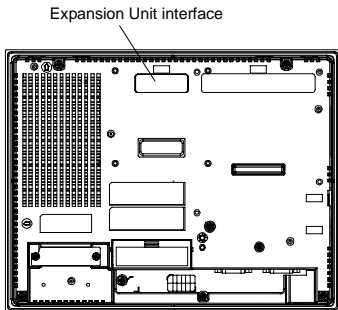
## RISK OF ELECTRIC SHOCK

- Do not connect XBT GT Slave unit power cord to a live power supply.

**Failure to follow this instruction will result in death or serious injury.**

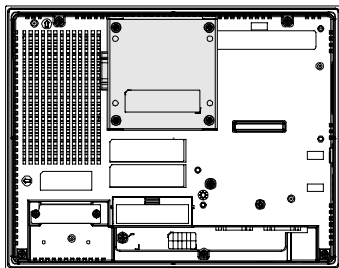
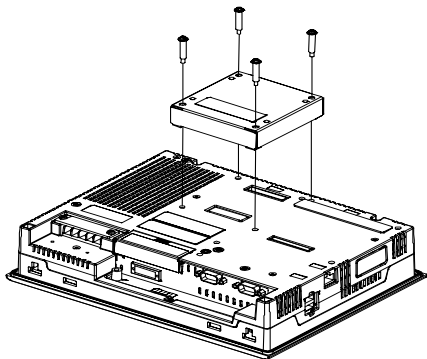
The following illustrations describe how to install the Profibus DP Slave unit to an XBT GT.

- 1 Disconnect the power cable and place the XBT GT Slave unit face down on a horizontal surface.
- 2 Insert the Profibus XBT GT connector into the Expansion Unit interface on the rear of the XBT GT Slave unit.



Rear view XBT GT Slave unit

3 Attach the Profibus DP Slave unit using the four screws, tightening to a torque of 0.5 to 0.6 N • m (4.42 to 5.31 in–lb).



## Wiring

### CAUTION

#### RISK OF ELECTRIC SHOCK

- Insure to ground the XBT GTs Frame Ground terminal.
- Connect all the data cables shield wires to the Frame Ground on the XBT GT.

**Failure to follow this instruction will result in death or serious injury.**

**Note :** For connection of this unit and any equipment related to Profibus DP Slave unit, use cables and connectors which comply with the Profibus specifications.

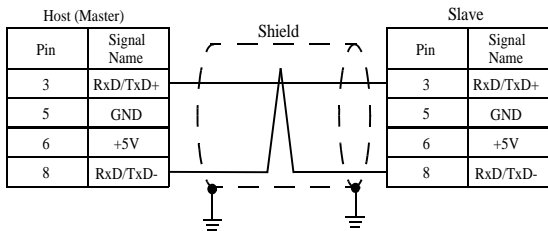
## Cable Specifications

This specification corresponds to the EN50170 standard:

Type A cable for Profibus-DP	
Impedance	135 to 165 $\Omega$ /3 to 20 Mhz
Capacitance	<30 pF/m
Resistance	> 110 $\Omega$ /km
Conductor Diameter	> 0.64 mm
Conductor Area	> 0.34 mm <sup>2</sup>

## Wire Connection Diagram

The following wire connection diagram should be used when making a cable for the Profibus DP Slave unit.



CE Marking Regulations requires the attachment of a Ferrite Core to the Profibus cable being used

The Ferrite Core must be attached closely to the Profibus DP Slave unit.

## Interface Specifications

A SUB-D 9 pin socket connector is used. (Stack metal Fittings:#4–40 inch screw)

Pin No.	Signal Name	Direction	Details
1	NC	–	–
2	NC	–	–
3	RxD/TxD+	Input/Output	Send/Receive Data (+)
4	CNTR–P	Output	Repeater Control Signal
5	GND	–	GND
6	+5 V	Output	+5 V
7	NC	–	–
8	RxD/TxD–	Input/Output	Send/Receive Data (–)
9	NC	–	–
Shell	FG	–	Frame Ground (Common with signal ground)

**Note :** For Connection of this unit and any equipment related to Profibus–DP Slave unit, use cable and connectors which comply with the Profibus specifications



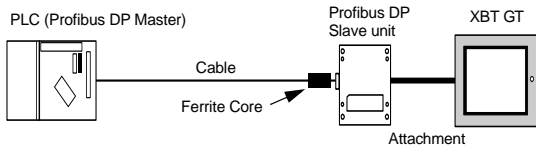


## Operating the Profibus DP Slave Unit

This chapter describes the operation of the Profibus DP Slave unit and the cautions necessary for correct data communication.

**Note :** This unit is a Profibus DP–V0 interface. The additional requirements for the Profibus DP–V1 and DP–V2 are not supported.

The Profibus DP Slave unit is an extended unit of the Schneider XBT GT (except XBT GT11xxx series) series. If the Profibus DP Slave unit is attached to the XBT GT and connected directly to a connection device (PLC etc.) that supports the Profibus DP Master via a cable, the XBT GT will be able to join the Profibus network and communicate with the Profibus DP Master.



CE Marking Regulations requires the attachment of a Ferrite Core to the Profibus cable being used.

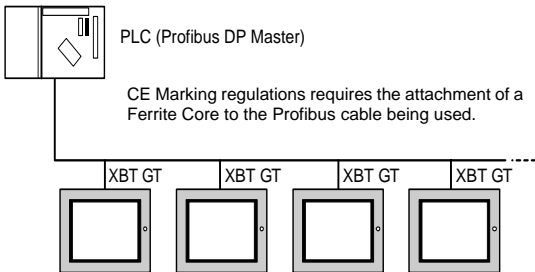
The Ferrite Core must be attached closely to the Profibus Slave unit

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## System Configuration

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The connection method for the network complies with the Profibus DP Protocol. The maximum number of slave devices that can be connected to the Profibus DP Master is limited by the memory size of the Master device. For packet communication, up to four units can be connected. For details of the memory size, please refer to the manual for each of the supported devices.



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## When Using Screen Creation Software

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The Vijeo Designer screen creation software is used to make communication settings such as: slave address, I/O size and packet transfer. When making these settings, select Profibus International as the Master and Profibus DP Slave for series in the Device/PLC settings.

## Troubleshooting

When the XBT GT does not communicate with the Profibus DP Master, use the following status LED table and troubleshooting guide to diagnose the problem and find a solution.

Status LED		Meaning	Cause
ERR (Red)	PWR (Green)		
Not lit	Lit	No Power	–
Lit	Lit	No data exchanges	<ul style="list-style-type: none"> <li>– Bus disconnected</li> <li>– Master not available/switched off</li> <li>– Master I/O communication size disagrees with that of the XBT GT</li> <li>– Master slave address setting disagrees with that of XBT GT</li> </ul>
Not lit	Lit	The connection is correct and data is being exchanged	–

## No Data Communication

If...	Then...
The connected device has not been accurately configured	Select Fieldbus from the New DRIVER SETTINGS. (Please refer to Vijeo Designer connection manual for details).
The Profibus DP Slave has been wired incorrectly	Wire the Profibus cable correctly and connect connector firmly.
Turn off the XBT GT units power supply (remove the power cord).	

If...	Then...
The Profibus DP Slave unit has not been properly installed on the XBT GT	Check that none of the connector pins have become bent or broken. Reinstall the unit on the XBT GT so that its connector is fitted correctly.
Remove the Profibus cable temporarily. Switch the power to the XBT GT on.	
The PWR and ERR LEDs are dark	Contact your local distributor for assistance and possible replacement of the unit.
Connect the Profibus DP Slave unit cable	
The ERR LED is not lit	–
The network is incorrectly configured	Check the error message displayed and perform the suggested solution to configure the network correctly.
Data transfer is not being performed normally	Contact your local distributor for assistance and possible replacement of the unit.
The ERR LED is illuminated	Contact your local distributor for assistance and possible replacement of the unit.
Assuming an authorized replacement was obtained	
Data transfer from the new unit is not being performed normally	The XBT GT unit may be defective. Contact your local distributor for further assistance.