PROFIBUS Products

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6.1. Overview

PROFIBUS (Process Field Bus) is a standard for fieldbus communication in automation technology and was first promoted (1989) by BMBF (German department of education and research). It is the world's most successful fieldbus, with more than 31 million devices installed by the end of 2009. Over 5.4 million of these were in the process industries.

There are two variations of PROFIBUS in use today. The most commonly used PROFIBUS DP, and the lesser used PROFIBUS PA.

- **PROFIBUS DP (Decentralized Peripherals)**
  It is used to operate sensors and actuators via a centralized controller in production (factory) automation applications.
- **PROFIBUS PA (Process Automation)**
  It is used to monitor measuring equipment via a process control system in process automation applications. This variant is designed for use in explosion/hazardous areas.

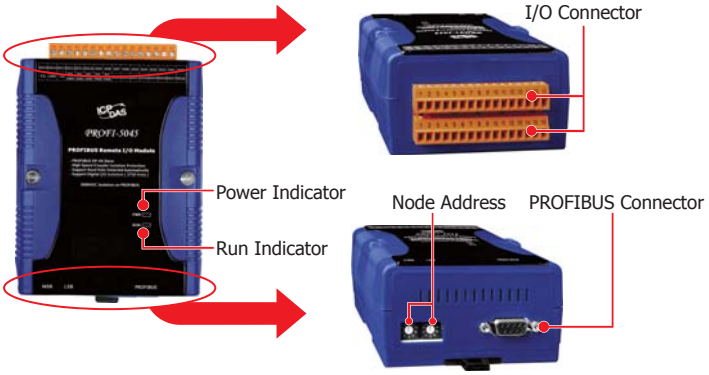
ICP DAS has been developing various PROFIBUS DP Slave products for several years. We offer converters, gateways, and remote I/O to our customers, and help them to solve technology problems.

• Features

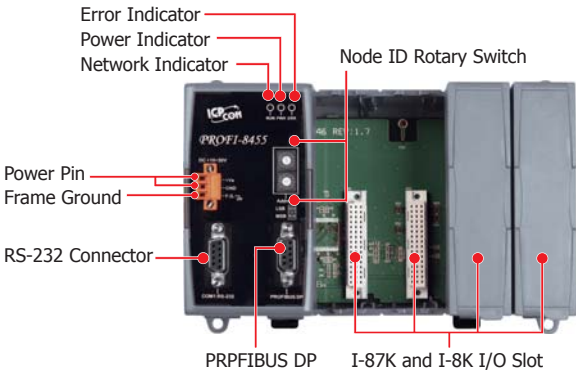
- Baudrate up to 12Mbit/s.
- Maximum 244 bytes input and 244 bytes output per slave.
- Fast Cyclic data communication between master and slave.
- Slave configuration and parameters are set from the master side by GSD file.
- Allow Multi-master system.
- 124 slaves can be put in Data Exchange.
- 32 stations on one segment.

• Appearance

PROFI-5000



PROFI-8455

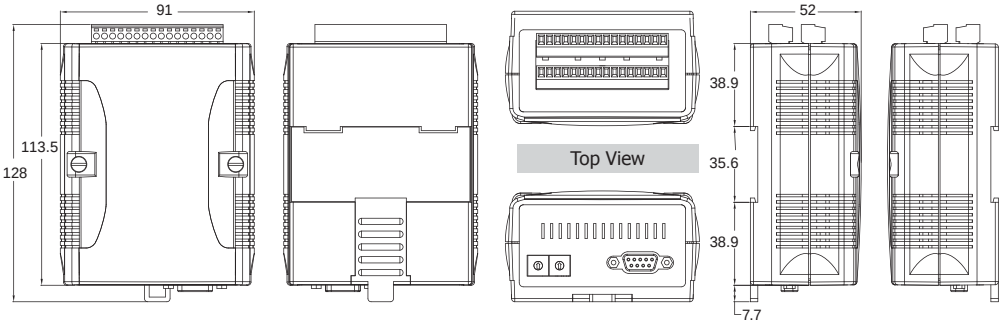


• Hardware

1. Installation

DIN-Rail Mounting

2. Dimensions (Units: mm)



Front View | Rear View | Bottom View | Left View | Right View

• Selection Guide

Product		Interface	Description
PROFIBUS Converters & Repeaters	PROFI-2510	PROFIBUS DP <--> PROFIBUS DP	Isolated PROFIBUS repeater
	PROFI-2541	PROFIBUS DP <--> Fiber	PROFIBUS to fiber converter
	I-7550	PROFIBUS DP <--> RS-232/RS-485/RS-422	PROFIBUS DP slave to RS-232/RS-485/RS-422 converter
PROFIBUS Gateway	GW-7552	PROFIBUS DP <--> RS-232/RS-485/RS-422	PROFIBUS DP slave to Modbus RTU/ASCII gateway
	GW-7553	PROFIBUS DP <--> Ethernet/RS-232	PROFIBUS DP slave to Modbus TCP/RTU/ASCII gateway
	GW-7557	PROFIBUS DP <--> HART master	PROFIBUS DP slave to HART master gateway
PROFIBUS Remote I/O Modules	PROFI-5045	PROFIBUS DP, 24 DOs	Isolated 24-ch DO PROFIBUS slave module
	PROFI-5050	PROFIBUS DP, 16 DIs, 8 DOs	16-ch DI & 8-ch DO PROFIBUS slave module
	PROFI-5051	PROFIBUS DP, 24 DIs	Isolated 24-ch DI PROFIBUS slave module
	PROFI-5052	PROFIBUS DP, 12 DIs	Ch-to-ch Isolated 12-ch DI PROFIBUS slave module
	PROFI-5053	PROFIBUS DP, 24 DIs	24-ch DI PROFIBUS slave module
	PROFI-5055	PROFIBUS DP, 8 DIs, 8 DOs	Isolated 8-ch DI & 8-ch DO PROFIBUS slave module
	PROFI-5060	PROFIBUS DP, 8 DIs, 4 relay outputs	Isolated 8-ch DI & 4 relay output PROFIBUS slave module
	PROFI-5017	PROFIBUS DP, 8 voltage inputs	8-ch voltage input PROFIBUS slave module
	PROFI-5017C	PROFIBUS DP, 8 current inputs	8-ch current input PROFIBUS slave module
	PROFI-5024	PROFIBUS DP, 4 voltage/current outputs	4-ch voltage/current output PROFIBUS slave module
PROFIBUS Remote I/O units	PROFI-8155	PROFIBUS DP, 1 I/O expansion slot	1-slot PROFIBUS slave I/O unit
	PROFI-8255	PROFIBUS DP, 2 I/O expansion slots	2-slot PROFIBUS slave I/O unit
	PROFI-8455	PROFIBUS DP, 4 I/O expansion slots	4-slot PROFIBUS slave I/O unit
	PROFI-8855	PROFIBUS DP, 8 I/O expansion slots	8-slot PROFIBUS slave I/O unit
Accessories	CNT-PROFI	9-pin D-Sub male connector	PROFIBUS Connector

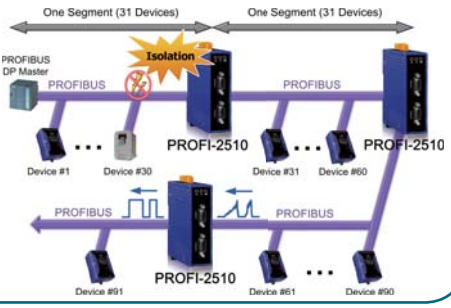
6.2. PROFIBUS Converter/Repeater

Isolated PROFIBUS Repeater

PROFI-2510 CR

Available soon

- Detect transmission rate (9.6 k ~ 12000 kbps) automatically
- No additional space needed in the cabinet
- Can be used as a bus extension or spur line
- Increases the number of nodes
- System expansion
- Provide status LEDs
- 2500 VDC isolation protection on PROFIBUS side
- 4 kV Contact ESD protection for any terminal
- Wide range of power input (10 ~ 30 VDC) and operating temperature (-25 ~ +75°C)

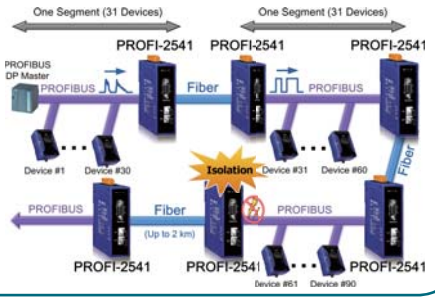


PROFIBUS to Fiber Converter

PROFI-2541 CR

Available soon

- Detect transmission rate (9.6 k ~ 3000 kbps) automatically
- Fiber Port: ST (Multi-mode)
- Wave Length: 850 nm
- Provide status LEDs
- Mount easily on DIN-rail
- 2500 VDC isolation protection on PROFIBUS side
- 4 kV Contact ESD protection for any terminal
- Wide range of power input (10 ~ 30 VDC) and operating temperature (-25 ~ +75°C)



PROFIBUS to RS-232/RS-485/RS-422 Converter

I-7550 CR

- Protocol PROFIBUS DP-V0 slave
- Detect transmission rate (9.6 to 12000 kbps) on PROFIBUS automatically
- 128 bytes max. input data length
- 128 bytes max. output data length
- PROFIBUS address 0 ~ 126 set by DIP switch
- Support several kinds of baud for COM1 from 1.2 ~ 115.2 kbps
- Network isolation Protection: 2500 Vrms high speed iCoupler
- 3000 VDC isolation protection on PROFIBUS side

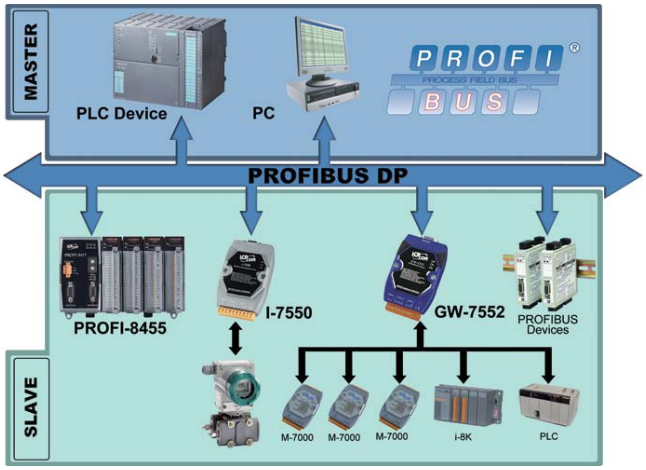
6.3. PROFIBUS Gateway

PROFIBUS Slave to Modbus RTU Gateway

GW-7552 CR

NEW

The GW-7552 gateway is a PROFIBUS DP slave. It allows the PROFIBUS master to access the Modbus RTU devices. In the Modbus network, the GW-7552 can be a master to access the Modbus slaves, or be a slave to provide the data from the PROFIBUS master. The flexible design lets the GW-7552 widely applying in the many applications.



- Protocol PROFIBUS DP-V0 Slave
- Detect transmission rate (9.6 to 12000 kbps) on PROFIBUS automatically
- 128 bytes max. input data length
- 131 bytes max. output data length
- Support Modbus master mode and slave mode
- PROFIBUS address 0 ~ 126 set by DIP switch
- Support several kinds of baud for COM1 from 2.4 ~ 115.2 kbps
- Network Isolation Protection: 2500 V_{rms} High Speed iCoupler
- 3000 V_{DC} isolation protection on PROFIBUS side

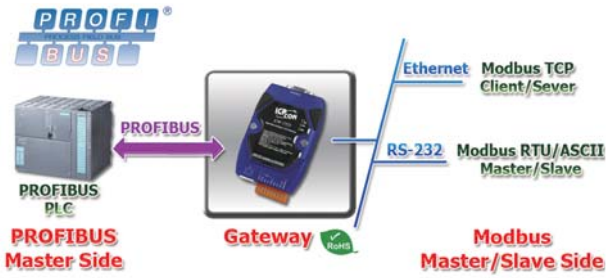
PROFIBUS Slave to Modbus TCP/RTU Gateway

GW-7553 CR

NEW

The GW-7553 is used for data-exchange between the Modbus TCP/RTU network and the PROFIBUS network. It provides not only the Modbus TCP client and server functions, but the Modbus RTU master and slave functions. Therefore, the GW-7553 can satisfy most of the applications of the data transfer between Modbus and PROFIBUS.

- Protocol PROFIBUS DP-V0 & DP-V1 slave
- Detect transmission rate (9.6 to 12000 kbps) on PROFIBUS automatically
- Support one 10/100 Base-TX Ethernet port
- Support one RS-232 port (3-wire or 5-wire)
- 240 bytes max. input data length
- 240 bytes max. output data length
- Support Modbus TCP/RTU/ASCII protocol
- PROFIBUS address 0 ~ 126 set by DIP switch
- Network isolation protection: 2500 V_{rms} high speed iCoupler
- 3000 V_{DC} isolation protection on PROFIBUS side



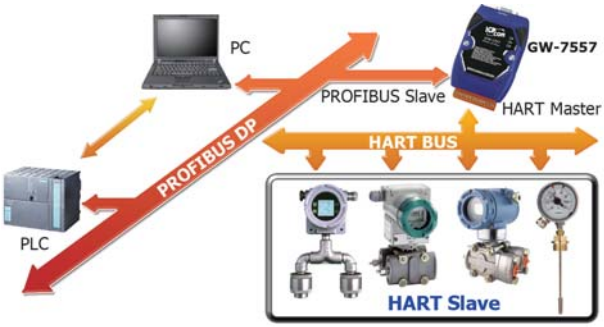
PROFIBUS Slave to HART Master Gateway

GW-7557 CR

NEW

The GW-7557 is designed for the slave device of PROFIBUS DP protocol. It allows the PROFIBUS master to access the HART slave devices. These HART devices may be a transmitter, an actuator, a current output device and so forth. Owing to the GW-7557, you can put the HART slave devices into PROFIBUS network very easily.

- Protocol: PROFIBUS DP-V0 slave
- Detect transmission rate (9.6 to 12000 kbps) on PROFIBUS automatically
- 240 bytes max. input data length
- 240 bytes max. output data length
- PROFIBUS address 0 ~ 126 set by DIP switch
- Support HART mode: point-to-point/multi-drop
- Support 4 HART channels, each for max. 15 HART modules
- Support HART Short/Long frame
- Network isolation protection: 2500 V_{rms} high speed iCoupler
- 3000 V_{DC} isolation protection on PROFIBUS side

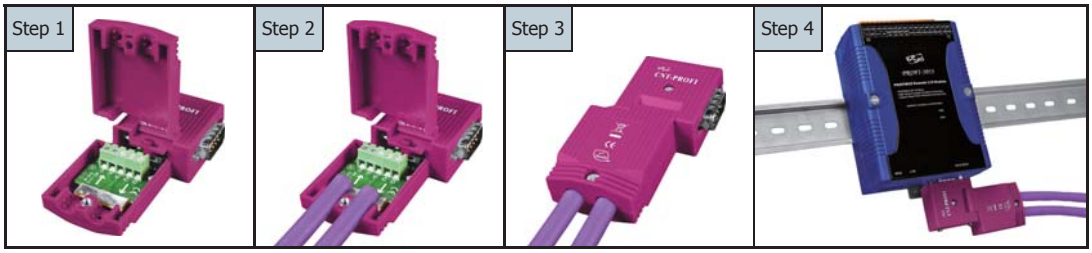


6.4. PROFIBUS Remote I/O Modules

PROFIBUS Digital I/O Modules							
Model Name	**PROFI-5045**	**PROFI-5050**	**PROFI-5051**	**PROFI-5052**	**PROFI-5053**	**PROFI-5055**	**PROFI-5060**
Pictures							
DI							
Channels	-	16	24	12	24	8	8
Isolation Voltage	-	-	3750 V_{rms}	5000V_{rms}	-	3750 V_{rms}	3750 V_{rms}
Contact	-	Dry	Wet	Wet	Dry	Wet	Wet
Sink/Source(NPN/PNP)	-	Sink/Source	Sink/Source	Sink/Source	-	Sink/Source	Sink/Source
ON Voltage Level	-	+4~ +30 V_{DC}	+10~ +50 V_{DC}	+4~ +30 V_{DC}	Open	+10~ +50 V_{DC}	+4~ +30 V_{DC}
OFF Voltage Level	-	+1 V_{DC} Max.	+4 V_{DC} Max.	+1 V_{DC} Max.	Close to IN.GND	+4 V_{DC} Max.	+1 V_{DC} Max.
Input Impedance	-	-	10 KΩ	3 KΩ	-	10 KΩ	3 KΩ
DO							
Channels	24	8	-	-	-	8	4
Isolation Voltage	3750 V_{rms}	-	-	-	-	3750 V_{rms}	-
Type	Open Collector	Open Collector	-	-	-	Open Collector	Relay (Form C)
Sink/Source(NPN/PNP)	Sink	Sink	-	-	-	Sink	-
Load Voltage	+10 ~ +40 V_{DC}	+10 ~ +30 V_{DC}	-	-	-	+10 ~ +40 V_{DC}	0 ~ 125 V_{AC} 0 ~ 30 V_{DC}
Max. Load Current	650mA/channel	30 mA/channel	-	-	-	650 mA/channel	0.6 A @ 125 V_{AC} 2 A @ 30 V_{DC}
Communication							
Connector	9-pin female D-Sub						
Baud Rate (bps)	9.6 k, 19.2 k, 45.45 k, 93.75 k, 187.5 k, 500 k, 1.5 M, 3 M, 6 M, 12 M						
Controller	Profichip VPCLS2						
Transceiver	ADI ADM2486						
Protocol	DP-V0						
Node Address	0~99 selected by rotary switch						
System							
ESD Protection	4 kV Contact for each channel						
Isolation	3000 V_{DC} for DC-to-DC, 2500 V_{rms} for bus-to-logic						
Watchdog	Yes						
Power							
Input range	Unregulated +10 ~ +40 V_{DC}						
Power Consumption	1 W	1 W	1 W	1 W	1 W	1 W	1 W
Mechanism							
Installation	DIN-Rail						
Dimensions (W x L x H)	91 mm x 128 mm x 52 mm						
Environment							
Operating Temperature	-25 ~ +75°C						
Storage Temperature	-30 ~ +80°C						
Relative Humidity	10 ~ 90% RH, non-condensing						

Accessory

Optional PROFIBUS connector: CNT-PROFI



Installation

For more products refer to Industrial Fieldbus Catalog

- RS-485
- CAN bus
- J1939
- Ethernet/IP
- Industrial Ethernet
- CANopen
- PROFIBUS
- BACnet
- Profinet
- Devicenet
- HART

6.5. PROFIBUS I/O Unit

Features

- Protocol & hierarchy: DP-V0 & DP-V1 Slave
- Detect transmission Rate Automatically (Max.12 Mbps)
- Support Device-Related & Channel-Related Diagnosis
- Address 0 ~ 126 Set by Rotary Switches or SSA-Telegram
- Support Hot-Swap for I-87K High-Profile I/O Modules
- 3000 VDC Isolation Protection on PROFIBUS side
- 1/2/4/8 I/O Slots for I-87K and I-8K Series I/O Modules
- 4 KV ESD Protection (contacting for any terminal)
- Operating Temperature: -25 ~ +75°C

Introduction

The PROFI-8x55 Remote I/O Unit is designed for the slave device of PROFIBUS DP protocol. It supports up to 1/2/4/8 slots for ICPDAS I-8k, I-87k series I/O modules. In addition, we also provide hot-swap function for I-87k High Profiles series I/O modules. To setup network, users can choose and configure I/O modules by using the GSD file without any other setting tools.

System Specifications

Models	PROFI-8155	PROFI-8255	PROFI-8455	PROFI-8855
UART Interface				
COM 1	On-Board at JP1 (RS-232 for Update Firmware purpose). Note 1.		at Front Panel	
I/O Expansion Slot				
Hot Swap	Yes			
Auto Configuration	Yes			
Support Module Type	High/low profile I-8K & I-87K I/O module			High profile I-8K & I-87K I/O module
Slots Numbers	1	2	4	8
LED				
Round LED	PWR LED, RUN LED, ERR LED			
PROFIBUS Features				
Protocol & Hierarchy	DP-V0 & DP-V1 (Read/Write)		DP-V0 Slave	DP-V0 Slave
Address Setting	0~126 set by Rotary Switches or SSA-telegram set by DP-Master (Class 2)		0~126 set by Rotary switches	
Supports Transmission Rate (Kbps)	9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000, 6000, 12000			
Transmission Rate Setting	detected automatically			
Indicators	PWR, ERR, and RUN LEDs			
I/O modules Configuration	Configured by GSD file			
Network Isolation Protection	High Speed iCoupler			
DC Isolation Protection	3000 VDC on PROFIBUS side			
Max. Input/Output Data Length	128 Bytes			240 Bytes
Number of Channel of Diag.	32		39	
Device-Related Diag. Type	Offline Detection			
Programmable Diag. period	Supported			
Mechanism				
Dimensions (W x L x H)	64 mm x 119 mm x 91 mm	95 mm x 132 mm x 91 mm	188 mm x 132 mm x 91 mm	312 mm x 132 mm x 91 mm
Environmental				
Operating Temperature	-25 ~ +75°C			
Storage Temperature	-30 ~ +80°C			
Humidity	10 ~ 90% RH (non-condensing)			
Power				
Input Range	Unregulated +10 ~ +30 VDC			
Reverse Polarity Protection	YES			
Frame Ground	YES			
Consumption	3 W	3 W	5 W	5.5 W
Power Board Driving	8 W	8 W	25 W	25 W

Note 1: CA-0904 : transform from 4-pin connector to 9-pin Female D-Sub connector.

Ordering Information

PROFI-8155-G CR	PROFIBUS Remote I/O Unit with 1 Expansion Slot (RoHS)
PROFI-8255-G CR	PROFIBUS Remote I/O Unit with 2 Expansion Slots (RoHS)
PROFI-8455-G CR	PROFIBUS Remote I/O Unit with 4 Expansion Slots (RoHS)
PROFI-8855-G CR	PROFIBUS Remote I/O Unit with 8 Expansion Slots (RoHS)

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