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Communication Expert
of Industrial IOT

Industrial Protocol Converter

USR-PX531



Introduction

The USR-PX series are the latest industrial protocol converters for automation applications lunched by PUSR. With simple parameter configuration, these devices enable efficient conversion between major industrial protocols including EtherCAT, PROFINET, CANopen, and Modbus and will continue to expand, bridging industrial communication between different protocols.

The USR-PX531 in this series is an industrial fieldbus protocol converter designed for PROFINET to CANopen/Modbus communication. This product operates as a PROFINET slave on the network side. In hardware, it features 2 * PROFINET ports, 1 * CAN interface, 1 * RS485 interface, and 1 * standard 10/100M Ethernet port. It enables seamless integration of on-site Modbus master/slave devices and CANopen slave devices into PROFINET master systems.

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Product Features

Reliability & Stability

- Aluminum casing with IP40 protection.
- Industrial-grade design for extreme temperatures (-20°C to +70°C).
- Wide-voltage input (DC 9-36V) with reverse polarity protection.
- EMC Level 3 protection, full-isolation protection to withstand harsh industrial environments.
- DIN-rail 35mm mounting.

Rich Interface

- 2 * PROFINET ports with integrated switch.
- 1 * standard Ethernet port for parameter configuration.
- 1 * CAN interface for connecting CANopen slave device.
- 1 * isolated RS485 serial port.
- 1 * Type-C interface for debugging.

Powerful Functionality

- Compliant with standard PROFINET protocol, enabling seamless integration with mainstream PROFINET master devices (e.g., Siemens series PLCs).
- Supports conversion from PROFINET slave to CANopen master.
- Supports conversion from PROFINET slave to Modbus RTU/TCP master, and from PROFINET slave to Modbus RTU/TCP slave.
- PROFINET supports up to 1400 input bytes and 1400 output bytes, with compatibility for 16 slot configurations.
- Allows connection of up to 127 CANopen slave devices, supporting up to 128 configurable SDO groups.
- Each slave group supports up to 128 RPDOs, totaling a maximum of 256 RPDOs; each slave group also supports up to 128 TPDOs, totaling a maximum of 256 TPDOs.
- CANopen master features include heartbeat monitoring, error detection, NMT management, and more.
- Modbus RTU supports connection of up to 32 slaves, while Modbus TCP supports up to 8 slave connections.
- Edge data collection and computation for up to 2,000 data points
- Includes GSDML file for easy import into PROFINET master systems.
- Configuration via PC software, with CSV file import/export
- One-click factory reset (hardware/software)
- Built-in 120Ω terminal resistor, configurable via software
- Modbus function codes: 01, 02, 03, 04, 05, 06, 15, and 16
- User-defined IP address, port, slave ID, and register settings

Dimensions

Unit: mm

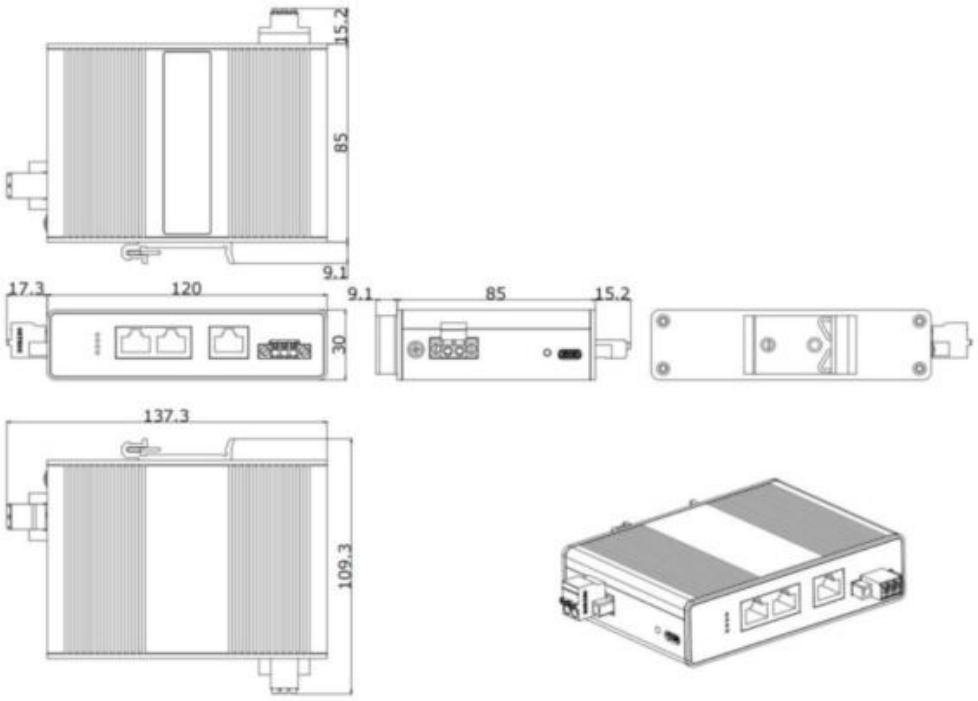
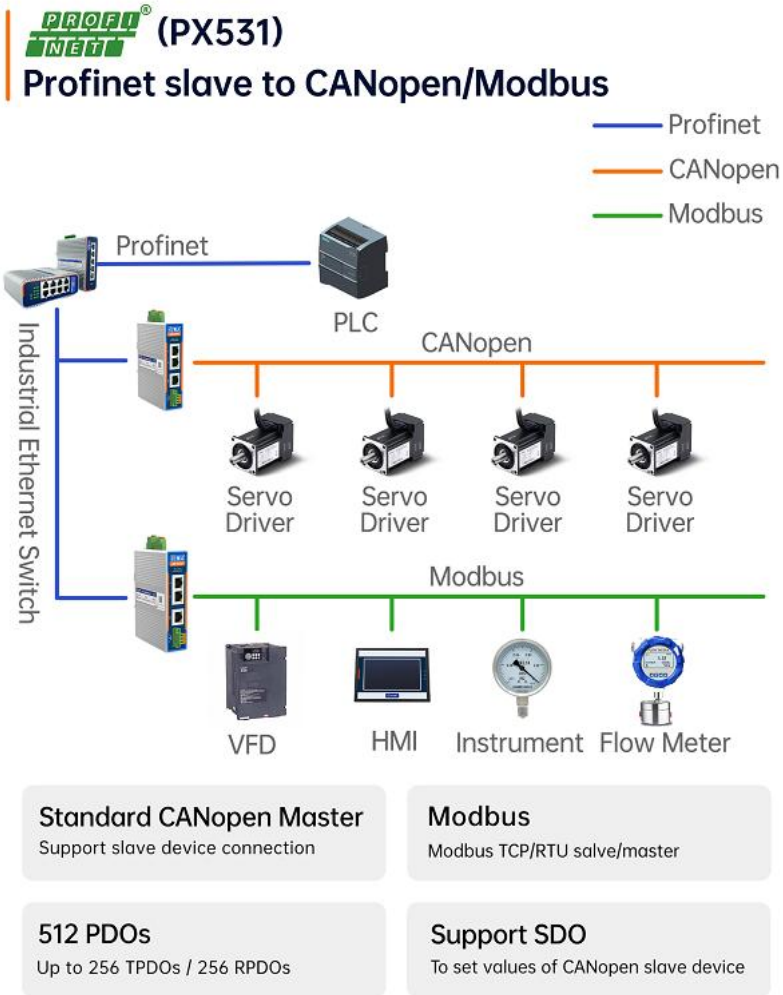


Figure 1 Dimension of USR-PX531

Application



Specifications

Catalog	Parameters	Value
Power Supply	Power Input	9-36V DC
	Working Current	Idle: 158mA/12V (avg), 163mA/12V (max); Full load: 162mA/12V (avg), 165mA/12V (max)
	Connector	5.08×2P pluggable terminal block with anti-reverse and screw lock
RS485 Interface	Connector	3.81×3P pluggable terminal block with screw lock
	Pin	A (RS485 A), B (RS485 B), G (GND)
	Baud Rate	600~230.4K bps
	Data bits	8
	Stop bit	1, 2
	Parity bit	None, Odd, Even
Ethernet Port	PROFINET	2 × PROFINET(P1, P2), 10/100Mbps, auto MDI/MDIX
	Ethernet	1× RJ45 port, 10/100Mbps, auto MDI/MDIX
	Default IP	192.168.0.7
	Gateway IP	192.168.0.1
CAN	Pin	H: L: G:
	Baud Rate	5K ~ 1000Kbps,
Other Interface	Indicators	PWR, CAN, 485, PN
	Reload Button	Press for 3-15s to restore factory settings
	Type-C	Debugging interface for troubleshooting
Physical Parameters	EMC Protection	IEC 61000-4-2(ESD): 6kV contact, 8kV air IEC 61000-4-5(Surge): 2kV common mode, 1kV differential mode for power; 2kV for Ethernet/RS485 IEC 61000-4-4(EFT): 2kV for power, 1kV for Ethernet/RS485
	Isolation	Isolation for both serial, Ethernet, PROFINET, CAN, and power
	Dimension	120×85×30mm (without terminals/rail); 137.3×30×109.3mm (with terminals/rail)
	Installation	DIN rail mounting, aluminum housing
	Operating Temperature	-20℃ to +70℃
	Storage Temperature	-40℃ to +105℃ (non-condensing)
	Operating Humidity	5%-95% (non-condensing)
Software	Protocol	PROFINET slave to CANopen master PROFINET slave to Modbus RTU/TCP master PROFINET slave to Modbus RTU/TCP slave
	FROFINET	16 slot, up to 1400 input bytes and 1400 output bytes
	Modbus	Supports custom slave devices and point table information, edge data collection and computation for up to 2,000 data points
	CAN	Supports up to 127 CANopen slave devices, supporting up to 128 configurable SDO groups
	Setup	Setup tool on PC

Ordering Guide

Model	Protocol	Interface

USR-PX520	EtherCAT slave to Modbus RTU/TCP master	2 * EtherCAT, 1 * RJ45, 1 * RS485
USR-PX530	Profinet slave to Modbus RTU/TCP master	2 * Profinet, 1 * RJ45, 1 * RS485
USR-PX511	CANopen slave to Modbus RTU/TCP master	1 * CAN(FD), 1 * RJ45, 1 * RS485
USR-PX521*	EtherCAT slave to Modbus RTU/TCP master EtherCAT slave to CANopen master	2 * EtherCAT, 1 * RJ45, 1 * RS485, 1 * CAN(FD)
USR-PX531	Profinet slave to Modbus RTU/TCP master Profinet slave to CANopen master	2 * Profinet, 1 * RJ45, 1 * RS485, 1 * CAN(FD)

*: *In processing*

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