Industrial 1-port RS232/422/485 Modbus Gateway

TAIWAN EXCELLENCE 2021



Standard Industrial Modbus TCP/RTU/ASCII Network Integration

PLANET has added the Industrial Modbus TCP/IP Protocol to its easily-integrated industrial management level products that come with SCADA/HMI system and other data acquisition systems on factory floors. Moreover, the industrial IT SNMP network is upgraded to the Industrial automation Modbus TCP/IP network. PLANET industrial management level products with the Modbus TCP/IP Protocol offer flexible network connectivity solutions for the industrial automation environment.

To complete the industrial automation environment application solution, PLANET has announced a first industrial level 1-port RS232/422/485 Modbus Gateway, IMG-210XT, a bridge that converts between Modbus TCP/IP Protocol and Modbus RTU/ASCII Protocol. It features a wide operating temperature range from -40 to 75 degrees C and a compact but rugged IP30 metal housing.



A Conversion Bridge for Flexible Network Deployment

The IMG-210xT Series can be a conversion bridge between the equipment with the Modbus RTU/ASCII Protocol and the administrator workstations that run the Modbus TCP/IP Protocol. The RS232/422/485 serial interface of the IMG-210xT Series provides the Modbus RTU/ASCII operation mode and various baud rate options to meet the demand of integration between the Modbus TCP/IP Protocol, Modbus RTU Master/Slave Protocol and Modbus ASCII Master/Slave Protocol.

Serial Interface

- One DB9 interface that supports RS232
- One terminal block interface that supports 2-wire RS485 and 4-wire RS422/RS485 operation
- Asynchronous serial data rates up to 921600bps

Ethernet Interface

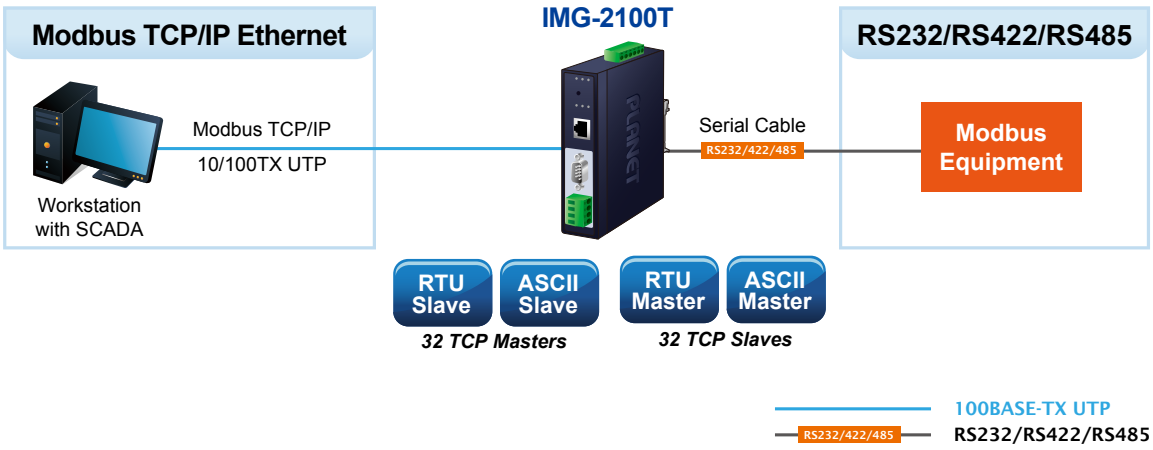
- 1-port 10/100BASE-TX RJ45 with auto MDI/MDI-X function or 100BASE-FX SFP interface

Management Function

- Built-in IP-based Web interface and telnet interface for remote management
- Software Protocol supports Modbus TCP, Modbus RTU, Modbus ASCII, IP, ARP, DHCP and DNS
- Supports RTU Master, RTU Slave, ASCII Master, and ASCII Slave four serial operation modes via management interface
- Master mode supports 32 TCP slave connection requests
- Slave mode supports 32 TCP master connections
- PLANET Modbus Gateway utility for finding client device on the network.
- PLANET Smart Discovery utility automatically finds the client devices on the network
- Firmware upgrade/configuration backup and restore via HTTP protocol

Industrial Case and Installation

- IP30 metal case
- DIN-rail and wall-mount designs
- Redundant power design
  - 9 to 48V DC / 24V AC, redundant power with reverse polarity protection
- Supports 6000 VDC Ethernet ESD protection
- Free fall, shock-proof and vibration-proof for industries
- Supports extensive LED indicators for network diagnosis
- -40 to 75 degrees C operating temperature
- Reset button for reset to factory default



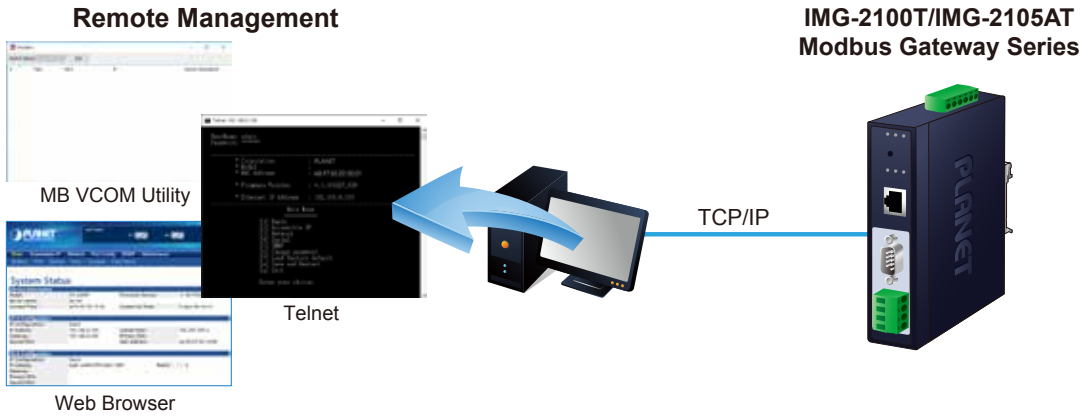
The advantage of having the IMG-210XT is to assist users to build an industrial environment between the Modbus TCP/IP Protocol and the Modbus RTU/ ASCII Protocol easily, thus offering an application solution to the industrial control equipment without Ethernet ports and the industrial control equipment can only control through an industrial PC workstation or industrial control panel.

In addition, the effective integration solution of Modbus Ethernet devices, Modbus serial equipment or multi Modbus master / slave in an industrial hybrid network brings the following:

- Master mode supports up to 32 TCP slave connection requests
- Slave mode supports up to 32 TCP master connections

Remote Management

The IMG-210XT makes the connected industrial Modbus RTU/ASCII equipment become IP-based facilities and is able to connect to the Modbus TCP/IP network via its RS232/422/485 serial interface and **10/100BASE-TX RJ45** or **100BASE-FX** Ethernet port. It provides a remote web management and telnet Interface for efficient remote network management. The IMG-210XT also provides PLANET Modbus Gateway utility tool and supports PLANET Smart Discovery utility to help network administrator to easily get the current IP subnet address information or change the IP subnet address setting of the IMG-210XT.



Modbus Serial Port State Monitoring

The IMG-210XT shows the details of the total bytes transmitted and received on the RS232/422/485 serial interface, and the detailed total number of frames transmitted and received on the remote web/telnet management interface. This function allows network administrator to check the status and statistics of the IMG-210XT via the single RS232/422/485 serial interface.

Stable Performance in Hardened Environment Design

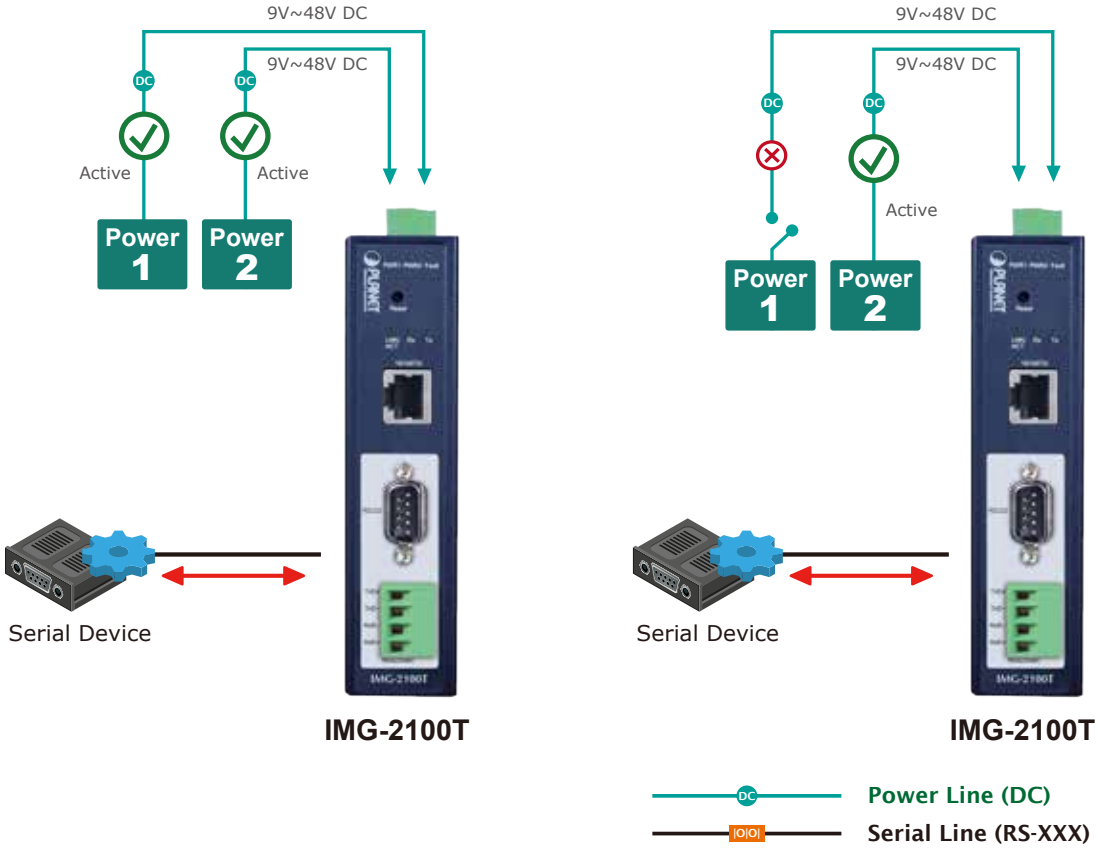
The IMG-210XT provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets. Its operating temperature ranging from -40 to 75 degrees C allows the IMG-210XT to be placed in almost any difficult environment.

The IMG-210XT is equipped with a compact IP30-rated metal case that allows wall mounting for efficient use of cabinet space. The IMG-210XT also provides an integrated power supply source with wide-ranging voltages (9 to 48V DC / 24V AC) ideally suitable for worldwide operation with high availability applications.

Dual Power Input for High Availability Network System

The IMG-210xT series features a strong dual power input system with wide-ranging voltages (9V~48V DC / 24V AC) incorporated into customer's automation network to enhance system reliability and uptime. In the example below, when Power Supply 1 fails to work, the hardware failover function will be activated automatically to keep powering the IMG-210xT series via Power Supply 2 without any break of operation.

Non-stop Ethernet Service with Dual Power Input & Auto Failover

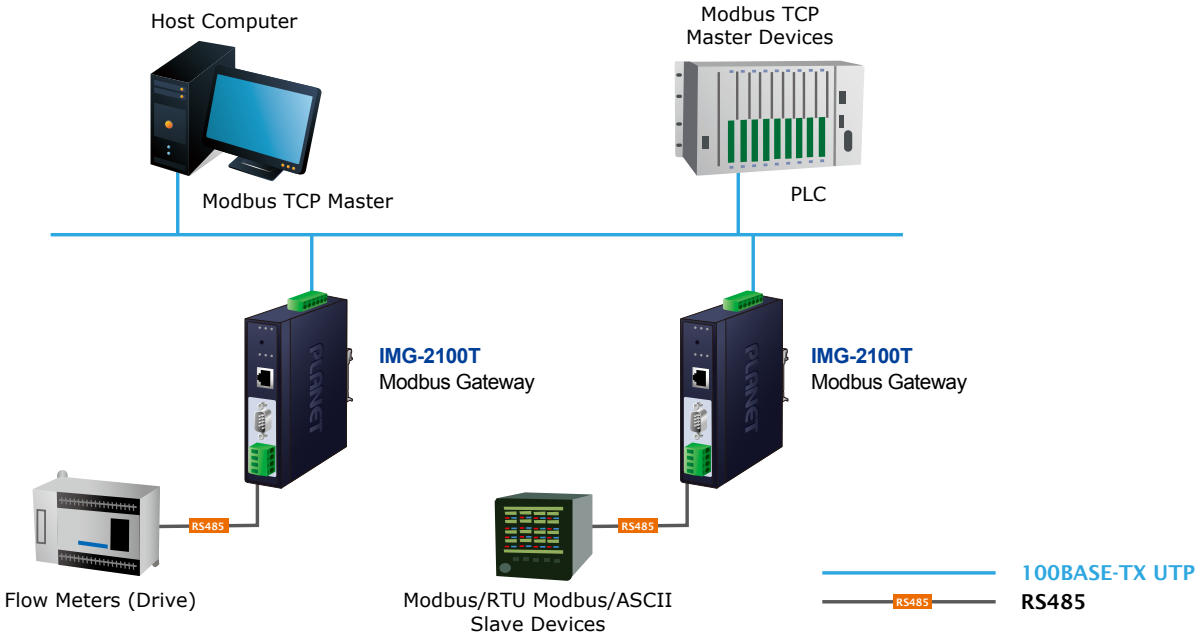


Applications

RTU/ASCII Master to Multi Modbus TCP/IP Slaves

The IMG-210XT can act as a bridge between the industrial RTU/ASCII master equipment and the multi-industrial TCP/IP slave equipment in a Modbus TCP/IP networking environment to control multi-industrial TCP/IP slave equipment via the industrial RTU/ASCII master equipment.

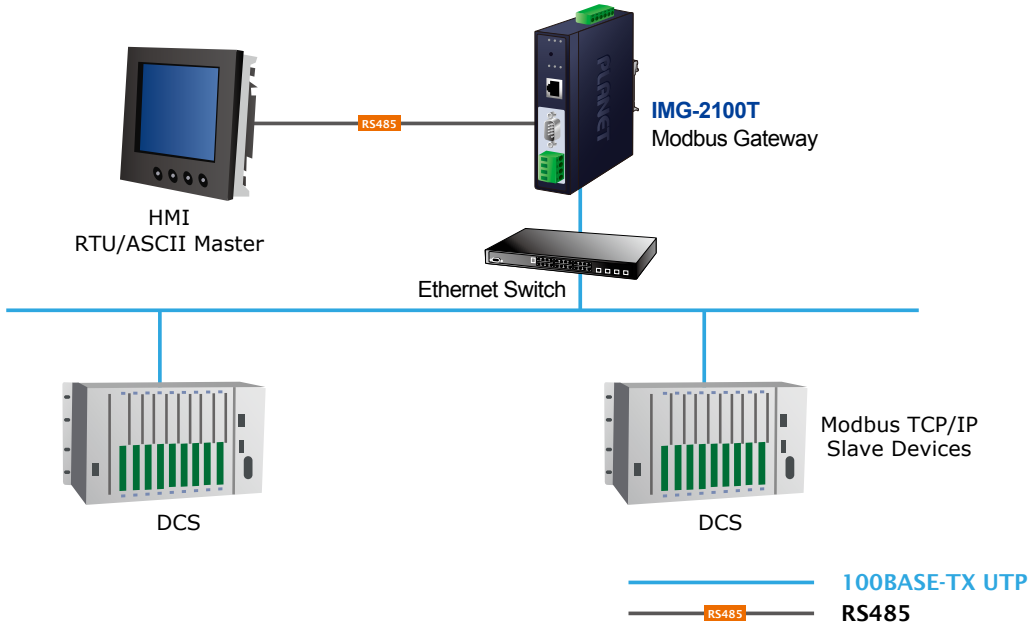
Multi Modbus TCP/IP Master to RTU/ASCII Slaves



Multi Modbus TCP/IP Master to RTU/ASCII Slaves

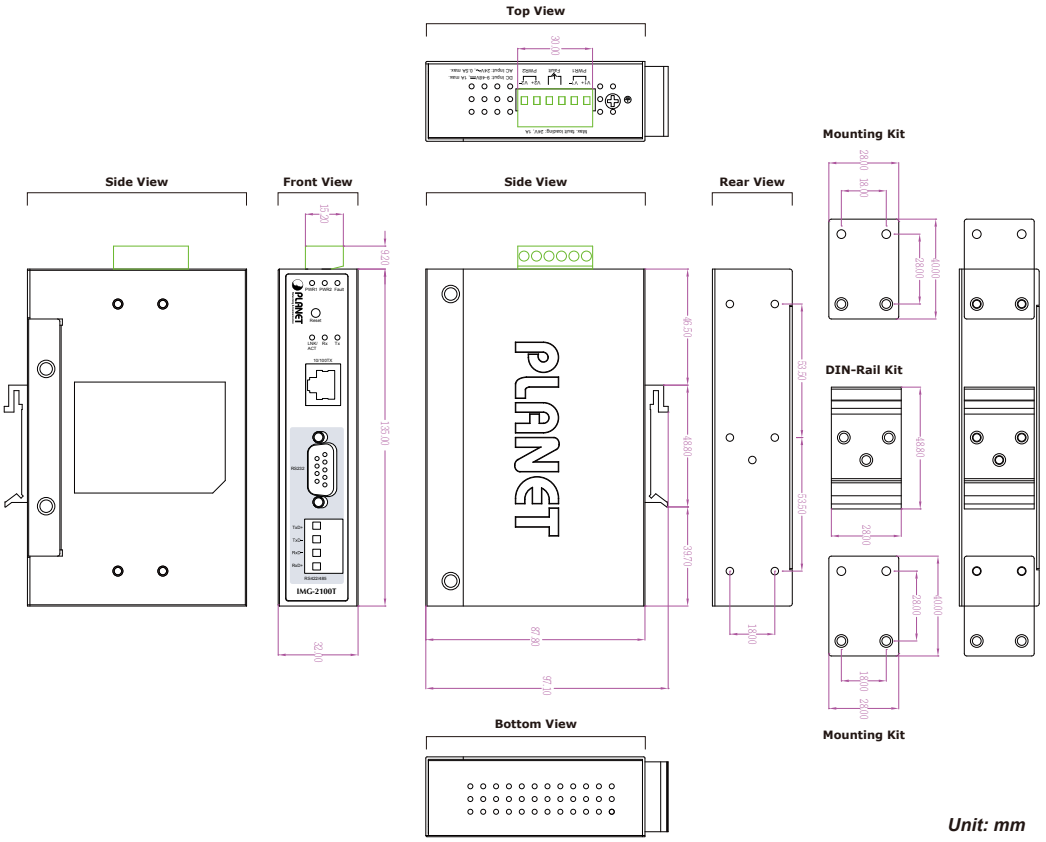
The IMG-210XT can operate as a bridge between the multi-industrial TCP/IP master equipment and the industrial RTU/ASCII slave equipment in a Modbus TCP/IP networking environment to control the industrial RTU/ASCII slave equipment via the multi-industrial TCP/IP master equipment.

RTU/ASCII Master to Multi Modbus TCP/IP Slaves



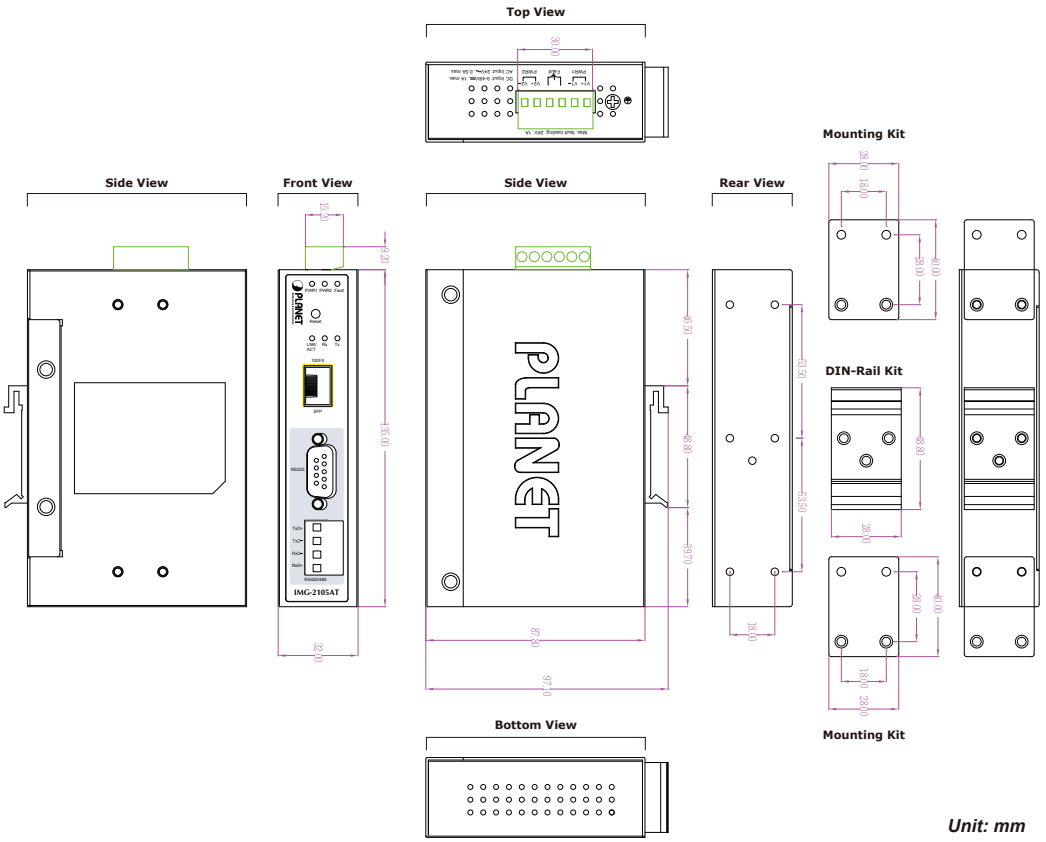
Drawing

■ IMG-2100T



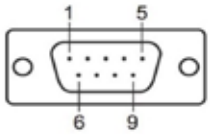
Unit: mm

■ IMG-2105AT



Unit: mm

Specifications

Product	IMG-2100T	IMG-2105AT
Serial Interface		
Serial Ports	1 x DB9 male for RS232 1 x 4-Pin Terminal block for RS422 / RS485	
Serial Standards	RS232 / 4-wire RS422 or RS485 / 2-wire RS485	
Baud Rate (Data Rate)	50bps to 921Kbps	
Data Bits	5, 6, 7, 8	
Parity Type	1, 1.5, 2	
Stop Bit	Odd, Even, None, Space, Mark	
Flow Control	RTS/CTS and DTR/DSR (RS232 only) XON/XOFF	
Signals	RS232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND RS422: Tx+, Tx-, Rx+, Rx-, GND 4-wire RS485: Tx+, Tx-, Rx+, Rx-, GND 2-wire RS485: Data A (+), Data B (-), GND	
Pin Assignment		
Operation Mode	RTU Master/RTU Slave/ASCII Master/ASCII Slave Master mode: Supports up to 32 TCP slave connection requests Slave mode: Supports up to 32 TCP master connection requests	
Ethernet Interface		
Ethernet Ports	1 x RJ45	1 x SFP
Standard	10/100BASE-TX	100BASE-FX
Distance	100m	2km to 120km, vary on SFP modules
ESD Protection	6KV	
Surge Protection	2KV	
Hardware		
Installation	DIN-rail kit and wall-mount ear	
Enclosure	IP 30 metal	
Dimensions (W x D x H)	32 x 87.8 x 135 mm	32 x 87.8 x 135 mm
Weight	392g	390g
LED Indicators	System: Power 1, Power 2, Fault, SYS TP/SFP Port: Link/ Active Serial Port: Tx and Rx	
Power Requirements	9~48V DC / 24V AC, redundant power with reverse polarity protection	
Power Consumption	Full Loading 9VDC: 0.35A (3.15 watts) 12VDC: 0.28A (3.36 watts) 24VDC: 0.12A (3 watts) 48VDC: 0.08A (3.84 watts)	Full Loading 9VDC: 0.44A (3.96 watts) 12VDC: 0.33A (4 watts) 24VDC: 0.17A (4.08 watts) 48VDC: 0.1A (4.8 watts)
Connector	Removable 6-pin terminal block for power input Pin 1/2 for Power 1, Pin 3/4 for fault alarm, Pin 5/6 for Power 2	
Alarm	Provides one relay output for power failure Alarm relay current carry ability: 1A @ DC 24V	
Reset Button	< 5 sec: System reboot > 5 sec: Factory default	
Management		
Management Interfaces	Web management Telnet Console management Windows-based VCOM Utility management SNMPv1, v2c / SNMP Trap UNI-NMS monitoring PLANET Smart Discovery Utility	

Male DB9	Pin	RS232	RS422 RS485-4W	RS485-2W
	1	DCD	TxD+	--
	2	RxD	TxD-	--
	3	TxD	RxD-	Data-
	4	DTR	RxD+	Data+
	5	GND	GND	GND
	6	DSR	--	--
	7	RTS	--	--
	8	CTS	--	--
	9	--	--	--

IP Version	IPv4 and IPv6
Operation Mode	RTU Master RTU Slave ASCII Master ASCII Slave
Virtual COM Utility Platform Supports	Windows-based only: Windows XP Windows Server 2003 Windows 7 Windows Server 2008 Windows 8 (Must install the latest version of WinPcap) Windows Server 2012 (Must install the latest version of WinPcap) Windows 10
Fault Alarm	Record: System log / SNMP trap
Time	NTP
Security	Allow max. 4 accessible IP address hosts/ranges
SNMP MIBs	RFC1213 MIB-II RFC1317 RS232-like MIB
Standards Conformances	
Regulatory Compliance	FCC Part 15 Class A, CE Certification Class A
Stability Testing	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Standards	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX/100BASE-FX RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 854 Telnet RFC 958 NTP RFC 1591 DNS (client only) RFC 1908 SNMPv2c RFC 2068 HTTP RFC 2131 DHCP Client RFC 2732 Format for Literal IPv6 Addresses in URL's RFC 3315 DHCPv6 Client RFC 3513 IPv6 Addressing Architecture RFC 3596 DNSv6 RFC 4443 ICMPv6 EIA/TIA RS232/422/485
Regulatory Approval	RoHS
Environment	
Operating Temperature	-40 ~ 75 degrees C
Storage Temperature	-40 ~ 85 degrees C
Humidity	5 ~ 95% (non-condensing)

Ordering Information

IMG-2100T	IP30 Industrial 1-Port RS232/RS422/RS485 Modbus Gateway (1 x 10/100TX, -40~75 degrees C)
IMG-2105AT	IP30 Industrial 1-Port RS232/RS422/RS485 Modbus Gateway (1 x 100FX, -40~75 degrees C)

Related Products

IMG-2200T	IP30 Industrial 2-Port RS232/RS422/RS485 Modbus Gateway (2 x 10/100TX, -40~75 degrees C, 2KV isolation)
IMG-2400T	IP40 Industrial 4-Port RS232/RS422/RS485 Modbus Gateway (2 x 10/100TX, -40~75 degrees C, 2KV isolation, 2 x DI + 2 x DO)
MG-110	1-port RS232/422/485 Modbus Gateway (-10~60 degrees C)
MG-115A	1-port RS232/422/485 Modbus Gateway with 1-port 100BASE-FX SFP (-10~60 degrees C)
IMG-110T	Industrial 1-port RS422/485 Modbus Gateway (9~48VDC, -40~75 degrees C)
IMG-120T	Industrial 2-port RS422/485 Modbus Gateway (9~48VDC, -40~75 degrees C)

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