

## Industrial 2-/4-Port RS232/422/485 Modbus Gateway





# Economical Solution for 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 2-/4-port RS232/422/485 Modbus Gateway, IMG-2x00T Series, 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 IP30/40 metal housing.



### A Conversion Bridge for Flexible Network Deployment

The IMG-2x00T 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-2x00T 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

- Two/four DB9 interfaces support RS232, 2-wire RS485,
   4-wire RS485 and RS422 operation
- · Asynchronous serial data rates up to 921600bps

## **Ethernet Interface**

- 2-port 10/100BASE-TX RJ45 with auto MDI/MDI-X function
- Complies with IEEE 802.3, IEEE 802.3u 10/100BASE-TX standard
- Supports 10/100BASE-TX RJ45 port with distance up to 100m

### **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/IP40 metal case
- · DIN-rail and wall-mount designs
- Redundant power design
  - 12 to 48V DC, redundant power with reverse polarity protection
- · Supports 6000 VDC Ethernet ESD protection
- Free fall, shock-proof and vibration-proof for industries





The advantage of having the IMG-2X00T Series 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

- · Supports extensive LED indicators for network diagnosis
- · -40 to 75 degrees C operating temperature
- · Reset button for reset to factory default

## Digital Input and Digital Output (IMG-2400T)

- 2 Digital Input (DI)
- 2 Digital Output (DO)
- · Integrate sensors into auto alarm system
- · Transfer alarm to IP network via email and SNMP trap

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:

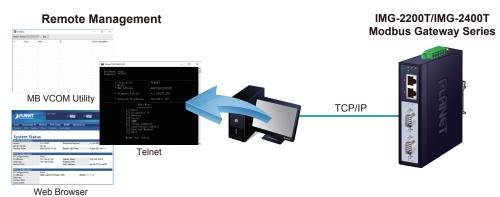
■ Master mode supports up to 32 TCP slave connection requests

control through an industrial PC workstation or industrial control panel.

■ Slave mode supports up to 32 TCP master connections

### Remote Management

The IMG-2x00T Series 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 Ethernet port. It provides a remote web management and telnet interface for efficient remote network management. The IMG-2x00T Series 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-2x00T Series.



## Modbus Serial Port State Monitoring

The IMG-2x00T Series 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-2x00T Series via the single RS232/422/485 serial interface.

## Stable Performance in Hardened Environment Design

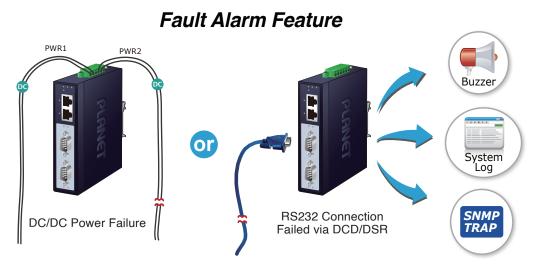
The IMG-2x00T Series provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets. Its operating temperature ranging from -40 to 75 degrees C allows the IMG-2x00T Series to be placed in almost any difficult environment.

The IMG-2x00T Series is equipped with a compact IP30/40-rated metal case that allows wall mounting for efficient use of cabinet space. The IMG-2x00T Series also provides an integrated power supply source with wide-ranging voltages (12 to 48V DC) ideally suitable for worldwide operation with high availability applications.



#### Effective Alarm Alert for Better Protection

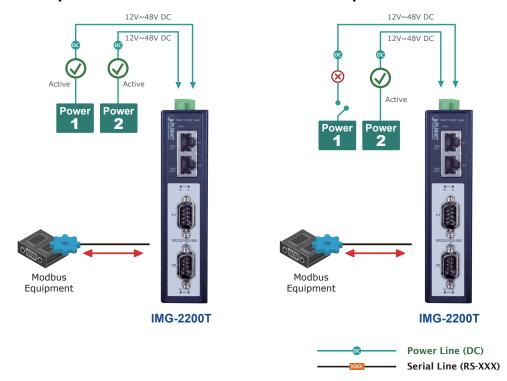
The IMG-2x00T series comes with a Fault Alarm feature which can alert the users when there is something wrong with the Serial Device Server. With this ideal feature, the users would not have to waste time finding where the problem is. It will help to save time and human resource. The IMG-2x00T Series provides event alert function to help to diagnose the abnormal device owing to whether or not there is a break of the network connection, or the rebooting response.



### Dual Power Input for High Availability Network System

The IMG-2x00T Series features a strong dual power input system with wide-ranging voltages (12V~48V DC) 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-2x00T Series via Power Supply 2 without any break of operation.

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



### Digital Input and Digital Output for External Alarm (only 2400T)

With digital input and digital output on its front panel, an external alarm can help users via the digital input to detect and log external device status (such as door intrusion detector), and then immediately send an event alarm to the administrator. The digital output can be used to alarm the administrator if the IMG-2400T serial port shows DCD, changed DSR or power failure.

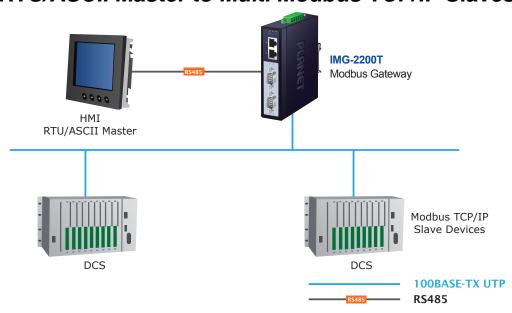


## **Applications**

### RTU/ASCII Master to Multi Modbus TCP/IP Slaves

The IMG-2x00T Series 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.

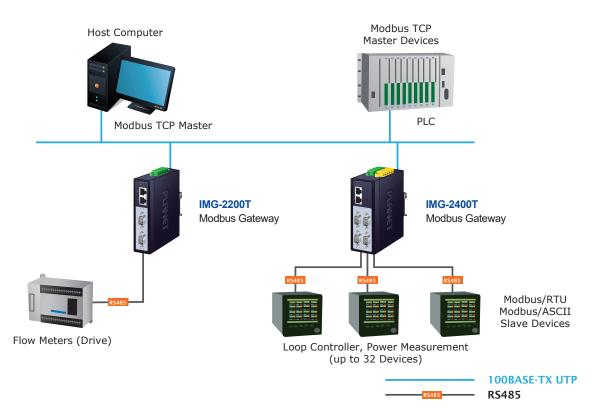
## RTU/ASCII Master to Multi Modbus TCP/IP Slaves



### Multi Modbus TCP/IP Master to RTU/ASCII Slaves

The IMG-2X00T Series 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.

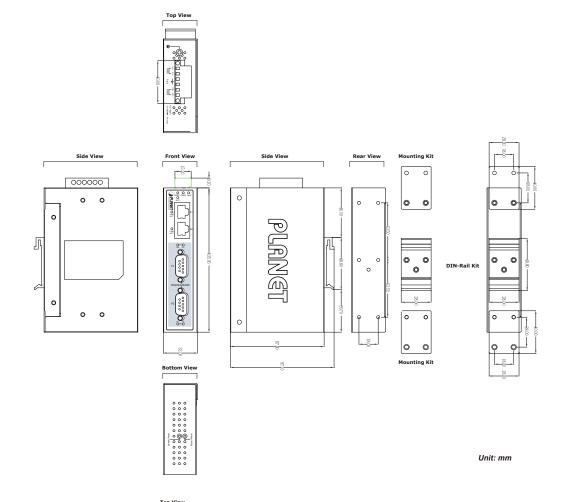
## Multi Modbus TCP/IP Master to RTU/ASCII Slaves



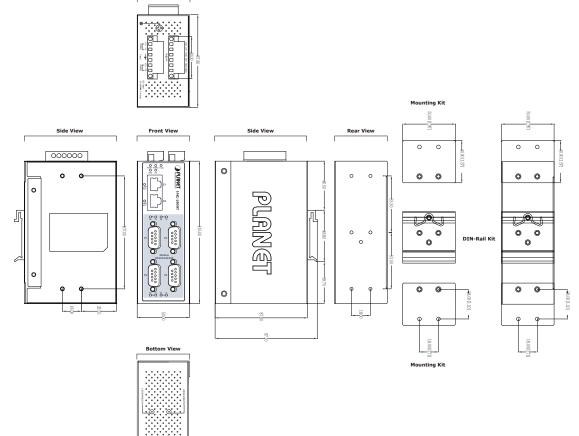


## **Drawing**

■ IMG-2200T



■ IMG-2400T





## **Specifications**

Product	IMG-2200T			IMG-2400	T			
Serial Interface								
Serial Ports	2 x DB9 male			4 x DB9 ma	ale			
erial Standards	RS232 / 4-wire RS422 or RS	485 / 2-wire	RS485					
aud Rate (Data Rate)	50bps to 921Kbps							
Oata Bits	5, 6, 7, 8							
Parity Type	1, 1.5, 2							
top Bit	Odd, Even, None, Space, Ma	ırk						
low 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							
	Male DB9	Pin	RS232	RS422 RS485-4W	RS485-2W			
		1	DCD	TxD+				
		2	RxD	TxD-				
	1 5	3	TxD	RxD-	Data-			
Pin Assignment		4	DTR	RxD+	Data+			
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	5	GND	GND	GND			
		J 6	DSR					
	6 9	7	RTS CTS					
		9						
		J						
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							
	2KV isolation protection							
Serial Line Protection	1KV (level 2) surge protection							
	15KV ESD protection							
thernet Interface								
thernet Ports	2 x RJ45							
andard	10/100BASE-TX							
stance	100m							
witch Architecture	Store-and-Forward-							
ddress Table	1K							
SD Protection	6KV							
urge Protection	2KV							
ardware								
stallation	DIN-rail kit and wall-mount ea	ar						
nclosure	IP30/40 metal			IP 40 metal				
imensions (W x D x H)	32 x 87.8 x 135 mm				50 x 87 x 135 mm			
eight	392g			625 g				
	System: Power 1, Power 2, F	ault, SYS			ower 1, Power 2, F	ault. SYS I/O		
LED Indicators	TP Port: Link/ Active					TP Port: LEink/ Active		
	Serial Port: Tx and Rx		Serial Port: Tx and Rx					
Power Requirements	12~48V DC, redundant power with polarity reverse protection function							
	Full Loading	poiai	, 1040136	Full Loadin				
	12VDC: 0.326A (3.8 watts)				12VDC: 0.419A (5.1 watts)			
ower Consumption	24VDC: 0.176A (4.2 watts)		24VDC: 0.227A (5.4 watts)					
		48VDC: 0.114A (5.4 watts)						
		ale former	an Immiik	40VDC: 0.1	36A (6.5 watts)			
onnector	Removable 6-pin terminal blo			or Dower 0				
	Pin 1/2 for Power 1, Pin 3/4 for	or fault alari	n, Pin 5/6 fo					
				2 Digital Ir				
					Level 0: -24V~2.1V (±0.1V)			
DI and DO	N/A		Level 1: 2.1V~24V (±0.1V)					
		Innut Load	Input Load to 24V DC, 10mA max.					
Tallu DO								
				2 Digital O	output (DO): ctor to 24V DC, 10			



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		
	Web management	
	Telnet Console management	
Management Interfaces	Windows-based VCOM Utility management	
, and the second	SNMPv1, v2c / SNMP Trap	
	UNI-NMS monitoring	
	PLANET Smart Discovery Utility	
IP Version	IPv4 and IPv6	
	RTU Master	
Operation Mode	RTU Slave	
·	ASCII Master	
	ASCII Slave	
	Windows-based only:	
	Windows XP	
	Windows Server 2003	
Virtual COM Utility Platform Supports	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	
OTTIMI WIES	RFC1317 RS232-like MIB	
Standards Conformances		
Regulatory Compliance	FCC Part 15 Class A,	
, regulatory compliance	CE Certification Class A	
	IEC60068-2-32 (Free fall)	
Stability Testing	IEC60068-2-27 (Shock)	
	IEC60068-2-6 (Vibration)	
	IEEE 802.3 10BASE-T	
	IEEE 802.3u 100BASE-TX	
	RFC 768 UDP	
	RFC 793 TFTP	
	RFC 791 IP	
Standards	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	
Environment		
Operating Temperature	-40 ~ 75 degrees C	
Storage Temperature	-40 ~ 85 degrees C	
Humidity	5 ~ 95% (non-condensing)	



## **Ordering Information**

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)

## **Related Products**

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)
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)

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