

# Product Specifications

## Industrial 1-Port RS422/485 Modbus Gateway

### IMG-110T

Version 1.0

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#### Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2017/5/17	Marc Liao	Initial Release

Author:	Marc Liao	Editor:	Marc Liao
Reviewed By:		Approved By:	Kent Kang

## 1. PRODUCT DESCRIPTION



### **Economic Solution for Industrial Modbus TCP/RTU/ASCII Network Integration**

PLANET has added the Industrial Modbus TCP/IP Protocol to industrial management level products to provide its easily-integrated industrial management level products with SCADA/HMI system and other data acquisition systems in 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 solution for industrial automation environment. To complete the industrial automation environment application solution, PLANET has announced a first industrial level 1-port RS422/485 Modbus Gateway -- IMG-110T, 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.

### **Modbus TCP/IP for Modbus RTU/ASCII Network Environment Deployment**

The IMG-110T can be a conversion bridge between the industrial equipment with the Modbus RTU/ASCII Protocol and the administrator workstations that run the Modbus TCP/IP Protocol. The RS422/485 serial interface of the IMG-110T 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.

The advantage of having the IMG-110T 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 slave TCP connection requests
- Slave mode supports up to 16 TCP master connections

## Remote Management

The IMG-110T 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 RS422/485 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-110T 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-110T.

## Modbus Serial Port State Monitoring

The IMG-110T shows the details of the total bytes transmitted and received on the RS422/485 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-110T via the single RS422/485 serial interface.

## Stable Performance in Hardened Environment Design

The IMG-110T 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-110T to be placed in almost any difficult environment.

The IMG-110T is equipped with a compact IP30-rated metal case that allows wall mounting for efficient use of cabinet space. The IMG-110T also provides an integrated power supply source with wide-ranging voltages (9 to 48V DC) ideally suitable for worldwide operation with high availability applications.

## 2. PRODUCT FEATURES

### ▶ **Serial Interface**

- One **RS422/485** port with 5-contact terminal block
- Cost effective for RS422/RS485 to Fast Ethernet 10/100BASE-TX application
- Supports 4-wire RS422 or 2-wire RS485 with 5-contact terminal block operation
- 300bps~115200bps baud rate and non-blocking communication

### ▶ **Ethernet Interface**

- One **RS422/485** port with 5-contact terminal block
- 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 slave TCP connection requests
- Slave mode supports 16 TCP master connections
- Supports IP address and MAC address filtering function
- PLANET Modbus Gateway utility for finding client device on the network and related IP subnet address setting to reset to factory default function
- PLANET Smart Discovery utility automatically finds the client devices on the network
- Firmware upgrade/configuration backup and restore via HTTP protocol

▶ **Hardware**

- LED indicators for system, network and RS422/585 port diagnostics
- DIP switch on the upper panel for resetting to factory default
- Wall-mount kit

▶ **Industrial Case and Installation**

- Wallmount-type IP30 metal case
- The 2-contact terminal block connector on the top panel of Industrial Modbus Gateway is used for DC power input (9-48V)
- -40 to 75 degrees C operating temperature

### 3. PRODUCT SPECIFICATIONS

#### 3.1 MAIN COMPONENTS

Microcontroller: NXP LPC1778 x1  
 RS422/485 Transceiver Exar SP485E x1

#### 3.2 FUNCTION SPECIFICATIONS

<b>Model</b>	<b>IMG-110T</b>
<b>Serial Port</b>	
<b>Interface</b>	RS422/ RS485 x 1
<b>Connector</b>	5-contact terminal block for RS422/RS485
<b>Surge Protection</b>	1KV
<b>Baud Rate (Data Rate)</b>	300bps to 115200bps
<b>Data Bits</b>	7, 8
<b>Parity Type</b>	Odd, Even, None, Space, Mark
<b>Stop Bit</b>	1, 2
<b>Flow Control</b>	H/W, None

<b>Signals</b>	RS422 : Tx+, Tx-, GND, Rx+, Rx- RS485: Data A (+), GND, Data B (-)
<b>Distance</b>	RS422/RS485 for 20m transfer distance
<b>Operation Mode</b>	RTU Master/RTU Slave/ASCII Master/ASCII Slave Master mode: Supports up to 32 slave TCP connection requests Slave mode: Supports up to 16 TCP master connection requests
<b>Fast Ethernet Port</b>	
<b>Standard</b>	IEEE 802.310BASE-T standard IEEE 802.3u 100BASE-TX standard IEEE 802.3x full-duplex flow control
<b>Connector</b>	RJ45
<b>Distance</b>	100 meters
<b>Hardware</b>	
<b>Copper Port</b>	10/100BASE-T RJ45 TP x1, auto-MDI/MDI-X, auto-negotiation
<b>Serial Port</b>	RS422/RS485 x 1
<b>DIP Switch</b>	Reset system to factory default
<b>LED Indicators</b>	System: Power x 1 10/100BASE-TX Port: Link/Active x 1 RS422/RS485 Serial Port: TX (Transmit) x 1, RX (Receive) x 1
<b>Management</b>	Remote Web Management Remote Telnet Management PLANET Modbus Gateway Utility PLANET Smart Discovery Utility
<b>Operation Mode</b>	<ul style="list-style-type: none"> <li>■ RTU Master</li> <li>■ RTU Slave</li> <li>■ ASCII Master</li> <li>■ ASCII Slave</li> </ul>
<b>Power Input Connector</b>	2-contact terminal block connector (DC power: 9-48V)
<b>Installation</b>	Wall-mount kit
<b>Mechanical</b>	Metal
<b>Standards Conformance</b>	
<b>Standards Compliance</b>	IEEE 802.310BASE-T standard IEEE 802.3u 100BASE-TX standard IEEE 802.3x full-duplex flow control EIA/TIA RS422/485

### 3.3 PHYSICAL SPECIFICATIONS:

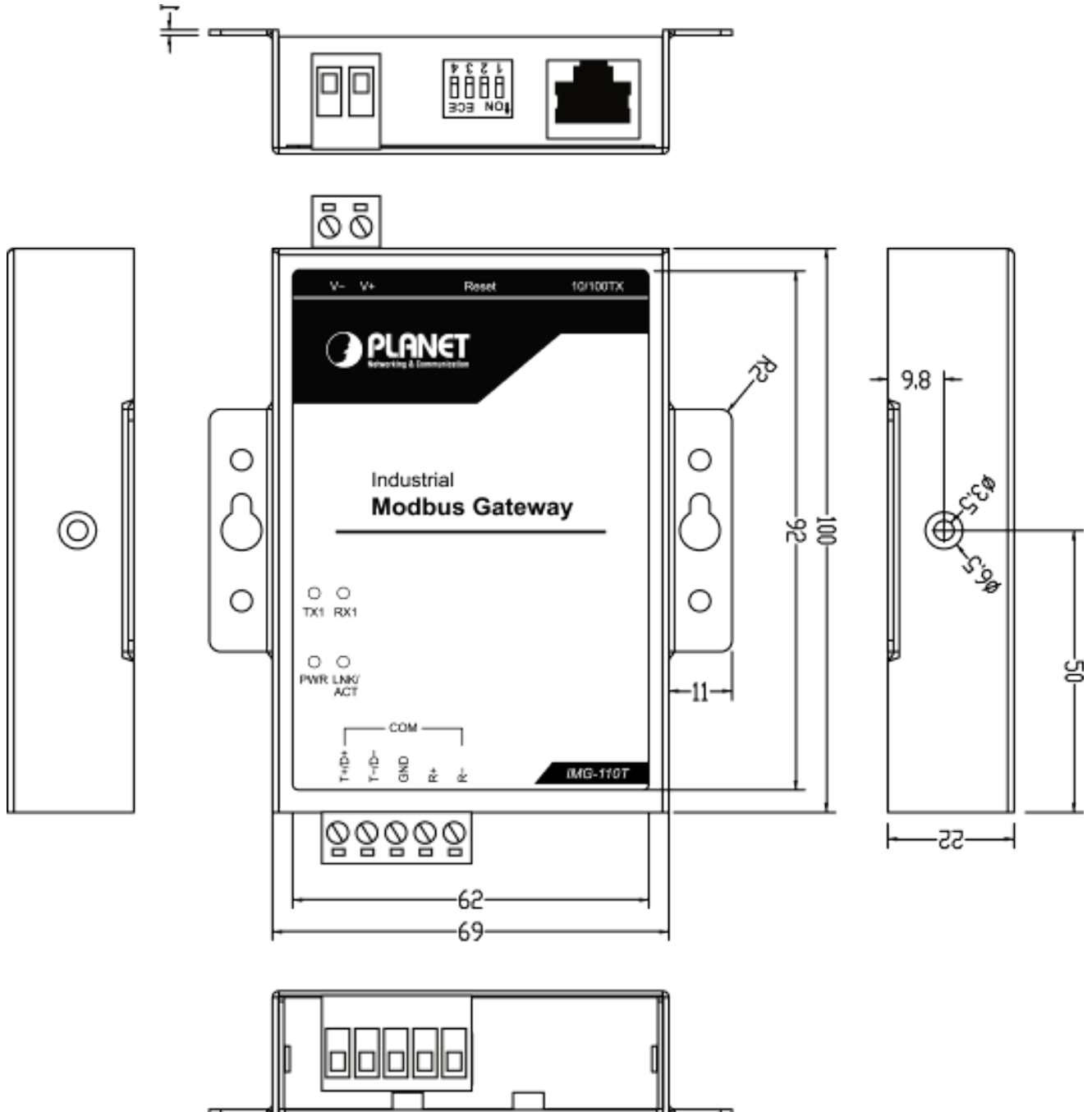
■ **Dimensions:**

69 x 100 x 22 mm (W x D x H)

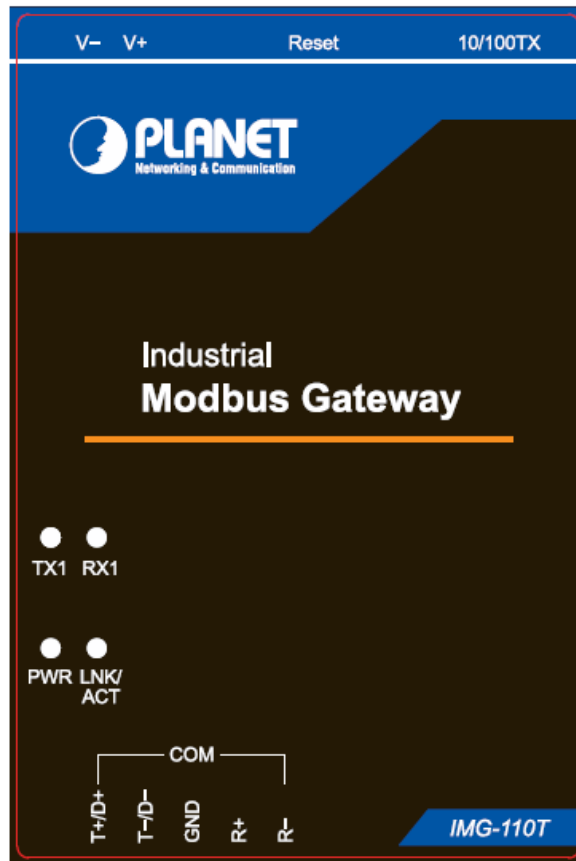
■ **Weight:**

238g

■ **Diagram**



■ Front Panel:



■ LED Definition

■ System

LED	Color	Function
Power	Green	Lights to indicate the system has power.

■ 10/100BASE-TX Interface

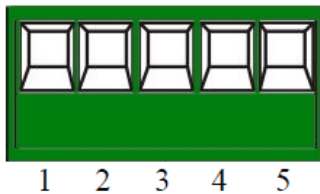
LED	Color	Function
LNK/ACT	Green	<b>Lights:</b> To indicate the link through that port is successfully established.
		<b>Blinks:</b> To indicate that the IMG-110T is actively sending or receiving data over that port.

■ RS422/RS485 Serial Port

LED	Color	Function
TX1	Green	<b>Blinks:</b> To indicate that the IMG-110T is actively transmitting data over that port.
RX1	Green	<b>Blinks:</b> To indicate that the IMG-110T is actively receiving data over that port.

■ **Serial Port Connection:**

The 5-contact terminal block connector on the lower panel of Industrial Modbus Gateway is used for RS422/485 connections.



PIN	RS485 PIN Define	RS422 PIN Define
1	D+	T+
2	D-	T-
3	GND	GND
4	--	R+
5	--	R-

**3.4 ENVIRONMENTAL SPECIFICATIONS**

**Operating:**

**Temperature:** -40°C ~ 75 degrees C

**Relative Humidity:** 5% ~ 95% (non-condensing)

**Storage:**

**Temperature:** -40°C ~ 75 degrees C

**Relative Humidity:** 5% ~ 95% (non-condensing)

**3.5 ELECTRICAL SPECIFICATION**

**Power Input Connector:** 2-contact terminal block connector (DC power: 9-48V)

**Power Consumption:**

Operation Mode	Input Voltage	Power Consumption
<b>System on</b>	9V DC	0.9W/3BTU
	24V DC	0.8W/2.7BTU
	36V DC	0.8W/2.7BTU
	48V DC	0.8W/2.7BTU
<b>Full Loading (Operating)</b>	9V DC	1.1W/3.7BTU
	24V DC	1.1W/3.7BTU
	36V DC	1.1W/3.7BTU
	48V DC	1.1W/3.7BTU



### 3.6 REGULATORY COMPLIANCE

FCC Part 15 Class B, CE

#### Stability Testing:

- IEC60068-2-32 (Free Fall)
- IEC60068-2-27 (Shock)
- IEC60068-2-6 (Vibration)

### 3.7 RELIABILITY

MTBF > 100,000Hrs @ 25 degrees C

### 3.8 BASIC PACKAGING

<input checked="" type="checkbox"/> The IMG-110T	x 1
<input checked="" type="checkbox"/> Quick Installation Guide	x 1
<input checked="" type="checkbox"/> User's Manual CD	x 1

### 3.9 PACKING DIMENSIONS

<b>Box Dimensions:</b>	205 (W) × 144 (D) × 46 mm (H)
<b>Carton Dimensions:</b>	430 (W) × 315 (D) × 264 mm (H)
<b>Total Weight :</b>	TBD (gross weight)
<b>Carton Unit:</b>	20pcs in one carton