



IEC850-211-S

Modbus TCP to IEC-61850 Gateway

### **₱** Features

- Read/Write Modbus register via IEC-61850
- Maps Modbus registers to IEC-61850 data objects via utility automatically
- Supports Logical Node GGIO and Data Object Ind, IntIn, SPCSO, ISCSO
- Offers secure remote operations with a Select-Before-Operate feature
- Supports Modbus function code 1, 2, 3, 4, 5 and 6
- Allows up to 32 Modbus TCP server and 5 IEC-61850 MMS client connections
- Allows 9600 Modbus registers in total. (Includes coil, discrete inputs, input registers and hold registers)
- Provides ICD file via utility





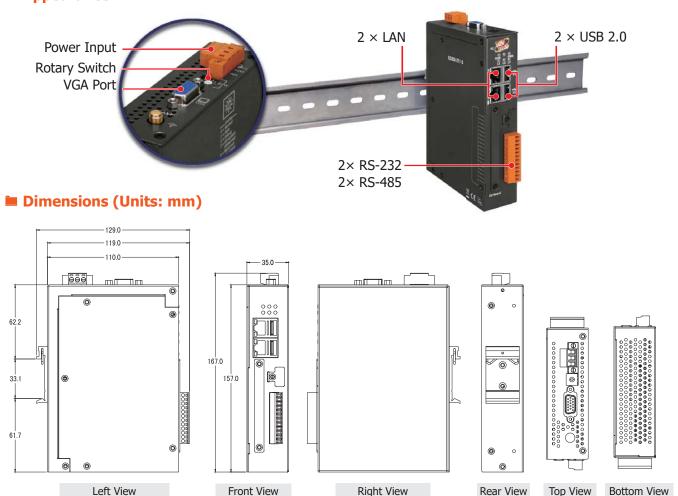


#### Introduction

IEC 61850 is an international standard defining communication protocols for intelligent electronic devices at electrical substations. It is developed by the International Electrotechnical Commission's (IEC) Technical Committee 57 reference architecture for electric power systems. The objective of the standard is to specify requirements and to provide a framework to achieve interoperability between the IEDs supplied from different suppliers. This protocol can run over TCP/IP networks or substation LANs using high speed switched Ethernet to obtain the necessary response times below four milliseconds for protective relaying.

IEC850-211-S is a network gateway allowing IEC-61850 MMS client to access Modbus TCP network as a Modbus TCP client. IEC-61850 protocol is used in substation automation. The IEDs exchange information with other IEDs or SCADA via IEC-61850 protocol for protection and control devices. IEC850-211-S support Logical Node GGIO and Data Object Ind, IntIn, SPCSO, ISCSO. It also support data set and unbuffered report function to exchange data with a client. The data mapping rule can be configured via ICPDAS Utility.

### Appearance



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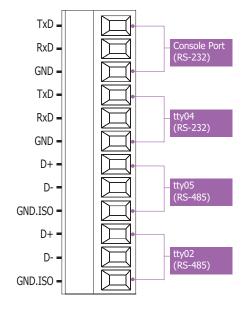
## Specifications

CPU         Cortex-A8, 1 GHz           SDRAM         512 MB           Flash         512 MB           FRAM         64 KB           LED Indicators         PWR(Power), RUN(Running), L1, L2, L3           Communication Ports           VGA         1 (reserved)           Ethernet         RJ-45 x 2, 10/100/1000 Based-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)           USB 2.0         2 (reserved)           Console Port         RS-232 (RXD, TXD and GND); Non-isolated           ttyO2         RS-485 (reserved) (Data+, Data-); Non-isolated           ttyO4         RS-232 (reserved) (RXD, TXD and GND); Non-isolated           ttyO5         RS-485 (reserved) (Data+, Data-); 2500 VDC isolated           Protocol           Modbus         Function           Function         1, 2, 3, 4, 5, 6           connection         Max. 32 Modbus TCP servers           identity         IEC-61850 MMS server           connection         Max. 5 MMS clients           Logical Node         LLNO · LPHD · GGIO           Data Object         Ind, Intin, SPCSO, ISCSO           Status-only direct-withnormal-security sho-with-enhanced-security sho-with-enhanced-security sho-with-enhanced-security sho-with-enhanced security sho-with-enhanced security sho-with-enhanced security sho-w	System		
Flash	CPU		Cortex-A8, 1 GHz
Communication Ports	SDRAM		512 MB
Communication Ports  VGA	Flash		512 MB
Communication Ports  VGA	FRAM		64 KB
Tebernet   Console Port   Console Port   Console Port   RS-485 (reserved)   Console Port   RS-232 (RxD, TxD and GND); Non-isolated   RS-485 (reserved) (Data+, Data-); Non-isolated   RS-232 (reserved) (RxD, TxD and GND); Non-isolated   RS-232 (reserved) (Data+, Data-); 2500 VDC isolated   RS-485 (reserved) (Data-, Data	LED Indicators		PWR(Power), RUN(Running), L1, L2, L3
Ethernet RJ-45 x 2, 10/100/1000 Based-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)  USB 2.0 2 (reserved)  Console Port RS-232 (RxD, TxD and GND); Non-isolated RS-232 (reserved) (Data+, Data-); Non-isolated RS-232 (reserved) (RxD, TxD and GND); Non-isolated RS-232 (reserved) (Data+, Data-); Non-isolated RS-285 (reserved) (Data+, Data-); Non-isolated RS-285 (reserved) (Data+, Data-); Non-isolated RS-485 (reserved) (RxD, TxD and GND); Non-isolated RS-485 (reserved) (Data+, Data-); Non	Communic	ation Ports	
Ethernet (Auto-negotiating, Auto MDI/MDI-X, LED indicators)  USB 2.0 2 (reserved)  Console Port RS-232 (RxD, TxD and GND); Non-isolated ttyO2 RS-485 (reserved) (Data+, Data-); Non-isolated RS-232 (reserved) (RxD, TxD and GND); Non-isolated RS-232 (reserved) (Data+, Data-); Non-isolated RS-232 (reserved) (Data+, Data-); Non-isolated RS-485 (reserved) (Data+, Data-); 2500 VDC isolated RS-485 (reserved) (Data+, Data-); 2600 VDC isolated RS-485 (reserved) (Data+, Data-); 2600 VDC isola	VGA		1 (reserved)
Console Port  RS-232 (RxD, TxD and GND); Non-isolated  RS-485 (reserved) (Data+, Data-); Non-isolated  RS-232 (reserved) (RxD, TxD and GND); Non-isolated  RS-232 (reserved) (RxD, TxD and GND); Non-isolated  RS-485 (reserved) (Data+, Data-); 2500 VDC isolated  Protocol  Modbus    Identity	Ethernet		(Auto-negotiating, Auto MDI/MDI-X, LED
ttyO2  RS-485 (reserved) (Data+, Data-); Non-isolated  RS-232 (reserved) (RxD, TxD and GND); Non-isolated  ttyO5  RS-485 (reserved) (Data+, Data-); 2500 VDC isolated  Protocol  Modbus    Identity	USB 2.0		2 (reserved)
ttyO2  Non-isolated  RS-232 (reserved) (RxD, TxD and GND); Non-isolated  RS-485 (reserved) (Data+, Data-); 2500 VDC isolated  Protocol  Modbus  identity  Modbus TCP client  Function  1, 2, 3, 4, 5, 6  connection  Max. 32 Modbus TCP servers  identity  identity  IEC-61850 MMS server  connection  Max. 5 MMS clients  Logical Node  LLN0 · LPHD · GGIO  Data Object  Ind, IntIn, SPCSO, ISCSO  status-only direct-with-normal-security direct-with-enhanced-security sbo-with-enhanced-security sbo-with-enhanced-security  Power  Supply Voltage  +12 to +48 VDC  Consumption  4.8 W  Connector  3-pin Removable Terminal Block  Mechanism  Dimensions  35 mm x 167 mm x 119 mm  Casing  Metal  Installation  DIN-Rail  Environment  Operating Temp.  -25°C ~ +75°C  Storage Temp  -40°C ~ +80°C	Console Port		RS-232 (RxD, TxD and GND); Non-isolated
ttyO5 RS-485 (reserved) (Data+, Data-); 2500 VDC isolated  Protocol  Modbus identity Modbus TCP client Function 1, 2, 3, 4, 5, 6	ttyO2		, , , , , , , , , , , , , , , , , , , ,
Protocol  Modbus    Identity	ttyO4		
Identity   Modbus TCP client	ttyO5		
Modbus  Function 1, 2, 3, 4, 5, 6  connection Max. 32 Modbus TCP servers  identity IEC-61850 MMS server  connection Max. 5 MMS clients  Logical Node LLN0 · LPHD · GGIO  Data Object Ind, IntIn, SPCSO, ISCSO  status-only direct-with-normal-security direct-with-enhanced-security sbo-with-normal-security sbo-with-enhanced-security  Power  Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal  Installation DIN-Rail  Environment  Operating Temp25°C ~ +75°C  Storage Temp -40°C ~ +80°C	Protocol		
connection Max. 32 Modbus TCP servers  identity IEC-61850 MMS server  connection Max. 5 MMS clients  Logical Node LLN0 · LPHD · GGIO  Data Object Ind, IntIn, SPCSO, ISCSO  status-only direct-with-enhanced-security sbo-with-normal-security sbo-with-enhanced-security sbo-with-enhanced-security  Power  Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal  Installation DIN-Rail  Environment  Operating Temp25°C ~ +75°C  Storage Temp -40°C ~ +80°C	Modbus	identity	Modbus TCP client
identity IEC-61850 MMS server  connection Max. 5 MMS clients  Logical Node LLN0 \ LPHD \ GGIO  Data Object Ind, IntIn, SPCSO, ISCSO  status-only direct-with-normal-security direct-with-enhanced-security sbo-with-enhanced-security sbo-with-enhanced-security  Power  Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal  Installation DIN-Rail  Environment  Operating Temp25°C \times +75°C  Storage Temp -40°C \times +80°C		Function	1, 2, 3, 4, 5, 6
connection Max. 5 MMS clients  Logical Node LLN0 \ LPHD \ GGIO  Data Object Ind, IntIn, SPCSO, ISCSO  status-only direct-with-normal-security direct-with-enhanced-security sbo-with-enhanced-security  Power  Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal  Installation DIN-Rail  Environment  Operating Temp25°C ~ +75°C  Storage Temp -40°C ~ +80°C		connection	Max. 32 Modbus TCP servers
Logical Node LLN0 · LPHD · GGIO  Data Object Ind, IntIn, SPCSO, ISCSO  status-only direct-with-normal-security direct-with-enhanced-security sbo-with-normal-security sbo-with-enhanced-security Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal  Installation DIN-Rail  Environment  Operating Temp25°C ~ +75°C  Storage Temp -40°C ~ +80°C		identity	IEC-61850 MMS server
Data Object Ind, IntIn, SPCSO, ISCSO  status-only direct-with-normal-security direct-with-enhanced-security sbo-with-enhanced-security Sowwith-enhanced-security Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal Installation DIN-Rail  Environment  Operating Temp25°C ~ +75°C  Storage Temp -40°C ~ +80°C		connection	Max. 5 MMS clients
status-only direct-with-normal-security direct-with-enhanced-security sbo-with-enhanced-security sbo-with-enhanced-security  Power  Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal  Installation DIN-Rail  Environment  Operating Temp25°C ~ +75°C  Storage Temp -40°C ~ +80°C		Logical Node	LLN0 · LPHD · GGIO
status-only direct-with-normal-security direct-with-enhanced-security sbo-with-normal-security sbo-with-enhanced-security  Power  Supply Voltage +12 to +48 VDC  Consumption 4.8 W  Connector 3-pin Removable Terminal Block  Mechanism  Dimensions 35 mm x 167 mm x 119 mm  Casing Metal  Installation DIN-Rail  Environment  Operating Temp25°C ~ +75°C  Storage Temp -40°C ~ +80°C	IEC-61850	Data Object	Ind, IntIn, SPCSO, ISCSO
Supply Voltage         +12 to +48 VDC           Consumption         4.8 W           Connector         3-pin Removable Terminal Block           Mechanism         Dimensions           Casing         Metal           Installation         DIN-Rail           Environment         Operating Temp.           Storage Temp         -25°C ~ +80°C	120-01030	control	direct-with-normal-security direct-with-enhanced-security sbo-with-normal-security
Consumption         4.8 W           Connector         3-pin Removable Terminal Block           Mechanism           Dimensions         35 mm x 167 mm x 119 mm           Casing         Metal           Installation         DIN-Rail           Environment         Operating Temp.           Storage Temp         -25°C ~ +75°C           Storage Temp         -40°C ~ +80°C	Power		
Connector         3-pin Removable Terminal Block           Mechanism         35 mm x 167 mm x 119 mm           Casing         Metal           Installation         DIN-Rail           Environment         Operating Temp.         -25°C ~ +75°C           Storage Temp         -40°C ~ +80°C	Supply Voltage		+12 to +48 VDC
Mechanism         35 mm x 167 mm x 119 mm           Casing         Metal           Installation         DIN-Rail           Environment         Operating Temp.           Operating Temp         -25°C ~ +75°C           Storage Temp         -40°C ~ +80°C	Consumption		4.8 W
Dimensions         35 mm x 167 mm x 119 mm           Casing         Metal           Installation         DIN-Rail           Environment         Operating Temp.           -25°C ~ +75°C           Storage Temp         -40°C ~ +80°C	Connector		3-pin Removable Terminal Block
Casing         Metal           Installation         DIN-Rail           Environment         Operating Temp.         -25°C ~ +75°C           Storage Temp         -40°C ~ +80°C	Mechanisn	n	
Installation         DIN-Rail           Environment         Operating Temp.         -25°C ~ +75°C           Storage Temp         -40°C ~ +80°C	Dimensions		35 mm x 167 mm x 119 mm
Environment  Operating Temp. $-25^{\circ}\text{C} \sim +75^{\circ}\text{C}$ Storage Temp $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$	Casing		Metal
Operating Temp. $-25^{\circ}\text{C} \sim +75^{\circ}\text{C}$ Storage Temp $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$	Installation		DIN-Rail
Storage Temp -40°C ~ +80°C	Environme	ent	
	Operating Temp.		-25°C ~ +75°C
Humidity 10 ~ 90% RH, non-condensing	Storage Temp		-40°C ~ +80°C
	Humidity		10 ~ 90% RH, non-condensing

# **■** Applications



# **■ Pin Assignments**



# **■ Ordering Information**

IEC850-211-S	Modbus TCP to IEC-61850 Gateway (RoHs)

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