

# **HART Series Products**

## Modbus RTU/ASCII to HART Gateway

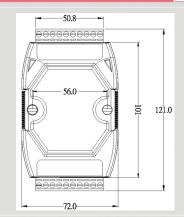








HRT-710



## **Dimensions**

The HRT-710 Gateway is specially designed for the master device of HART protocol. It allows the Modbus master device to access the HART slave devices. These HART devices may be a transmitter, an actuator, a current output device and so forth. In addition, we also provide the utility software for users to configure the HRT-710. By using this module, users can integrate their HART devices into Modbus network easily.

#### **Features**

- Support HART Short/Long frame
- Support HART Burst mode
- Allow two HART Masters
- Working in point-to-point or multi-drop HART mode
- Connecting up to 15 HART modules
- Support Modbus RTU and ASCII format
- Support Modbus Slave mode
- Isolated COM 1: RS-232/422/485
- Provide LED indicators
- Built-in Watchdog
- 4KV ESD Protection

## **Modbus Support**

Support the following Modbus commands.

Code	Name	Description
01	Read Coil Status	Read the ON/OFF status of discrete outputs in the slave
02	Read Input Status	Read the ON/OFF status of discrete inputs in the slave
03	Read Holding Registers	Read the binary contents of holding registers in the slave
04	Read Input Registers	Read the binary contents of input registers in the slave
05	Force Single Coil	Write a single output to either ON or OFF in the slave
06	Preset Single Register	Write an integer value into a single register in the slave
15	Force Multi. Coils	Write each coil in the sequence of coils to either ON or OFF in the slave
16	Preset Multi. Registers	Write a block of contiguous registers in the slave

#### **Utility Features**

- Read/Write HART device by HART command
- Provide diagnostic Information
- Read/Write module configuration of the HRT-710
- Show Modbus address of HART command



## Pin Assignments



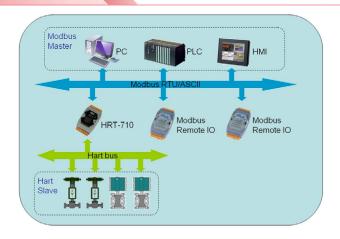




# Hardware Specifications

Watchdog         Watchdog IC           ESD Protection         4 kV class A           UART Interface           COM 1         RS-232(3 wire)/RS-422/RS-485           COM 1 Connector         9-pin screwed terminal block           Baud Rate (bps)         1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200           Protocol         Modbus RTU / Modbus ASCII           HART Interface           HART Channel         1           HART Interface         2-pin screwed terminal block           HART Device         2-wired or 4-wired HART devices           HART Topology         Point to Point or Multi-Drop           HART Data         Only Digital Data           HART Frame Type         Short and Long Frame           Burst Mode         Supported           Max. HART Device         15           Loop Resistor         250 Ω resistor by Jumper           Isolation         Follow UL1577 Spec.           Power         Power supply         Unregulated +10 ~ +30 Vpc           Protection         Power reverse polarity protection, Over-voltage brown-out protection           Power Consumption         1 W           Mechanism           Installation         DIN-Rail or Wall Mounting           Dimensions         72 mm x 35 mm x 1					
ESD Protection         4 kV class A           UART Interface           COM 1         RS-232(3 wire)/RS-422/RS-485           COM 1 Connector         9-pin screwed terminal block           Baud Rate (bps)         1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200           Protocol         Modbus RTU / Modbus ASCII           HART Interface	Hardware				
UART InterfaceCOM 1RS-232(3 wire)/RS-422/RS-485COM 1 Connector9-pin screwed terminal blockBaud Rate (bps)1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200ProtocolModbus RTU / Modbus ASCIIHART Interface					
COM 1         RS-232(3 wire)/RS-422/RS-485           COM 1 Connector         9-pin screwed terminal block           Baud Rate (bps)         1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200           Protocol           Modbus RTU / Modbus ASCII           HART Interface           HART Channel         1           HART Interface         2-pin screwed terminal block           HART Device         2-wired or 4-wired HART devices           HART Topology         Point to Point or Multi-Drop           HART Data         Only Digital Data           HART Frame Type         Short and Long Frame           Burst Mode         Supported           Max. HART Device         15           Loop Resistor         250 Ω resistor by Jumper           Isolation         Follow UL1577 Spec.           Power           Power supply         Unregulated +10 ~ +30 Vpc           Protection         Power reverse polarity protection, Over-voltage brown-out protection           Power Consumption         1 W           Mechanism           Installation         DIN-Rail or Wall Mounting           Dimensions         72 mm x 35 mm x 121 mm (W x L x H) Detail           Environment		4 kV class A			
COM 1 Connector 9-pin screwed terminal block Baud Rate (bps) 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 Protocol Modbus RTU / Modbus ASCII  HART Interface  HART Channel 1 HART Interface 2-pin screwed terminal block HART Device 2-wired or 4-wired HART devices HART Topology Point to Point or Multi-Drop HART Data Only Digital Data HART Frame Type Short and Long Frame Burst Mode Supported Max. HART Device 15 Loop Resistor 250 Ω resistor by Jumper Isolation Follow UL1577 Spec.  Power  Power  Power supply Unregulated +10 ~ +30 V <sub>DC</sub> Protection Power reverse polarity protection, Over-voltage brown-out protection Power Consumption 1 W  Mechanism Installation DIN-Rail or Wall Mounting Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp25 °C ~ +75 °C Storage Temp30 °C ~ +85 °C	UART Interface				
Baud Rate (bps) 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200  Protocol Modbus RTU / Modbus ASCII  HART Interface  HART Channel 1  HART Interface 2-pin screwed terminal block  HART Opology Point to Point or Multi-Drop  HART Data Only Digital Data  HART Frame Type Short and Long Frame  Burst Mode Supported  Max. HART Device 15  Loop Resistor 250 Ω resistor by Jumper  Isolation Follow UL1577 Spec.  Power  Power supply Unregulated +10 ~ +30 V <sub>DC</sub> Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp25 °C ~ +75 °C  Storage Temp30 °C ~ +85 °C	COM 1	RS-232(3 wire)/RS-422/RS-485			
Protocol Modbus RTU / Modbus ASCII   HART Interface   HART Channel 1   HART Interface 2-pin screwed terminal block   HART Device 2-wired or 4-wired HART devices   HART Topology Point to Point or Multi-Drop   HART Data Only Digital Data   HART Frame Type Short and Long Frame   Burst Mode Supported   Max. HART Device 15   Loop Resistor 250 Ω resistor by Jumper   Isolation Follow UL1577 Spec.   Power   Power supply Unregulated +10 ~ +30 Vpc   Protection Power reverse polarity protection, Over-voltage brown-out protection   Power Consumption 1 W   Mechanism   Installation DIN-Rail or Wall Mounting   Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail   Environment Operating Temp25 °C ~ +75 °C   Storage Temp25 °C ~ +75 °C   Storage Temp30 °C ~ +85 °C	COM 1 Connector	9-pin screwed terminal block			
HART InterfaceHART Channel1HART Interface2-pin screwed terminal blockHART Device2-wired or 4-wired HART devicesHART TopologyPoint to Point or Multi-DropHART DataOnly Digital DataHART Frame TypeShort and Long FrameBurst ModeSupportedMax. HART Device15Loop Resistor $250 \Omega$ resistor by JumperIsolationFollow UL1577 Spec.PowerPower supplyUnregulated $+10 \sim +30 \text{ Vpc}$ ProtectionPower reverse polarity protection, Over-voltage brown-out protectionPower Consumption1 WMechanismInstallationDIN-Rail or Wall MountingDimensions72 mm x 35 mm x 121 mm (W x L x H) DetailEnvironment-25 °C $\sim$ +75 °CStorage Temp. $-25 \circ \circ \sim +85 \circ \circ$	Baud Rate (bps)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200			
HART Channel 1 HART Interface 2-pin screwed terminal block HART Device 2-wired or 4-wired HART devices  HART Topology Point to Point or Multi-Drop  HART Data Only Digital Data HART Frame Type Short and Long Frame  Burst Mode Supported  Max. HART Device 15 Loop Resistor 250 Ω resistor by Jumper Isolation Follow UL1577 Spec.  Power  Power  Power unregulated +10 ~ +30 V <sub>DC</sub> Protection Power reverse polarity protection, Over-voltage brown-out protection Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp25 °C ~ +75 °C Storage Temp30 °C ~ +85 °C	Protocol	Modbus RTU / Modbus ASCII			
HART Interface 2-pin screwed terminal block  HART Device 2-wired or 4-wired HART devices  HART Topology Point to Point or Multi-Drop  HART Data Only Digital Data  HART Frame Type Short and Long Frame  Burst Mode Supported  Max. HART Device 15  Loop Resistor 250 Ω resistor by Jumper  Isolation Follow UL1577 Spec.  Power  Power  Power Unregulated $+10 \sim +30 \text{ Vpc}$ Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25 \text{ °C} \sim +75 \text{ °C}$ Storage Temp. $-30 \text{ °C} \sim +85 \text{ °C}$	HART Interface				
HART Device 2-wired or 4-wired HART devices  HART Topology Point to Point or Multi-Drop  HART Data Only Digital Data  HART Frame Type Short and Long Frame  Burst Mode Supported  Max. HART Device 15  Loop Resistor 250 Ω resistor by Jumper  Isolation Follow UL1577 Spec.  Power  Power supply Unregulated $+10 \sim +30 \text{ Vpc}$ Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25  ^{\circ}\text{C} \sim +75  ^{\circ}\text{C}$ Storage Temp. $-30  ^{\circ}\text{C} \sim +85  ^{\circ}\text{C}$	HART Channel	1			
HART Topology Point to Point or Multi-Drop  HART Data Only Digital Data  HART Frame Type Short and Long Frame  Burst Mode Supported  Max. HART Device 15  Loop Resistor 250 Ω resistor by Jumper  Isolation Follow UL1577 Spec.  Power  Power supply Unregulated $+10 \sim +30 \text{ Vpc}$ Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25 \degree C \sim +75 \degree C$ Storage Temp. $-30 \degree C \sim +85 \degree C$	HART Interface	2-pin screwed terminal block			
HART Data Only Digital Data HART Frame Type Short and Long Frame Burst Mode Supported Max. HART Device 15 Loop Resistor Isolation Follow UL1577 Spec.  Power  Power supply Unregulated +10 ~ +30 V <sub>DC</sub> Protection Power Consumption 1 W  Mechanism Installation DIN-Rail or Wall Mounting Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment Operating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	HART Device	2-wired or 4-wired HART devices			
HART Frame Type Short and Long Frame  Burst Mode Supported  Max. HART Device 15  Loop Resistor 250 $\Omega$ resistor by Jumper  Isolation Follow UL1577 Spec.  Power  Power Supply Unregulated $+10 \sim +30 \text{ Vpc}$ Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25  ^{\circ}\text{C} \sim +75  ^{\circ}\text{C}$ Storage Temp. $-30  ^{\circ}\text{C} \sim +85  ^{\circ}\text{C}$	HART Topology	Point to Point or Multi-Drop			
Burst Mode Supported  Max. HART Device 15  Loop Resistor 250 $\Omega$ resistor by Jumper  Isolation Follow UL1577 Spec.  Power  Power supply Unregulated $+10 \sim +30 \text{ Vpc}$ Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	HART Data	Only Digital Data			
Max. HART Device 15 Loop Resistor 250 $\Omega$ resistor by Jumper Isolation Follow UL1577 Spec.  Power  Power supply Unregulated +10 ~ +30 V <sub>DC</sub> Protection Power reverse polarity protection, Over-voltage brown-out protection Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp25 °C ~ +75 °C Storage Temp30 °C ~ +85 °C	HART Frame Type	Short and Long Frame			
Loop Resistor $250 \Omega$ resistor by JumperIsolationFollow UL1577 Spec.PowerPower supplyUnregulated $+10 \sim +30 \text{ Vpc}$ ProtectionPower reverse polarity protection, Over-voltage brown-out protectionPower Consumption $1 \text{ W}$ MechanismInstallationDIN-Rail or Wall MountingDimensions $72 \text{ mm x } 35 \text{ mm x } 121 \text{ mm } (\text{W x L x H}) \text{ Detail}$ EnvironmentOperating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Burst Mode	Supported			
IsolationFollow UL1577 Spec.PowerPower supplyUnregulated $+10 \sim +30 \text{ Vpc}$ ProtectionPower reverse polarity protection, Over-voltage brown-out protectionPower Consumption1 WMechanismInstallationDIN-Rail or Wall MountingDimensions $72 \text{ mm x } 35 \text{ mm x } 121 \text{ mm (W x L x H) Detail}$ EnvironmentOperating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Max. HART Device	15			
PowerPower supplyUnregulated $+10 \sim +30 \text{ Vpc}$ ProtectionPower reverse polarity protection, Over-voltage brown-out protectionPower Consumption1 WMechanismInstallationDIN-Rail or Wall MountingDimensions $72 \text{ mm x } 35 \text{ mm x } 121 \text{ mm (W x L x H) Detail}$ EnvironmentOperating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Loop Resistor	250 Ω resistor by Jumper			
Power supply Unregulated $+10 \sim +30 \text{ V}_{DC}$ Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Isolation	Follow UL1577 Spec.			
Protection Power reverse polarity protection, Over-voltage brown-out protection  Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting  Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Power				
Power Consumption 1 W  Mechanism  Installation DIN-Rail or Wall Mounting Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail  Environment  Operating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Power supply	Unregulated +10 ~ +30 V <sub>DC</sub>			
MechanismInstallationDIN-Rail or Wall MountingDimensions $72 \text{ mm x } 35 \text{ mm x } 121 \text{ mm } (\text{W x L x H}) \text{ Detail}$ EnvironmentOperating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Protection	Power reverse polarity protection, Over-voltage brown-out protection			
InstallationDIN-Rail or Wall MountingDimensions $72 \text{ mm x } 35 \text{ mm x } 121 \text{ mm } (\text{W x L x H}) \text{ Detail}$ EnvironmentOperating Temp. $-25 ^{\circ}\text{C}  \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C}  \sim +85 ^{\circ}\text{C}$	Power Consumption	1 W			
Dimensions 72 mm x 35 mm x 121 mm (W x L x H) Detail <b>Environment</b> Operating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Mechanism				
EnvironmentOperating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Installation	DIN-Rail or Wall Mounting			
Operating Temp. $-25 ^{\circ}\text{C} \sim +75 ^{\circ}\text{C}$ Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Dimensions	72 mm x 35 mm x 121 mm (W x L x H) Detail			
Storage Temp. $-30 ^{\circ}\text{C} \sim +85 ^{\circ}\text{C}$	Environment				
	Operating Temp.	-25 °C ~ +75 °C			
Humidity 5% ~ 95% RH, non-condensing	Storage Temp.	-30 °C ∼ +85 °C			
2,0 ,0,0 1011, 1011 001140110110	Humidity	5% ~ 95% RH, non-condensing			

## Applications



# Ordering Information

HRT-710 CR Modbus RTU/ASCII to HART Gateway (RoHS)