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# HUR Series Modbus TCP Remote I/O Devices with I/O Logic Functions, and MQTT Publisher

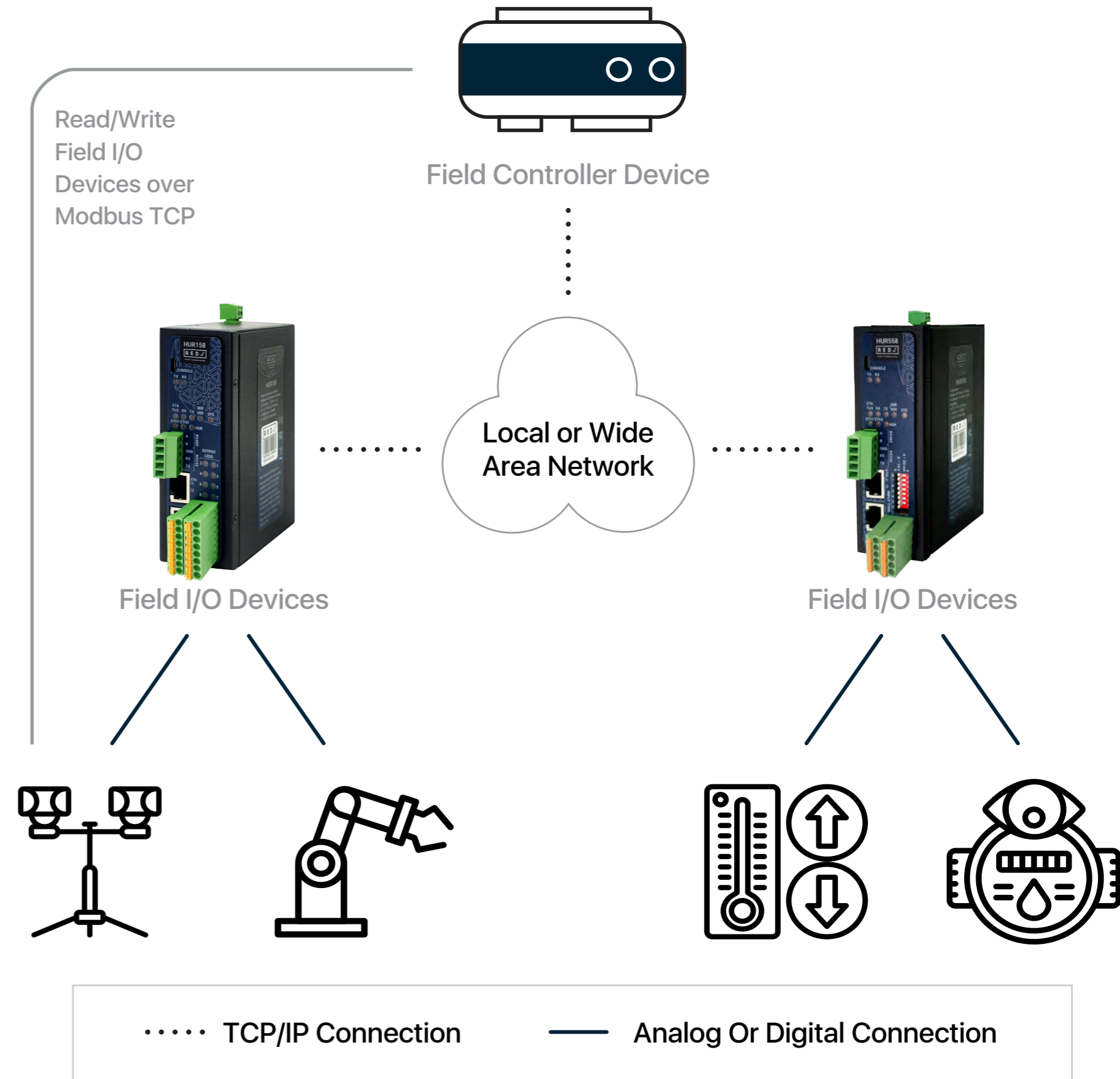
Different I/O Options  
and 2 x 10/100Base-T(x) Ports



HUR Series Modbus TCP Remote Input/Output (I/O) Devices are designed for facilities of rugged industry and infrastructure and perform various features such as wide temperature, wide range power input range... etc. HUR Series Modbus TCP Remote I/O Devices offers different I/O options, which provide greater flexibility and are compatible with many different applications that makes them the perfect choice for establishing a cost-effective remote I/O system with I/O Logic Functions.

HUR Series Modbus TCP Remote Input/Output (I/O) Devices support up to 8 I/O, any of Analog Input, Digital Input, Analog Output or Digital Output options can be selected. All I/O data can be read via Modbus TCP and can be sent to MQTT Server in same time. I/O data can also be controlled through MQTT Server via commands for output models. Output versions also support I/O Mirror function which is copying an input of in 1 HUR device to Output on 1 or more HUR devices.

All versions of HUR Series Modbus TCP Remote Input/Output (I/O) Devices support I/O Logic Functions which can be used to make field automation by using HUR Series itself in the field. As an example, device can be programmed to Turn ON Output or send status of input values to MQTT server or LoRaWAN Server when an input dedected. There are many combinations available.



# Main Features

- Supports 2 x 10/100Base-T(X) ports
- Supports Full/Half-Duplex, auto MDI/MDI-X on each port
- Embedded web interface for ease of use
- **2 different Operating Modes:**

**Modbus TCP Remote I/O Device with MQTT Publisher in Server Mode**

**Modbus TCP Remote I/O Device as a slave Device in Client Mode and Supports I/O Mirror for Output Devices**

- **MQTT Publisher with different data transfer options**

**OBIS Values as Data Objects**

**OBIS Values as Modbus Frame**

- **HUR can send Data to MQTT Server and MQTT Server can remotely control**

**Output Versions of HUR Devices in the same time**

- **Logic Function commands available to make field automation based on I/O status**
- Up to 10 client connection in Server Mode
- DHCP Server Capability
- Easy to follow Device Status on web interface
- Device Address changeable via web interface
- Easy to follow Device Parameters such as Device Up Time, Modbus read counter etc. on web interface
- Easy to follow Ethernet data packages on web interface
- Black List and White List based IP Filter in TCP Server Mode
- Firmware Upgrade over Web
- 2 firmware storage capability on same device (1 active only)
- AC or DC wide range power options
- Wide operating temperature range from -25 to 70 °C AC and -40 to 85 °C DC power input versions
- Rugged Metal IP-40 housing design
- DIN-Rail mounting

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Extra Features for Output Models

- Output configuration can be defined by user for restart
- Output values can be saved and applied during auto restart
- I/O Mirror functionality: Device can duplicate output from a Modbus input device

# Technical Specifications

## ETHERNET SWITCH TECHNOLOGY

### Ethernet Standards

- IEEE 802.3 for 10Base-T
- IEEE 802.3u for 100Base-T(X)
- IEEE 802.3x Flow Control

### Mac Table

- 1K MAC address entry

### Processing

- Store-and-Forward

### Memory

- 448K bits packet
- buffer memory



## I/O LOGIC FUNCTIONS

All versions of HUR Series Modbus TCP Remote Input/Output (I/O) Devices support I/O Logic Functions which can be used to make field automation by using HUR Series itself in the field. As an example, device can be programmed to Turn ON Output or send status of input values to MQTT server or LoRaWAN Server when an input detected. There are many combinations available.

### I/O Logic Commands

- Up to 8 commands available

### Condition Slot and I/O

- HUR can check programmed input or output of selected slot. This can be any of the available slot (Analog Input, Digital Input, Analog Output or Digital Output)

### Condition Command

- For Analog Input and Analog Output: HUR can check if the selected I/O value is Higher or Lower than user specified value
- For Digital Input and Digital Output: HUR can check if the selected I/O value is ON, OFF or its State Changed (from ON to OFF or OFF to ON)

### Condition Duration

- HUR can check the command for user defined duration and function is only triggered when command is true for specified duration

### Result Slot and I/O

- This is the affected input or output number of slot for triggered command. This can be any of the available slot (Analog Input, Digital Input, Analog Output or Digital Output)

### Result Command

- For Digital Output and Analog Output: HUR can set output to specific value. It can be On, Off or State Change for Digital Output model and can be user defined value for Analog Output Model
- For All Slot Models: HUR can send MQTT message or LoRaWAN message for specified slot when command is triggered

### Wait Before Next Check

- Once the command is triggered, HUR can wait for next check of command based on user defined duration

### Examples

- HUR can send MQTT message for selected slot if an Analog Input Value is Higher than 10mA.
- HUR can send MQTT message for selected slot if a Digital Value is ON.
- HUR can set Output ON for selected Digital Output slot if a Digital Input value is OFF

## MODBUS TCP CHARACTERISTICS

<b>Modbus Protocol</b>	<ul style="list-style-type: none"><li>• Modbus TCP</li></ul>
<b>Modbus Address</b>	<ul style="list-style-type: none"><li>• Default value is 0x01</li><li>• Changeable via Web Interface</li></ul>
<b>Monitoring Parameters</b>	<ul style="list-style-type: none"><li>• Modbus Read counter</li><li>• Time counter (in seconds)</li><li>• FW version</li><li>• Device Up Time</li><li>• Serial and TCP packages</li></ul>

## EXTRA FEATURES FOR OUTPUT MODELS

<b>Save Output Values Before Auto Restart</b>	<ul style="list-style-type: none"><li>• Default enabled and when system auto restarts the values are saved and applied after restart</li><li>• Changeable via Web Interface</li></ul>
<b>Save Output Values and Apply on Power Up</b>	<ul style="list-style-type: none"><li>• Default disabled, user can activate and enter parameters for each output individually</li><li>• Changeable via Web Interface</li></ul>
<b>I/O Mirror Functionality</b>	<ul style="list-style-type: none"><li>• Default disabled</li><li>• If enabled, device can read input value of remote HUR device and duplicate those values as output</li></ul>

## CONNECTORS AND PORTS

<b>Console Port</b>	Micro USB or USB Type-C connection for LOG in 115200 baud
<b>10/100T(X) RJ45 Ports</b>	Ethernet Connection on 2 ports
<b>Reset Buttons</b>	Reset to Client and Reset to Server Operating modes buttons

## LED INDICATORS

<b>Power Indicator</b>	Power LED
<b>10/100T(X) Indicators</b>	Activity LEDs: ETH1, ETH2 and HUR (Activity of device itself)
<b>System Indicators</b>	Status LED, Tx and Rx of data LEDs and Server LED (LED ON: Server Operating Mode, LED OFF: Client Operating Mode)
<b>System LED</b>	Flashes during normal operation of I/O module
<b>Slot LEDs</b>	S-1, S-2, S-3 and S-4: Turns On for 1 second and Turns OFF for 1 second under normal operation of I/O Interface. Each LED corresponds to related I/O Slot.
<b>Console Indicators</b>	Tx and Rx of data LEDs

## I/O CONNECTORS AND INDICATORS - HUR158 & HUR258

### I/O Connector

- Terminal Connectors  
Digital Outputs: 8 Channel  
Output Terminals, polarity is not important.  
Total 16 connection pins for each slot.
- 5-275V AC-DC, 100mA Digital  
Optocoupler Outputs

### Isolation

- Digital Optocoupler Output:  
3750 Vrms for 1 min

### Over Voltage Protection

- Digital Optocoupler Output: 275V
- Non-repetitive peak on-state  
pulse current: 80A

### Output Status LEDs

- Shows which pin is ON and OFF



## I/O CONNECTORS AND INDICATORS - HUR168 & HUR268

### I/O Connector

- Terminal Connectors  
Digital Outputs: 8 Channel  
5Amps 250VAC/30VDC Digital Relay  
Output  
8 Channel Output terminals and polarity  
is not important. 2 pins for each  
connection and total 16 connection pins.

Maximum 5 Amperes 250VAC/30VDC for  
each channel.

### Dielectric Strength

- 3kV dielectric strength (between coil  
and contacts)  
Meets IEC61131-2 reinforce insulation

### Output Status LEDs

- Shows which pin is ON and OFF



## I/O CONNECTORS AND INDICATORS - HUR358 & HUR458

### I/O Connector

- Terminal Connectors  
Digital Inputs: 8 Channel  
12-275V AC-DC, 60mA Digital  
Optocoupler Input  
8 Channel Input terminals and polarity is not important. 2 pins for each connection and total 16 connection pins for each slot.

### Isolation

- Digital Optocoupler Input:  
4470Vrms 1min

### Over Voltage Protection

- Digital Optocoupler Input:  
275V



## I/O CONNECTORS AND INDICATORS - HUR558 & HUR658

### I/O Connector

- Terminal Connectors  
Analog Inputs: 8 Channel  
0-20mA Analog Input  
Polarity is important and all inputs references to Common point.  
2 Common points 8 Analog Inputs total  
10 connection pins for each slot.  
0-10V and 0-20mA Switch Selectable  
Analog Input

### Analog Input Features

- 16-bit resolution with no missing codes  
Throughput: 250 kSPS



## I/O CONNECTORS AND INDICATORS - HUR595 & HUR695

### I/O Connector

- Terminal Connectors  
Analog Outputs: 5 Channel  
4-20mA Analog Output  
5 Analog Outputs total 10 connection pins for each slot.  
  
4-20mA Analog Output designed for 24V 250ohm load or 12V 125ohm load.

### Over Voltage Protection

- Analog Output:  
40V





## POWER - DC MODELS

<b>Input Range</b>	5-48V DC wide range power input (Allows up to 60 V DC)
<b>Reverse Polarity Protection</b>	Available
<b>Thermal Shutdown and Current Limit Protection</b>	Available

## POWER - AC MODELS

<b>Input Range</b>	100 - 240V AC (120 - 370V DC), 50Hz to 60Hz AC Input
<b>Isolation</b>	Fully Isolated >4200Vrms, 5mA 1 Min  Insulation: Class II

## PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS DC MODELS

<b>Enclosure</b>	Metal, IP 40
<b>Dimensions</b>	43 x 95 x 124 (w x d x h) mm
<b>Weight</b>	~400gr
<b>Storage Temperature</b>	-65 to 150 °C
<b>Operating Temperature</b>	-40 to 85 °C
<b>Operating Humidity</b>	5% to 95% Non-condensing

## PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS AC MODELS

<b>Enclosure</b>	Metal, IP 40
<b>Dimensions</b>	43 x 95 x 124 (w x d x h) mm
<b>Weight</b>	~400gr
<b>Storage Temperature</b>	-40 to 105 °C
<b>Operating Temperature</b>	-25 to 70 °C
<b>Operating Humidity</b>	5% to 95% Non-condensing

# Ordering Information

**HUR158:** 8 Channels 5-275V AC-DC, 100mA Digital Optocoupler Output Modbus TCP Remote IO Device, 1 x RS485, 5-48V (max. 60V) DC Power Input

**HUR168:** 8 Channels Digital 5Amps 250VAC/30VDC Relay Output Modbus TCP Remote IO Device, 1 x RS485, 5-48V (max. 60V) DC Power Input

**HUR258:** 8 Channels 5-275V AC-DC, 100mA Digital Optocoupler Output Modbus TCP Remote IO Device, 1 x RS485, 100 - 240V AC (120 - 370V DC), 50Hz to 60Hz AC Power Input

**HUR268:** 8 Channels Digital 5Amps 250VAC/30VDC Relay Output Modbus TCP Remote IO Device, 1 x RS485, 100 - 240V AC (120 - 370V DC), 50Hz to 60Hz AC Power Input

**HUR358:** 8 Channels 12-275 AC-DC, 60mA Digital Optocoupler Input Modbus TCP Remote IO Device, 1 x RS485, 5-48V (max. 60V) DC Power Input

**HUR458:** 8 Channels 12-275 AC-DC, 60mA Digital Optocoupler Input Modbus TCP Remote IO Device, 1 x RS485, 100 - 240V AC (120 - 370V DC), 50Hz to 60Hz AC Power Input

**HUR558:** 8 Channels 0-10V and 0-20mA Selectable Analog Input Modbus TCP Remote IO Device, 1 x RS485, 5-48V (max. 60V) DC Power Input

**HUR595:** 5 Channels 4-20mA Analog Output Modbus TCP Remote IO Device, 1 x RS485, 5-48V (max. 60V) DC Power Input

**HUR658:** 8 Channels 0-10V and 0-20mA Selectable Analog Input Modbus TCP Remote IO Device, 1 x RS485, 100 - 240V AC (120 - 370V DC), 50Hz to 60Hz AC Power Input

**HUR695:** 5 Channels 4-20mA Analog Output Modbus TCP Remote IO Device, 1 x RS485, 100 - 240V AC (120 - 370V DC), 50Hz to 60Hz AC Power Input

## PRODUCT SELECTION

Model	I/O Logic Functions	5-48V (max. 60V) DC Power input	100 - 240V AC (120 - 370V DC), 50Hz to 60Hz AC Power Input	2 x 10/100 T(x) ETH ports	8 Channel 5-275V AC-DC, 100mA Digital Optocoupler Output	8 Channel Digital 5Amp. Relay Output	8 Channel 12-275 AC-DC, 60mA Digital Optocoupler Input	8 Channel 0-10V and 0-20mA Selectable Analog Input	5 Channel 4-20mA Analog Output
HUR158	●	●		●	●				
HUR258	●		●	●	●				
HUR168	●	●		●		●			
HUR268	●		●	●		●			
HUR358	●	●		●			●		
HUR458	●		●	●			●		
HUR558	●	●		●				●	
HUR658	●		●	●				●	
HUR595	●	●		●					●
HUR695	●		●	●					●