WISE-7504M

WISE I/O Module with 4-channels AI, 4-channels AO, 4-channels DI and 2-port Ethernet Switch

Features

- Runs on browsers, no extra software tool is required.
- No more programming, Web pages provided for control logic editing.
- IF-THEN-ELSE logic rules execution ability.
- Built-in I/O
  AI: 4 Channels; AO: 4 Channels; DI: 4 Channels
- Support I/O Moniitoring/Control, Counter, Timer, Email sending and CGI Command sending operations.
- Modbus TCP Protocol for SCADA System Integration.
- IEEE 802.3af-compliant Power over Ethernet (PoE).
- 2-port Ethernet Switch for Daisy-Chain Topology.
- Support Schedule operation
- MQTT Protocol for IT & IoT (Internet of Things) System Integration.

Introduction

WISE (Web Inside, Smart Engine) is a product series developed by ICP DAS that functions as control units for use in remote logic control and monitoring in various industrial applications. WISE offers a user-friendly and intuitive web site interface that allows users to implement IF-THEN-ELSE control logic on controllers just a few clicks away; no programming is required. With its powerful and easy-to-use features, it will minimize the learning curve, shorten time to market and dramatically reduce the labor and cost spent on system development.

WISE-7504M is a multi-function module with 4-channel analog inputs, 4-channel analog outputs and 4-channel digital inputs. It provides various programmable analog inputs, and analog outputs. Each analog input is allowed to configure a proper range with 240 Vrms high voltage protection. WISE-7504M follows IEEE 802.3af-compliant Power over Ethernet (PoE) specification. It allows receiving power from PoE enabled network by Ethernet pairs. In additional to this, WISE-7504M also has a built-in two-port Ethernet switch to implement daisy-chain topology. The cabling is much easier and total costs of cable and switch are significantly reduced.

By integrating with IF-THEN-ELSE rule engine, WISE-7504M provides more powerful functions such as I/O Moniitoring/Control, Counter, Timer, Schedule, E-mail sending & CGI Command sending for use in various industrial applications. WISE-7504M also supports Modbus TCP and MQTT protocol to make seamless integration with SCADA, IT and IoT (Internet of Things) system.

I/O Specifications

Analog Input		
Channels	4 (Differential)	
Type	+/-500 mV, +/-1 V, +/-5 V, +/-10 V, +0 mA to +20 mA, +/-20 mA, 4 to 20 mA (Jumper Selectable)	
Resolution	16-bit	
Sampling Rate	10 Samples/Second (Total)	
Accuracy	+/-0.1%	
Zero Drift	+/-20 µV/°C	
Span Drift	+/-25 ppm/°C	
Overvoltage Protection	240 Vrms	
Overcurrent Protection	50 mA Max. at 110 V_{DC}/V_{AC} Max.	
Common Voltage Protection	±200 V_{DC}	
Overcurrent Protection	Yes, 50 mA at 110 V_{DC}	
Virtual Channel to Channel Isolation	Yes, 400 V_{DC}	
Open Wire Detection for 4 ~ 20 mA	Yes	
Input Impedance	Voltage	2 MΩ
	Current	125 Ω
Common Mode Rejection	86 dB Min.	
Normal Mode Rejection	100 dB	
Analog Output		
Channels	4	
Type	+0 V_{DC} to +5 V_{DC}, +/-5 V_{DC}, +0 V_{DC} to +10 V_{DC}, +/-10 V_{DC}, +0 mA to +20 mA, +4 mA to +20 mA (Jumper Selectable)	
Resolution	12-bit	
Accuracy	+/-0.1% of FSR	
Voltage Output Capability	20 mA @ 10 V	
Current Load Resistance	400 Ω	
Open Wire Detection	Yes, for 4 to 20 mA only	
Digital Input/Counter		
Channels	4	
Dry Contact (Source)	On Voltage Level	Close to GND
	Off Voltage Level	Open
	Effective Distance for Dry Contact	500 M Max.
Wet contact (Sink)	On Voltage Level	+1 V_{DC} Max.
	Off Voltage Level	+3.5 V_{DC} to +30 V_{DC}
Counters	Max. Count	16-bit (65535)
	Max. Input Frequency	50 Hz
	Min. Pulse Width	10 ms
Overvoltage Protection	30 V_{DC}	

System Specifications

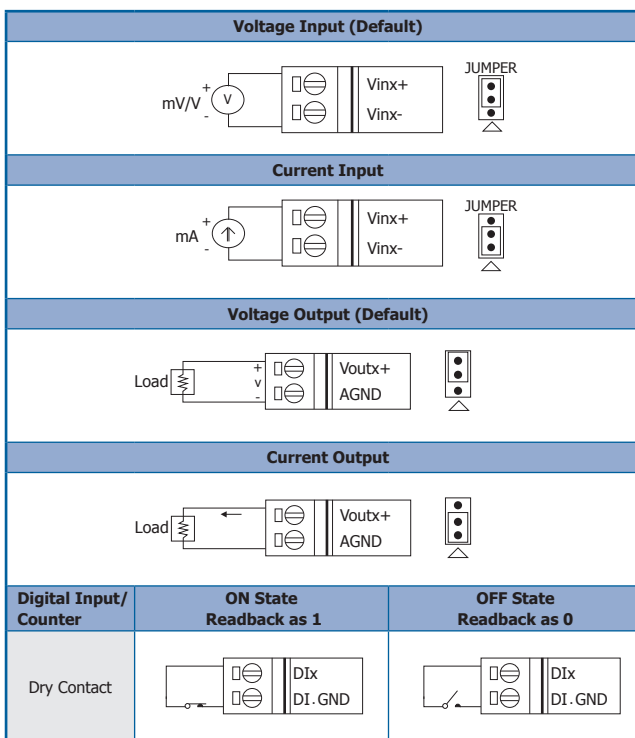| Communication	
Ethernet Port	2 x RJ-45, 10/100 Base-TX, Swtich Ports
PoE	Yes
Protocol	Modbus TCP, MQTT
LED Indicators	
for System Running	Yes
for Ethernet Link/Act	Yes
for I/O Channel Status	Yes
for PoE Power	Yes
2-Way Isolation	
I/O	2500 V_{DC}
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for Each Terminal and ±8 kV Air for Random Point
EFT (IEC 61000-4-4)	±2 kV for Power Line
Surge (IEC 61000-4-5)	±2 kV for Power Line
Power	
Reverse Polarity Protection	Yes
Powered from Terminal Block	12 to 48 V_{DC}
Powered from PoE	Yes, IEEE 802.3af, Class1
Consumption	5.1 W (Max.)
Mechanical	
Dimensions (L x W x H)	120mm x 97mm x 42mm
Installation	Wall mounting
Environment	
Operating Temperature	-25 °C to +75 °C
Storage Temperature	-30 °C to +80 °C
Humidity	10 to 90% RH, non-condensing

■ Software Specifications

Functions	
Rule Configuration Website	Access Web server on WISE controllers to edit and upload logic rules through web browser.
72 IF-THEN-ELSE Logic Rules	3 IF conditions with AND or OR operators 3 THEN actions and 3 ELSE actions
48 Internal Registers	Hold temporary variables and read/write data
24 Timers	Delay / Timing functions.
24 Schedules	Setup prescheduled routine tasks.
24 Emails	Send Email messages to pre-set Email receivers.
24 CGI Commands	Send pre-set CGI commands.
24 Recipes	Set up THEN/ELSE action groups.
8 P2P remote modules	Set up the connection information for the remote WISE modules.
Modbus TCP Protocol	Real time control and monitoring I/O channels and system status of controllers via SCADA software.
MQTT Protocol	Real time message publish/subscribe mechanism for I/O channels and system status via IT/IoT software.

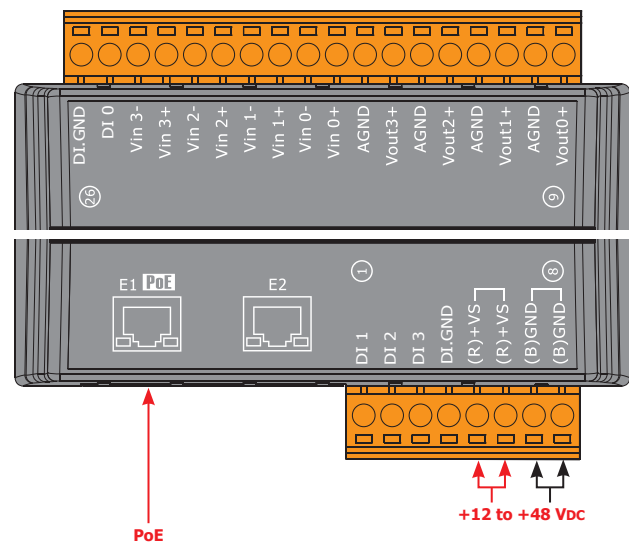| IF Conditions	
DI Channel	ON, OFF, ON to OFF, OFF to ON, Change
AI Channel	=, >, <, >=, <= (value)
Internal Register	
DI Counter	=, >, <, >=, <= (value), Change
Timer	Timeout, Not Timeout
Schedule	In Range, Out of Range
P2P	DI, AI, DI counter, DO counter, IR
Rule Status	Enable, Disable

WISE
IF-THEN-ELSE
Rule Engine
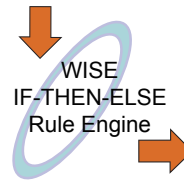
THEN / ELSE Actions	
AO Channel	Change the value
Internal Register	
DI Counter	Reset
Timer	Start, Reset
Schedule	Enable, Disable
Email	Send
MQTT message	
CGI Commands	
Recipe	Execute
P2P	DO(On/Off), AO, IR
Rule Status	Enable, Disable

■ Wire Connections

Voltage Input (Default)

mV/V — Vinx+ / Vinx- — JUMPER

Current Input

mA — Vinx+ / Vinx- — JUMPER

Voltage Output (Default)

Load — Voutx+ / AGND

Current Output

Load — Voutx+ / AGND

Digital Input/ Counter	ON State Readback as 1	OFF State Readback as 0
Dry Contact	DIx / DI.GND	DIx / DI.GND

■ Pin Assignments

DI.GND DI 0 Vin 3- Vin 3+ Vin 2- Vin 2+ Vin 1- Vin 1+ Vin 0- Vin 0+ AGND Vout3+ AGND Vout2+ AGND Vout1+ AGND Vout0+ (26) (9)

E1 PoE E2 (1) DI 1 DI 2 DI 3 DI.GND (R)+VS (R)+VS (B)GND (B)GND (8)

PoE

+12 to +48 V_DC

■ Ordering Information

WISE-7504M CR	WISE I/O Module with 4-channels AI, 4-channels AO, 4-channels DI and 2-port Ethernet Switch(RoHS) Art. No. 155728

■ Accessories

GPSU06U-6	24V/0.25A, 6 W Power Supply
MDR-20-24	24V/1A, 24 W Power Supply with DIN-Rail Mounting
NS-205 CR	Unmanaged 5-Port Industrial Ethernet Switch (RoHS)
NS-205PSE CR	Unmanaged 5-Port Industrial PoE Ethernet Switch (RoHS)