



## Features

- Built-in Web Server for IF-THEN-ELSE rule setting
- Built-in IF-THEN-ELSE rule engine for logic operation
- No more programming. Just click and get done!
- Support IO, Counter, Timer, Email operations
- Modbus/TCP Protocol for SCADA Software Seamless Integration
- IEEE 802.3af-compliant Power over Ethernet (PoE)
- 10/100 Base-TX Ethernet
- AI: 3 (mV, V, mA)
- DO: 3 (Power Relay, Form A)
- DI: 6 (Wet Contact)



## 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-7102 follows IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) specification. It allows receiving power from PoE enabled network by Ethernet pairs (Category 5 Ethernet cable). This feature provides greater flexibility and higher efficiency therefore simplifying systems design, saving space, reducing cables and eliminating the requirement for dedicated electrical outlets. Meanwhile, in case under a non-PoE environment, WISE-7102 will still be able to receive power from auxiliary power sources like AC adapters or battery, etc.

This multi-function module WISE-7102 supports Modbus/TCP protocol to make seamless integration with SCADA software available. It features 3-channel analog inputs, 6-channel digital inputs and 3-channel Power Relay outputs. Each analog input channel provides 240 Vrms high over voltage protection.

## Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment, etc.

## System Specifications

### I/O Specifications

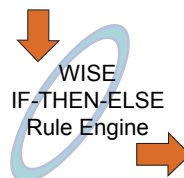
Analog Input		
Input Channels	3 (Differential)	
Input Type (jumper selectable)	+/-150mv, +/-500mv, +/-1 V, +/-5 V, +/-10 V +/-20 mA, 0 ~ 20 mA, 4 ~ 20 mA	
Resolution	16-bit	
Sampling Rate	10 Sample/Sec. (Total)	
Accuracy	+/-0.1%	
Zero Drift	+/-20 $\mu$ V/ $^{\circ}$ C	
Span Drift	+/-25 ppm/ $^{\circ}$ C	
Overvoltage Protection	240 Vrms	
Overcurrent Protection	50 mA max. at 110 V <sub>DC</sub> /V <sub>AC</sub> max.	
Input Impedance	Voltage	2 M $\Omega$
	Current	125 $\Omega$
Common Mode Rejection	86 dB Min.	
Normal Mode Rejection	100 dB	
Individual Channel Configuration	Yes	
Open Wire Detection	Yes, for 4 ~ 20 mA only	
Digital Input		
Channels	6	
Contact	Wet Contact	
Sink/Source (NPN/PNP)	Sink/Source	
On Voltage Level	+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>	
Off Voltage Level	+4 V <sub>DC</sub> Max.	
Input Impedance	10 K $\Omega$ , 0.5W	
Counters	Channels	6
	Max. Counts	16-bit (65535)
	Max. Input Frequency	50 Hz
	Min. Pulse Width	10 ms
Overvoltage Protection	+50 V <sub>DC</sub>	
Power Relay		
Channels	3	
Type	Power Relay, Form A (SPST N.O.)	
Operating Voltage Range	250 V <sub>AC</sub> /30 V <sub>DC</sub>	
Max. Load Current	5.0A/channel at 25 $^{\circ}$ C	
Operate Time	6 ms (Typical)	
Release Time	3 ms (Typical)	
Electrical Life ( Resistive load )	VDE:	5 A @ 250 V <sub>AC</sub> 30,000 ops (10 ops/minute) at 75 $^{\circ}$ C. 5 A @ 30 V <sub>DC</sub> 70,000 ops (10 ops/minute) at 75 $^{\circ}$ C.
	UL:	5 A @ 250 V <sub>AC</sub> /30 V <sub>DC</sub> 6,000 ops. 3 A @ 250 V <sub>AC</sub> /30 V <sub>DC</sub> 100,000 ops.
	Mechanical Life	20,000,000 ops. at no load (300 ops./minute).
Intra-module Isolation, Field to Logic	3750 V <sub>DC</sub>	

System	
CPU	16-bit CPU
SRAM	512KB
Flash Memory	512KB
EEPROM	16KB
Watchdog	Yes
Communication	
PoE Ethernet Port	10/100 Base-TX and automatic MDI/MDI-X
2-Way Isolation	
I/O	2500 V <sub>DC</sub>
EMS Protection	
ESD (IEC 61000-4-2)	$\pm$ 4 kV Contact for each terminal and $\pm$ 8 kV Air for random point
EFT (IEC 61000-4-4)	$\pm$ 4 kV for Power Line
LED Indicators	
PoE Power	PoE On
L1	System Running
L2	Ethernet Link/Act
L3	Ethernet 10/100 M Speed
Power Requirements	
Reverse Polarity Protection	Yes
Powered from Terminal Block	Yes, 12 ~ 48 V <sub>DC</sub>
Powered from PoE	Yes, IEEE 802.3af, Class1
Consumption	1.7W
Mechanical	
Dimensions (W x L x D)	72 mm x 123 mm x 35 mm
Installation	DIN-Rail or Wall mounting
Environment	
Operating Temperature	-25 $^{\circ}$ C ~ +75 $^{\circ}$ C
Storage Temperature	-30 $^{\circ}$ C ~ +80 $^{\circ}$ C
Humidity	10 ~ 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.
36 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 via Modbus/TCP address.
12 Timers	Delay / Timing functions.
12 Emails	Send Email messages to pre-set Email receivers.
12 CGI Commands	Send pre-set CGI commands.
12 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.

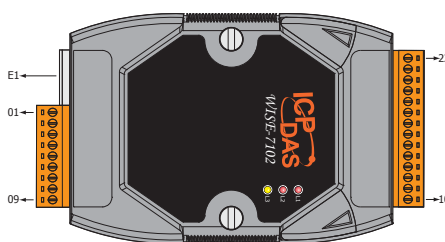
IF Conditions	
DI Channel	ON, OFF, ON to OFF, OFF to ON, Change
AI Channel	=, >, <, >=, <= (value)
Internal Register	
DI Counter	=, >, <, >=, <= (value), Change
DO Counter	
Timer	Timeout, Not Timeout
P2P	DI, AI, DI counter, DO counter, IR
Rule Status	Enable, Disable



THEN / ELSE Actions	
DO Channel	ON, OFF, Pulse Output
Internal Register	Change the value
DI Counter	Reset
DO Counter	
Timer	Start, Reset
Email	
CGI Commands	Send
Recipe	Execute
P2P	DO(On/Off), AO, IR
Rule Status	Enable, Disable

## Pin Assignments

Terminal No.	Pin Assignment
E1	RJ-45
01	Vin 0+
02	Vin 0-
03	Vin 1+
04	Vin 1-
05	Vin 2+
06	Vin 2-
07	N/A
08	(R)+Vs
09	(B)GND

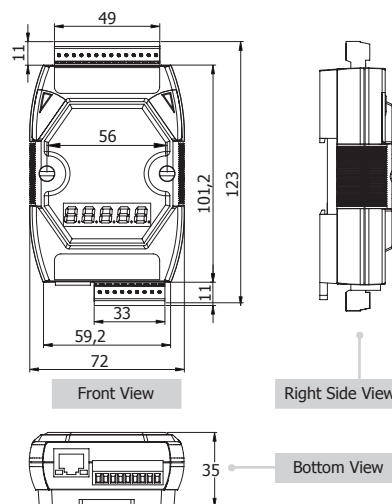


Terminal No.	Pin Assignment
23	IN 5
22	IN 4
21	IN 3
20	IN 2
19	IN 1
18	IN 0
17	IN.COM
16	IN.COM
15	RL2 COM
14	RL2 NO
13	RL1 COM
12	RL1 NO
11	RL0 COM
10	RL0 NO

## Wire Connections

Voltage Input		Current Input	
Digital Input/Counter	Readback as 1	Readback as 0	
	+10 ~ +50 Vdc	OPEN or <4 Vdc	
Sink			
Source	+10 ~ +50 Vdc	OPEN or <4 Vdc	
Power Relay	ON State Readback as 1	OFF State Readback as 0	
Relay Output			

## Dimensions (Unit:mm)



## Ordering Information

<b>WISE-7102</b>	3-Channel Analog Inputs, 6-Channel Digital Inputs and 3-Channel Power Relay Outputs PoE Module (RoHS)
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## Accessories

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