



## WISE-7160

6-channel Power Relay Output and  
6-channel Isolation Digital Input PoE Module

## Relay Output & Digital Input

### 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
- 2-way Isolation/ESD Protection
- DO Type: 6 Power Relay (Form A)
- DI Type: 6 Wet Contact (Sink, Source)



### 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 effort and cost spent on system development.

WISE-7160 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-7160 will still be able to receive power from auxiliary power sources like AC adapters or battery, etc.

This module WISE-7160 supports Modbus/TCP protocol to make seamless integration with SCADA software available. It features 6 power relay outputs and 6 isolated wet contact digital inputs. Each power relay supports contact rating as 5 A @ 250 Vac or 5 A @ 30 Vac and each digital input channel supports counter input.

### Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote diagnosis and Testing Equipment, etc.

### System Specifications

| System                  |                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------|
| CPU                     | 80186 CPU (80 MHz)                                                                                                |
| SRAM                    | 512 KB                                                                                                            |
| Flash Memory            | 512 KB                                                                                                            |
| EEPROM                  | 16 KB                                                                                                             |
| Dual Watchdog           | Yes                                                                                                               |
| Communication           |                                                                                                                   |
| PoE Ethernet Port       | 10/100 Base-TX (With Link, Activity LED Indicator) and automatic MDI/MDI-X                                        |
| 2-Way Isolation         |                                                                                                                   |
| Ethernet                | 1500 V <sub>DC</sub>                                                                                              |
| I/O                     | DI 3750 V <sub>rms</sub>                                                                                          |
|                         | Relay Output 3000 V <sub>rms</sub>                                                                                |
| LED Indicators          |                                                                                                                   |
| PoE                     | PoE On                                                                                                            |
| L1                      | Run                                                                                                               |
| L2                      | Link/Act                                                                                                          |
| L3                      | 10/100M                                                                                                           |
| Power Requirements      |                                                                                                                   |
| IEEE 802.3af            | Class 1                                                                                                           |
| Required Supply Voltage | Powered by Power over Ethernet (PoE) or auxiliary power +12 V <sub>DC</sub> ~ +48 V <sub>DC</sub> (non-regulated) |
| LED Indicator           | Yes                                                                                                               |
| Power Consumption       | 0.12 A @ 24 V <sub>DC</sub> Max.                                                                                  |
| Mechanical              |                                                                                                                   |
| Dimensions (W x H x D)  | 72 mm x 123 mm x 35 mm                                                                                            |
| Installation            | DIN-Rail or Wall mounting                                                                                         |
| Environment             |                                                                                                                   |
| Operating Temperature   | -25 °C ~ +75 °C                                                                                                   |
| Storage Temperature     | -30 °C ~ +80 °C                                                                                                   |
| Humidity                | 5 ~ 90% RH, non-condensing                                                                                        |

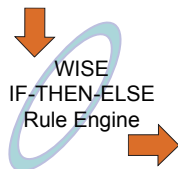
### I/O Specifications

| Relay Output                        |                        |                                                            |
|-------------------------------------|------------------------|------------------------------------------------------------|
| Output Channels                     |                        | 6                                                          |
| Output 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 °C                                      |
| Operate Time                        |                        | 6 ms                                                       |
| Release Time                        |                        | 3 ms                                                       |
| Electrical Life<br>(Resistive Load) | VDE                    | 5A 250 V <sub>AC</sub> 30,000 ops (10 ops/minute) at 75 °C |
|                                     |                        | 5A 30 V <sub>DC</sub> 70,000 ops (10 ops/minute) at 75 °C  |
|                                     | UL                     | 5A 250 V <sub>AC</sub> /30 V <sub>DC</sub> 6,000 ops.      |
|                                     |                        | 3A 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)               |
| Digital Input                       |                        |                                                            |
| Input Channels                      |                        | 6                                                          |
| Input Type                          |                        | Wet Contact (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 kΩ                                                      |
| Counters                            | Max. Count             | 65535 (16 bits)                                            |
|                                     | Max. Input Frequency   | 50 Hz                                                      |
|                                     | Min. Pulse Width       | 10 ms                                                      |
|                                     | Overvoltage Protection | +70 V <sub>DC</sub>                                        |

## Software Specifications

| Functions                   |                                                                                                    |
|-----------------------------|----------------------------------------------------------------------------------------------------|
| 36 IF-THEN-ELSE Logic Rules | 3 IF conditions with AND or OR operators<br>3 THEN actions<br>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.                                                    |
| Rule Configuration Website  | Access Web server on WISE controllers to edit and upload logic rules through web browser.          |
| Modbus/TCP Protocol         | Real time control and monitoring I/O channels and system status of controllers via SCADA software. |

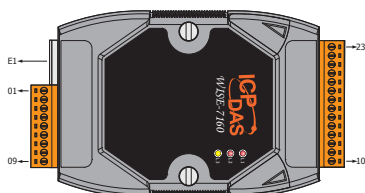
| IF Conditions     |                                           |
|-------------------|-------------------------------------------|
| DI Channel        | ON - OFF - ON to OFF - OFF to ON - Change |
| Internal Register | = > < > = < = (value)                     |
| DI Counter        | = > < > = < = (value) - Change            |
| DO Counter        |                                           |
| Timer             | Timeout - Not Timeout                     |



| THEN / ELSE Actions |                         |
|---------------------|-------------------------|
| DO Channel          | ON - OFF - Pulse Output |
| Internal Register   | Change the value        |
| DI Counter          | Reset                   |
| DO Counter          |                         |
| Timer               | Start - Stop            |
| Email               | Send                    |

## Pin Assignment

| Terminal No. | Pin Assignment |
|--------------|----------------|
| E1           | RJ-45          |
| 01           | IN5            |
| 02           | IN4            |
| 03           | IN3            |
| 04           | IN2            |
| 05           | IN1            |
| 06           | IN0            |
| 07           | IN.COM         |
| 08           | (R)+Vs         |
| 09           | (B)GND         |

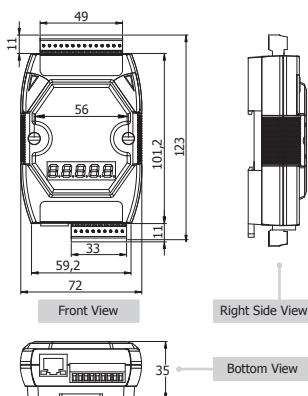


| Terminal No. | Pin Assignment |
|--------------|----------------|
| 23           | RL5 COM        |
| 22           | RL5 NO         |
| 21           | RL4 COM        |
| 20           | RL4 NO         |
| 19           | RL3 COM        |
| 18           | RL3 NO         |
| 17           | RL2 COM        |
| 16           | RL2 NO         |
| 15           | RL1 COM        |
| 14           | RL1 NO         |
| 13           | RL0 COM        |
| 12           | RL0 NO         |
| 11           | N/A            |
| 10           | N/A            |

## Wire Connection

| Digital Output | Readback as 1             | Readback as 0              |
|----------------|---------------------------|----------------------------|
| Relay Output   | Relay On                  | Relay Off                  |
|                |                           |                            |
| Digital Input  | Readback as 0             | Readback as 1              |
| Sink           | +10 ~ +50 V <sub>DC</sub> | OPEN or <4 V <sub>DC</sub> |
|                |                           |                            |
| Source         | +10 ~ +50 V <sub>DC</sub> | OPEN or <4 V <sub>DC</sub> |
|                |                           |                            |

## Dimensions (Unit: mm)



## Ordering Information

|           |                                                                                      |
|-----------|--------------------------------------------------------------------------------------|
| WISE-7160 | 6-channel Power Relay Output and 6-channel Isolation Digital Input PoE Module (RoHS) |
|-----------|--------------------------------------------------------------------------------------|

## 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) |