

ICP DAS WISE User Manual for WISE-71xx Series

[Version 1.13]



ICP DAS CO., LTD.

泓格科技股份有限公司

Warning

ICP DAS Inc., LTD. assumes no liability for damages consequent to the use of this product. ICP DAS Inc., LTD. reserves the right to change this manual at any time without notice. The information furnished by ICP DAS Inc. is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS Inc., LTD. for its use, or for any infringements of patents or other rights of third parties resulting from its use.

Copyright and Trademark Information

© Copyright 2009 by ICP DAS Inc., LTD. All rights reserved worldwide.

Trademark of Other Companies

The names used for identification only maybe registered trademarks of their respective companies.

License

The user can use, modify and backup this software on a single machine. The user may not reproduce, transfer or distribute this software, or any copy, in whole or in part.

Table of Contents

1	Introduction	7
2	Before Connection.....	10
3	Website Overview.....	12
4	Basic Setting.....	14
4.1	Name Setting.....	14
4.2	Ethernet Setting.....	14
4.3	Module Setting.....	15
4.4	Password Setting.....	17
5	Advanced Setting.....	18
5.1	DI Attribute Setting.....	18
5.2	DO Attribute Setting	19
5.3	AI Attribute Setting.....	21
5.4	AO Attribute Setting	23
5.5	Internal Register Setting	24
5.6	Timer Setting.....	24
5.7	Email Setting.....	25
5.8	CGI Command Setting.....	27
5.9	Recipe Setting	28
5.10	P2P Setting	29
6	Rules Setting.....	33
6.1	IF Condition	35
6.2	THEN/ELSE Action.....	42
6.3	Summary of the Rules.....	50
6.4	Rule Manager.....	51
7	Download to Module	54
8	Upload from Module	55
9	Channel Status	56
10	Firmware Update	57
10.1	Introduction.....	57
10.2	Install / Uninstall WISE Firmware Uploader.....	57
10.3	Update WISE firmware.....	60
	Appendix I : Modbus Address Table.....	63
	Appendix II : Quick Start of CJC Settings for WISE-7118/WISE-7119	65

List of Figures

Figure 1-1 : WISE system architecture	7
Figure 1-2 : WISE Series Products	8
Figure 2-1 : The switch is located at the back of the controller.....	10
Figure 2-2 : Select “Search” function on MiniOS7 Utility.....	10
Figure 2-3 : IP Setting button on MiniOS7 Scan	11
Figure 2-4 : Network Settings page	11
Figure 3-1 : Main page of WISE Web UI	12
Figure 3-2 : WISE Web UI Operation Procedures	13
Figure 4-1 : Name Setting page	14
Figure 4-2 : The Name location in WISE Web Page	14
Figure 4-3 : Ethernet setting page	15
Figure 4-4 : WISE-71xx DI/DO module setting page	16
Figure 4-5 : WISE-71xx AI/DO module setting page.....	16
Figure 4-6 : WISE-71xx AI/AO module setting page.....	17
Figure 4-7 : Password setting page	17
Figure 5-1 : DI Attribute setting page	19
Figure 5-2 : DO Attribute setting page.....	20
Figure 5-3 : AI attribute setting page	21
Figure 5-4 : AI Deadband Operation(> or >= a numerical value)	22
Figure 5-5 : AI Deadband Operation(< or <= a numerical value)	22
Figure 5-6 : AI Deadband Operation(= a numerical value)	23
Figure 5-7 : AO Attribute setting page.....	23
Figure 5-8 : Internal Register setting page.....	24
Figure 5-9 : Timer setting page	25
Figure 5-10 : Email setting page	26
Figure 5-11 : Email channel value encoded syntax	27
Figure 5-12 : CGI Command setting page	27
Figure 5-13 : Recipe setting page	28
Figure 5-14 : Recipe Action management.....	29
Figure 5-15 : P2P setting page	30
Figure 5-16 : WISE-7100 Controller Selection	30
Figure 5-17 : Select WISE-4000 Controller.....	31
Figure 5-18 : WISE-7901 Controller Selection	31
Figure 5-19 : Select the FRnet Module for WISE-7902	31
Figure 6-1 : Rules setting page	33
Figure 6-2 : Enable rules, edit rules and status display.....	33

Figure 6-3 : Rule setting page	34
Figure 6-4 : AI condition setting page	35
Figure 6-5 : DI condition setting page	36
Figure 6-6 : DI counter condition setting page	36
Figure 6-7 : DO counter condition setting page.....	37
Figure 6-8 : Internal register condition setting page	38
Figure 6-9 : Timer condition setting page	38
Figure 6-10 : P2P IF Condition setting page.....	39
Figure 6-11 : P2P IF Condition detail setting page	40
Figure 6-12 : Rule Status IF Condition setting page.....	40
Figure 6-13 : AO action page.....	42
Figure 6-14 : DO action page.....	43
Figure 6-15 : DI counter action page	43
Figure 6-16 : DO counter action page.....	44
Figure 6-17 : Internal Register action page.....	44
Figure 6-18 : Timer action page.....	45
Figure 6-19 : Email action page.....	46
Figure 6-20 : CGI Command action page	46
Figure 6-21 : Recipe action page	47
Figure 6-22 : P2P action page	47
Figure 6-23 : P2P action detail setting page.....	48
Figure 6-24 : Rule Status action page	48
Figure 6-25 : Clear/Save Rules	50
Figure 6-26 : Rule setting main page	50
Figure 6-27 : Rule Manager setting page.....	51
Figure 6-28 : Rule Copy setting page	51
Figure 6-29 : Rule Reset setting page	52
Figure 6-30 : Rule Reorder setting page	52
Figure 6-31 : Rule Swap setting page	53
Figure 7-1 : Enter the password	54
Figure 7-2 : Showing download progress	54
Figure 7-3 : Message showing a successful download	54
Figure 8-1 : Message showing a successful upload	55
Figure 9-1 : Channel Status page	56
Figure 10-1 : Install WISE Firmware Uploader.....	57
Figure 10-2 : Select installation directory.....	58
Figure 10-3 : Display installation progress	58
Figure 10-4 : Complete the installation.....	58

Figure 10-5 : Start to remove WISE Firmware Uploader59

Figure 10-6 : Remove WISE Firmware Uploader (1).....59

Figure 10-7 : Remove WISE Firmware Uploader (2).....59

Figure 10-8 : Complete uninstalling WISE Firmware Uploader60

Figure 10-9 : Launch WISE Firmware Uploader.....60

Figure 10-10 : Assign IP address61

Figure 10-11 : Select the WISE firmware61

Figure 10-12 : Upload firmware61

Figure 10-13 : Display firmware update progress62

Figure 10-14 : Complete firmware update62

Figure 10-15 : Reset the device.....62

1 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 HMI interface that allows users to implement control logic on controllers just a few clicks away; no programming is required. With this powerful and easy-to-use software, it will minimize the learning curve, shorten time to market and dramatically reduce the labor and cost spent on system development. WISE system architecture is shown as below:

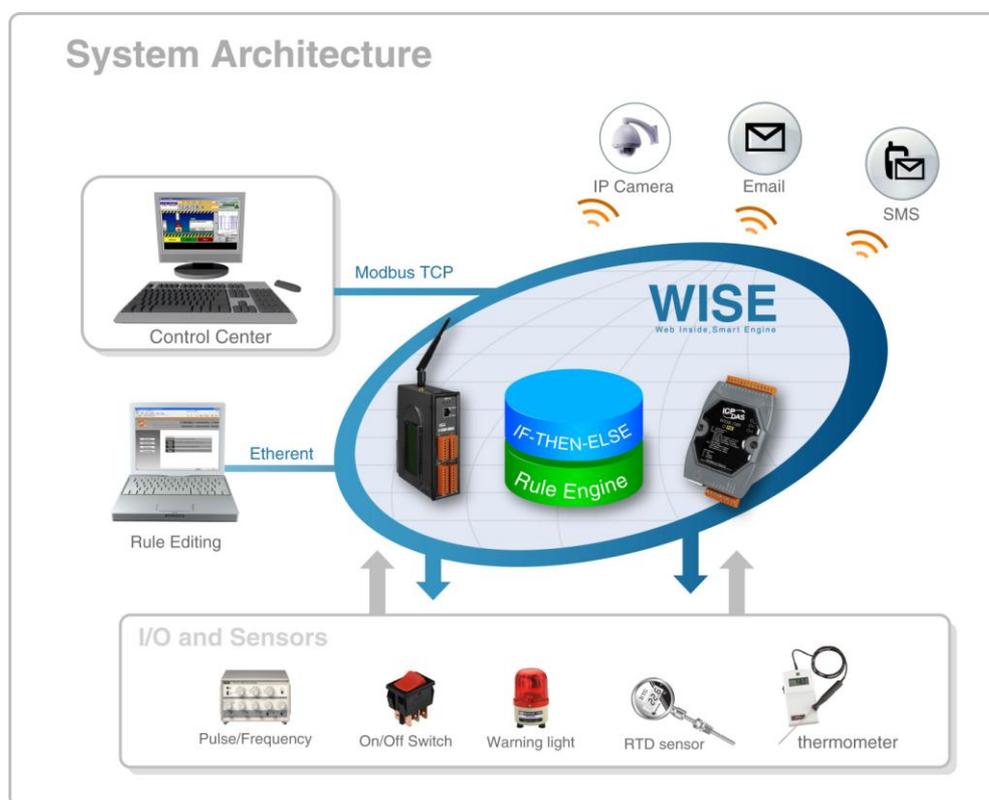


Figure 1-1 : WISE system architecture

Through Web browser, users can access Web Server on ICP DAS WISE controllers to perform tasks such as logic edition and download. A Rule Engine will be set up to manage and deploy rules for controllers. The Rule Engine will check whether the rules are valid or not and determine the execution of actions under specific conditions, for examples: setting up I/O channel values, perform scheduled tasks, sending Email or sending SMS message under a specific condition. In addition, through the Modbus TCP Protocol, it enables SCADA software to control and monitor I/O channel or system status on controllers in real time.

WISE system features:

◆ **IF-THEN-ELSE logic rules execution ability**

WISE controller equips with an IF-THEN-ELSE logic Rule Engine, it offers up to 36 IF-THEN-ELSE rules for users to set up the logic content. After completing rule edition and downloading rules to the WISE controller, the Rule Engine will loop execute the rules in accordance with the execute order under specific conditions.

◆ **No programming is required to implement logic content on controllers**

WISE provides user-friendly Web UI pages for editing control logic on the controllers. It enables to implement logic edition by a few clicks on the mouse to set up and deploy logic rules without writing a single line of code.

◆ **No extra software tool is required; all operations can be done through the Web browsers**

WISE HMI interface runs on regular Web browsers. To edit control logic, it only requires a browser to connect to the Web server on WISE controller. No extra software tool installation is needed on the target PC.

◆ **Support various hardware controllers that are with different I/O types**

The wide range of I/O function modules ICP DAS provided allows users to find best solutions that meet their requirements. Please refer to the following table for modules and functions:

Functions	Without Display	With Display
Analog Input Modules	WISE-71xx Series	
Multi Function I/O		
Digital I/O		
Relay Output & Digital Input		
I/O Expansion Boards	WISE-7901	WISE-7901D
FRnet Remote I/O Modules	WISE-7902	WISE-7902D
SMS	WISE-4000	WISE-4000D

Figure 1-2 : WISE Series Products

◆ **Provide Timer and Schedule operation**

WISE features two kind of timing functions: Timer and Schedule. It allows user to schedule specific date or time for control logic execution, or perform specific tasks such as time delay.

◆ Real-time remote alarm via SMS or Email

WISE supports SMS and Email functions. SMS and Email functions are important functions for real-time message communication. The sending action can be added to the logic edition as part of logic control to provide real-time message transmission function.

◆ Fully P2P function between WISE controllers

WISE offers P2P function that enables WISE controllers to directly communicate with other remote WISE controllers on networks. All WISE controllers can freely share their status information such as I/O channel value, DI/DO Counter or Internal Register to each others. The P2P operations can be incorporated into WISE logic rules as Condition statements or Action statements for Condition evaluation criteria or Action executions.

◆ Recipe function for Group Action operation

WISE provides Recipe function that allows to execute a sequence of actions previously saved in the Recipe to response to IF-THEN-ELSE logic rules Conditions. Different Recipe sets can be edited to meet various requirements for different applications.

◆ Real-time monitoring system status of controllers

WISE supports Modbus TCP Protocol for users to perform real-time monitoring and control of the controllers. Please refer to Appendix 1 for the mapping table of controller system information and Modbus TCP protocol Address. In addition, WISE provides an easy-to-view HMI web interface for real-time monitoring. It allows users to get important real time system information even without SCADA software.

◆ Password protection for access control when download logic rules

WISE HMI web page offers password protection; it allows users to modify the password for access control when download the logic rules.

This document is intended to give you a full-range instruction to WISE-71xx controllers. You will be able to learn how to edit logic of the rules and how to download the rules to the controllers for conditional execution.

2 Before Connection

Before connecting to WISE Web HMI pages, please complete the following steps for network configuration. The network configuration of the controllers has to be set up for users to connect to Web server on WISE controllers.

- ◆ Please make sure the Init/Normal switch on the controller has been switched to “Normal” position. Connect the controller to power supply and to the network. The Init/Normal switch position is shown as below:



Figure 2-1 : The switch is located at the back of the controller

- ◆ Install and execute MiniOS7 Utility. MiniOS7 Utility can be downloaded from the following link (please download version v321 or later):
http://ftp.icpdas.com/pub/cd/8000cd/napdos/minios7/utility/minios7_utility/
- ◆ On toolbar, select Connection→Search (shown as below). A ”MiniOS7 Scan” window will pop up and automatically start searching controllers in the network.

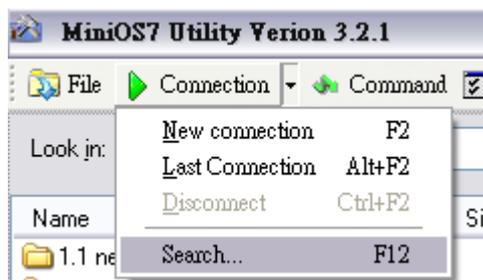


Figure 2-2 : Select “Search” function on MiniOS7 Utility

- ◆ After finish searching, find the target controller and click "TCP Broadcast", and then click "IP Setting" button on the toolbar as shown below:

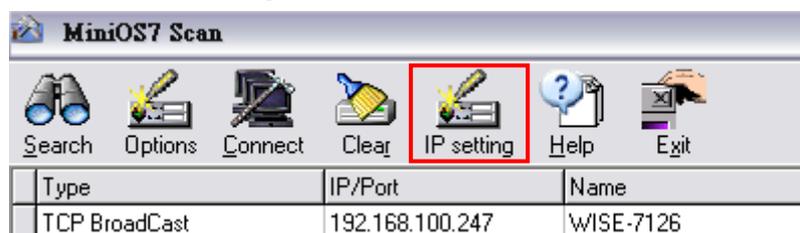


Figure 2-3 : IP Setting button on MiniOS7 Scan

- ◆ Click "IP Setting" button, a network settings window will pop up. Input the information and click the "Set" button to complete the settings.

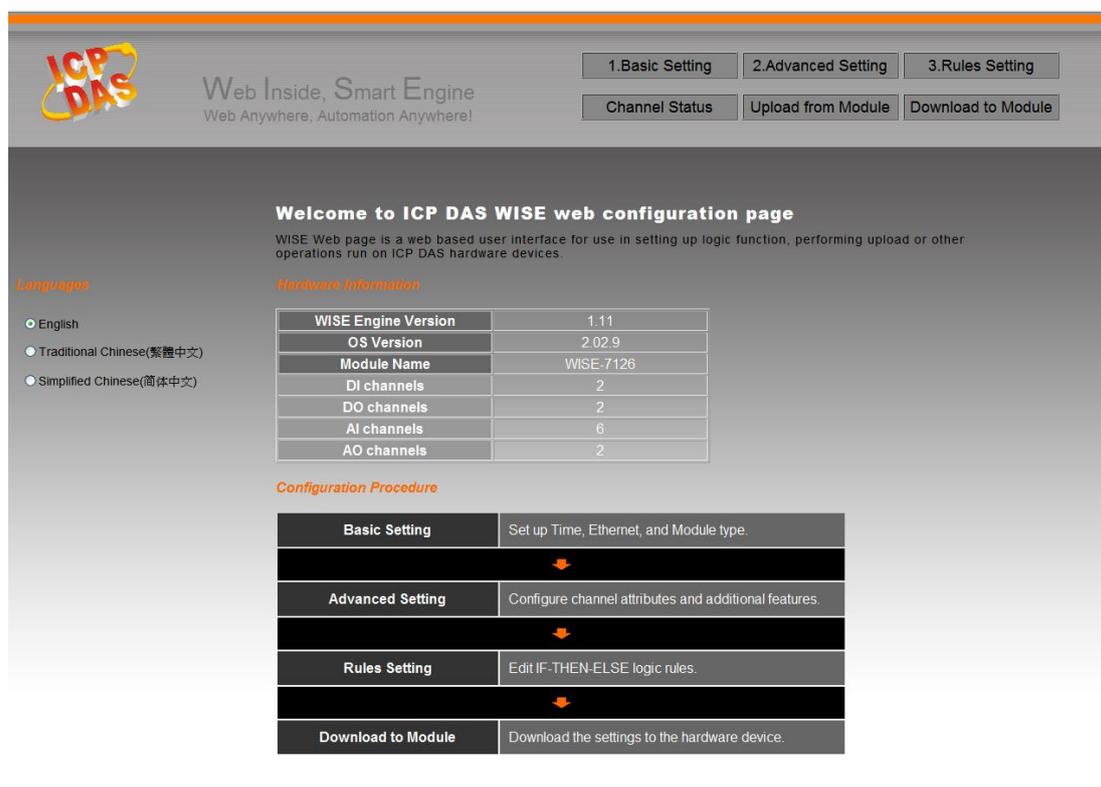


Figure 2-4 : Network Settings page

- ◆ After finish Network settings, reboot the controller for the changes to take effect.

3 Website Overview

Please use IE or Firefox browser to connect to Web server on WISE controller. In order to get a better operation experience, 1280x1024 resolution is recommended. The main page of WISE controller Web page is shown as below:



Welcome to ICP DAS WISE web configuration page

WISE Web page is a web based user interface for use in setting up logic function, performing upload or other operations run on ICP DAS hardware devices.

Languages

- English
- Traditional Chinese(繁體中文)
- Simplified Chinese(简体中文)

Hardware Information

WISE Engine Version	1.11
OS Version	2.02.9
Module Name	WISE-7126
DI channels	2
DO channels	2
AI channels	6
AO channels	2

Configuration Procedure

Basic Setting	Set up Time, Ethernet, and Module type.
↓	
Advanced Setting	Configure channel attributes and additional features.
↓	
Rules Setting	Edit IF-THEN-ELSE logic rules.
↓	
Download to Module	Download the settings to the hardware device.

Figure 3-1 : Main page of WISE Web UI

Six buttons will appear on the upper part of the Web page:

- ◆ Basic Setting
- ◆ Advanced Setting
- ◆ Rules Setting
- ◆ Channel Status
- ◆ Upload from Module
- ◆ Download to Module

The main page will display the WISE firmware version information, module information and general operating procedures.

The procedures are as follows:

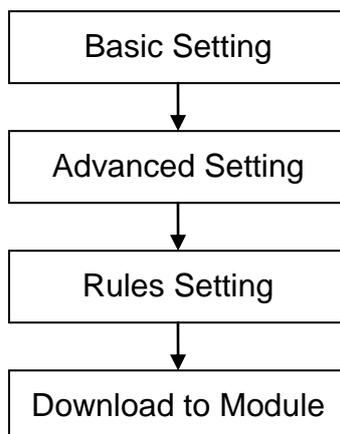


Figure 3-2 : WISE Web UI Operation Procedures

Please note: DO NOT refresh the Web page when you are editing the pages, otherwise the contents of all previous settings will be gone. And please remember all settings will take effect only when they have been downloaded to the modules, if you close the Web page before finishing “Download to Module”, all settings will be disappeared as well.

In addition, there is a language selection menu on the left region of the main page. WISE Web UI offers: English, Traditional Chinese and Simplified Chinese for users to choose their prefer languages. The system will memorize previous language selection, and will automatically switch to the previously chosen language next time when connected to the WISE Web UI. **Please note: do not select the language during the process of Rule edition; otherwise the previous edited content might disappear.** It is recommended to perform language selection at the beginning when connected to the WISE Web UI or after finishing “Download to Module”.

More detail information of each button will be given in the following parts.

4 Basic Setting

Under the Basic Setting section, it allows to perform Name Setting, Ethernet Setting, Module Setting and Password Setting.

4.1 Name Setting

Name Setting Page is for you to give your controller a name for easy recognition and identification. Name Setting Page is shown as follow:

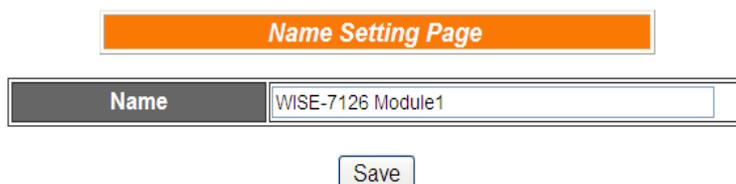


Figure 4-1 : Name Setting page

If you have already given a name to this controller, when you get on this page, the name you previously set up will be shown on the pane. After you modify or input the name, click Save to save the name. The name you input will appear on the top of the page as shown below. **Please note: the Save button on Name Setting Page is for temporary storage only, to complete the Name Setting and save the change to the controller, please finish the process of “Download to Module”.**

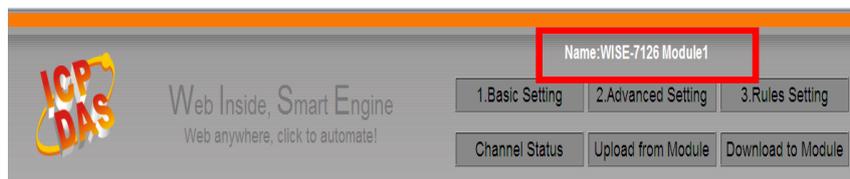


Figure 4-2 : The Name location in WISE Web Page

4.2 Ethernet Setting

Ethernet Setting allows you to set network configuration, web server port, and the NetID of Modbus TCP protocol on hardware devices. The following figure illustrates the configuration interface:

Ethernet Setting Page				
IP	192	. 168	. 100	. 247
Mask	255	. 255	. 255	. 0
Gateway	192	. 168	. 100	. 254

Web Server Port	80
Modbus TCP NetID	1

Figure 4-3 : Ethernet setting page

Each time when you enter this page, it will display current network configuration automatically read from the hardware devices. You can modify IP/Mask/Gateway configuration of the hardware devices in this section. After you finish modification, click “Save” and then all changes will be saved and written back to the hardware. You can also modify the web server port and the Modbus TCP NetID in the same way.

Please note: if you make any modification to the network configuration, the hardware device will reboot itself and re-connect to the web page automatically about 5 seconds later.

4.3 Module Setting

On the module configuration page, it allows users to set up configuration of AI/AO channels on Analog I/O Module such as: voltage range, current range, or operation modes. The hardware module will be automatically detected and will appear on the drop down list. The Module Setting page allows users to set up the following three types of module (different modules may equip with different I/O):

- ◆ DI/DO Module (Digital I/O module): includes WISE-7144, WISE-7151, WISE-7152, WISE-7160 and WISE-7167 modules. These modules contain DI / DO channels only, therefore there is no need to set up configuration for channel operation. The setting page is shown as below:

Figure 4-4 : WISE-71xx DI/DO module setting page

- ◆ AI / DO Module (Analog Input module): includes WISE-7105, WISE-7115, WISE-7117, WISE-7118Z and WISE-7119 modules. These modules contains AI channel, therefore the voltage range, current range, or operation mode (such as Thermistor, RTD or Thermocouple) of each AI channel must be defined. If the AI channel is connected with Sensor Input (Thermistor, RTD or Thermocouple), WISE provide Celsius($^{\circ}\text{C}$) and Fahrenheit($^{\circ}\text{F}$) unit selection for the AI input. The setting page is shown as below:

AI Voltage & Current Input

Convert $^{\circ}\text{C}$ to $^{\circ}\text{F}$

AI0	AI1	AI2
-15 mV ~ 15 mV	-15 mV ~ 15 mV	-15 mV ~ 15 mV
AI3	AI4	AI5
-15 mV ~ 15 mV	-15 mV ~ 15 mV	-15 mV ~ 15 mV
AI6	AI7	
-15 mV ~ 15 mV	-15 mV ~ 15 mV	

Figure 4-5 : WISE-71xx AI/DO module setting page

- ◆ AI / AO Module (Analog I/O module): WISE-7126 module. This module equips with both AI and AO channel, therefore the voltage range or current range for each AI /AO channel must be defined. The setting page is shown as below:

Module Setting Page

Module	WISE-7126
---------------	-----------

AO Voltage & Current Input

AO0	AO1
0 V ~ 5 V	0 V ~ 5 V

AI Voltage & Current Input

AI0	AI1	AI2	AI3
-500 mV ~ 500 mV			
AI4	AI5		
-500 mV ~ 500 mV	-500 mV ~ 500 mV		

Figure 4-6 : WISE-71xx AI/AO module setting page

4.4 Password Setting

Password Setting allows users to change the password and password hint for access control when download logic rules. The Password Setting page is as follow:

Password Setting Page

Old Password	
New Password	
Confirm New Password	
Hint	wise

Figure 4-7 : Password setting page

To avoid unauthorized access and altering of data; it is required for users to input password before they start to download control logic to the controllers. **The default password for access control is set as “wise”.** You can modify the password and password hint on this page. Password length is limited to 16 characters and the password hint length is limited to 20 characters.

5 Advanced Setting

Advanced Setting provides additional features and allows you to perform channel configuration on hardware devices. Click the Advanced Setting button, a column of buttons will appear on the left of the page:

- ◆ DI Attribute Setting
- ◆ DO Attribute Setting
- ◆ AI Attribute Setting
- ◆ AO Attribute Setting
- ◆ Internal Register Setting
- ◆ Timer Setting
- ◆ Email Setting
- ◆ CGI Setting
- ◆ Recipe Setting
- ◆ P2P Setting

Please note: In order to avoid possible error when performing rule definition (IF-THEN-ELSE), please **always finish configuration in Advanced Setting before starting to define Rules**. Avoid unnecessary change in Advanced Setting after you finishing rule definition. Unexpected errors might occur if you violate this sequence: Advanced Setting → Rule Setting. In case you make any modification, please double check your settings and Rules definition to make sure no errors are present.

For each module may carry different I/O channels, if the related DI Attribute Setting, DO Attribute Setting, AI Attribute Setting or AO Attribute Setting does not apply to the selected module, the corresponding buttons will appear “Disable”. The following sections will describe more detail information for these configurations.

5.1 DI Attribute Setting

DI Attribute setting page allows to set up detail DI channel counter configuration. The configuration page is shown as below:

DI Attribute Setting Page	
Module & Channel	WISE-7126 Channel 0
Filter	0 X 10ms
Counter	
Condition	Disable
Initial Value	0

Save

Figure 5-1 : DI Attribute setting page

Follow the following steps:

- i. Specify the channel you are going to configure by selecting channel index from the dropdown list of channel field in “Module & Channel” section.
- ii. Input the time interval in the “Filter” field. The time interval for filter is the minimum duration a signal has to present to make a change to the DI channel value. If the signal last shorter than this filter time interval, this signal change will be determined to be noise instead of a valid signal change. Default Filter time interval will be 0 and this value must be multiples of 10ms, for example, a setting of 20 would mean a 200 ms filter (20 x10 ms).
- iii. Please set the trigger criteria for triggering the counter to count. There are three criteria: HI to LOW, LOW to HI and Status Change. If you select “Disable” indicates that the counter of this DI channel will not function.
- iv. You can set the initial value of the counter in the “Initial Value” field. This counter will start counting from the initial count value. The default initial value is 0.
- v. Repeat steps i ~ iv. After all DI channel settings are completed, click “Save” button to save the changes.

5.2 DO Attribute Setting

DO Attribute Setting page allows to set up detail configuration of DO channel, including Power On value, Counter and Pulse Output. You don't need to finish all configurations; configure the one(s) according to your needs. The configuration page is shown as below:

DO Attribute Setting Page	
Module & Channel	WISE-7126 Channel 0
Power On Value	OFF
Counter	
Condition	Disable
Initial Value	0
<input checked="" type="checkbox"/> Enable Pulse Output	
Pulse High	0 X 10ms
Pulse Low	0 X 10ms

Save

Figure 5-2 : DO Attribute setting page

Follow the following steps:

- i. Specify the channel you are going to configure by selecting channel index from the dropdown list of channel field in “Module & Channel” section.
- ii. You can specify the initial status to be “ON” or to be “OFF” when the hardware device is power on. Select the value from the dropdown list of “Power On Value” field. The default value is “OFF”.
- iii. You can set the trigger criteria for triggering the counter to count. There are three criteria: HI to LOW, LOW to HI and Status Change. This field cannot be “Disable” if you want to use the counter function of this channel. You can also specify the initial value of the counter in the “Initial Value” field. This counter will start counting from the initial count value. The default initial value is 0.
- iv. If you check the Enable pulse output checkbox, it will allow this DO channel to perform pulse output. In Pulse Output mode, the selected DO channel will generate a square wave according to specified parameters (Pulse High and Pulse Low). Pulse High and Pulse Low are required and has to be entered in multiples of 10ms. Pulse High indicates the “ON” time duration and Pulse Low indicates the “OFF” time duration in a periodic Pulse cycle.
- v. Repeat steps i ~ iv. After all DO channel settings are completed, click “Save” button to save the changes.

5.3 AI Attribute Setting

AI Attribute Setting section is for specifying a Deadband value and a scale range for the AI channel on the WISE controller. As we know, when the controller receives a signal from AI channel, if the change of this value received matches the evaluation criteria that was previously defined in Condition statements; the result of this IF-THEN-ELSE evaluation will be “true”. In order to avoid signal oscillation that may result in instability to the status changes, the user can set up a Deadband value for the AI channel; when there is a change to the AI channel, the actions will occur when this change matches the evaluation criteria value plus or minus the Deadband value. The AI attribute configuration page is shown as below:

AI Attribute Setting Page	
Module & Channel	WISE-7126 Channel 0
Deadband	0 (-500 mV ~ 500 mV)
Scale	MIN 0 MAX 0

Save

Figure 5-3 : AI attribute setting page

Follow the following steps:

- i. Specify the channel you are going to configure by selecting channel index from the dropdown list of channel field in “Module & Channel” section.
- ii. You can set the Deadband value of this AI channel in the “Deadband” field, on the right side of the Deadband field, the AI channel value range will be displayed. Foreexample, the channel value range is -500mV~500mV in Figure 5-3. The default Deadband value is 0.
- iii. In the “Scale” field, AI channel raw data can be set to operate with linear proportion between “MIN” and “MAX” values. IF Condition will use the adjusted value in the logic Rule operation, and the AI value retrieved from Modbus TCP and Web HMI would be the adjusted value. The default value for MAX and MIN is 0, it mean disable the Scale function.
- iv. Repeat steps i ~ iii. After all AI Channel settings are completed, click “Save” button to save the changes.

There are three operation styles for AI Deadband. Detail description is as below. The AI Channel setting in following examples is 0mA ~ 20mA.

(1) When AI > or >= a numerical value :

Assuming the Deadband value is set to be 2 mA, and the following statements are defined in the related logic Rule: IF AI0>10mA, THEN DO=ON, ELSE DO=OFF, that means, when AI0 receives a signal that exceed 10mA, the DO channel will change to ON immediately, however, when the AI0 channel value drops and becomes lower than 10mA, the DO channel will not change back to OFF immediately until the value reaches 8mA (10mA minus the Deadband value 2mA), as shown in following figure.

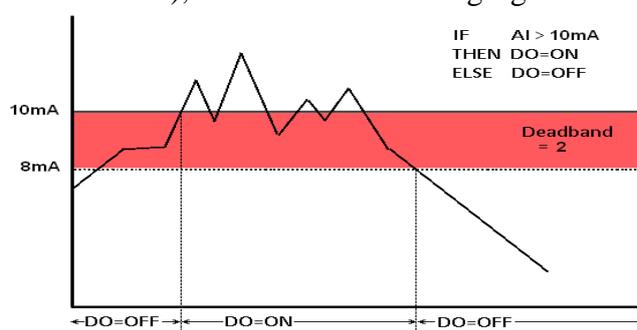


Figure 5-4 : AI Deadband Operation(> or >= a numerical value)

(2) When AI < or <= a numerical value :

Assuming the Deadband value is set to be 2 mA, and the following statements are defined in the related logic Rule: IF AI0<10mA, THEN DO=ON, ELSE DO=OFF, that means, when AI0 receives a signal which is lower than 10mA, the DO channel will change to ON immediately, however, when the AI0 channel value exceed 10mA, the DO channel will not change back to OFF immediately until the value reaches 12mA (10mA plus the Deadband value 2mA), as shown in following figure.

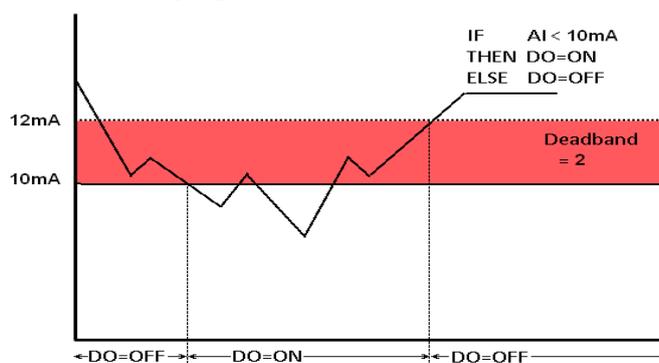


Figure 5-5 : AI Deadband Operation(< or <= a numerical value)

(3) When AI = a numerical value :

Assuming the Deadband value is set to be 1 mA, and the following statements are defined in the related logic Rule: IF AI0 = 9mA, THEN DO=ON, ELSE DO=OFF, that means, when AI0 receives a signal between 8mA (9mA minus the deadband value 1mA) and 10mA (9mA plus the deadband value 1mA), the DO channel will change to ON immediately. However, when the AI0 channel value exceed 10mA, or is lower than 8mA, the DO channel will change to OFF, as shown in following figure.

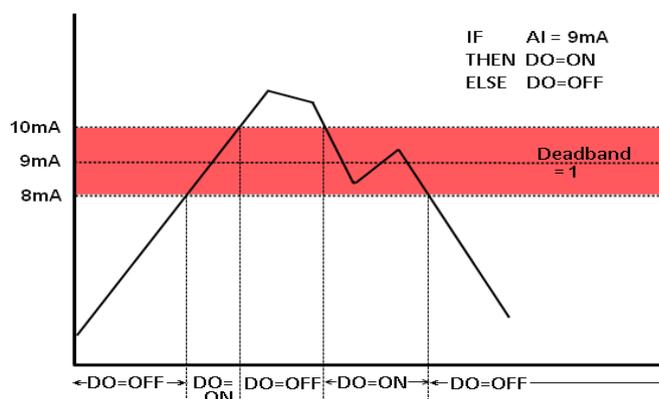


Figure 5-6 : AI Deadband Operation(= a numerical value)

5.4 AO Attribute Setting

AO Attribute Setting page allows to set up initial value of the AO channel. The configuration page is shown as below:

AO Attribute Setting Page	
Module & Channel	WISE-7126 Channel 0
Power On Value	0 (0 V ~ 5 V)
Save	

Figure 5-7 : AO Attribute setting page

Follow the following steps:

- i. Specify the channel you are going to configure by selecting channel index from the dropdown list of channel field in “Module & Channel” section.
- ii. You can set the initial value of the AO channel in the “Power On Value” field. The hardware device will output this value when is power on. The default initial value is 0.

- iii. Repeat steps i ~ ii. After all AO Channel settings are completed, click “Save” button to save the changes.

5.5 Internal Register Setting

WISE provides 48 Internal Registers; they can be used to hold temporary variables and to read/write data via Modbus address. The configuration page is shown as below:

Internal Register Setting Page			
<input type="checkbox"/> No.01	<input type="checkbox"/> No.02	<input type="checkbox"/> No.03	<input type="checkbox"/> No.04
<input type="checkbox"/> No.05	<input type="checkbox"/> No.06	<input type="checkbox"/> No.07	<input type="checkbox"/> No.08
<input type="checkbox"/> No.09	<input type="checkbox"/> No.10	<input type="checkbox"/> No.11	<input type="checkbox"/> No.12
<input type="checkbox"/> No.13	<input type="checkbox"/> No.14	<input type="checkbox"/> No.15	<input type="checkbox"/> No.16
<input type="checkbox"/> No.17	<input type="checkbox"/> No.18	<input type="checkbox"/> No.19	<input type="checkbox"/> No.20
<input type="checkbox"/> No.21	<input type="checkbox"/> No.22	<input type="checkbox"/> No.23	<input type="checkbox"/> No.24
<input type="checkbox"/> No.25	<input type="checkbox"/> No.26	<input type="checkbox"/> No.27	<input type="checkbox"/> No.28
<input type="checkbox"/> No.29	<input type="checkbox"/> No.30	<input type="checkbox"/> No.31	<input type="checkbox"/> No.32
<input type="checkbox"/> No.33	<input type="checkbox"/> No.34	<input type="checkbox"/> No.35	<input type="checkbox"/> No.36
<input type="checkbox"/> No.37	<input type="checkbox"/> No.38	<input type="checkbox"/> No.39	<input type="checkbox"/> No.40
<input type="checkbox"/> No.41	<input type="checkbox"/> No.42	<input type="checkbox"/> No.43	<input type="checkbox"/> No.44
<input type="checkbox"/> No.45	<input type="checkbox"/> No.46	<input type="checkbox"/> No.47	<input type="checkbox"/> No.48

Figure 5-8 : Internal Register setting page

Follow the following steps:

- i. A checkbox appears in front of each Internal Register; check the checkbox to enable the Internal Register. Input a value if you want to set a default value for that Internal Register.
- ii. After you finish all Internal Registers selections and settings, click “Save” button to save the settings.

5.6 Timer Setting

WISE provides 12 groups Timer for timing functions. The Timer setting interface is shown as below:

Timer Setting Page	
Timer Amount	0
Index	
Period	0 Sec
Initial Status	Stop

Save

Figure 5-9 : Timer setting page

Follow the following steps:

- i. “Timer Amount” field is required. Select the total number of timer you are going to use from the dropdown list.
- ii. Specify the timer you want to set up by selecting its index number from the dropdown list of the “Index” field.
- iii. “Period” field is required for each timer; please input the period interval in units of seconds.
- iv. Specify the initial status of each timer from the dropdown list of the “Initial Status” field. Select “Start” indicates the timer will start to count as soon as the hardware device is power up. “Stop” indicates the Timer will remain off when the hardware device is power up; it will not be activated until being triggered under certain conditions. The default setting of initial Status is “Stop”.
- v. Repeat steps ii ~ iv. After all timer settings are completed, click “Save” button to save the changes.

5.7 Email Setting

WISE supports up to 12 Email messages. This function allows sending pre-input Email message(s) to pre-set Email receiver(s) under certain conditions. The configuration page is shown as below:

E-mail Setting Page	
E-mail Amount	0
Index	
SMTP Server (IP or Domain Name)	
<input type="checkbox"/> Authentication	
Login ID	
Password	
Sender Name	
Sender Email Address	
1st Receiver Email Address	
2nd Receiver Email Address	
3rd Receiver Email Address	
4th Receiver Email Address	
5th Receiver Email Address	
Subject	
Content <small>(Note: The length of the message cannot exceed 160 characters.)</small>	

Figure 5-10 : Email setting page

Follow the following steps:

- i. Specify the numbers of email messages you want to set up from the dropdown list of the “E-mail Amount” field.
- ii. Specify the email group number from the dropdown list of the “Index” field.
- iii. Enter the IP or the domain name of the SMTP server in the “SMTP Server” field.
- iv. If SMTP server requires account and password validation, please select the Authentication Checkbox, and continue steps v~vi to login into the SMTP server. If SMTP server don't need account and password validation, uncheck the Authentication Checkbox and skip steps v~vi, go directly to step vii.
- v. Enter the SMTP server login ID in the “Login ID” field.
- vi. Enter the SMTP server password in the “Password” field.
- vii. Enter the sender's name in the “Sender Name” field.
- viii. Enter the sender's email address in the “Sender Email Address” field.
- ix. Enter the receiver's email address in the “1st ~5th Receiver Email

address” field. Please note: you can input up to 5 receivers, at least one email address has to be entered. Please enter the email address in sequence to avoid possible error.

- x. Enter the email subject in the “Subject” field.
- xi. Enter the content in the “Content” field. The length of the content cannot exceed **160 characters**. In addition, Email provides an encoded string that allow user to add current channel value into Email content. The syntax is shown as below:

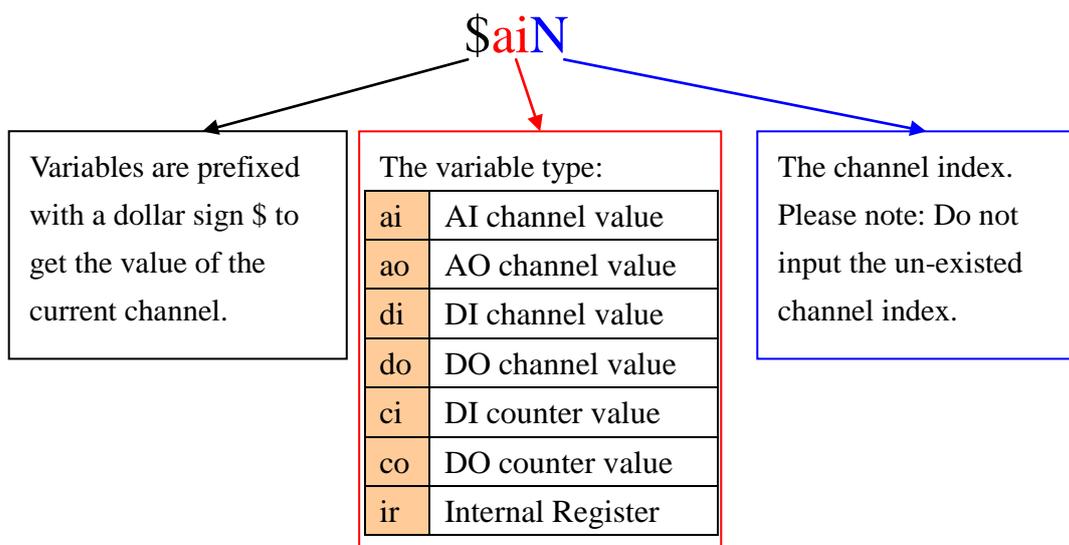


Figure 5-11 : Email channel value encoded syntax

- xii. Repeat steps ii ~ xi. After all email groups settings are completed, click “Save” button to save the changes.

5.8 CGI Command Setting

WISE offers up to 12 sets of CGI Command setting. This function allows sending pre-input CGI Command to pre-set Remote Server under certain conditions. The configuration page is shown as below:

CGI Command Setting Page

CGI Amount	0 <input type="button" value="v"/>
Index	<input type="button" value="v"/>
CGI Command	HTTP:// <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> /
Retry Count	<input type="text"/> times
Retry Interval	<input type="text"/> Sec

Figure 5-12 : CGI Command setting page

Follow the following steps:

- i. Specify the numbers of CGI Commands you want to set up from the dropdown list of the “CGI Amount” field.
- ii. Specify the CGI group number from the dropdown list of the “Index” field.
- iii. Enter the Remote Server IP, Port number and CGI Command in the “CGI Command” field.
- iv. Enter the number in the “Retry Count” field. It means the retry number WISE will try when it can’t connect with Remote Server.
- v. Enter the number in the “Retry Interval” field. It means the time interval between each retry connection. The unit is Second
- vi. Repeat steps ii ~ v. After all CGI groups settings are completed, click “Save” button to save the changes

5.9 Recipe Setting

WISE offers up to 12 sets of Recipe setting. A sequence of actions can be stored and saved in a Recipe, users can setup to execute this sequence of actions that was previously stored in the Recipe when an IF condition is matched. A Recipe contains a sequence of actions, therefore, we can say a Recipe is a macro for Actions. The configuration page for Recipe Setting is shown as below:

Recipe Attribute Setting Page				
Recipe Amount	0			
Index	1			
Action	None Add			
Edit	Delete	▲	▼	Clear All
Save				

Figure 5-13 : Recipe setting page

Follow the following steps:

- i. Select the total number of Recipe you are going to use from the dropdown list of the Recipe Amount field.
- ii. Assign an index number to the Recipe from the dropdown list of the “Index” field.
- iii. Select a THEN/ELSE Action from the dropdown list of the Action field.

- iv. Click the Add button. A THEN/ELSE Action Setting page will appear for you to set up related THEN/ELSE Action Settings, please refer to THEN/ELSE Action.
- v. After you finish setting up THEN/ELSE Action Settings, the page will refresh automatically and the Actions will be listed on Recipe.

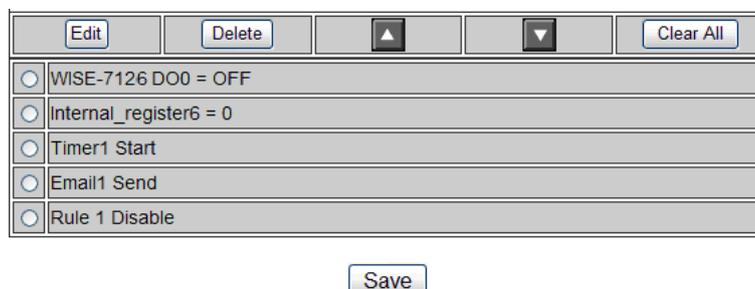


Figure 5-14 : Recipe Action management

- vi. All selected Actions will be listed on the Recipe page. Click on the radio checkbox to select the target Action, you can edit the selected Action by click on Edit button, or delete the Action from the list by click on Delete button. To rearrange the order of the Action, click the Move Up or Move Down button to move the target Action to the desired order. To delete all Actions, click on the Clear All button to remove all actions from the list.
- vii. Repeat steps ii ~ vi. After all Recipe settings are completed, click “Save” button to save the changes.

5.10 P2P Setting

WISE supports up to 8 P2P Setting. This function enables WISE controllers to communicate with other remote controllers directly. The remote controllers can freely share their data such as I/O value, DI/DO Counter or Internal Register status information with local WISE controller. The configuration page is shown as below:

P2P Setting Page	
P2P Amount	0 ▾
Index	▾
IP	<input type="text"/> - <input type="text"/> - <input type="text"/> - <input type="text"/>
Scan Interval	<input type="text"/> (Sec)
Modbus TCP NetID	<input type="text"/>
Module Type	WISE-7100 ▾
Module Name	<input type="text"/>

Figure 5-15 : P2P setting page

Follow the following steps:

- i. Select the total number of P2P settings you are going to use from the dropdown list.
- ii. Assign an index number to the P2P setting from the dropdown list of the “Index” field.
- iii. In the “IP” field, input the IP of the remote WISE controller that you want to communicate with.
- iv. In the “Scan Interval” field, input the time interval in seconds. The controller will communicate with the target remote controller every specified time-interval. The default value is 5 seconds.
- v. In the “Modbus TCP NetID” field, input the NetID of the remote WISE controller.
- vi. In the Module Type field, select the type of the remote WISE controller. The module type currently divided into four categories:
 - (1) WISE-7100:

WISE-7100 offers WISE-71xx controllers to choose from. The configuration page for WISE-7100 is shown as below:

Module Name	WISE-7105 ▾
-------------	-------------

WISE-7105

WISE-7115

WISE-7117

WISE-7118Z

WISE-7119

WISE-7126

WISE-7144

WISE-7151

WISE-7160

WISE-7167

Figure 5-16 : WISE-7100 Controller Selection

(2) WISE-4000

WISE-4000 offers only WISE-4000 controller. The configuration page for WISE-4000 is shown as below:

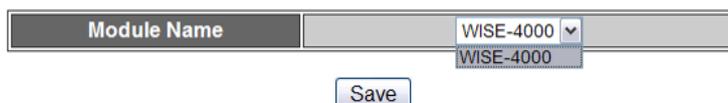


Figure 5-17 : Select WISE-4000 Controller

(3) WISE-7901:

WISE-7901 can be used with ICP DAS XBoard. The XBoard type you select for the remote WISE controller has to match the actual one. The configuration page for WISE-7901 is shown as below, select the add-on Xboard from the list:

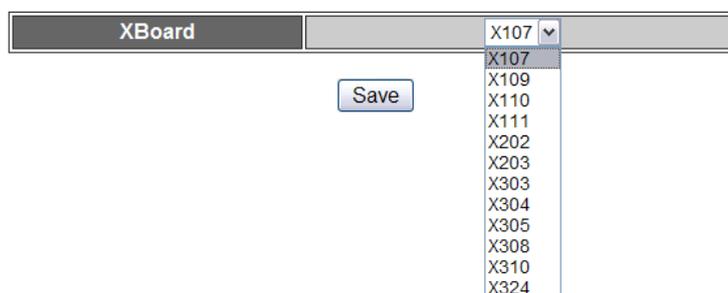


Figure 5-18 : WISE-7901 Controller Selection

(4) WISE-7902:

WISE-7902 equips 8 sets of DO and DI addresses for FRnet modules. The FRnet modules you select for the remote WISE controller have to match the actual remote settings. For DO, select FR-2054 or FR-2057; and for DI, select FR-2053 and FR-2054. Please note: when you select FR-2054, the configuration page for WISE-7902 is shown as below:

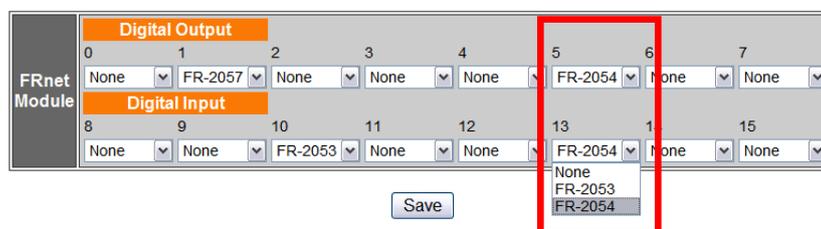


Figure 5-19 : Select the FRnet Module for WISE-7902

- vii. In the Module Name, XBoard or FRnet Module field, select the name of the remote WISE controller from the dropdown list.

- viii. Repeat steps ii ~ vi. After all P2P settings are completed, click “Save” button to save the changes.

6 Rules Setting

After finishing all Advanced Setting configurations, the user can start to edit IF-THEN-ELSE rules. Click the “Rules Setting” button, a Rule Manager table will appear, and the list of rules will be displayed on the left side of the page. At the left side of the page, the status of each rule will be displayed. And at the right side of the page will show detail content of each rule that was previously defined by the users. The rule setting page is shown as below:

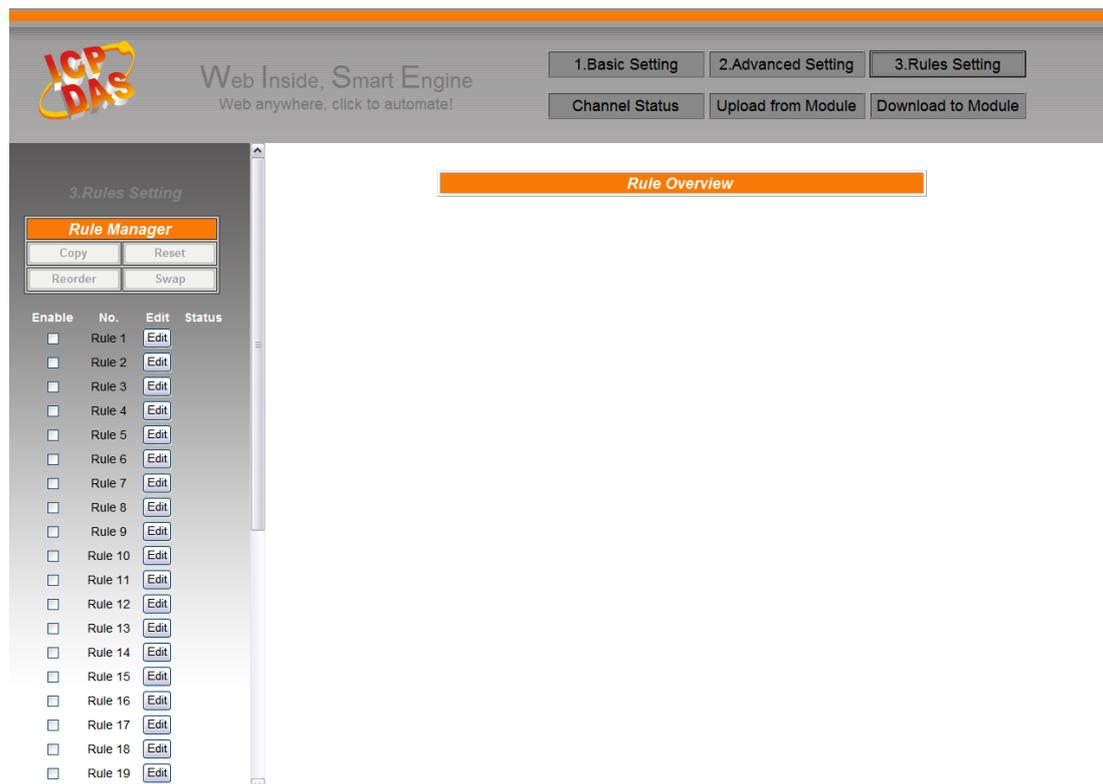


Figure 6-1 : Rules setting page

On the left side of the page, a Rule Manager table will appear at the top of the page. (More detail information for Rule Manager will follow.) Under the Rule Manager table, the list of rule contains four items:

Enable	No.	Edit	Status
<input type="checkbox"/>	Rule 1	Edit	
<input type="checkbox"/>	Rule 2	Edit	
<input type="checkbox"/>	Rule 3	Edit	
<input type="checkbox"/>	Rule 4	Edit	
<input type="checkbox"/>	Rule 5	Edit	

Figure 6-2 : Enable rules, edit rules and status display

- ◆ **Enable:** A checkbox appears before each rule; check the checkbox to enable the rule and this rule will be executed after being downloaded, otherwise it will only be stored temporarily.
- ◆ **No.:** Indicates the identification number of the rule. To avoid possible error, it is recommended to assign the identification number in sequence.
- ◆ **Edit:** Click the Edit button to edit detail logic content of the rule.
- ◆ **Status:** “OK” indicates this rule is successfully defined. “Error” indicates there is error occurs. **Please note: if you make modification in Advanced Setting after finish defining the rules, it might cause unexpected error due to the changes, some variables may no longer exist. Therefore, in case you make any modification, please double check your settings and Rules definition to make sure no errors are present.**

Click the “Edit” button, the Rules Setting page will appear:

IF		THEN		ELSE	
Condition1	None	Action1	None	Action1	None
Condition2	None	Action2	None	Action2	None
Condition3	None	Action3	None	Action3	None
Operator	None				

Figure 6-3 : Rule setting page

The rule number will be displayed at the top of the page. The Description field provides a space for users to make a brief description of this Rule. An IF-THEN-ELSE Rule setting table appears under the description section. Each Rule offer 3 IF conditions. The user could create IF(condition) statements by selecting appropriate operator (AND, OR) from the dropdown list. In order to avoid possible errors, the design of this table is foolproof: The user has to finish setting up Condition1 before moving on Condition2, and so on. Each Rule also offers 3 THEN actions, and 3 ELSE actions. More detail information will follow.

6.1 IF Condition

In IF Condition statement, the following values or their status can be included as evaluation criteria:

- ◆ AI
- ◆ DI
- ◆ DI Counter
- ◆ DO Counter
- ◆ Internal Register
- ◆ Timer
- ◆ P2P
- ◆ Rule Status

If the hardware device equips with AI or DI channel, their corresponding AI or DI channel will automatically appear on the list. To include subjects other than AI or DI channels in the IF Condition statement; they have to be pre-defined in Advanced Setting first. The subjects that already being defined in Advanced Setting will appear on the dropdown list of IF Condition. Select the subject you want to use, and then click right side  button, a window will pop up for you to edit detail information.

6.1.1 AI

AI channel value can be used as evaluation criteria for IF condition statement; the editing page for AI Condition Setting is shown as below:

AI Condition Setting

Module & Channel	<input type="text" value="WISE-7126"/>	<input type="text" value="Channel 0"/>
Channel Value	= <input type="text" value="0"/>	(-10 V ~ 10 V)

Figure 6-4 : AI condition setting page

Follow the following steps:

- i. Select the channel that you are going to use the value as evaluation criteria for IF condition statement. Specify the channel from the dropdown list of channel field in the “Module & Channel” section.
- ii. Set up the expression statement for this channel value. Select an operator from “=”, “>”, “<”, “>=”, “<=”, and then specify the evaluation value. If this AI channel value match the evaluation

- criteria, the result of this condition evaluation will be “true”.
- iii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.1.2 DI

DI channel value can be used as evaluation criteria for IF condition statement; the editing page for DI Condition Setting is shown as below:

DI Condition Setting

Module & Channel	WISE-7126 ▼ Channel 0 ▼
Channel Value	OFF ▼

Figure 6-5 : DI condition setting page

Follow the following steps:

- i. Select the channel that you are going to use the value as evaluation criteria for IF condition statement. Specify the channel from the dropdown list of channel field in “Module & Channel” section.
- ii. Define the evaluation criteria of the status in IF statement to be “OFF” “ON” “ON to OFF” “OFF to ON” or “Change”. Once the DI channel value matches the evaluation criteria, the result of this condition evaluation will be “true”. **Please note: If the statement involves state transitions: “ON to OFF”, “OFF to ON” and “Change”, the action will be executed only once and only at the moment when the state transition occurs.**
- iii. Click “Save” button to save the settings. This popup window will be closed and return to the Rule settings page.

6.1.3 DI Counter

DI counter value can be used as evaluation criteria for IF condition statement; the editing page for DI counter Condition Setting is shown as follow:

DI Counter Condition Setting

Module & Channel	WISE-7126 ▼ Channel 0 ▼
Value	= ▼ 0

Figure 6-6 : DI counter condition setting page

Follow the following steps:

- i. Select the channel that you are going to use the value as evaluation criteria for IF condition statement. Specify the channel from the dropdown list of channel field in the “Module & Channel” section.
- ii. Set up the expression statement for this counter value. Select an operator from “=”, “>”, “<”, “>=”, “<=” or “Change”. If the operator is “=”, “>”, “<”, “>=” or “<=”, an evaluation value has to be specified; if the DI counter value match the evaluation criteria, the result of this condition evaluation will be “true”. If the operator is “Change”, the condition will be “true” when there is a change to the counter value. **The action will be executed only once and only at the moment when DO Counter experience a change.**
- iii. Click “Save” button to save the settings. This popup window will be closed and return to the Rule settings page.

6.1.4 DO Counter

DO counter value can be used as evaluation criteria for IF condition statement; the editing page for DO counter Condition Setting is shown as follow:

DO Counter Condition Setting

Module & Channel	WISE-7126	Channel 0
Value	=	0

Figure 6-7 : DO counter condition setting page

Follow the following steps:

- i. Select the channel that you are going to use the value as evaluation criteria for IF condition statement. Specify the channel from the dropdown list of channel field in the “Module & Channel” section.
- ii. Set up the expression statement for this counter value. Select an operator from “=”, “>”, “<”, “>=”, “<=” or “change”. If the operator is “=”, “>”, “<”, “>=” or “<=”, an evaluation value has to be specified; if this DO counter value match the evaluation criteria, the result of this condition evaluation will be “true”. If the operator is “Change”, the condition will be true when there is a change to the counter value. **The action will be executed only once and only**

at the moment when DO Counter experience a change.

- iii. Click “Save” button to save the settings. This popup window will be closed and return to the Rule settings page.

6.1.5 Internal Register

Internal Register value can be used as evaluation criteria for IF condition statement; the editing page for Internal Register Condition Setting is shown as follow:

Internal Register Condition Setting	
Index	1 ▼
Condition	= ▼ 0

Figure 6-8 : Internal register condition setting page

Follow the following steps:

- i. Select the Internal Register that you are going to use the value as evaluation criteria for IF condition statement. Specify the Internal Register Index from the dropdown list of “Index” field.
- ii. Set up the expression statement for this Internal Register value. Select an operator from “=”, “>”, “<”, “>=”, or “<=”, and then specify the evaluation value. If this Internal Register value match the evaluation criteria, the result of this condition evaluation will be “true”.
- iii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.1.6 Timer

Timer condition can be used as evaluation criteria for IF condition statement; the editing page for timer condition setting is shown as follow:

Time Condition Setting	
Index	1 ▼
Status	Not Timeout ▼

Figure 6-9 : Timer condition setting page

Follow the following steps:

- i. Select the timer that you are going to use its status as evaluation criteria for IF condition statement. Specify the timer index from the dropdown list of “Index” field.
- ii. Define the evaluation criteria of the timer status in IF statement to be “Not timeout” or “Timeout”. If the timer status match the evaluation criteria, the result of this condition evaluation will be “true”.
- iii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.1.7 P2P

Through P2P function, the data (DI, AI, DI/DO Counter or Internal Register) from remote WISE controllers can be retrieved and can be incorporated into IF Condition statements. To set up P2P condition Setting, first of all, you will need to assign an index number and specify what data you are going to use in the IF condition statements. Secondly, you will need to set up detail settings for the Condition settings. The configuration page for setting up index and condition is shown as below:

P2P Condition Setting	
index	1
Module	WISE-7105
Condition	AI
Save	

Figure 6-10 : P2P IF Condition setting page

Follow the following steps:

- i. Assign an index number to the P2P Condition Setting from the dropdown list of the “Index” field.
- ii. Specify the data for use in the Condition statements from the dropdown list in the Condition field.
- iii. Click on the  button, a Condition setting page will appear for setting up detail information of the Condition settings. The configuration page for Condition settings is shown as below:

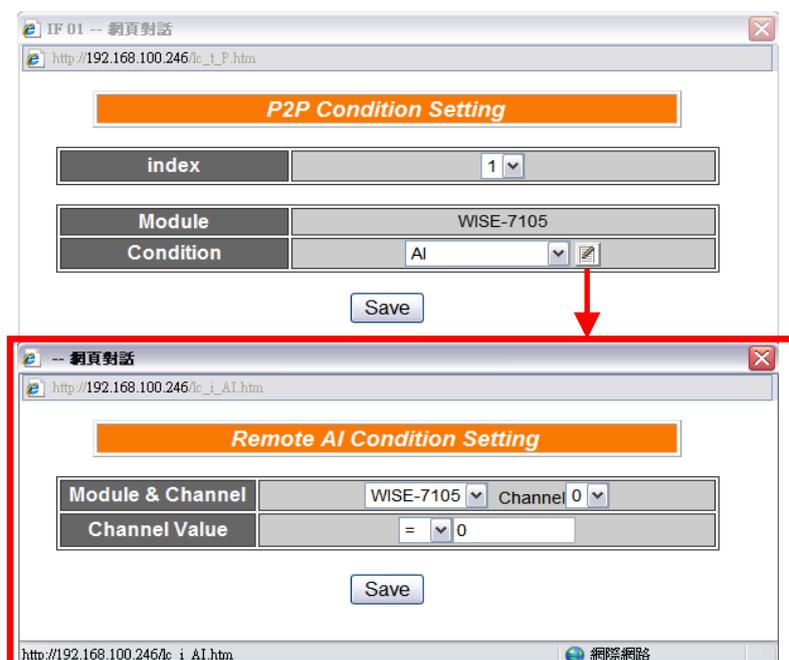


Figure 6-11 : P2P IF Condition detail setting page

- iv. For detail information of Condition Setting, please refer to IF Condition; sections regarding DI, AI, DI Counter, DO Counter, and Internal Register.
- v. Click “Save” button to save the settings. The popup Condition Setting page will be closed and return to P2P Condition setting page.
- vi. On the P2P Condition setting page, click “Save” button to save the settings. The P2P Condition setting page will be closed and return to the Rule Setting page.

6.1.8 Rule Status

The Rule Status (if the Rule is disabled or enabled) can be used as evaluation criteria for IF condition statement. Please note: there must be at least one edited rule on WISE controller for setting up Rule Status in the IF Condition Setting page. The editing page for Rule Status Condition Setting is shown as below:

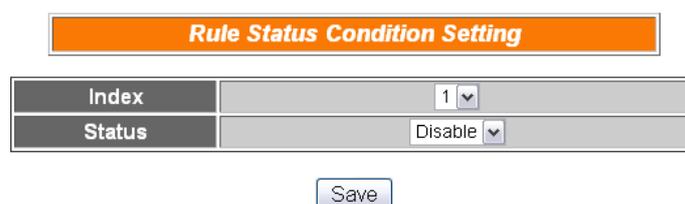


Figure 6-12 : Rule Status IF Condition setting page

Follow the following steps:

- i. Specify the index number of the Rule that is going to be used in the IF Condition statement from the dropdown list of the “Index” field.
- ii. Specify the Rule status to be Disable or Enable from the dropdown list of the “Status” field. When the Rule status matches the specified status, the evaluation result will be “true”.
- iii. Click “Save” button to save the settings. The Rule Status Condition Setting page will be closed and return to the Rule setting page.

6.2 THEN/ELSE Action

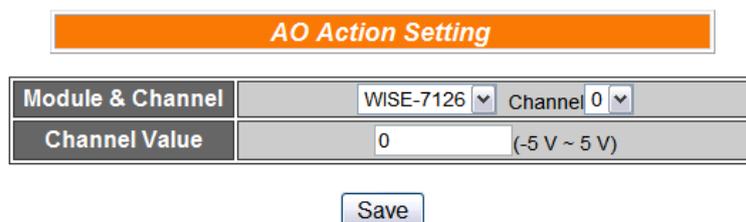
In the THEN/ELSE Action statement, the following values or status can be included:

- ◆ AO
- ◆ DO
- ◆ DI Counter
- ◆ DO Counter
- ◆ Internal Register
- ◆ Timer
- ◆ Email
- ◆ CGI
- ◆ Recipe
- ◆ P2P
- ◆ Rule Status

Select the component for Action statement from the combo box, and then click the right side  button, a window will pop up for you to edit detail information. The THEN Action statement will be executed only when the result of IF condition statement is found “true”; otherwise the ELSE Action statement will be executed. **The Actions involve with AO, DO(ON and OFF) and Internal Register will be executed over and over again as long as the conditions remain unchanged. On the other hand, other Actions will be executed only once and only at the moment when their corresponding IF Conditions are satisfied.**

6.2.1 AO

You can execute an action in AO channel in THEN/ELSE Action statement; the editing page for AO Action is shown as follow:



AO Action Setting	
Module & Channel	WISE-7126 Channel 0
Channel Value	0 (-5 V ~ 5 V)

Save

Figure 6-13 : AO action page

Follow the following steps:

- i. From the dropdown list of the “Module & Channel” field, select the AO channel index to execute actions.
- ii. Specify the AO channel value in the “Channel Value” field. The AO channel value will be changed into this value when executing Action under specific condition.
- iii. Click “Save” button to save the settings. The popup window will be closed and will return to the rule setting page.

6.2.2 DO

You can execute an action in DO channel in the THEN/ELSE Action statement; the editing page for DO Action is shown as follow:

DO Action Setting	
Module & Channel	WISE-7126 Channel 0
Channel Value	OFF

Save

Figure 6-14 : DO action page

Follow the following steps:

- i. Select the DO channel to execute actions from the dropdown list of channel field in the “Module & Channel” section.
- ii. Specify the output value of DO Channel from the dropdown list of the “Channel Value” field. The output value can be “OFF”, “ON” or “Pulse Output”. Please note: to make “Pulse Output” option available here, you have to enable “Pulse Output” in Advanced Setting before editing Rules Setting.
- iii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.3 DI Counter

You can reset DI counter in the THEN/ELSE Action statement; the editing page for DI counter Action is shown as follow:

DI Counter Action Setting	
Module & Channel	WISE-7126 Channel 0
Action	Counter Reset

Save

Figure 6-15 : DI counter action page

Follow the following steps:

- i. Select the DI channel to reset DI counter from the dropdown list of channel field in the “Module & Channel” section.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.4 DO Counter

You can reset DO counter in THEN/ELSE Action statement; the editing page for DO counter Action is shown as below:

DO Counter Action Setting

Module & Channel	WISE-7126 ▾	Channel 0 ▾
Action	Counter Reset	

Figure 6-16 : DO counter action page

Follow the following steps:

- i. Select the DO channel to reset DO counter from the dropdown list of channel field in the “Module & Channel” section.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.5 Internal Register

You can modify the value of Internal Register in the THEN/ELSE Action statement; the editing page for Internal Register Action Setting is shown as below:

Internal Register Action Setting

Index	1 ▾
Value	0

Figure 6-17 : Internal Register action page

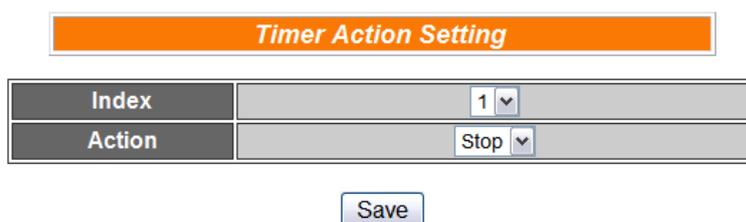
Follow the following steps:

- i. Select the pre-defined Internal Register from the dropdown list of the “Index” field. Please note: the Internal Register you select has to be enabled in Advanced Setting.

- ii. Input the value you want to set to this Internal Register when the THEN/ELSE Action is executed.
- iii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.6 Timer

You can change the Timer status (to stop or to start the Timer) in the THEN/ELSE Action statement; the editing page for Timer Action Setting is shown as below:



Timer Action Setting	
Index	1
Action	Stop

Save

Figure 6-18 : Timer action page

Follow the following steps:

- i. Select the pre-defined Timer from the dropdown list of the “Index” field.
- ii. Please note: the Timer you select has to be enabled in Advanced Setting.
- iii. Specify you want to “Stop” or “Start” this Timer when this THEN/ELSE Action statement is executed.
- iv. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.7 Email

You can send a message to an Email group when executing a THEN/ELSE Action statement; the editing page is shown as below:

Email Action Setting	
index	1
Email Information	
Subject	Alarm 1
1st Receiver Email Address	service@icpdas.com
2nd Receiver Email Address	
3rd Receiver Email Address	
4th Receiver Email Address	
5th Receiver Email Address	

Figure 6-19 : Email action page

Follow the following steps:

- i. Select the pre-set Email group from the dropdown list of the “Index” field. The Email group information will be displayed for you to verify if this is the Email group you are going to send the message to.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.8 CGI

You can send a CGI Command to a Remote Server when executing a THEN/ELSE Action statement; the editing page is shown as below:

CGI Action Setting	
Index	1
Action	Send

Figure 6-20 : CGI Command action page

Follow the following steps:

- i. Select the pre-set CGI Command action from the dropdown list of the “Index” field. Please note: the CGI Command Index you select has to be enabled in Advanced Setting.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.9 Recipe

You can execute a Recipe action in THEN/ELSE Action statement; the editing page for Recipe Action is shown as follow:

Recipe Action Setting	
Index	1
Action	Execute Recipe

Save

Figure 6-21 : Recipe action page

Follow the following steps:

- i. Select the pre-set Recipe action from the dropdown list of the “Index” field. Please note: the Recipe Index you select has to be enabled in Advanced Setting.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.10 P2P

Through P2P function, the data (DO,AO or Internal Register) from remote WISE controllers can be incorporated into THEN/ELSE Action statements. To set up P2P Action Setting, first of all, you will need to assign an index number and specify what data you are going to use in the Action statements. Secondly, you will need to set up detail settings for the Action settings. The configuration page for setting up index and Action is shown as below:

P2P Action Setting	
index	1
Module	WISE-7105
Action	DO

Save

Figure 6-22 : P2P action page

Follow the following steps:

- i. Assign an index number to the P2P Action Setting from the dropdown list of the “Index” field.
- ii. Specify the data for use in the Action statements from the dropdown list in the Action field.

- iii. Click on the  button, an Action setting page will appear for setting up detail information of the Action settings. The configuration page for Action settings is shown as below:

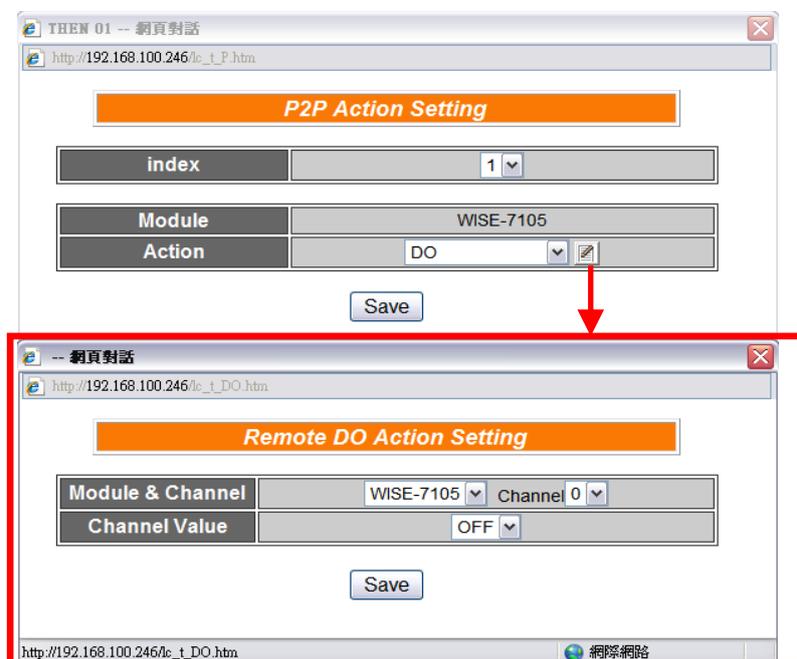


Figure 6-23 : P2P action detail setting page

- iv. For detail information of Action Setting, please refer to THEN/ELSE Action; sections regarding DO, AO, and Internal Register.
- v. Click “Save” button to save the settings. The popup Action Setting page will be closed and return to P2P Action
- vi. On the P2P Action setting page, click “Save” button to save the settings. The P2P Action setting page will be closed and return to the Rule Setting page.

6.2.11 Rule Status

The Rule Status can be modified to be Disable or Enable in the Action. The editing page for Rule Status Action Setting is shown as below:



Figure 6-24 : Rule Status action page

Follow the following steps:

- i. Specify the index number of the Rule (It has to be a previously saved Rule) that is going to be changed in the Action Condition statement from the dropdown list of the “Index” field.
- ii. Specify the Rule status to be Disable or Enable from the dropdown list of the “Status” field. When the Action being executed, the Rule status will be changed to specified status.
- iii. Click “Save” button to save the settings. The Rule Status Action Setting page will be closed and return to the Rule setting page.

6.3 Summary of the Rules

After you finish editing all IF condition and THEN / ELSE action statements for a rule, return to the Rules Setting page and click “Save” to save all settings of this rule. Please note: if you want to clear previous settings, after you click “Clear” button, you have to click “Save” to make sure this “Clear” status is saved. Rules Setting page is shown as below:

Rules Setting Page

Rule 5

Description:

	IF		THEN		ELSE
Condition1	Timer	Action1	Email	Action1	AO
Condition2	AI	Action2	DI counter	Action2	Timer
Condition3	DI	Action3	Internal register	Action3	DO
Operator	AND				

Figure 6-25 : Clear/Save Rules

Each time you finish editing a Rule will go back to the Rules Setting main page. All statements of edited Rules will be displayed. Rules Setting main page is shown as below:

Rule Overview

Rule 1(Enable)
Description: DI Channel0 ON -> Timer1 Start
< IF >
WISE-7126 DI0 = ON
< THEN >
Internal_register1 = 111
Timer1 Start

Rule 2(Enable)
Description: Timer1 Timeout -> Send Email1
< IF >
Timer1 Timeout
< THEN >
Email1 Send
Internal_register2 = 222

Rule 3(Enable)
Description: Internal Register triggers AO Channel setting
< IF >
Internal_register1 = 111 (AND)
Internal_register1 = 222
< THEN >
WISE-7126 AO0 = 0.5 mA
WISE-7126 AO1 = 2.2 mA

Rule 4(Enable)
Description: Internal Register triggers Pulse output
< IF >
Internal_register3 = 333
< THEN >
WISE-7126 DO0 = Pulse output

Figure 6-26 : Rule setting main page

Click “Rules Setting” button to display detail rules description. Rules can be downloaded to the hardware device immediately after you successfully set up one or more rule(s).

6.4 Rule Manager

The Rule Manager allows easy modification and deployment with existing rules. By a few simple steps, users can easily change the rule orders or make modification with previously edited rules. The Rule Manager table is shown as below:

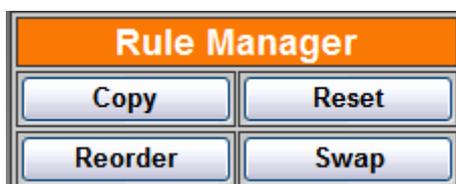


Figure 6-27 : Rule Manager setting page

Rule Manager offers 4 functions:

- ◆ **Copy:** Copy the content of previously edited rule to another rule. Click “Copy” button, a window as shown below will pop up:



Figure 6-28 : Rule Copy setting page

Select the source rule from the first field, and then select the destination(s) from the second fields (multiple rule destinations is allowed). Click “Save” button to copy the content of the source rule to all destination rules.

- ◆ **Reset:** allows to clear rule content of previously edited rules. Click “Reset” button, a window as shown below will pop up:



Figure 6-29 : Rule Reset setting page

Rules that are previously edited will be listed on the page, select the rule to be cleared and then click “Save” button, the rule you select will be reset.

- ◆ **Reorder:** reorder existing rules. Click “Reorder” button, a window as shown below will pop up:

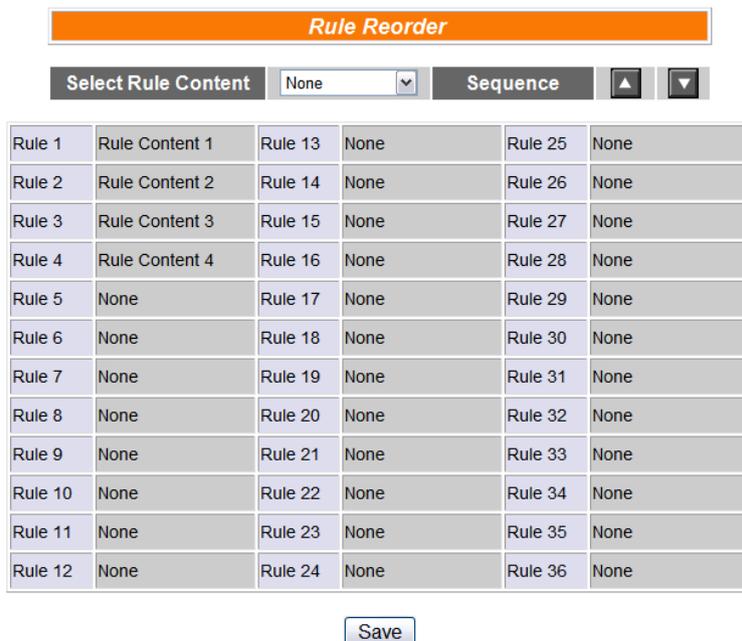


Figure 6-30 : Rule Reorder setting page

A menu will appear at the top of the page, it contains a drop down list for selecting the target rule, and a pair of “Move Up”/“Move Down” buttons to move target rule to the desired location. All rule locations will be listed in sequence (currently support 36 rule locations). If the rule content of a specific rule location has been previously edited, “Rule Content X” (X : rule sequence index) will appear. If the rule content of the rule location is blank, it will be specified as “None”. To reorder a rule, select the target rule from the dropdown list, the corresponding “Rule content X” font will

turn to blue from its usual black. Click on “Move Up”/“Move Down” buttons to move the selected rule to the desired location and then click “Save” to save the settings.

- ◆ **Swap:** Exchange the Rule content of a pair of rules. Click Swap button, a window as shown below will pop up:



The image shows a dialog box titled "Rule Swap". The title bar is orange with the text "Rule Swap" in white. Below the title bar is a horizontal panel with a white background and a thin border. This panel contains two dropdown menus, one on the left and one on the right, both showing "Rule 1" with a downward arrow. Between the two dropdown menus is a button labeled "Swap". Below this panel is a separate button labeled "Save".

Figure 6-31 : Rule Swap setting page

From the left side drop down list, select the first rule (has to be previously edited), and select the second rule from the right side drop down list (the rule content can be blank), click “Save” to swap the rule content.

7 Download to Module

Download button allows you to download edited rules from Web UI to hardware devices. Click the “Download to Module” button, a popup window will appear for user to input the password:



Figure 7-1 : Enter the password

If the password is incorrect, the download will not be processed, the download process will be started only when the correct password is entered. Current download progress will be displayed as below:

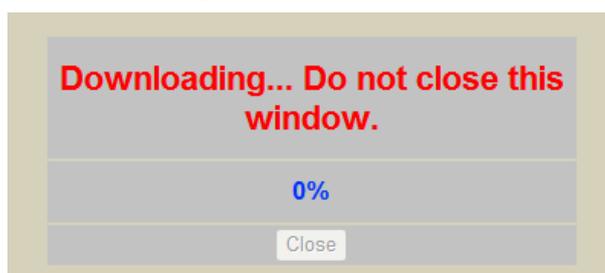


Figure 7-2 : Showing download progress

When the download process is finished, the popup window will notify the user the process is completed:



Figure 7-3 : Message showing a successful download

Close the popup window and go back to the Rules Setting window. **About 3 seconds after the download is completed, the hardware device will automatically reboot and start to run the rules that have been downloaded.** At this time, you can still edit or modify the content of the rules.

8 Upload from Module

Upload button allows you to retrieve Rules Setting information from the hardware devices and edit them at this Rules Setting page. Click “Upload from Module” to start the upload process. When the upload process is finished, the window showing progress status will notify the user the process is completed:

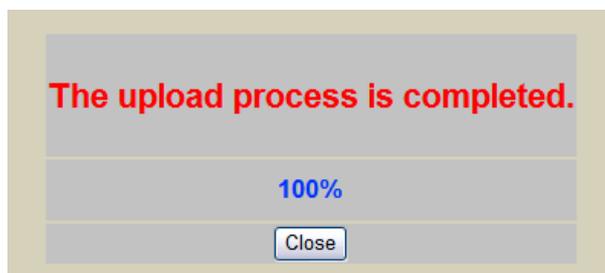


Figure 8-1 : Message showing a successful upload

Click “close” to close the upload process window to finish upload. Now the rules have been uploaded from hardware devices to the web page, you can modify and download the edited rules to the hardware devices later again.

9 Channel Status

Channel Status function offers an easy-to-view monitoring page that allows users to view important controller information in real time without SCADA software.

The Channel Status page is shown as below:

The screenshot shows the 'Channel Status Page' interface. At the top, there is a navigation bar with buttons for '1.Basic Setting', '2.Advanced Setting', '3.Rules Setting', 'Channel Status', 'Upload from Module', and 'Download to Module'. The main content area is divided into several sections:

- DI Channel:** A table with columns for Channel0 and Channel1. Rows include Channel, Value (OFF), and Counter (0).
- DO Channel:** A table with columns for Channel0 and Channel1. Rows include Channel, Value (OFF buttons), and Counter (0).
- AI Channel:** A table with columns for Channel0 through Channel5. Rows include Channel and Value (-0.02, -0.1, 0, 0, -0.1, -0.1).
- AO Channel:** A table with columns for Channel0 and Channel1. Rows include Channel and Value (0).
- Internal Register:** A large table with 12 columns (No.01 to No.12) and 4 rows of data, all showing 0 values.

Figure 9-1 : Channel Status page

The Channel Status page will show the values of DI / DO / AI / AO channel, DI/DO counter, and the Internal Register. You can modify the values of the DO channels with the value buttons on this page. This page will be updated once every 10 seconds, showing the latest data of the controllers.

10 Firmware Update

10.1 Introduction

WISE Firmware Uploader is a software tool provides a user friendly interface to easily update WISE firmware that runs on WISE hardware devices. With a few clicks, users could upload the latest WISE firmware to the hardware.

System Requirements:

- Operating System: Windows Server 2003, Windows Server 2008, Windows Vista, Windows XP.
- Make sure you have installed Microsoft .NET Framework Version 2.0 (or later)

- You can download Microsoft .Net Framework Version 2.0 from the link below:

<http://www.microsoft.com/downloads/details.aspx?FamilyID=0856eacb-4362-4b0d-8edd-aab15c5e04f5&DisplayLang=en>

- You can download Microsoft .Net Framework Version 3.5 from the link below:

<http://www.microsoft.com/downloads/details.aspx?familyid=33325FD-AE52-4E35-B531-508D977D32A6&displaylang=en>

10.2 Install / Uninstall WISE Firmware Uploader

10.2.1 Install WISE Firmware Uploader

Follow the steps below to install WISE Firmware Uploader:

- Obtain the WISE Firmware Uploader setup file (WISE Firmware Uploader Setup.exe).
- Double click the setup file to install the file, you will see a window pop up as below, click [Next] to continue.



Figure 10-1 : Install WISE Firmware Uploader

- Choose the installation location to install WISE Firmware Uploader. Click [Install] to start the installation.

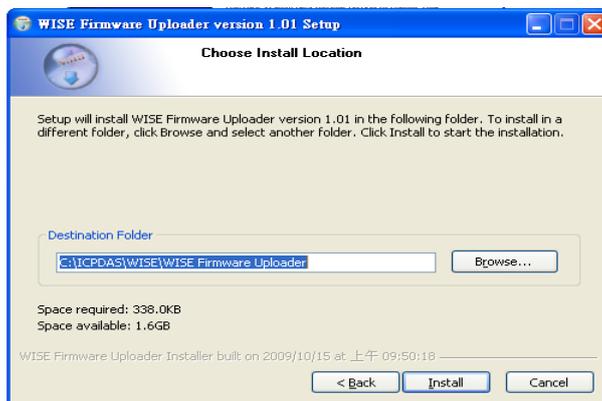


Figure 10-2 : Select installation directory

- The installation progress will be shown as below; please wait till the installation is completed.

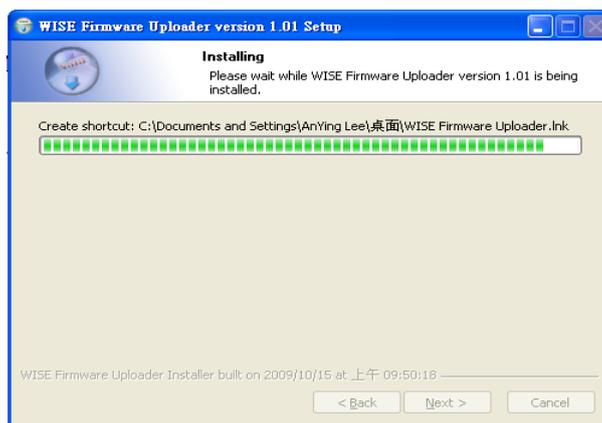


Figure 10-3 : Display installation progress

- When the installation is completed, click [Finish] to close the process.



Figure 10-4 : Complete the installation

10.2.2 Uninstall WISE Firmware Uploader

Follow the steps below to uninstall WISE Firmware Uploader:

- Click [Start] → [All Programs] → [ICPDAS] → [WISE], and then click [Uninstall] under the [WISE] category.

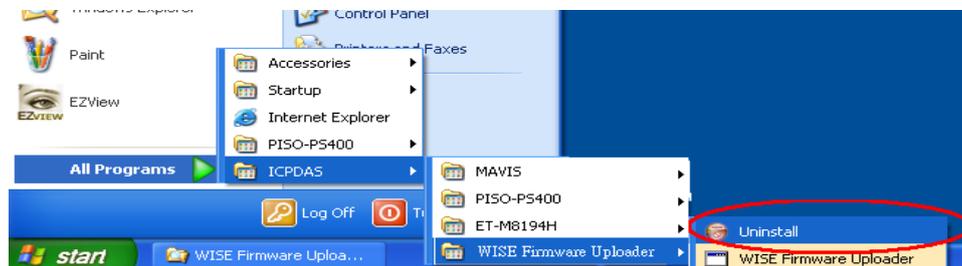


Figure 10-5 : Start to remove WISE Firmware Uploader

- You will see a window pop up as below, click [Next] to continue.

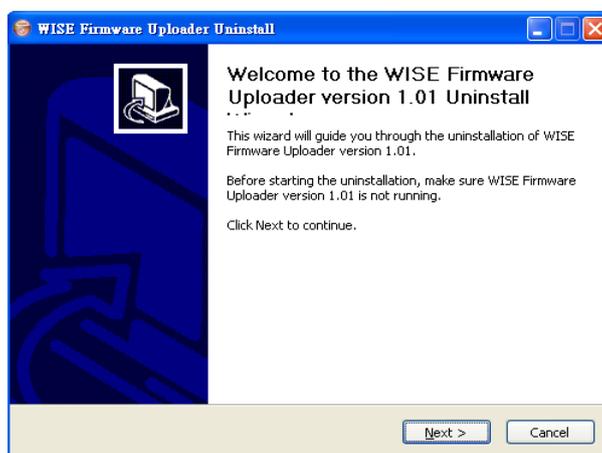


Figure 10-6 : Remove WISE Firmware Uploader (1)

- Click [Uninstall] to uninstall the program.

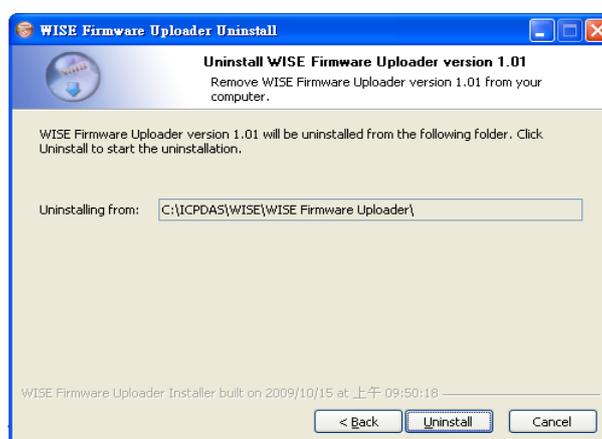


Figure 10-7 : Remove WISE Firmware Uploader (2)

- When the uninstall process is completed, click [Finish] to finish the uninstallation.



Figure 10-8 : Complete uninstalling WISE Firmware Uploader

10.3 Update WISE firmware

Please follow the six steps below to update the WISE firmware program on the hardware devices:

10.3.1 Before update

- Please visit WISE product web site (<http://wise.icpdas.com/>) or contact ICP DAS service to obtain the latest version of the WISE firmware program. Copy the file to the computer that you previously installed WISE Firmware Uploader.
- Connect the hardware device that you are going to update WISE firmware to the network. Please verify and make a note of the hardware device IP address, you will need it later in the process.

10.3.2 Execute WISE Firmware Uploader

- Taking Windows XP as an example: click [Start]→[All Programs]→[ICPDAS]→[WISE], and then click [WISE Firmware Uploader] under the [WISE] category to start the program.

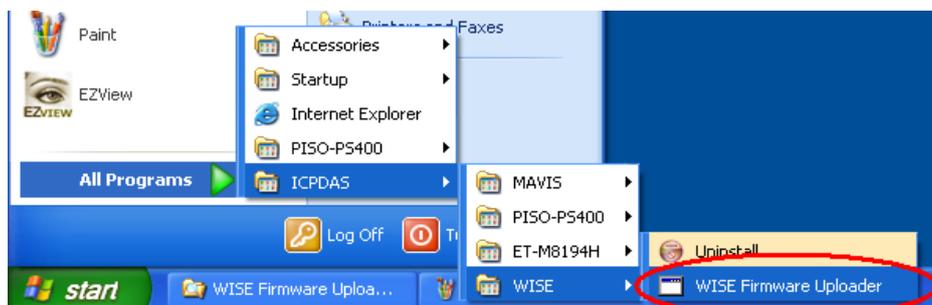


Figure 10-9 : Launch WISE Firmware Uploader

10.3.3 Set up Hardware IP

Enter the IP address of the hardware device that you are going to update WISE firmware, as shown in the following figure.

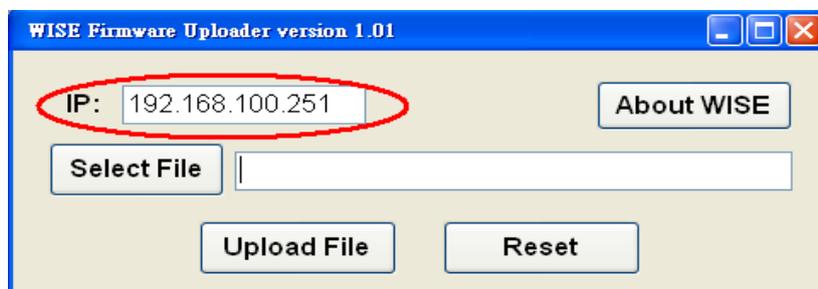


Figure 10-10 : Assign IP address

10.3.4 Select WISE firmware file

Click “Select File” button; browse the file through the File Dialog Box to select the appropriate WISE firmware version. As shown in the following figure:

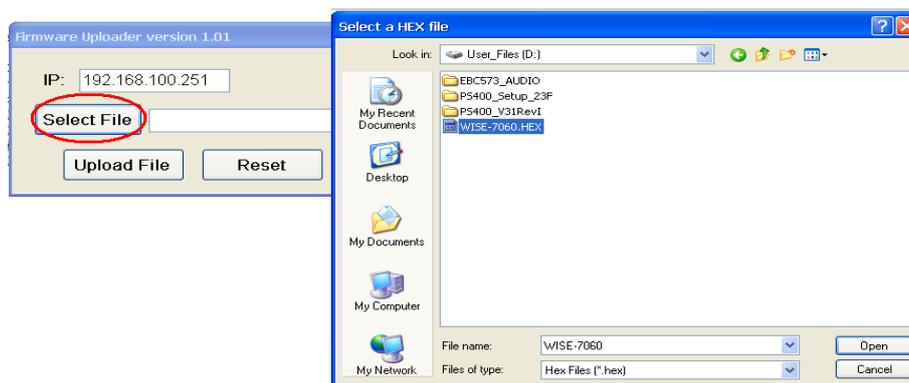


Figure 10-11 : Select the WISE firmware

10.3.5 Upload WISE firmware program

Click ”Upload File” button to start update WISE firmware to the hardware device.

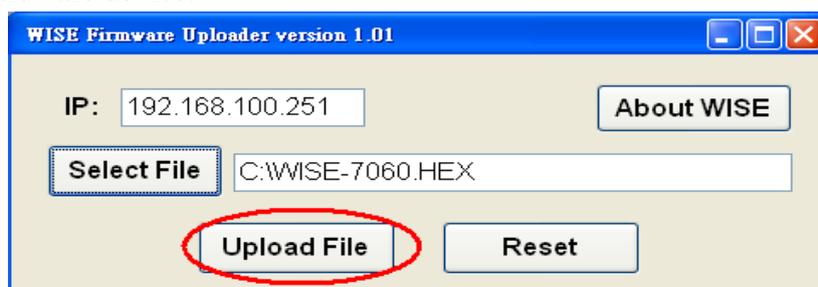


Figure 10-12 : Upload firmware

The status of WISE firmware update progress will be shown as below:

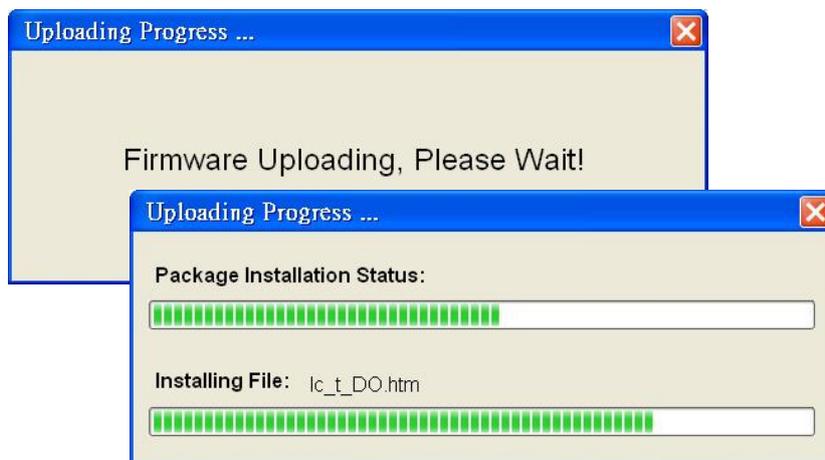


Figure 10-13 : Display firmware update progress

When completing update of the WISE firmware, a pop-up window will appear to inform the user. Close the window to finish firmware upload.



Figure 10-14 : Complete firmware update

10.3.6 Reset hardware

Click "Reset" button to reset the hardware device. The new updated firmware will take effect after resetting the hardware.

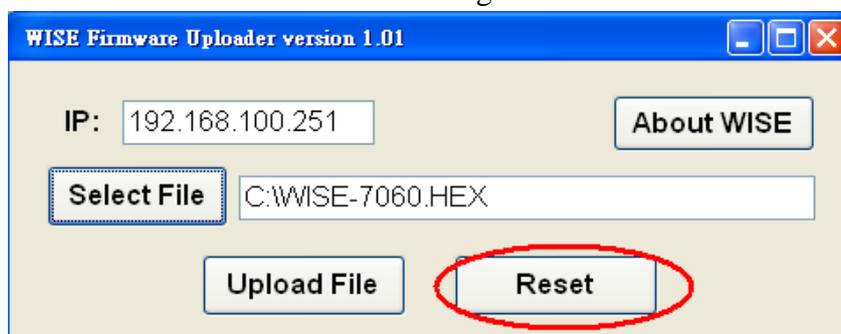


Figure 10-15 : Reset the device

Appendix I : Modbus Address Table

WISE allows you to retrieve data on hardware devices via Modbus TCP.

Register addresses are specified according to Modbus register mapping tables as follows: (The addresses are in Base 0 format. The default value of NetID is 1, and you can modify the NetID value in the Ethernet Setting page.)

◆ 0xxxx

Begin address	Points/Channels	Description	Coils per Point/Channel	Range	Access type
0 (0x00)	1	Reboot switch	1	1=reboot	R/W
1 (0x01)	1	CJC Enable	1	0=disable 1=enable	R/W
2 (0x02)	1	CJC Setting switch	1	1=set CJC parameters	R/W
20 (0x14)	0~20	DO channel value	1	0=off 1=on	R/W

◆ 1xxxx

Begin address	Channels	Description	Coils per Channel	Range	Access type
20 (0x14)	0~20	DI channel value	1	0=off 1=on	R

◆ 3xxxx

Begin address	Points/Channels	Description	Registers per Point/Channel	Range	Access type
0 (0x00)	1	Module Name	1	0~65535	R
2 (0x02)	1	Firmware Version	2	-65535~65535 (float)	R
4 (0x04)	1	Alive Counter	1	0~65535	R
5 (0x05)	1	Cycle Time	1	0~65535	R

6 (0x06)	6	MAC Address	1	0~255	R
12 (0x0C)	1	Web Server Port	1	0~65535	R
13 (0x0D)	1	Modbus TCP NetID	1	0~255	R
14 (0x0E)	1	CJC Value	1	-32768~32767	R
20 (0x14)	0~20	AI channel value	2	-65535~65535 (float)	R
60 (0x3C)	0~20	DI Counter	1	0~65535	R
80 (0x50)	0~20	DO Counter	1	0~65535	R

◆ 4xxxx

Begin address	Points/Channels	Description	Registers per Point/Channel	Range	Access type
0 (0x00)	4	IP	1	0~255	R/W
4 (0x04)	4	Mask	1	0~255	R/W
8 (0x08)	4	Gateway	1	0~255	R/W
12 (0x0C)	1	CJC Update Setting	1	0=CJC Stop 1=CJC Start 2=Read Once	R/W
13 (0x0D)	1	CJC Total Offset	1	-4096~4095	R/W
20 (0x14)	0~10	AO channel value	2	-65535~65535 (float)	R/W
		CJC channel offset for WISE-7118/7119	1	-4096~4095 (int)	
40 (0x28)	48	Internal Register	2	-65535~65535 (float)	R/W

Appendix II : Quick Start of CJC Settings for WISE-7118/ WISE-7119

The screenshot displays the ICP DAS WISE web interface. At the top, there are navigation tabs: '1. Basic Setting', '2. Advanced Setting', and '3. Rules Setting'. Below these are buttons for 'Channel Status', 'Upload from Module', and 'Download to Module'. The left sidebar contains '1. Basic Setting' with sub-options: 'Name Setting', 'Ethernet Setting', 'Module Setting' (highlighted), and 'Password Setting'. The main area is titled 'Module Setting Page' and shows a table for 'Module' (WISE-7119), 'CJC' (checked), 'CJC Total Offset' (0), and 'CJC Update Settings' (CJC Start). Below this is the 'AI Voltage & Current Input' section with a 'Convert °C to °F' checkbox and a table of settings for channels AI0 through AI7. A 'Save' button is at the bottom. Numbered callouts (1-7) indicate key steps: 1. Module Setting page, 2. CJC Enable checkbox, 3. CJC Total Offset field, 4. CJC Update Settings dropdown, 5. Individual channel CJC Offset fields, 6. Save button, 7. Download to Module button.

1. Enter the Module Setting page of Basic Setting.
2. Check the CJC Enable checkbox.
3. You can set the total offset value of CJC in the “CJC Total Offset” field. Please notice that the offset unit is 0.01 °C or 0.018 °F.
4. Select the CJC Update setting to “CJC Start”.
5. Also, you can set the CJC offset for each channel if the channel type was thermocouple.
6. Press the Save button to save the settings.
7. Download the rules and the channel settings to the WISE module.
8. You can check the CJC value on the Channel Status page.



Web Inside, Smart Engine
Web Anywhere, Automation Anywhere!

1.Basic Setting

2.Advanced Setting

3.Rules Setting

Channel Status

Upload from Module

Download to Module

Channel Status Page

DO Channel						
Channel	Channel0	Channel1	Channel2	Channel3	Channel4	Channel5
Value	<input type="button" value="OFF"/>					
Counter	0	0	0	0	0	0

AI Channel										
CJC	27.11									
Channel	Channel0	Channel1	Channel2	Channel3	Channel4	Channel5	Channel6	Channel7	Channel8	Channel9
Value	3276.7	3276.7	3276.7	15	15	15	15	15	15	3276.7

Internal Register											
No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09	No.10	No.11	No.12
0	0	0	0	0	0	0	0	0	0	0	0
No.13	No.14	No.15	No.16	No.17	No.18	No.19	No.20	No.21	No.22	No.23	No.24
0	0	0	0	0	0	0	0	0	0	0	0
No.25	No.26	No.27	No.28	No.29	No.30	No.31	No.32	No.33	No.34	No.35	No.36
0	0	0	0	0	0	0	0	0	0	0	0
No.37	No.38	No.39	No.40	No.41	No.42	No.43	No.44	No.45	No.46	No.47	No.48
0	0	0	0	0	0	0	0	0	0	0	0

8