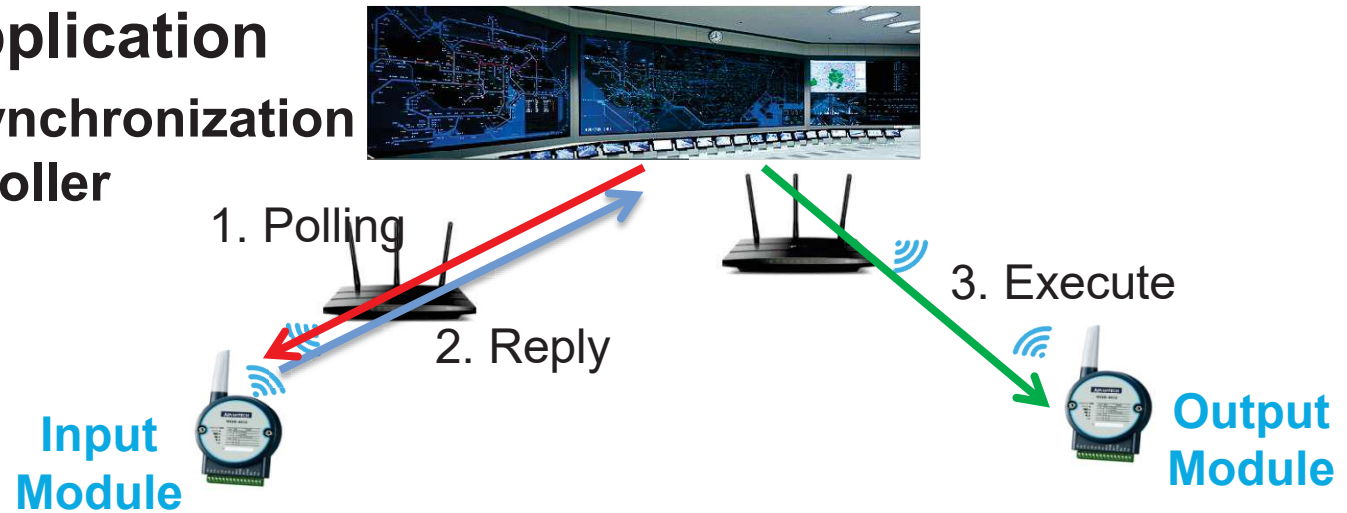


# What is P2P?

- **Typical Application**

- **Signal Synchronization via Controller**



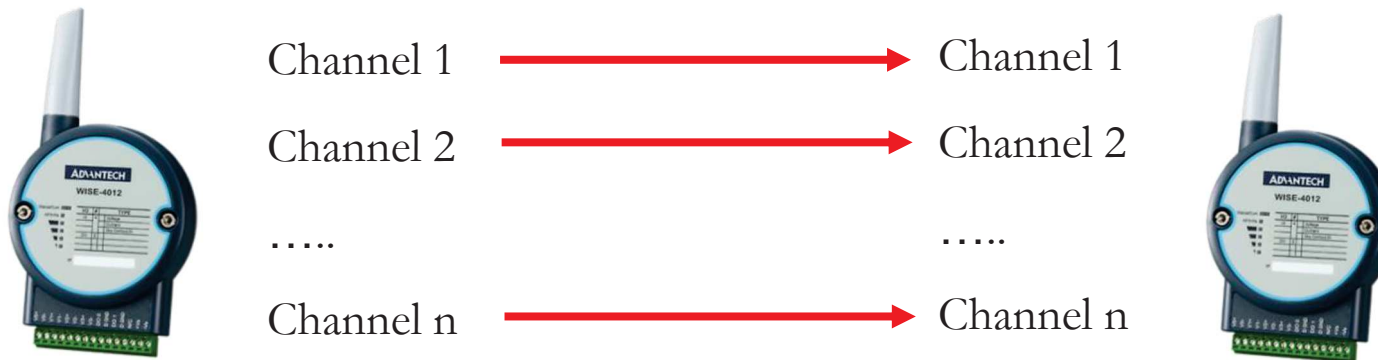
- **Peer-to-peer (P2P)**, is a computing or networking distributed application architecture that partitions tasks or workloads among peers

- Define a mapping between input module and output module
- DI channels to DO channels(i.e. Logic Status)

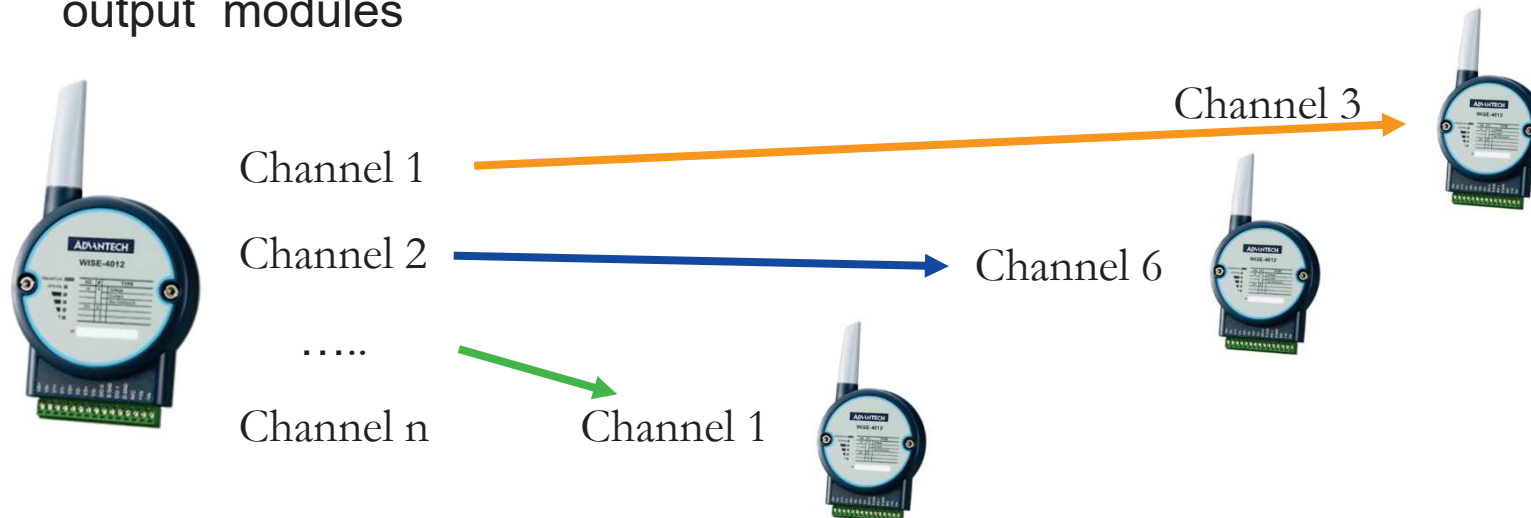


# Modes of P2P Function

- **Basic Mode:** One to one module & Identical Channel # mapping

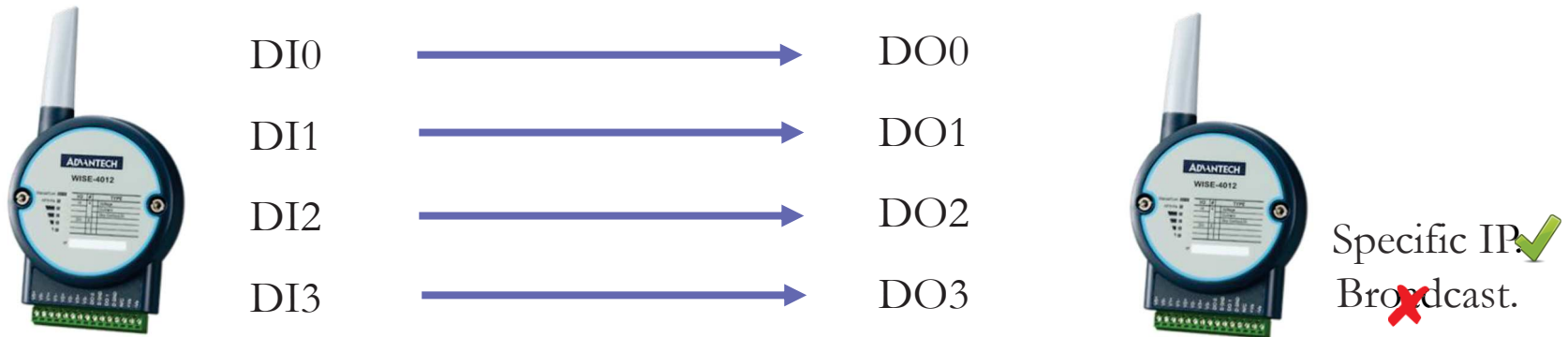


- **Advanced Mode:** Different channel # mapping between different input and output modules

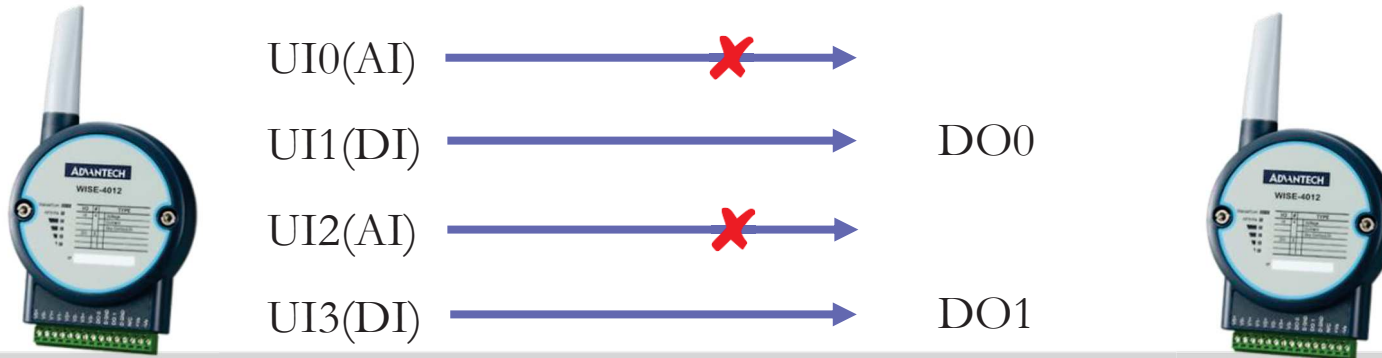


# Basic mode

- **DI can only control DO; AI can not control DO.**
  - Channel # need to be matching, too.
- **Digital input module map to remote module**

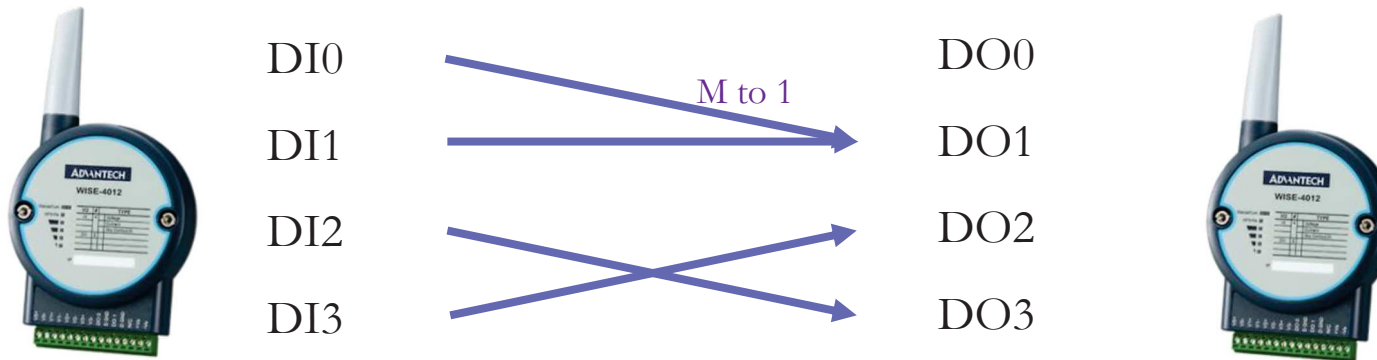


- **Universal input module map to remote module**

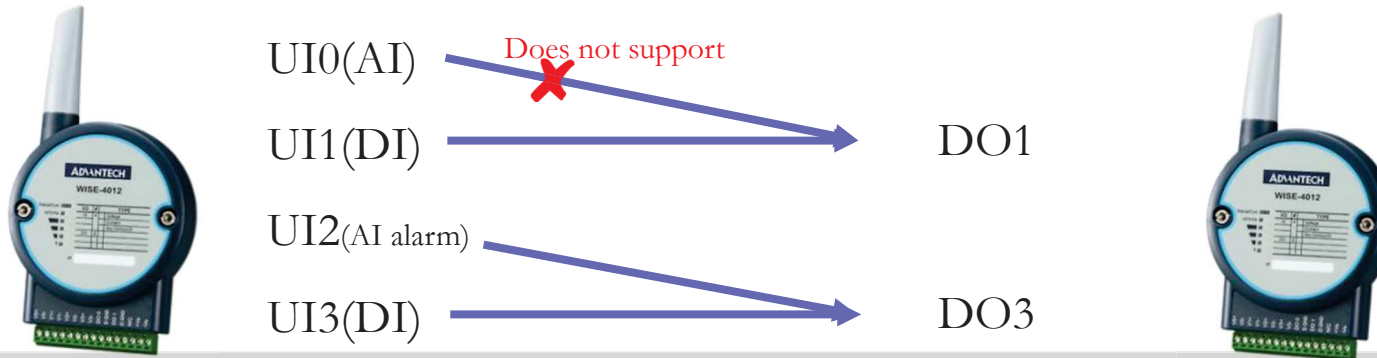


# Advanced mode

- **DI can control DO; AI can also control DO.**
  - No need to match the Channel #.
- **Digital input module map to DO module**



- **Universal input module map to remote module**



# P2P Configuration in Web Utility

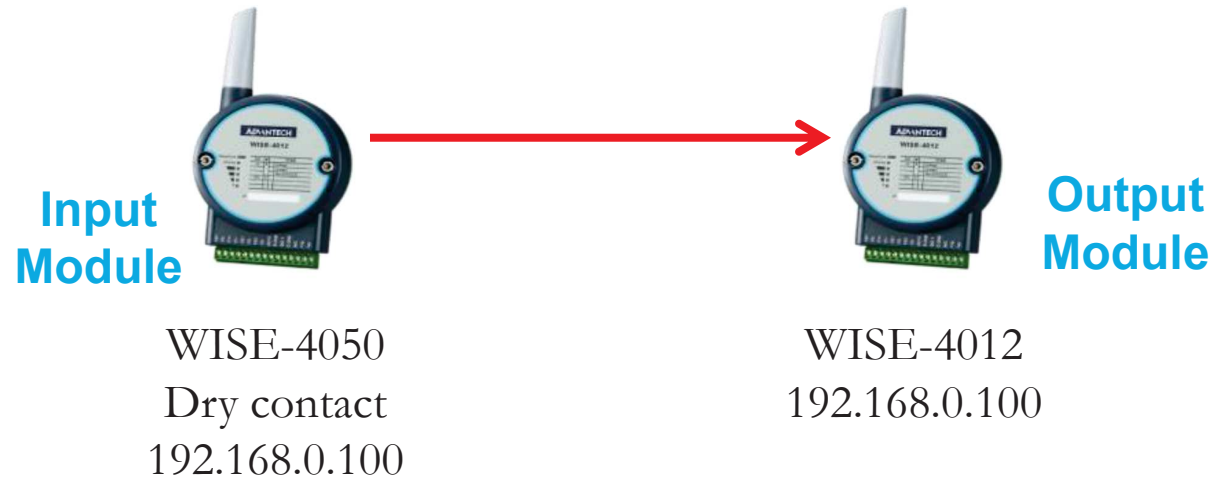
- P2P command send in every 1 second(i.e. by default)
- Instead of sending data periodically, you can also send based on the following:
  - **Change of State(COS):** Digital Input Module, send P2P command when DI logic status changed
  - **Deviation Value:** Analog Input Module, send P2P command when change over deviation value

- Setting steps:
  - Choose mode
  - Setting period
  - Setting event
  - Assign IP
  - Setting individual Channel
  - Apply list

The screenshot shows the 'Peer to Peer' configuration page in the WISE-4050 Web Utility. The page is titled 'WISE-4050\_00D0C9FCB033 Web Utility' and includes navigation links for 'Login Info', 'Device Info', 'QR', and 'Site Survey'. The main content area is divided into 'Mode' and 'Destination' sections. The 'Mode' section has three radio buttons: 'Disable', 'Basic' (selected), and 'Advanced'. A 'Submit Mode' button is located to the right. The 'Destination' section includes a 'Periodically Transmission' toggle switch set to 'ON', a 'QoS Level for Response' dropdown menu set to 'no response', and an 'Encryption Type' dropdown menu set to 'AES-128'. Below this, there is a 'Destination Port' input field with the value '5048'. The 'Basic Mode' section features a 'Destination IP' field with a 'Select IP' button and a 'Period Time' input field set to '5'. At the bottom, there is a checkbox for 'DI change of state or AI deviation' which is checked, with a 'C.O.S.' label next to it, and a 'Deviation Value (AI Only)' input field set to '5'.

# Peer to peer hands-on demo (Basic mode)

Topology:



Result:

The screenshot shows the web interfaces for the WISE-4050 and WISE-4012 modules. The WISE-4050 interface shows the IO Status page with a table of channels. The WISE-4012 interface shows the IO Status page with a table of channels and a red arrow pointing from the WISE-4050 interface to the WISE-4012 interface, labeled "Peer to Peer communication".

**WISE-4050 IO Status Table:**

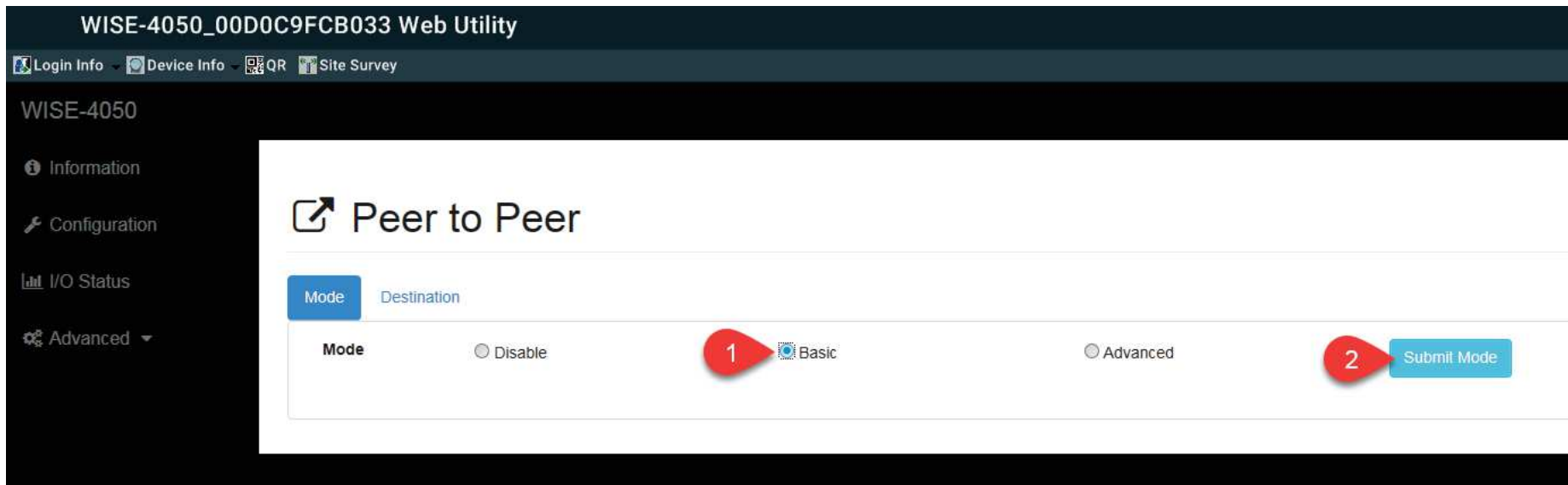
Channel	Mode	Status
0	DI	<input checked="" type="checkbox"/>
1	DI	<input type="checkbox"/>
2	DI	<input type="checkbox"/>
3	DI	<input type="checkbox"/>

**WISE-4012 IO Status Table:**

Channel	Mode	Status
0	DO	<input checked="" type="checkbox"/>
1	DO	<input type="checkbox"/>

# Peer to peer hands-on steps (Basic mode)

1. Set P2P in Basic mode on input module.
  - (WISE-4050, 192.168.0.100)
2. Click “Submit Mode” to choose basic operating mode.





# Peer to peer hands-on steps (Basic mode)

3. Change to “Destination” tab and type-in the destination module IP and password. (WISE-4012, 192.168.0.102)

Peer to Peer

3 Destination

Index	IP address	Model Name	Password
0	192.168.0.102	WISE-4012	00000000

4. Select output module IP address

Peer to Peer

Mode Destination

Mode  Disable

Periodically Transmission  ON

QoS Level for Response no response

Destination Port 5048

Basic Mode

Destination   Select IP

DI change of state or AI deviation  C.O.S.

Configuration

IP Selection

Enable/Disable	Index	IP	Module
<input checked="" type="checkbox"/>	0	192.168.0.102	WISE-4012
<input type="checkbox"/>	1	255.255.255.255	WISE-4012
<input type="checkbox"/>	2	255.255.255.255	WISE-4012
<input type="checkbox"/>	3	255.255.255.255	WISE-4012
<input type="checkbox"/>	4	255.255.255.255	WISE-4012
<input type="checkbox"/>	5	255.255.255.255	WISE-4012
<input type="checkbox"/>	6	255.255.255.255	WISE-4012
<input type="checkbox"/>	7	255.255.255.255	WISE-4012
<input type="checkbox"/>	8	255.255.255.255	WISE-4012
<input type="checkbox"/>	9	255.255.255.255	WISE-4012
<input type="checkbox"/>	10	255.255.255.255	WISE-4012
<input type="checkbox"/>	11	255.255.255.255	WISE-4012
<input type="checkbox"/>	12	255.255.255.255	WISE-4012



# Peer to peer hands-on steps (Basic mode)

5. Set period time or C.O.S.
  - If a user is using AI module, “Deviation Value” should not be 0%.

Basic Mode

Destination IP  5

DI change of state or AI deviation  C.O.S. 5  %

6. Select the channel to use P2P function
7. Click “Apply” to finish P2P setting

5 Configuration

Channel	Enable	Invert Signal
DI_0	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DI_1	<input type="checkbox"/>	<input type="checkbox"/>
DI_2	<input type="checkbox"/>	<input type="checkbox"/>
DI_3	<input type="checkbox"/>	<input type="checkbox"/>
All	<input type="checkbox"/>	<input type="checkbox"/>

6

# Peer to peer hands-on steps (Advanced mode)

Topology:



WISE-4012  
AI high alarm  
192.168.0.107

WISE-4050  
DO  
192.168.0.100

Result:

WISE-4012

IO Status

AI

Channel: 0

Range: +/- 10 V

Value: 10 V

High Alarm Status:

WISE-4050

IO Status

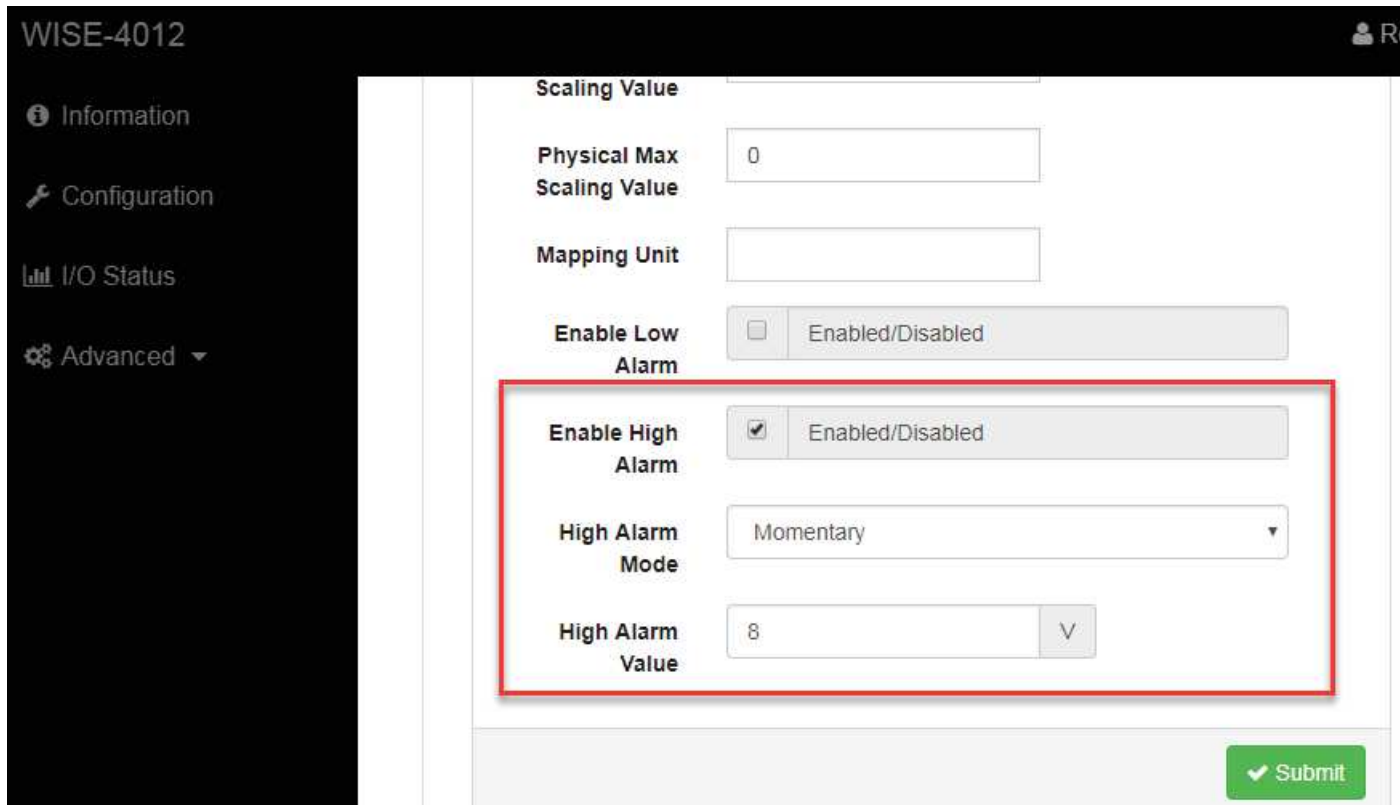
DO

Channel	Mode	Status
0	DO	<input checked="" type="checkbox"/>
1	DO	<input type="checkbox"/>
2	DO	<input type="checkbox"/>
	DO	<input type="checkbox"/>

P2P AI alarm trigger

# Peer to peer hands-on steps (Advanced mode)

1. Set AI high alarm threshold.
  - High alarm: 8V



The screenshot displays the configuration interface for the WISE-4012 device. The left sidebar contains navigation options: Information, Configuration, I/O Status, and Advanced (selected). The main content area shows the 'Advanced' settings for a high alarm threshold. A red box highlights the 'Enable High Alarm', 'High Alarm Mode', and 'High Alarm Value' fields. The 'Enable High Alarm' field is checked, the 'High Alarm Mode' is set to 'Momentary', and the 'High Alarm Value' is set to 8V. A 'Submit' button is visible at the bottom right.

Field	Value
Scaling Value	
Physical Max Scaling Value	0
Mapping Unit	
Enable Low Alarm	<input type="checkbox"/> Enabled/Disabled
Enable High Alarm	<input checked="" type="checkbox"/> Enabled/Disabled
High Alarm Mode	Momentary
High Alarm Value	8 V

# Peer to peer hands-on steps (Advanced mode)

2. Set P2P in Basic mode on input module.
  - (WISE-4012, 192.168.0.107)
3. Click “Submit Mode” to choose advanced operating mode.

The screenshot shows the configuration page for WISE-4012. On the left is a dark sidebar with navigation options: Information, Configuration, I/O Status, Advanced (expanded), Access Control, Data Logger, Diagnostician, and Peer to Peer. The main content area is titled 'Peer to Peer' and has two tabs: 'Mode' (selected) and 'Destination'. Under the 'Mode' tab, there are three radio buttons: 'Disable', 'Basic', and 'Advanced'. The 'Advanced' radio button is selected and highlighted with a red callout '3'. To the right of these radio buttons is a blue 'Submit Mode' button, highlighted with a red callout '4'. Below the radio buttons, there is a 'Periodically Transmission' toggle switch set to 'ON'. At the bottom, there is a 'QoS Level for Response' dropdown menu set to 'no response' and an 'Encryption Type' dropdown menu set to 'AES-128'. A red callout '1' points to the 'Peer to Peer' option in the sidebar.

# Peer to peer hands-on steps (Advanced mode)

4. Change to “Destination” tab and type-in the destination module IP and password. Then click on “Apply”.
  - (WISE-4050, 192.168.0.100)

Mode **Destination**

Index	IP address	Model Name	Password
0	<input type="text" value="192.168.0.100"/>	<input type="text" value="WISE-4050"/>	<input type="password" value="....."/>

# Peer to peer hands-on steps (Advanced mode)

5. Set up the source and the destination, then click on “apply”.
  - In this example, AI “high alarm” is used.
  - Will trigger DO of WISE-4050 (according to the destination IP).
6. Click “Apply” to finish P2P setting

Advanced Mode Configuration

2 Source

Channel: AI\_0

Channel Input Mode: High or Low alarm

Period Time: 5 sec

Deviation Value(AI only): 5 %

Enable Peer to Peer:  Enable

Channel Output Mode: DO mode

DI change of state or AI deviation:  C.O.S.

Invert Signal:  Invert Signal

Enable AI Bi-polar to Uni-polar conversion

Only Positive Value Valid

AO output value for DI high or AI Alarm: 65535

AO output value for DI low or no AI Alarm: 0

3 Destination

IP:

Channel: 0

4 Apply Close

1

5 Apply

Channel	Enable	Input	Deviation Value	Config
DI_1	false	***	****	<input type="button" value="Config"/>
DI_3	false	***	****	<input type="button" value="Config"/>
AI_0	true	High	5	<input type="button" value="Config"/>
AI_2	true	Low	5	<input type="button" value="Config"/>

# Port #

- The port #of WISE and the destination port # is 5048.
  - Range: 1~65534
- This port # is not configurable.

Protocol	Protocol	WISE Port #	Destination Port #
P2P	UDP	5048 (configurable)	5048 (configurable)

## Peer to Peer

Mode Destination

Mode  Disable  Basic  Advanced

Periodically Transmission  ON

QoS Level for Response

Destination Port

- FAQ: What are the protocols and corresponded port number of WISE-4000 series?

– <http://forum.adamcommunity.com/viewthread.php?tid=96468>



# Packet format

- Protocol: UDP
- Port: 5048 (configurable)
- P2P packet to remote module
  - Header

bit	7	6	5	4	3	2	1	0
Byte 1	Packet flag	Version		QoS level		0	Encryption type	
Byte 2	ACK flag	Compact	0	0	0	0	Message info	

- P2P message Payload

Length	Description
1 Byte	Payload length (no include of header and payload length)
1 Byte	Checksum (Sequence number + PW + message)
2 Byte	Sequence number
8 Byte	Root password for target module
n Byte	P2P message

# Troubleshooting

- P2P configuration

The screenshot shows the 'Configuration' page with the 'Firmware' tab selected. The 'Files' section contains several upload and export options. The 'P2P Configuration File Upload' and 'P2P Configuration File Export' options are highlighted with a red box.

Option	Action
Firmware Upload	<input type="text"/>
Configuration File Upload	With IP Settings(Default) ▾ <input type="text"/>
Configuration File Export	<input type="button" value="Export Configuration File"/>
<b>P2P Configuration File Upload</b>	<input type="text"/>
<b>P2P Configuration File Export</b>	<input type="button" value="Export Configuration File"/>