REDBAN IO111 Input/Output Module
REDBAN IO111-IS Input/Output Module with Built-in Isolator
REDBAN IO111-I Supervised Input Module
REDBAN IO111-I-IS Supervised Input Module with Built-in Isolator
REDBAN IO111-O Relay Output Module
REDBAN IO111-O-IS Relay Output Module with Built-in Isolator

Doc No: UM-IO111-IS-1022-R4-EN

SPECIFICATIONS

Operating Voltage Range:	16 to 30 VDC
Standby Current:	<150µA @ 24 VDC (average with LED blink)
Maximum Alarm Current :	<4 mA @ 24 VDC (Led on)
Operating Humidity Range:	10% to 93% Relative Humidity, Non-condensing
Relay Contact Ratings:	24vdc 300mA (IO111 and IO111O)
Operating Temperature Range:	-10°C to50°C
Built-in Isolator Type:	Simple Self Current Sensing (Annex A.3)
Built-in Isolator Switch Current:	230-400mA ($Iso_{min} - Iso_{max}$)
Built-in Isolator Reconnect C.:	3 – 13 mA ($Isc_{min} - Isc_{max}$)
Built-in Isolator Leakage C.:	<18mA
Serial resistance:	1 Ohm max
Dimensions:	90x35x40mm
Weight:	70 grams

GENERAL DESCRIPTION

IO111/IO111-X-X Module is designed for the gather inputs from outside of the fire alarm system or give output to control the devices that will indicate any alarms or trigger any device connected to the system. The module is plug-in type input or output with addressable analog communications. When working as input module, it transmits an analog representation of inputs over a communication line to the control panel. When working as output it receives data from the control panel and triggers the relay. Inside MCU's EEPROM keep the sensor's address that can be set by a portable Address setting device PP1201 Device Programmer.

The operation mode of the module can be programmed by the PP1201 device programmer. The module can work in three different operation modes;

1. Supervised Input Module
2. Relay Output Module
3. Input Module and Output Module (takes two consecutive addresses).

On IO111/IO111-X-X modules there are necessary connection terminals. After selecting the operation mode the related connections must be used. Useless terminals will not be enabled so wiring to these terminals will not work accept needed terminals.

IO111-I is factory default fixed only supervised input module. Address Bus terminals and Input terminals implemented. By programmer only address can be programmed. IO111-I-IS is supervised input module with built-in isolator model.

IO111-O is factory default fixed only relay output module. Address Bus terminals and Relay Output terminals implemented. By programmer only address can be programmed. IO111-O-IS is control module with built-in isolator model.

IO111-IS is 1 input 1 relay output module with built-in Isolator.
When any shortcircuit occurs on the transmission path, the built in isolator will cut the line. The device will continue on working and it cut the shorted side of the connection. The built-in isolator has no input or output side, both positive sides are similar.
In order to cancel the built-in isolator, R37 and R38 resistors must be shorted by a solder machine by a technician. IO111, IO111-I and IO111-O models are built-in isolator bypassed (shorted) factory default models.

INSTALLATION

The IO Module consists of two main parts: a base and the cover. The base consists of a circuit board, connection terminals, indicator leds and enable/disable of EndofLine resistors.

Under the base there are two different connection types; Hidden brackets for directly mounting on the wall, and DIN tray mounting when mounting in a closed DIN tray box. When mounting, leave at least 10cm around the device to permit adequate ventilation and heat dissipation.

Before wiring the installer must select the device operation mode, enable/disable the related jumpers and give the modules address by the PP1201 Device Programmer.

Operation Mode

For factory fixed devices
IO111-I or IO111-I-IS Supervised Input Device
and
IO111-O or IO111-O-IS Relay Output Module
no need to select operation mode. Simply installation can be done after address programming.

For IO111 and IO111-IS; 1 input 1 output device, it is possible to program the operation mode by the PP1201 device programmer. In order to set the Operation Mode by the PP1201 Programmer;

Setting the Working Mode of IO111/-IS Module will select the operation mode as follows:

1 : Supervised Input Module   >>Operation Mode 01
2 : Relay Output Module   >>Operation Mode 02
3 : Supervised Input and Relay Output >>Operation Mode 03

In order to program IO111/IO111-IS Operation Mode by PP1201 Programmer, simply press SET for two seconds to enter SET Mode, by pressing SET consecutively select WM. WM indicates WorkMode. Enter 1,2 or 3 and press Write Button. When the module read address, it will indicate input/output or IO module.
When IO111 used in both input and output the device will get two addresses. The input address and address+1.
For further information please refer to PP1201 Programmer Users Manual.

IO111 / IO111-X-X (Mode 1 or 3 Selected) Supervised Input Module

The module will operate as supervised input module. Only the Digital Input connection terminals are active. The input will supervise by connecting resistors. In order to supervise the wiring connection to the supervised device, an EOL(EndofLine) resistor 2K2 must be supervised. If the module can not see the 2K2 resistor it will transmit Open Error to the FACP. If there is a short circuit on Input terminals IO111 wil transmit Short Error to the FACP. The EOL resistor must be connected closer to the device that will be input supervised. So the module can supervise the wire connection between module and the device that will supervised. If the distance between the IO111 module and the device that will supervised not so long, or there are no 2K2 resistor to connect, there is an onboard cancelation of open-short recognition. By connecting the jumper EOL-IN, the open-short recognition can be cancelled. If the installer connects the 2K2 EOL resistor, he should not forget to remove the EOL-IN jumper.

The input is triggered when R_{alarm} (270R-680R) resistance captured from the supervised input. It transmits an alarm signal to the FACP within 10 seconds. Alarm capture resistor value should be between 270R-680R.

The wiring schematic is given in Figure 1.

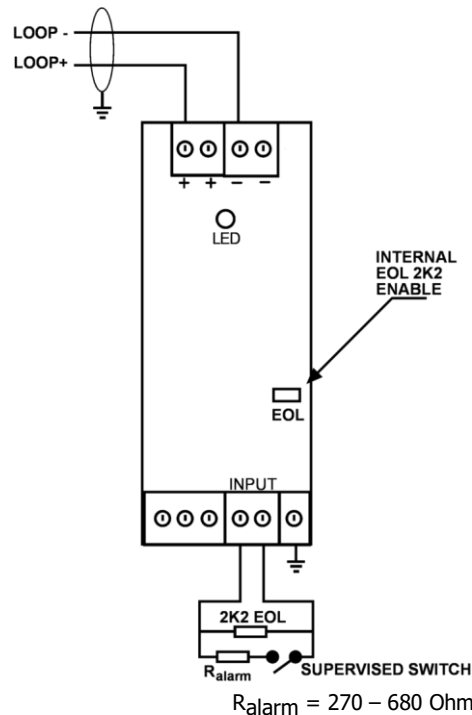$$R_{alarm} = 270 - 680 \text{ Ohm}$$

Figure 1- IO111-I or IO111-X-X Operation Mode:1/3 Supervised
Input Module Connection Diagram

In some cases, for example when monitoring water existence in the pipes, installation can be done not to give alarm. In this condition the installer can short the 470R resistor in order to give fault. The Input module will transmit a short fault to the FACP when switch closed.

IO111 / IO111-X-X (Mode 2 or 3 selected) Relay Output Module

The module will operate as Relay Output Module. When FACP sends a command to activate the relay, module triggers the relay. When IO111 is in Output Relay Mode there is no need for external power. Output Module can work from the loop power.
There are three terminals of relay out; NO (Normally Open), C (Common) and NC (Normally Closed). The installer can use these output terminals according to system needs.
There is an indicator led in order to indicate the relay position. When the relay activated it will be illuminated.
In Figure 2 the connection diagram is shown.
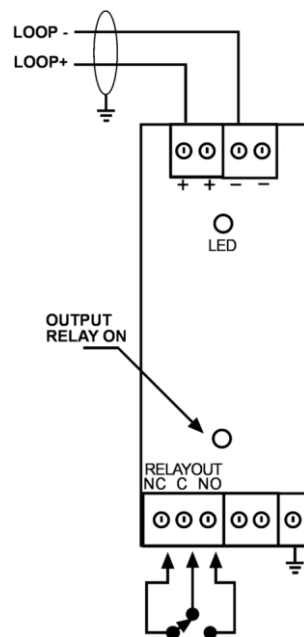
Figure 2- IO111-O or IO111-X-X Operation Mode:2/3 Relay
Output Module Connection Diagram

WIRING

The wiring should be done as shown in figures. Proper wire gauges should be used. The installation wires should be color-coded to limit wiring mistakes and ease system troubleshooting. Improper connections will prevent a system from responding properly in the event of a fire.
Earth Connection of the device must be done to the earth connection of FACP and cable screens.
While using Digital input mode, the input connection cable screens must be connected to the earth of the device and FACP.
Remove power from the communication line before installing module.

1. Wire the modules and controlled devices as shown in wiring diagrams.
2. Set the desired address by PP1201 Device Programmer portable address setting device.
3. After all devices have been installed, apply power to the control unit and activate the communication line.
4. Test the modules as connected devices as described in this manual.

When using IO111-IS built in isolator, two plus terminals must be connected Loop+ Vin and Loop+ Vout separately. If not the built-in isolator will not work.