



Installation, Operation and Maintenance Manual (v2)



Installation, Operation and Maintenance Manual

Page Index

1.	General Information	
	- Contents	Pg 3
	- Inputs/ Outputs	Pg 4
	- Offline/ Online remote service	Pg 5
	- Circuit Operation	Pg 5
	- System Faults/ Alarm	Pg 5
2.	Installation	
	- Sequence of installation	Pg 6
	- Panel Mounting	Pg 7
	- Knock Out Details	Pg 7
	- Electrical Details	Pg 8
	- Master Panel Wiring Diagram	Pg 9
	- Expansion Module Wiring Diagram	Pg 10
	- Resistor Installation	Pg 11
	- Connecting Expansion Modules	Pg 12-13
	- Addressing Expansion Modules	Pg 13
3.	FloWatch Programming	
	- Programming Software User guide	Pg 14-21
4.	Operation	
	Master Panel Button Functions	Pg 22
	LCD Display	Pg 22, 23
	LED Status - Master Panel	Pg 24
	LED Status - Expansion Module	Pg 25
	Alarm Sounder	Pg 25
	Understanding System States	Pg 26
	Online Remote Service Overview	Pg 27
	Outputs	Pg 28
	Fuses	Pg 28
	Cause & Effect	Pg 29
	Multi site online	Pg 30
	Sim Card	Pg 30
5.	Commissioning	Pg 31
6.	Troubleshooting guide	Pg 32
7.	Maintenance/ Annual Service	Pg 32
8.	Additional	
	-General queries	Pg 33
	- Programming Template	Pg 34-38
	- Drill Template	Pg 39



Installation, Operation and Maintenance Manual General Information

1. General Information

FloWatch is a sprinkler system fault signal and alarm device monitoring system designed to meet the requirements of BS9251:2021. It is suitable for single or multiple occupancy dwelling to monitor correct signalling of flow switches, pump faults, isolation valves, trace heating, cold water storage tank levels and any other monitoring components installed as part of a fire sprinkler system.

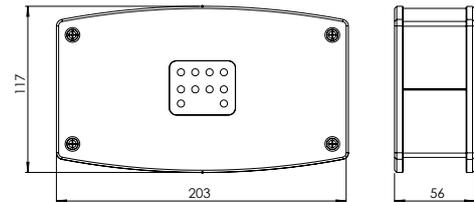
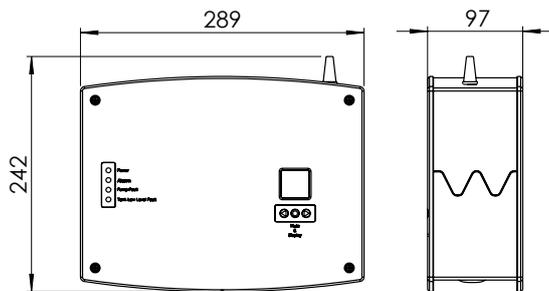
FloWatch must be installed in accordance with the latest edition of BS7671 by a competent person.

Mastel Panel contents:

- 1 x FloWatch Master Panel
- 1 x Installation, Operating and Maintenance Manual
- 1 x USB A to B cable (FloWatch programming cable)
- 16 x 100kΩ (Kilo-Ohm) Resistors
- 1 x Programming port bung

Expansion Unit contents:

- 1 x Expansion unit panel
- 16 x 100kΩ (Kilo-Ohm) Resistors



Inputs

The FloWatch Master Panel consists of 8 Inputs (Any of the following: Pump faults, tank low level fault, flow switch, isolation valve, heating system and/or other input devices)

Additionally up to 16 Expansion Modules (8 Way) can be installed. Each 8 way Expansion Module provides an additional 8 inputs.

In total the FloWatch system can cater for up to 136 inputs. Input devices can be configured between normally open and normally closed. Input devices must be volt free (for connection of resistors), inputs are non-latching.

Outputs

The FloWatch Master Panel provides 2 x Volt free outputs (FIRE AL & BMS)

- The 'FIRE AL' output activates when a 'Flow Switch' input is operated - when in alarm state.
- The 'BMS' output can be configured using the FloWatch programming software. This can be activated by either:
 - 'Tank Low': Tank Low Level Fault input in alarm (typically used in a system utilising a priority demand valve)
 - 'All': All other system Faults' (typically used when connecting to a building management system)

Refer to page 28 for more information



Installation, Operation and Maintenance Manual General Information

System Operation

The FloWatch system operates in two formats:

Offline

The FloWatch System will:

- Display/identify the relevant system faults/alarms and the associated input device name/location on the LCD
- The relevant LED will illuminate in the event of any fault and/or alarm
- Sound in the event of any fault or alarm activation
- Monitor the inputs
- Monitor the circuit to inputs

Online Remote Service

In addition to the Offline operation, The online remote service will enable the user to:

- Remotely view the system status and configuration
- Email alerts of any faults and alarm activations
- Text message alerts of any faults and alarm activations

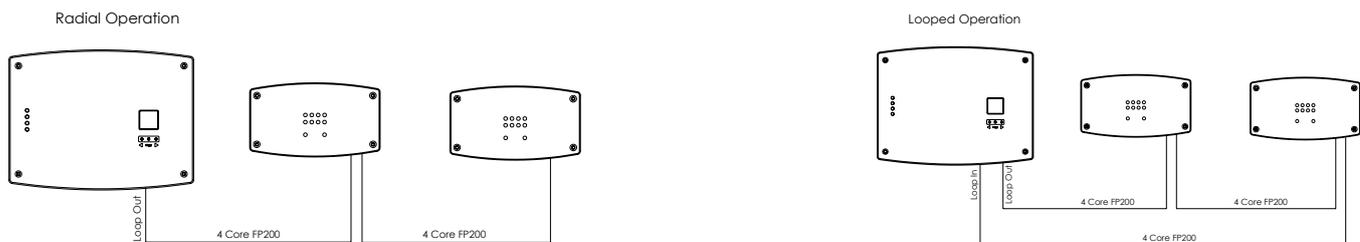
Refer to Page 27 for a list of all email/text alerts.

All Master Panels are supplied with Pre-installed GSM sim cards. This provides the user/installer the ability to view the system remotely via web browser. **Note: Master panel will require good signal strength in order to operate the online remote service.** The Sim card is a roaming type that utilises 4G connectivity.

In online mode the FloWatch server will check the master panels are correctly connected to the server (every 24 hours). An email/text alert will be sent if the master panel fails to connect to the server.

Circuit Operation

The FloWatch system can be wired and operate in a radial or looped system:



Radial system - if the cable leading to the expansion is cut, the master panel will alert that the expansion module has been lost, all connected devices to the associated expansion module will not alert any faults or alarms until the issue has been rectified.

Looped system (Additional return cable) If the cable leading to the expansion is cut, the master panel will alert that the expansion module cable has been broken. All connected devices will still alert of any fault or alarms (signal/ power will be sent via the other cable)

System Fault/Alarms

The FloWatch Master Panel will provide 3 different fault states:

- Alarm (Activation of input device)
- Short Circuit
- Open Circuit

Refer to Page 26 for more information



Installation, Operation and Maintenance Manual Installation

2. Installation

Sequence of Installation

a. Mount the Master Panel and/or Expansion Modules. Refer to Page 7

b. Wire the FloWatch System:

- Connect/Wire additional expansion modules if used. Refer to Page 12
- Wire inputs to Master Panel and/or expansion modules. Refer to Page 9 & Page 10
- Ensure correct installation of resistors. Refer to Page 11

c. Expansion Modules:

- Terminate the last expansion module (For radial system only) Refer to Page 12
- Address the expansion modules. Refer to Page 13

d. Power Supply:

- Wire the power supply to the master panel. Refer to Page 8
- Connect the battery (if installed). Refer to Page 8

Note: Turn on the power supply and connect the battery prior to programming.

e. Programme the Master panel. Refer to Page 14 - 21

f. Commission the FloWatch System. Refer to Page 31

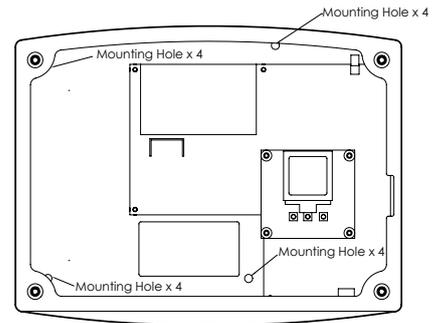


Installation, Operation and Maintenance Manual Installation

Panel Mounting

The FloWatch Master panel and expansion modules should be wall mounted (in the upright position) The units should be installed following the below process:

- a. Remove the front cover by releasing the 4 pan head screws using a handheld screwdriver.
- b. If fixing to brick/concrete construction:
 - Mark the position of the 4 mounting holes onto the wall, use the drill template if required (Page 39)
 - Remove box and drill the appropriate holes (dependant on raw plug size/type)
 - Fix unit to wall (see note below)
- c. If fixing to a wooden structure:
 - Screw the units directly to the structure (see note below)

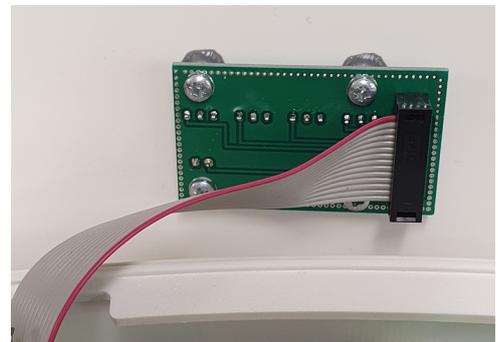


Note: Use suitable fixings dependant on the surface you are mounting to. Consider the weight of the FloWatch unit (1.7kg) when selecting the appropriate size screw/fixing. The mounting hole size of the Master panel is 6mm. The mounting hole size of the expansion modules is 4mm

Typically the master panel should be installed near to the entrance of the building in a clearly visible location and near to the main fire alarm panel if being connected too.

If connecting to the online remote service, the FloWatch master panel must be installed in a location with a good mobile network signal (for connection purposes)

Caution must be taken at all times to prevent damage of the internal PCB. When re-assembling enclosure lids, ensure the ribbon cable is firmly connected to the PCB & LCD/LED boards.



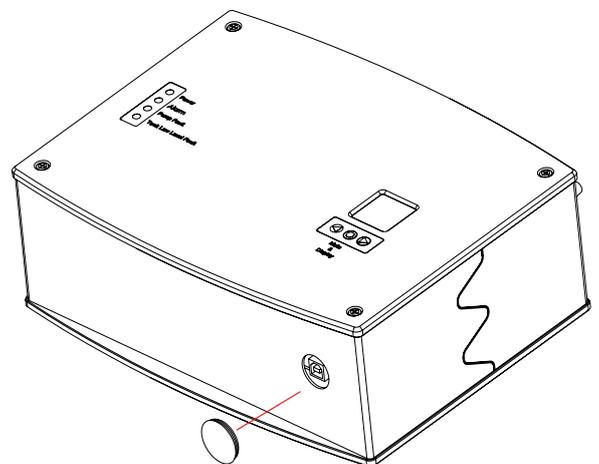
Cable Installation - Knock Outs

Master Panel and Expansion Modules provide 'internal knock out connectors' on the underside of the enclosures for easy installation. Holes are suitable for fitting with M20 Cable glands. To remove the knock outs push inwards.

Caution must be taken to prevent damage of internal PCB.

The master panel also has a rear knock out for cable entry.

Note: Using incorrect tools may cause damage to the internal PCB.



IP54 Bung

To maintain IP54 Rating:

Once the FloWatch system is programmed, install the IP54 bung to blank off the bottom port as shown.



Installation, Operation and Maintenance Manual Installation

Electrical Details

Power Supply

The FloWatch Master Panel requires 230/240V AC power supply. The power supply should be connected via a 5A fused spur. The Expansion modules require no direct power supply. They are wired directly to the master panel via the network connection terminals

Cable type - FP200 fire resistant cable or equivalent

- 1mm/ 1.5mm² 2 core cable for all inputs
- 1mm/ 1.5mm² 4 core cable for connection of expansion units.

Battery Backup

The FloWatch system will operate normally without the use of a battery until mains power is lost.

The FloWatch unit is **not supplied** with a battery.

Refer to Table 1 for recommended battery size (Sealed Lead Acid Battery)

The Master Panel accommodates a 75 (L) x 75 (W) x 175 (H) Battery (As per image) For larger systems connect the battery utilising an external battery enclosure.

Battery Back Up Offline - System functions as per page 5

Battery Back Up Online remote service - FloWatch will only email/text an alert that the FloWatch system has lost mains power to prevent detriment to battery.

The outputs will still function when utilising battery back up.

When connecting the battery

- Position the battery within the enclosure in the vertical position as shown
- Connect the battery to the spade connectors within the Master Panel. Red Connector +, Black Connector -
- Turn on the power supply to the master panel

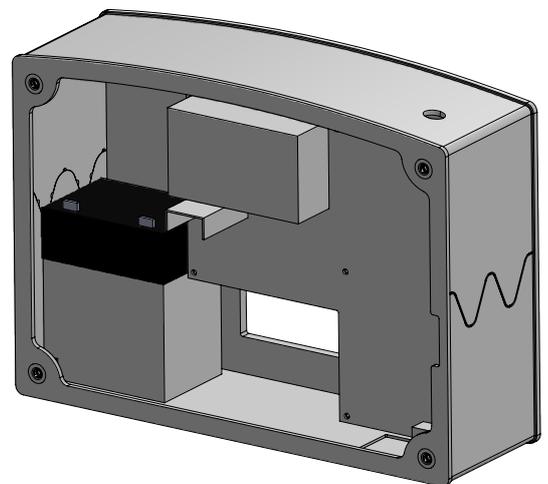


Table 1 : Battery Size for 24 Hour Back Up

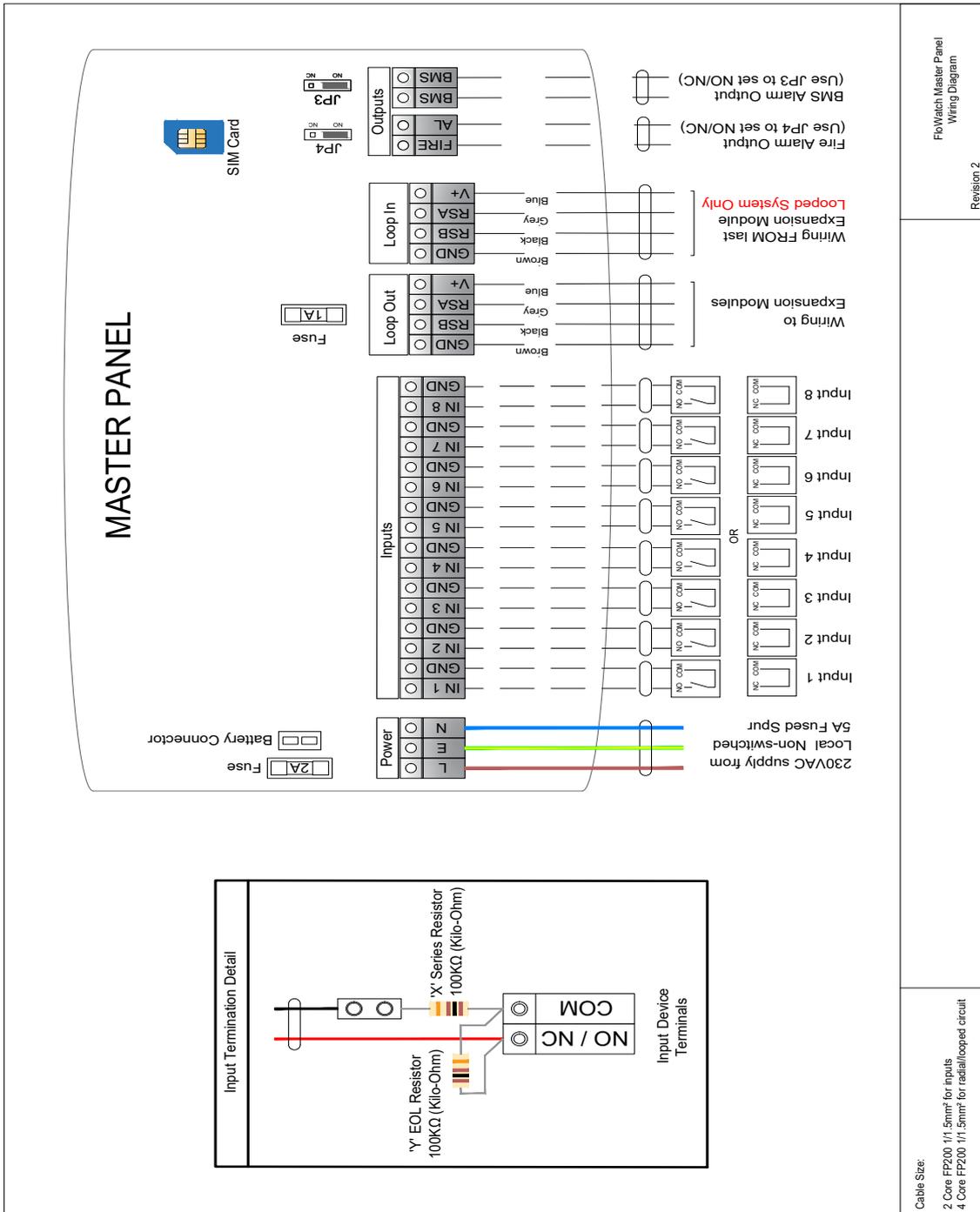
FloWatch System Size	Ah required (12V Battery)
Master Panel	≥ 2.9
Master Panel + Up to 3 Expansion Modules	≥ 3.2
Master Panel + Up to 4 Expansion Modules	≥ 4
Master Panel + Up to 5 Expansion Modules	≥ 4.3
Master Panel + Up to 6 Expansion Modules	≥ 4.8
Master Panel + Up to 7 Expansion Modules	≥ 5.3
Master Panel + Up to 8 Expansion Modules	≥ 5.6
Master Panel + Up to 12 Expansion Modules	≥ 6.6
Master Panel + Up to 13 Expansion Modules	≥ 6.9
Master Panel + Up to 14 Expansion Modules	≥ 7.2
Master Panel + Up to 15 Expansion Modules	≥ 7.7
Master Panel + Up to 16 Expansion Modules	≥ 8.8



Installation, Operation and Maintenance Manual

Installation

Master Panel Wiring Diagram



Cable Size:
2 Core FP200, 1/1.5mm² for inputs
4 Core FP200, 1/1.5mm² for radial/looped circuit



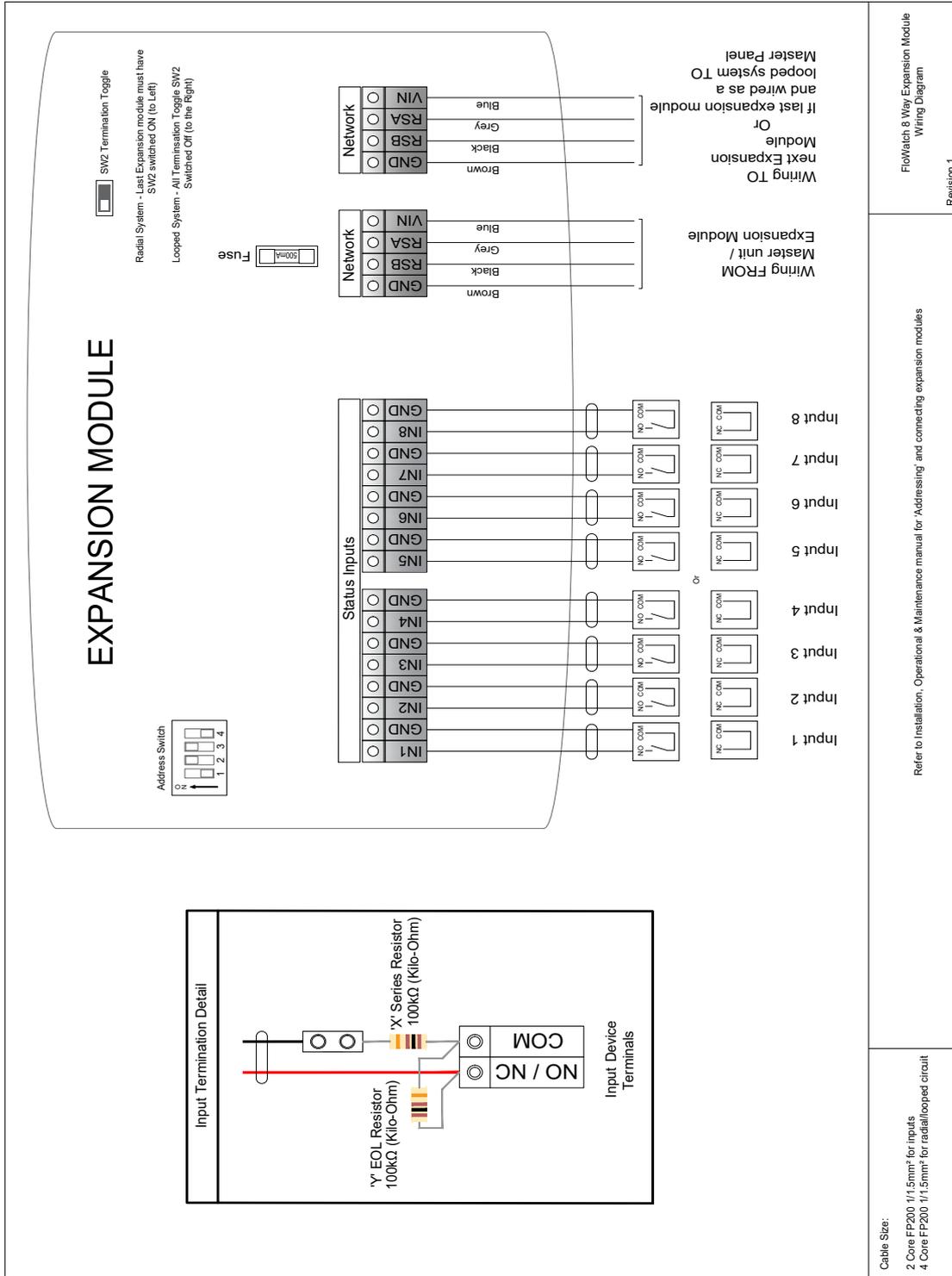
Link to website wiring diagram



Installation, Operation and Maintenance Manual

Installation

Expansion Module Wiring Diagram



Link to website wiring diagram

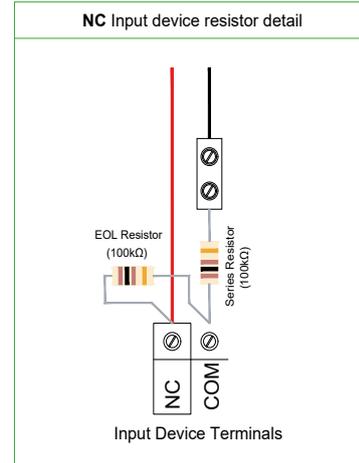
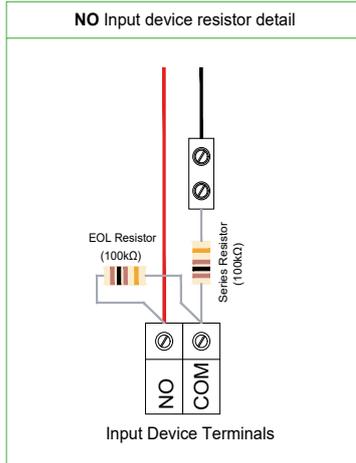
Installation, Operation and Maintenance Manual

Installation

Resistor Installation

The installation of resistors enables the FloWatch system to correctly identify the system state. FloWatch recommend using an input device with direct access to the switch terminals for a failsafe monitored system. For input devices with direct access to input terminals install as below.

Resistor Installation Diagrams



Normally Open Input Device Resistor Detail

Normally Closed Input Device Resistor Detail

For input devices with a sealed switch unit (Such as tank low level switches) install a junction box as close as possible to the switch terminals (examples below).

Note: FloWatch recommends wiring Normally closed if using a sealed device. If the cable between the sealed switch and junction box was cut an alarm would be activated. Using a NO device, there would be no resistance change if the cable was cut.



Installation, Operation and Maintenance Manual Installation

Connecting Expansion Modules

For connection of Expansion Modules follow the wiring diagram as per Page 9/10. Inside of each Expansion Module is a termination toggle switch (SW2 on wiring Diagram)

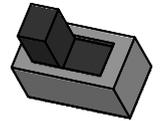
Looped circuit ; The termination toggle must be **toggled right** on all expansion modules.

Radial circuit ; The termination toggle on the last expansion module must be **toggled left**, to identify the last module in the circuit. When toggled left, the Expansion Module will show an orange LED. All other expansion units must be **toggled right**.

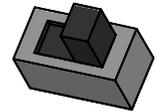
Note: The following cable lengths are an indicative guide to the maximum recommended length between units. These lengths may be exceeded, contact FloWatch for more information.

- 100m length of cable between the master panel and 1st expansion module
- 100m length of cable between expansion modules
- 100m length of cable between expansion modules and input devices
- **Looped:** 100m length of cable between the last expansion module and master panel

Examples of FloWatch systems using expansion modules:

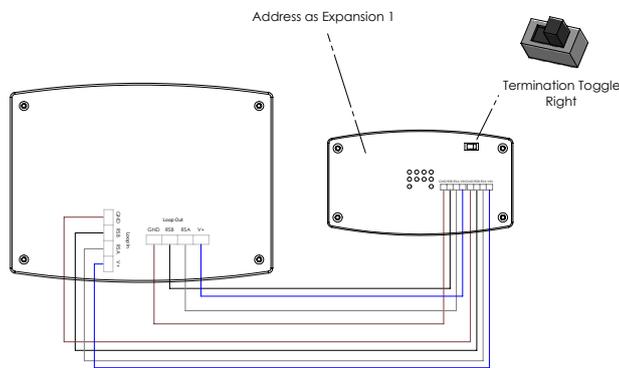


Termination Toggle (Toggled Left)

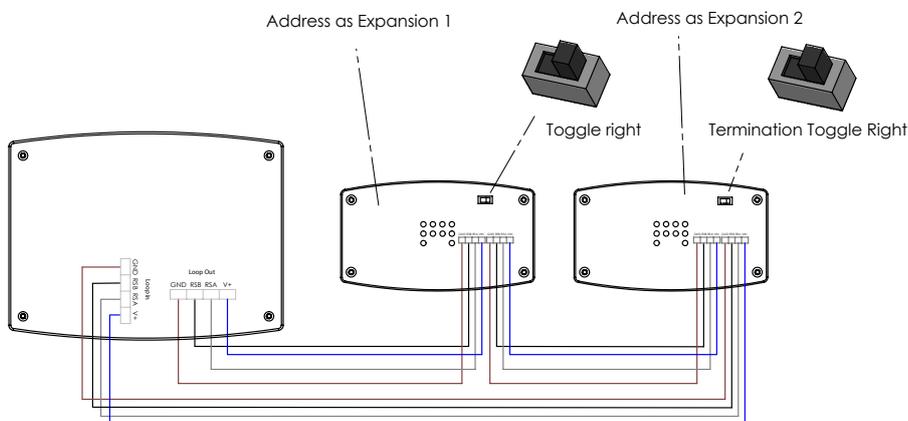


Termination Toggle (Toggled right)

Looped Circuit - Master Panel with 1 x Expansion Module

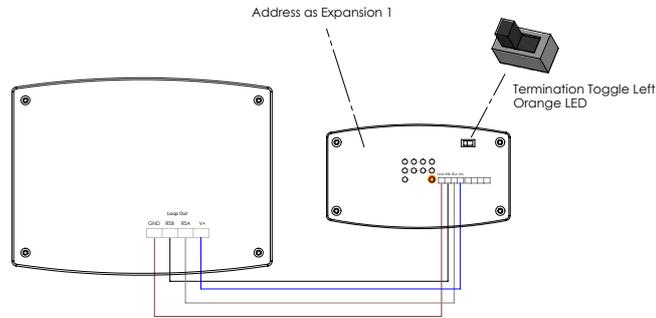


Looped Circuit - Master Panel with 2 x Expansion Modules

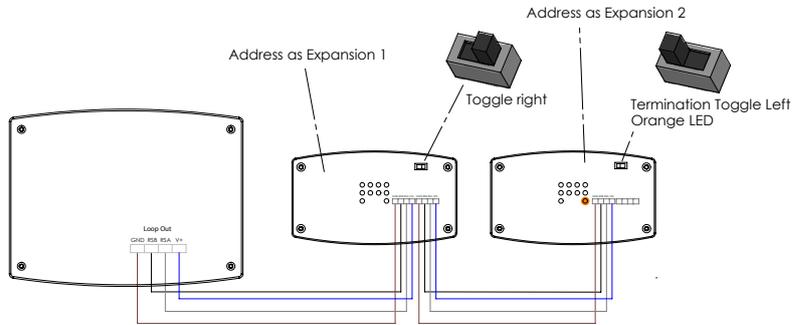




Radial Circuit - Master Panel with 1 x Expansion Module



Radial Circuit- Master Panel with 2 x Expansion Modules

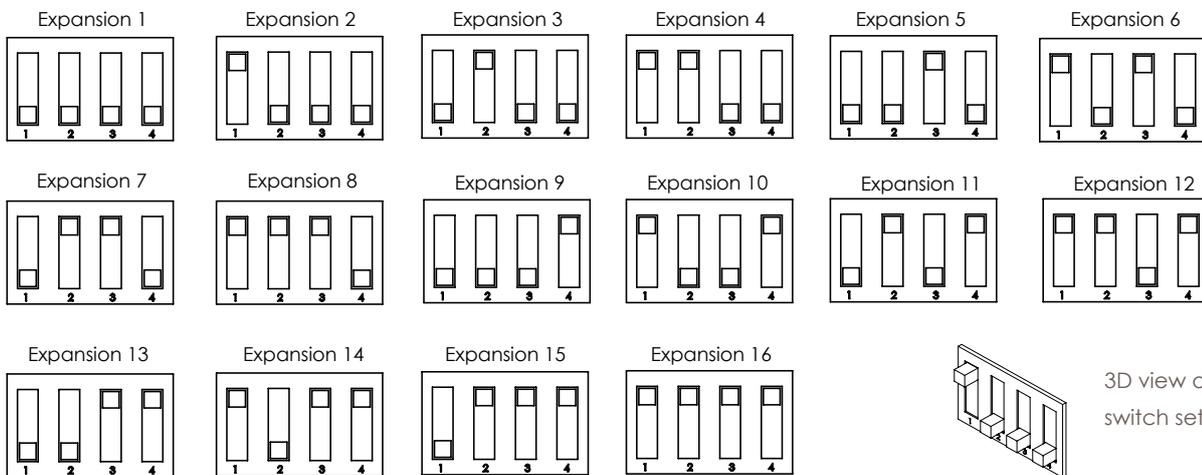


Addressing Expansion Modules

FloWatch uses a binary system to identify the Expansion Modules. Each Expansion Module must be **individually addressed** in **Sequential** order for the Master panel to differentiate each Expansion Module. Up to 16 Expansion Modules can be connected in total.

The addressable switch is located within the expansion unit on the left hand side. Push the white toggle upwards or downwards to set

Note: Sequential order - 1st Expansion Module in line must be addressed as Expansion 1





Installation, Operation and Maintenance Manual FloWatch Programming Software

3. Software programming

In order to program the FloWatch system, download the **latest** free Windows 10 based programming software from the windows app store.

Always use the configurator version as stated on the master panel packaging label

For ease of programming utilise the software programming template (Page 34-38)

In order to program the FloWatch System you will need to:

- Name each input
- Select the input type (Flow Switch, Isolation Valve, Heating Fault, Pump, Tank, Other)
- Select the input default state (NO/NC)

If using expansion modules, in addition to the above, you will need to:

- Name each expansion module
- Address each expansion module

The FloWatch software will provide prompts during the programming setup. Follow the Software programming sequence steps. Refer to page 23 for information with regards to the naming of inputs.

Software programming Sequence

1. **Connect the battery (if being used) and ensure all enclosure lids are closed. Turn on the power supply to the master panel, open the FloWatch Programming software and allow the software to install. Click Get Started when prompted.**

Welcome to the FloWatch System Manager and Installation Wizard.

Get Started

2. **Connect the supplied USB cable to the FloWatch master panel and PC/Laptop**



Please connect your FloWatch Master Panel to your PC using the USB cable supplied.

Use the correct software for the relevant master panel. Refer to:

www.flowatch.co.uk/download





Installation, Operation and Maintenance Manual FloWatch Programming Software

3. Fill in the relevant installation site details

- 1 Site Name, Building/House Number, Street, Postcode - All relevant to the installation
- 2 Phone Number : **If** the FloWatch system is being connected to the online remote service add a phone number
- 3 Email Address : **If** the FloWatch system is being connected to the online remote service add an email address
- 4 Record the number of expansion modules in the system
- 5 Record the number of inputs installed
- 6 Select whether the system has been wired as a Radial (Point to point) or Looped (Loop) circuit.

All settings can be modified after initial setup if any changes are required

Click Next once relevant details have been filled in.

FIRST TIME SETUP

Site Details

Site Name

1

Building/House Number

1

Street

1

PostCode

1

Phone Number (More can be added on the web portal)

Email Address (More can be added on the web portal)

2 Please enter a phone number, will be used for text alerts.

3 Please enter a email address, will be used for email alerts.

Install Details

Number of Expansion Modules Installed

0 4

Number of Inputs Installed

0 5

Modbus Mode

Point to Point



Loop

6

Example above shows Radial circuit.

Next

FloWatch will scan the system to ensure the correct number of expansion modules are connected as shown below (If installed) Click confirm if correct.



ID: 1

Firmware Version: 3.08

Termination Resistor: Disabled

Indicates the expansion module address





Installation, Operation and Maintenance Manual FloWatch Programming Software

4A. System with Master Panel Only

The following screen will be displayed for a system with a Single **Master Panel** (up to 8 inputs)

Utilising the software programming template (Page 34-38) programme the system accordingly.

Note: All settings can be modified once programmed.

Enable the input by clicking the grey toggle **1** - The toggle will turn green indicating the input is enabled.

Name the inputs in use **2** Refer to Page 23 for Naming of Input examples.

Select the input type (device type - flow switch, tank, pump, isolation valve, heating fault or other) **3**

Select the default state of the input to NO or NC, by clicking the grey toggle **4**

Enable the antitamper switch for the master panel (Optional) **5**

Master Module Inputs Enabled: 0



Input 1 Disabled **1** Enabled



Name

Please enter a name **2**

Type

Flow Switch **3**

Default State

NO NC

4

Input 2 Disabled Enabled



Name

Please enter a name

Type

Flow Switch

Default State

NO NC

Input 3 Disabled Enabled

3

- Flow Switch
- Flow Switch
- Tank
- Pump
- Isolation Valve
- Heating Fault
- Other

Input type drop down selection

5

Tamper Switch

Disabled Enabled

Disable/ Enable Tamper Switch



4B. System with Master Panel & Expansions Modules

The following screen will be displayed for systems with a **Master Panel** and additional **Expansion Module**.

Expansion Modules

Serial Number: Firmware Version: Inputs Enabled: 1 

Expansion Module Name:
Expansion 1| 1

Input 1 Disabled Enabled

Type: Flow Switch Default State: NO NC

Input 2 Disabled Enabled

Select to expand expansion modules

Follow the same procedure process as per 4A.

The Expansion Module must also be named 1 - Maximum of 16 Characters

Enable/Disable the tamper switch (Lid enclosure) for each Expansion Module if required. Once complete proceed by clicking 'Next'

Key steps when using the software:

- All Inputs that have been enabled must be named
- All connected expansion modules must be named

For ease of programming the software will provide prompt messages if the above have not been carried out.



Installation, Operation and Maintenance Manual FloWatch Programming Software

5. Alarm delays can be set for each input type. Type the value of the delay. **1**

Note: If setting a 'Flow Switch' It will set a delay for **all** inputs configured as 'Flow Switch'

The time delay function is the time delay for activating and deactivating of the device. The delays can be set to a maximum of 30 seconds

If utilising the BMS output relay select the appropriate activation **2** (Refer to Page 4 & Page 29 for function) Click Next when the relevant settings are filled in.

FIRST TIME SETUP

Alarm Delays (In Seconds)

Flow Switch	Isolation Valve	Heating Fault	Other
0 1	0	0	0
	Pump	Tank	
	0	0	

BMS Relay Mode

 2

Previous

Next

6. The software will display a list of the programmed inputs. If correct click 'Update unit' If incorrect press previous and modify accordingly.

FIRST TIME SETUP

Unit name	Input Name	Input Type	Default State
Master	FLOOR 1 FIRE	Flow Switch	NO

Previous

Update Unit



The Software will display the image below and the Master Panel will be in 'Offline Mode'. If wired correctly - refer to troubleshooting page if required

System Overview



Site Name: RD 1

Battery Status:

On Mains power: Yes

Offline Mode

Site Overview

System Setup

Alarm History

2

3

4

SYSTEM OVERVIEW

Input Type	Input Name	Alarm State	Connected To
Flow Switch	FLOOR 1 FIRE	Ok	Master Unit
Flow Switch	FLOOR 2 FIRE	Ok	Master Unit
Flow Switch	FLOOR 3 FIRE	Ok	Master Unit

- 1 - Modify building information, email address and telephone number(Additional contacts can be added on online. Refer to page 28)
- 2 - Site Overview - As shown above - Displays the overview of inputs and current alarm states.
- 3 - System Setup - See page 20 (Next Page)
- 4 - Alarm History - Displays the relevant events/ alarms.

For simplicity the FloWatch system will:

- Display amber colour coded bar to indicate which input is in short or open circuit. This could indicate a wiring fault or incorrect connection of resistors.
- Display red colour coded bar to indicate which input is in alarm. This could indicate the input device is not in its intended position e.g. an isolation valve closed. Alternatively it could indicate that the default state has been programmed incorrectly e.g. NO instead of NC.
- Display green to indicate the specific fault/ alarm has been fixed.

Refer to troubleshooting guide for additional faults.

Site Name: RD

Battery Status:

On Mains power: Yes Offline Mod

Site Overview

System Setup

Alarm History

ALARM HISTORY

Timestamp	Message
28/03/2024 08:38:28	FLOOR 1 FIRE Alarm Cleared
28/03/2024 08:38:17	Open Circuit FLOOR 1 FIRE
28/03/2024 08:38:12	FLOOR 1 FIRE Alarm Cleared
28/03/2024 08:38:06	Short Circuit FLOOR 1 FIRE
28/03/2024 08:37:59	FLOOR 1 FIRE Alarm Cleared
28/03/2024 08:37:52	Flow Switch FLOOR 1 FIRE



Site Name: RD

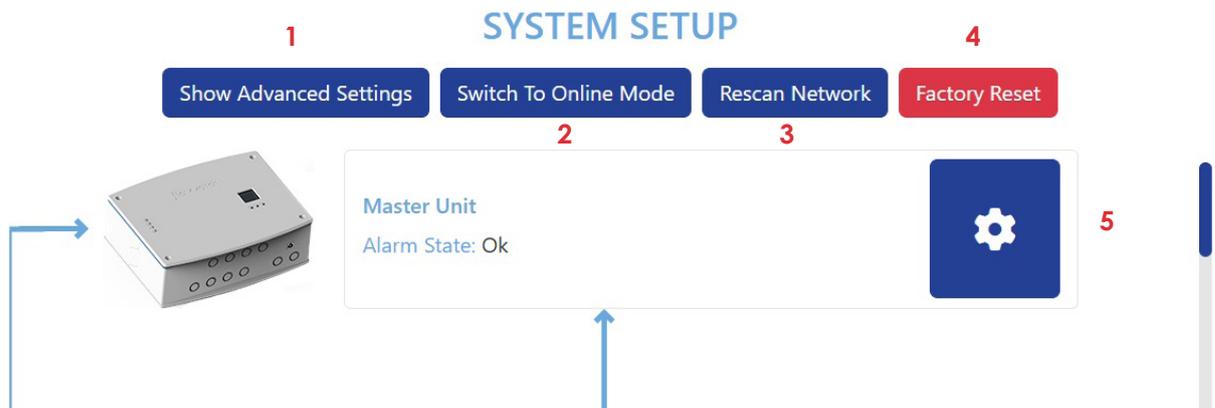
Battery Status:

On Mains power: Yes Offline

Site Overview

System Setup

Alarm History



1 Show Advanced Settings - Modify the time delay of the 'configured inputs' and Output BMS function.

2 Switch To Online Mode - Enables connection to the online remote service (See page 21 for connection)

3 Rescan Network - Enables the system to add additional expansion modules. To add additional expansion modules, click Rescan Network.

Note: When rescanning/ modifying any part of the system, the system will require re-commissioning.

4 Factory Reset - Clear all settings from the system - Note: You will need to turn power off and disconnect battery if installed. Once powered off you will need to reverse the process.

5 - Modify all input settings (4A & 4B)

If using FloWatch in Offline Mode :

Once programmed with no system fault or alarm states the system will require commissioning (as per page 32). The configurator cable can be disconnected once programmed.

If using FloWatch Online remote service:

Once the system is fully functional in 'offline' mode, connect the master panel 'online' (see page 21)



Installation, Operation and Maintenance Manual FloWatch Programming Software

Online Remote Service

If connecting to the online remote service, call FloWatch (01733 830440) to activate the master panel. FloWatch will require the 8 digit code of the master panel and subscription contact details. The code 8 digit code can be found internally on the master panel or on the master panel packaging label.

Select 'Switch To Online Mode' **1**

Fill in 'Register' section. Create your relevant user name and password. Unique code **2** is located internally on the master panel and packaging label.

Please note once created the username cannot be changed.

Once complete select 'register' **3**

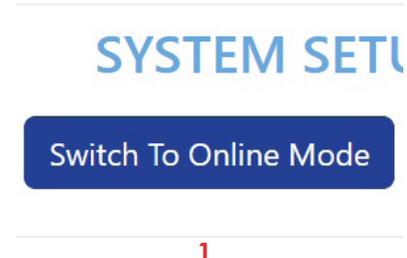
Note:

If the current master panel in use has already been registered fill in the 'Login' section **4**

Leave 'Custom APN' unticked if using supplied sim card **5**

If you already have an account and want to add another panel to a single user account (Multiple sites- up to 10 systems) Contact FloWatch with the relevant unique code and fill in the login section (Use previous username and password) **4 Refer to page 31 for more details**

The software can take up to 2 minutes to connect to the server.



Login

If you have previously created an account with us.

Username **4**

Password

Unique Code (Found on the inside of the Master Unit)

Login

Register **2**

If this is your first time creating an account with us.

Username

First Name

Email

Company

Password

Last Name

Phone

Unique Code (Found on the inside of the Master Unit)

2

Register **3**

APN Settings

Use Custom APN Settings

5

Name

m2m.tele2.com

Username

Password

Cancel Online Setup

If unable to connect online an error code will be displayed. Call FloWatch to advise of any error codes.

Once connected to the online remote service the system will require commissioning (as per page 31) The configurator cable can be disconnected once programmed and programming bung installed (as per page 7)



Installation, Operation and Maintenance Manual Operation

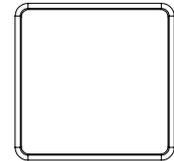
4. Operation

Master Panel Button Functions

Centre button - Press to mute the alarm sounder & to initiate the LCD display

Left button - Press to navigate left on the LCD screen

Right button - Press to navigate right on the LCD screen



Mute & Display

Note: When in operation, the master panel LCD will revert to sleep mode after 40seconds (Press the centre button to initiate the display)

Additional Functions

Factory Reset the programmed Master Panel.

- Power off the Master panel (removing battery if installed)
- Press and hold the two outer buttons.
- Whilst pressing the two outer buttons, turn the power on - all 4 LED will flash red.
- Continue to hold until the Master Panel power LED turns green, then release.

LCD Display

The LCD display is located on the front of the master panel. Any alarm or fault condition will be displayed on the screen. The screen will display the fault type (open circuit, short circuit, alarm) relevant input (as named in the programming software) and expansion module name (as named in the programming software) allowing easy identification of the particular input and it's connected module. If multiple alarms occur the screen will cycle through each fault at 10 second intervals.

In the event that the unit is running on battery back-up, the screen will go into standby mode. In the event of any fault or alarm whilst in battery back-up mode the screen will be initiated.

On initial start up, the Master Panel will display 'NOT SET UP' (With additional information including existing firmware and current date)

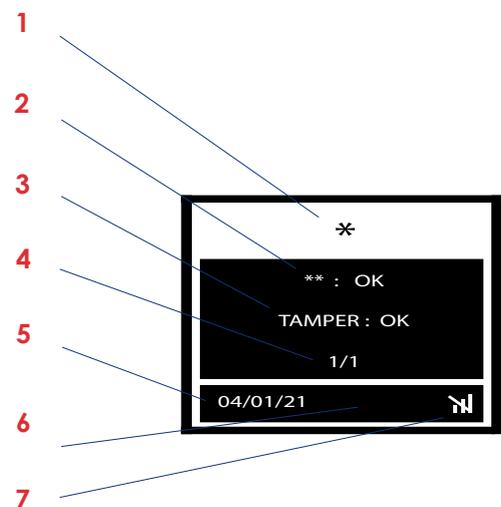


After programming (With no faults/alarms) the screen will cycle through the connected expansion modules & inputs.

The display will include:

- The Master panel & expansion module names (as named in the program software)
- The input names (as named in the program software)
- The enclosure lid (TAMPER) switch state
- Screen page number
- Date
- Battery installation
- Signal strength (for connection of online remote service)

Note: The screen text will be displayed for approximately 40 seconds and then revert to 'sleep mode'. If another event was to occur or the display button pressed, the screen will be reactivated.





Installation, Operation and Maintenance Manual Operation

LCD Screen Display

If any faults are detected, the system will display the following messages on the master panel LCD.

Input Type	LCD - Alarm State (RED LED)	LCD - Short Circuit (AMBER LED)	LCD - Open Circuit (AMBER LED)
Master Panel Inputs	LOCAL ALARM ** ***	LOCAL ALARM ** SHORT CIRCUIT	LOCAL ALARM ** OPEN CIRCUIT
Expansion Module Inputs	* ** ***	* ** SHORT CIRCUIT	* ** OPEN CIRCUIT

Note: LOCAL ALARM is referring to the master panel (pre-defined in programming software)

* The expansion module name is displayed (This is modified in the programming software)

* Expansion Naming examples

Expansion Module	Expansion Name Description	Expansion Name Example
Expansion 1	The relevant expansion number	EXPANSION 1
Expansion 2		EXPANSION 2

NOTE: It is good practice **not** to name the expansion with the physical location where it is installed.

** The input name is displayed (This can be modified in the programming software)

** Input Naming examples

Configured Input in use	Input Name Description	Input Name Example
Flow Switch	Location of flow switch for e.g a floor or apartment/flat	FLAT 1 FIRE
Isolation Valve	Location of Isolation Valve e.g a floor or apartment/flat	FLAT 1 ISOLATION
Heating Fault	'Trace heating'	TRACE HEATING
Pump	Location of pump/ Type of fault	MAIN PUMP FAULT
Tank	Tank water level switch	TANK LOW LVL
Other	Any other type of input for example PDV	PDV CLOSED

NOTE: Appropriate terminology would be to name flow switch inputs as location and 'fire'

'Other' input can be used for any other device for additional monitoring

*** See table below.

Configured Input in use	LCD Display ***
Flow Switch	FLOW ALARM
Isolation Valve	VALVE CLOSED
Tank	WARNING
Pump	WARNING
Heating Fault	WARNING
Other	WARNING

Other faults	LCD Display
Tamper (Enclosure activated)	* TAMPER
Expansion module missing	* MISSING
Network cable broken	LINK BROKEN BETWEEN * AND *



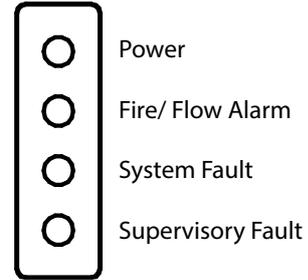
Installation, Operation and Maintenance Manual Operation

LED Status - Master Panel

There are Four LED's located on the front of the FloWatch Master Panel:

a. Power

LED Colour	Status
Green	Mains supply on
Red	Power lost to expansion modules
No LED	No Power to Unit
Red Flashing	No mains supply - Battery back-up in use,



b. FIRE/ FLOW ALARM - Flow switch inputs only

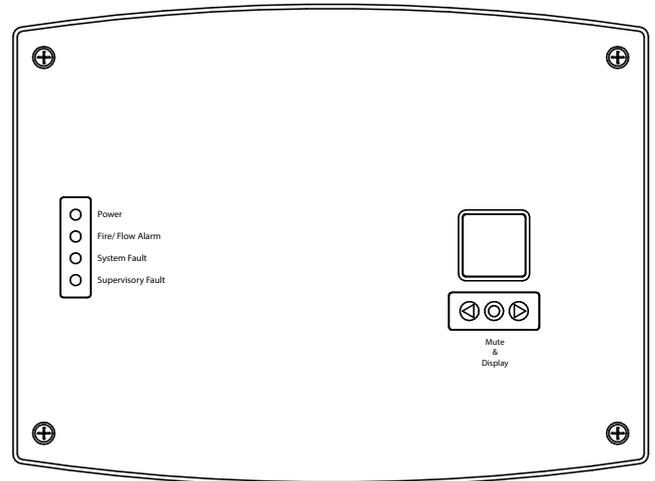
LED Colour	Status
Green	No Fault/Alarm detected
Red	Alarm
Orange	Open or short circuit
No LED	No flow switch inputs enabled

c. SYSTEM FAULT - Pump, Tank, Isolation valve, Heating fault & Other inputs

LED Colour	Status
Green	No Fault/Alarm detected
Red	Alarm
Amber	Open or short circuit
No LED	No system fault inputs enabled

d. SUPERVISORY- Electrical/ FloWatch system faults

LED Colour	Status
Green	No Fault/Alarm detected
Red	Expansion module lost
Red Flashing	Loop Circuit Fault
Amber	Tamper switch activated (enclosures)
Amber Flashing	Open or Short circuit of inputs



Note: If a flow switch input is in short circuit and another is in alarm the red LED will take priority.

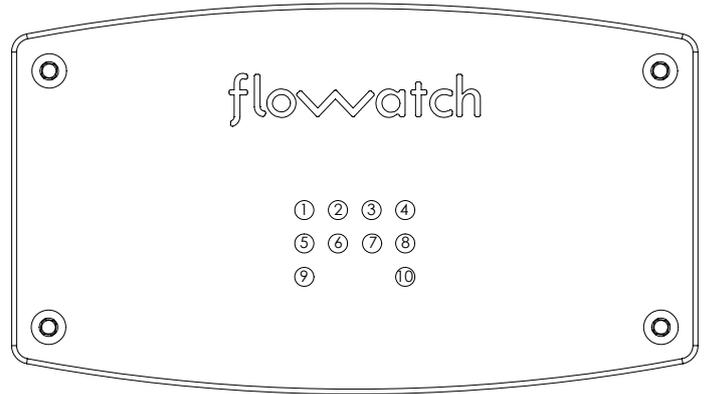


Installation, Operation and Maintenance Manual Operation

LED Status - Expansion module

There are Ten LED's located on the front of the FloWatch 8 Way expansion module

LED Number	LED Explanation
1	Input 1 of Expansion unit
2	Input 2 of Expansion unit
3	Input 3 of Expansion unit
4	Input 4 of Expansion unit
5	Input 5 of Expansion unit
6	Input 6 of Expansion unit
7	Input 7 of Expansion unit
8	Input 8 of Expansion unit
9	Expansion unit communication/ Power
10	Termination toggle (Radial circuit last expansion)



LED Colour	LED 1 - 8
Green	No Fault/Alarm state detected
Red	Alarm (activation of input device)
Amber	Open or short circuit
No LED	Input not in use

LED Colour	LED 9
Blue Flashing	Expansion unit correctly communicating with master panel
Blue Solid	Power being supplied to Expansion
No LED	No power/not connected to master panel

LED Colour	LED 10
Orange	Expansion unit set as end module (radial)
No LED	Expansion unit not set as end module

Alarm Sounder

The Alarm sounder is integrated within the Master panel unit. The alarm sounder will sound in the event of any fault state of the system (Open circuit, short circuit, Alarm activation) of any inputs (including expansion module inputs). The sounder will also sound if the enclosure lid of the Master panel or any Expansion Modules are removed (When enclosure/lid tamper switch is enabled within the programming software)

The sounder will emit an alarm until the fault has been rectified or until the panel is 'muted' (Refer to Page 22) The sounder will automatically stop when the fault has been rectified. The sounder will emit a sound of 52dB from approximately 1m away.



Installation, Operation and Maintenance Manual Operation

Understanding System States

FloWatch will detect any system fault or activation of monitored devices through the correct installation of resistors.

System OK - System/input device in normal operational state

Alarm - Activation of input device

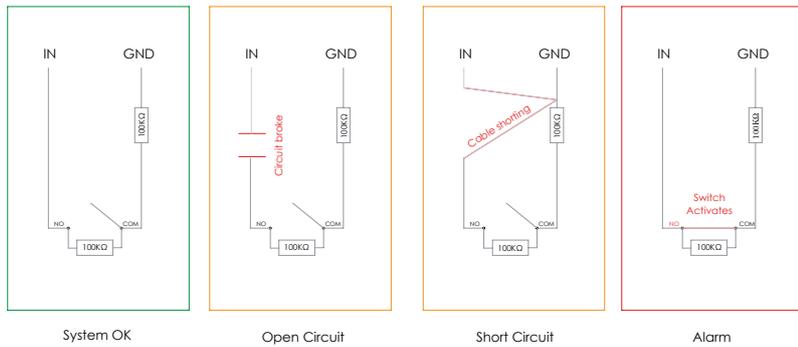
Open Circuit - indicates a fault within the cable of the input device

Short Circuit - indicates a fault within the cable of the input device

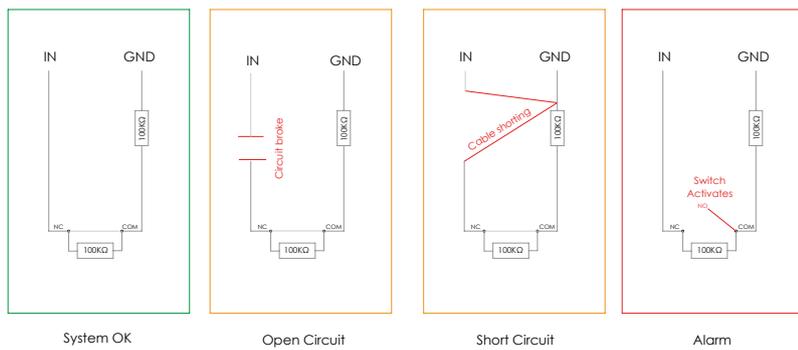
Refer to the troubleshooting guide for further information.

FloWatch Resistor installation - **basic principle** to determine the system fault states when using a **NO & NC Input**

NO SWITCH



NC SWITCH



System State/Fault	System state - NO Input Device	System State - NC Input Device
System OK	The Master panel receives a 200kΩ (Kilo-Ohm) resistance value	The Master panel receives a 100kΩ (Kilo-Ohm) resistance value
Open Circuit	The master panel receives no current	
Short Circuit	The Master panel receives zero resistance (maximum current)	
Alarm	The Master panel receives a 100kΩ (Kilo-Ohm) resistance value	The Master panel receives a 200kΩ (Kilo-Ohm) resistance value

The above is intended to demonstrate the principle of installation of resistors.



Online Remote Service Overview

To access the online remote service, 'LOGIN' to the system via the FloWatch website (Use login details as set during initial programming)

The online remote service will enable the user to:

- 1 Add/Remove additional email and telephone numbers for alerts
- 2 Site Overview - display the current site and its associated inputs
- 3 Site Setup - View the site setup
- 4 Alarm History - Display history of events
- 5 Stats - View the signal strength for the online remote service and expansion module location temperature (Expansion modules produced after 28.07.2021)

Viewing Site



Firmware Version: On Mains Power Signal: 90% Last Contact: 18/02/22 10:23:20

Site Overview Site Setup Alarm History Stats

2 3 4 5

SITE OVERVIEW

Input Type	Name	Alarm State	Connected To
Flow	FIRE ALARM	Inactive	Master Unit
	Tamper Switch	Inactive	Master Unit

- 6 Always ensure all details are filled in and the alerts are enabled.
If only one contact is used, fill in both lines and enable as shown.

Email/Text Alert

The following alerts will be sent:

- a. Mains power failed
- b. Alarm/ activation of any input device
- c. Open circuit fault of any input device
- d. Short circuit fault of any input device
- e. Enclosure tamper has activated
- f. Expansion module missing
- g. Site has lost connection (Communicates daily with server)
- h. System has been turned on
- i. Inactive account (Subscription expired)
- j. Network (link wire broken)
- K. Low battery voltage

FloWatch will also send an email/text when the above issues have been resolved (Alert Cleared)

Note: Mains power failed email/text alert will be the only message sent when the system is in battery back-up mode.

Site Settings ✕

Master Alert Email Address Master Alert Phone Number

FloWatch@FloWatch.com 6 01733847510

Alert Email Addresses (Seperate with ',')

FloWatch@FloWatch.com; 6 Enabled

Alert Phone Numbers (Seperate with ',')

01733847510 Enabled

Email Alert example



Dear User,

Event Time Stamp:	16/04/2024 08:15:27
Event Location:	FloWatch
Event Details:	Unit has been turned on.

Best Regards,
The FloWatch Team



Installation, Operation and Maintenance Manual Operation

FloWatch Outputs - Fire alarm interface

The FloWatch Master Panel subject to the building fire strategy can be used in conjunction with a fire alarm panel, beacon or sounder. The Master Panel provides 2 x Volt free outputs (FIRE AL & BMS)

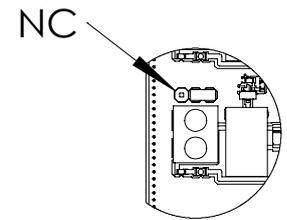
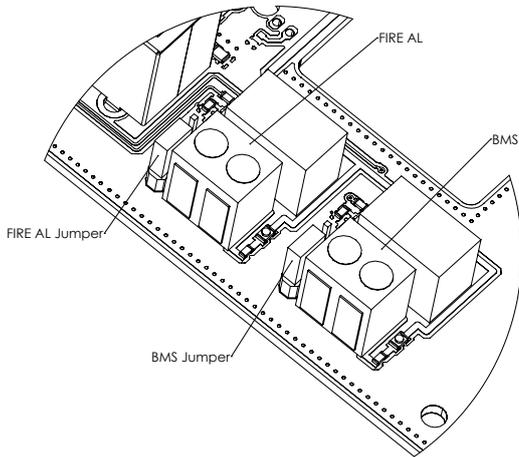
The 'FIRE AL' output (JP4 on wiring diagram) activates when a 'Flow Switch' input is operated - only when in alarm state

The 'BMS' output (JP3 on wiring diagram) can be configured to activate when either:

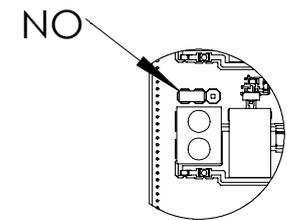
- a. 'TANK LOW ONLY' - The Tank Low Level Fault input is operated - only when in alarm state, or
- b. 'All' - Operated when any input is in Short circuit, open circuit and alarm state.

Each output can be configured between NO and NC by repositioning the PCB Jumper.

To reposition the PCB Jumper, lift the jumper upwards and replace onto the pins as shown



Normally Closed



Normally Open

Output contact ratings:

Max Switching Voltage - 125V AC, 60V DC

Max Switch Current - 1 A

Fuses

Master Panel

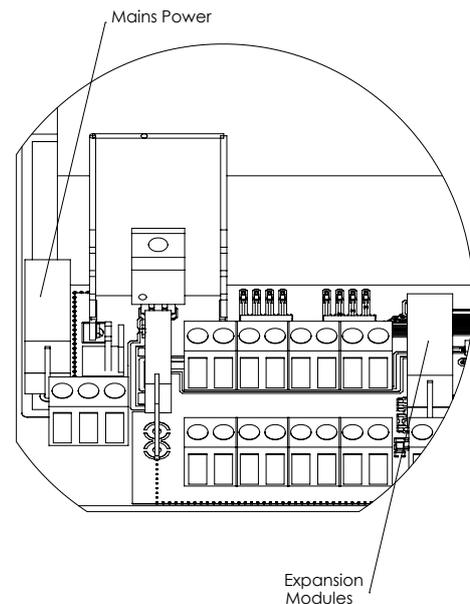
Two fuses are located within the Master panel;

Left (Mains power) - 2A Fuse to protect 15V transformer

Right (To expansion modules) - 1A Fuse for expansion unit power

Expansion Module

500mA to protect PCB





Installation, Operation and Maintenance Manual

Operation

Cause and Effect

Cause	Master Panel Power LED	Fire/Flow Alarm LED	System Fault LED	Supervisory Fault LED (Electrical Fault)	FIRE AL Output		BMS Output 'Tank Low'		BMS Output 'All'		Sounder	
					Off	On	Off	On	Off	On	Off	On
Power	Green	Grey	Grey	Grey								
Loss of Mains Power (Battery Active)	Red	Grey	Grey	Grey	X		X		X		X	
Expansion Module Lost	Grey	Grey	Grey	Grey	X		X		X		X	
Loop Circuit Fault	Grey	Grey	Grey	Red	X		X		X		X	
Tamper Switch (Enclosures)	Grey	Grey	Grey	Orange	X		X		X		X	
Flow Switch 'in Alarm'	Grey	Red	Grey	Green		X (Flow Switch Only)	X		X		X	
Flow Switch Open Circuit	Grey	Yellow	Grey	Yellow	X		X		X		X	
Flow Switch Short Circuit	Grey	Yellow	Grey	Yellow	X		X		X		X	
Flow Switch Enabled	Grey	Green	Grey	Green								
Tank, Pump, Isolation Valve, Heating Fault, Other' in Alarm	Grey	Grey	Red	Green	X		X (Tank Only)		X		X	
Tank, Pump, Isolation Valve, Heating Fault, Other' in Open Circuit	Grey	Grey	Yellow	Yellow	X		X		X		X	
Tank, Pump, Isolation Valve, Heating Fault, Other' in Short Circuit	Grey	Grey	Yellow	Yellow	X		X		X		X	
Tank, Pump, Isolation Valve, Heating Fault, Other' Enabled	Grey	Grey	Green	Green								



Installation, Operation and Maintenance Manual Operation

Online - Multiple sites, single login

FloWatch provides the ability to view up to 10 different systems/sites under a single login.

<https://lidexwebsite.azurewebsites.net/login> - link to view sites.

Displays the different sites **1**

Click the show icon to view a more indepth overview of the site, including modifying the alert contact details. **2**

FloWatch will display the sites using a colour coded box. system ok (green) alarm (red) or fault (amber) **3**

Note: Main account holder details (Not linked to alerts)

Sites Overview

Site Name	Address	Power Status	Signal	Firmware	Last Contact	Status	Unit Details
FloWatch Site A 1	Unit 1, 2 & 3, Newark Road, PE1 5WA	On Mains Power / Battery Not Filled	80%	V3.18 09/02/24V	3/25/2024 2:07:18 PM	OK (Green)	M1 - Ok, M2 - Ok, M3 - Ok
FloWatch Site B		Battery Voltage 0.00	73%	V2.18 03/11/22V	6/27/2023 9:20:14 AM	OK (Green)	5 - Ok
FloWatch Site C		On Mains Power	60%	V2.18 03/11/22V	7/26/2023 11:09:06 AM	OK (Green)	3 - Ok
FloWatch Site D		On Mains Power	90%	V2.18 03/11/22V	7/26/2023 11:09:20 AM	Open Circuit (Orange)	2 - Open Circuit



Installation, Operation and Maintenance Manual Commissioning

Commissioning

Download the excel based commissioning template from

<https://www.flowatch.co.uk/download>

Fill in the appropriate details



FloWatch Ltd

Rutland Business Park
Newark Road
Peterborough
PE1 5WA

FloWatch Sprinkler Monitoring System

Project :
Job Ref. :
Design Eng. :

Project Name
Reference
E.D.S.

Module Ref	Input Channel	Signal Type	Terminals	Description	Field Device	FloWatch Software Name	Switch State (NO/NC)	Tag Ref (If applicable)	10 Ser
Master Panel	Inputs								
	1	v.f.c.	IN1 GND	Ground Floor North Riser Sprinkler Flow Switch	Flow Switch		NO	FS/G	
	2	v.f.c.	IN2 GND	Ground Floor North Riser Sprinkler Isolation Valve	Isolation Valve		NO	IV/G	
	3	v.f.c.	IN3 GND	First Floor North Riser Sprinkler Flow Switch	Flow Switch		NO	FS/1	
	4	v.f.c.	IN4 GND	First Floor North Riser Sprinkler Isolation Valve	Isolation Valve		NO	IV/1	
	5	v.f.c.	IN5 GND						
	6	v.f.c.	IN6 GND						
	7	v.f.c.	IN7 GND						
	8	v.f.c.	IN8 GND						
	Outputs								
	v.f.c.	FIRE AL		Indication to Fire Alarm System	FAP / FIU			***	
	v.f.c.	BMS BMS		Indication to Building Management System	BMS Panel			***	

Upon start up all enabled input LED's should be green and no faults displayed on the LCD.

Functional Test the operation of the system as below:

Offline

1. Activate each input individually
2. Verify the master panel :
 - LCD displays the relevant input name and alarm type (ensure the input activated corresponds to the relevant name on the LCD)
 - Appropriate input LED alarm is Red
 - Master panel sound emits

Online Remote Service

Once the system has been commissioned 'offline'

- Verify email and/ or text message alert of relevant input name and alarm type is sent (Up to 5 devices is sufficient to verify correct operation)
- Login remotely online, ensuring the relevant activated input and alarm type is displayed within the 'alarm history' section



Installation, Operation and Maintenance Manual

6. Troubleshooting

Issue	Corrective Action
No Screen and LED Display	Check ribbon connection
No Screen but LED Display	Turn the power & battery (if connected) off and then turn on to reset the Display
Short/Open Circuit (ORANGE LED)	Check resistor installation, verify cable is not broken of the input device. Ensure input device is volt free
Alarm State Showing Under Normal Operation (RED LED)	Change the switch state (NO/NC) in the programming software of the input device or change the wiring of the input device (NO/NC)
Tamper Alarm	Check the enclosure lid is screwed flat or/and verify the internal switch engages
Software not Identifying Expansion Modules	Check all expansion units are wired correctly & individually addressed.
No Power to Expansion Modules	Check fuses in both expansion module and master panel. Check wiring
Not Receiving Email	Check Junk Folder
No Alarm History being displayed	Turn the Power on and off to reboot the system.

7. Maintenance/Annual Service

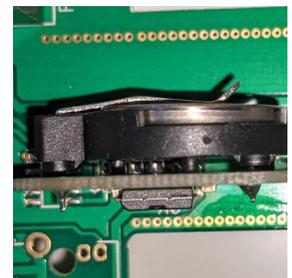
The FloWatch system requires minimal maintenance. It is advisable to inspect and verify the unit annually by a suitably competent person in accordance with BS9251.

The following should be checked but not limited too:

- System shows no faults/alarms and relevant LEDs are green.
- Manually activate each input to check communication with Master Panel;
- Ensure alarm/fault states are displayed correctly, Correct LED operates and the sounder emits
- Verify email/ text message alerts (when using the online remote service)
- Ensure outputs are correctly functioning (if being connected too)
- Battery backup (If installed) is charged and replaced as per battery manufacturer recommendations.
- Check the 3V (CR2032) real time clock PCB battery. Replace every 3 years.

(Located within the master panel)

CR2032 Battery Location :



FloWatch recommend updating to the latest firmware version when carrying out any maintenance or annual service. Refer to the Master panel firmware update procedure (www.flowatch.co.uk/download) If the system requires a firmware update, The system should be re-comissioned.

Firmware Update - The most recent firmware version can be downloaded from www.flowatch.co.uk/download. **Ensure the correct firmware is being updated on the correct master panel**

Important Installation Information

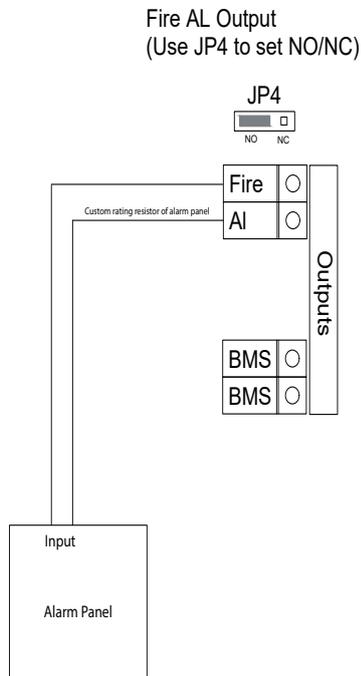
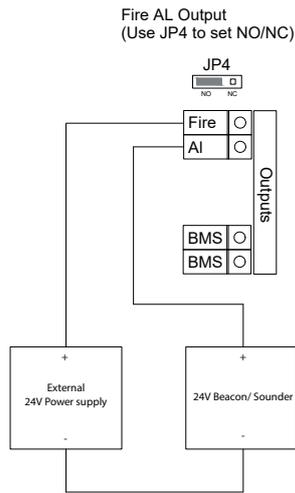
- FloWatch products must only be installed by a competent person in accordance with requirements of the local authority having jurisdiction. Deviations from these standards will invalidate warranty.
- It is the responsibility of the installing contractor to include a copy of this document in the sprinkler system installation, operating and maintenance manual.
- Alterations to FloWatch products will void any warranty.
- FloWatch products should be inspected and maintained during routine sprinkler system inspections by a competent person in accordance with national codes/requirements.
- Failure to follow these instructions could cause improper operation, resulting in personal injury and/or property damage.
- For further details and technical support please contact your FloWatch sales representative.



General Queries:

1. Output wiring examples

External beacon/ sounder upon activation of any flow switch.

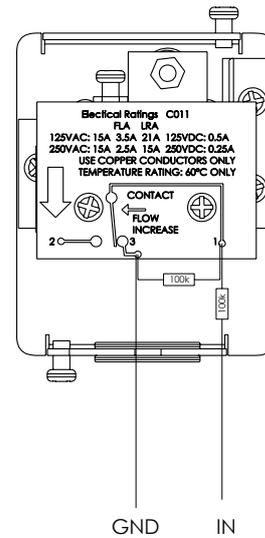


Connection to alarm panel - Upon activation of any flow switch, the output dry contact switch will activate causing the input state of the main alarm panel to change.

2. Resistor wiring of flow switches

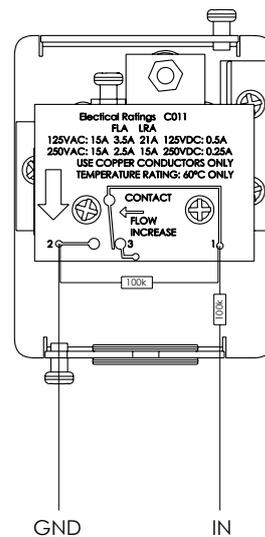
Normally Closed

FloWatch - NC



Normally Open

FloWatch - NO



Master Unit	Software Programming Template			
	Input Terminal	Input Name (For Software Max 16 Characters)	Input Type (Flow, Isolation, Pump Tank, Heating, Other)	Input Default State (NO/NC)
	1			
	2			
	3			
	4			
	5			
	6			
	7			
8				

Expansion Module	Expansion Name (Max 16 Characters) :	Binary Address (1-16) :	Software Programming Template			
			Input Terminal	Input Name (For Software Max 16 Characters)	Input Type (Flow, Isolation, Pump Tank, Heating Other)	Input Default State (NO/NC)
			1			
			2			
			3			
			4			
			5			
			6			
			7			
8						

Expansion Module	Expansion Name (Max 16 Characters) :	Binary Address (1-16) :	Software Programming Template			
			Input Terminal	Input Name (For Software Max 16 Characters)	Input Type (Flow, Isolation, Pump Tank, Heating Other)	Input Default State (NO/NC)
			1			
			2			
			3			
			4			
			5			
			6			
			7			
8						

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Address (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Address (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Address (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
			Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1	
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
			Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1	
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
			Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1	
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

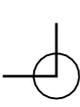
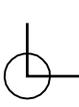
Expansion Module			Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump, Tank, Heating, Other)	Input Default State (NO/NC)
Expansion Name (Max 16 Characters) :	Binary Addresss (1-16) :	1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				

Drill Template

Top of Expansion Master Panel
x 4 Holes



Top of Expansion Module
x 4 Holes





Rapidrop: A Global company, British manufactured

British based manufacturer of fire sprinkler system products with international sales and distribution serving the needs of the fire detection and suppression industry worldwide.

UK	Europe	Middle East & North Africa
<p>Rapidrop Global Ltd Head Office Rutland Business Park Newark Road Peterborough PE1 5WA United Kingdom</p> <p>Telephone: +44 (0)1733 847 510 Facsimile: +44 (0)1733 553 958 E-mail: rapidrop@rapidrop.com</p>	<p>Rapidrop Europe Ltd Harcourt Centre Block 3 Dublin 2 Ireland</p> <p>Telephone: +353 1 447 0550 Facsimile: +44 (0)1733 553 958 E-mail: rapidrop@rapidrop.com</p>	<p>Rapidrop Middle East Trading LLC P.O Box 232031 Dubai - UAE Telephone: +971 4 8856671 Facsimile: +971 4 8856672 Sharjah - Sales Office Telephone : +971 6 5562669 Abu Dhabi - Sales Office Telephone : + 971 2 5528228 E-mail: uae@rapidrop.com</p>
Qatar	India	Asia Pacific
<p>Rapidrop Qatar LLC Salwa Road P.O.Box 17481 Doha Qatar</p> <p>Telephone: +974 4 0161484/482 Facsimile: +974 4 0161483 E-mail: uae@rapidrop.com</p>	<p>Rapidrop India Pvt Ltd Level 13, Office No. 1348 Platinum Techno Park Plot No.17/18, Sector -30A Vashi, Navi Mumbai, 400705 India</p> <p>Telephone: +91 22 61818348 Facsimile: +91 22 61214952 E-mail: rapidrop@rapidrop.com</p>	<p>Rapidrop International P.O Box 232031 Dubai - UAE</p> <p>Telephone: +971 6 566 2773 Facsimile: +971 4 8856672 E-mail: rdi@rapidrop.com</p>
South Africa	Saudi Arabia	
<p>Rapidrop Global Ltd Dachser South Africa (Pty) Ltd South Africa Country Office Air & Sea Logistics 9 Sim Road Pomona, Kempton Park 1619</p> <p>Office Telephone: +27(0)11 396 1113 Telephone: +27(0)727601627 E-mail: rapidrop@rapidrop.com</p>	<p>Sales Office Imam Saud Road Cross Abu Berker Aj Siddiq PO BOX 54092 Riyadh 11514 Kingdom of Saudi Arabia</p> <p>Telephone: +966 5569 80094 E-mail: saudi@rapidrop.com</p>	