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Installation, Operation and Maintenance Manual

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1. General Information

FloWatch is a sprinkler system fault signal and alarm device signal 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 and cold water storage tank levels 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)

12 x 100kΩ (Ohm) Resistors

Expansion Unit contents:

1 x Expansion unit panel

16 x 100kΩ (Ohm) Resistors
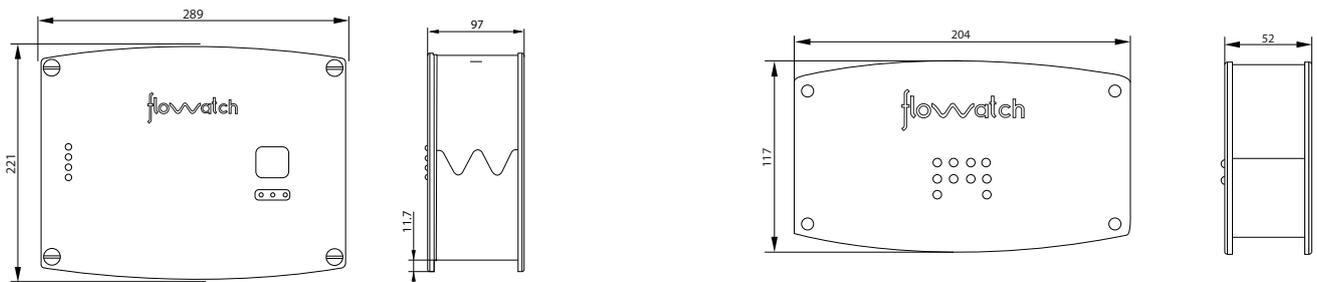
Inputs

The FloWatch Master Panel consists of 2 fixed Inputs (Pump Fault - Booster pump connection & Tank Low Level Fault - cold water storage tank) and an additional 4 inputs (any of the following; Flow Switch, Isolation Valve, Heating System or Pump Running fault)

Additionally up to 16 Expansion Modules (4/8 Way) can be installed. Each 8 way Expansion Module provides an additional 8 inputs (any of the following: Flow Switch, Isolation Valve, Heating System or Pump Running)

In total the FloWatch system can cater for up to 132 inputs plus 2 fixed inputs. Input switch 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

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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 (orange LED) and alarm (Red LED)
- 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 28 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 are roaming type that can connect to all 4 UK networks (02, Vodafone, EE and Three) They will look to connect to the strongest signal.

Note: FloWatch is offered with a 12 months free subscription for each Master Panel. Contact FloWatch sales representative for more information

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.

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

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2. Installation

Sequence of Installation

a. Mount the Master Panel and/or Expansion Modules. Refer to Page 6

b. Wire the FloWatch System:

- Connect/Wire additional expansion modules if used. Refer to Page 11

- Wire inputs to Master Panel and/or expansion modules. Refer to Page 8 & Page 9

- Ensure correct installation of resistors. Refer to Page 10

c. Expansion Modules:

- Terminate the last expansion module. Refer to Page 11

- Address the expansion modules. Refer to Page 12

d. Power Supply:

- Wire the power supply to the master panel. Refer to Page 7

- Connect the battery (if installed). Refer to Page 7

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

e. Programme the Master panel. Refer to Page 13 - 21

f. Commission the FloWatch System. Refer to Page 32

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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 35)
- 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)
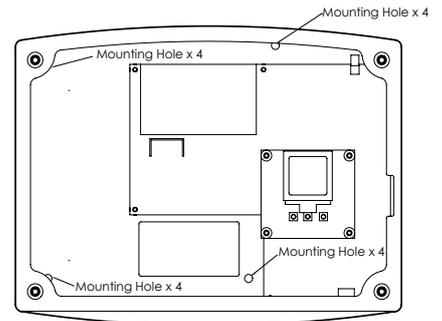
Note: Use suitable fixings dependant on the surface you are mounting to. Consider the weight of the FloWatch unit (1.7kg) when selecting the appropriate size screw/fixing. The mounting hole size of the Master panel is 6mm. The mounting hole size of the expansion modules is 4mm

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 to be connected with.

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.
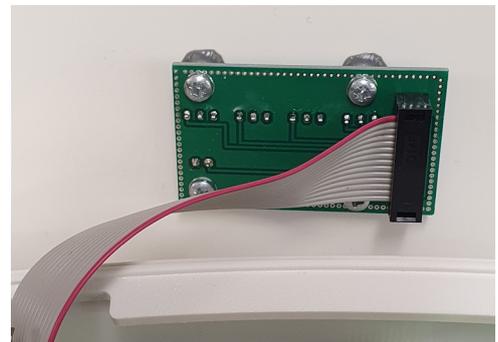
Cable Installation - Knock Outs
Master Panel and Expansion Modules provide 'knock out connectors' on the underside of the enclosures for easy installation. Holes are 20mm and suitable for fitting with M20 Cable glands. To remove the knock outs, push through by hand or alternatively use a knife

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

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FloWatch reserves the right to change the design, materials and specifications without notice to continue product development
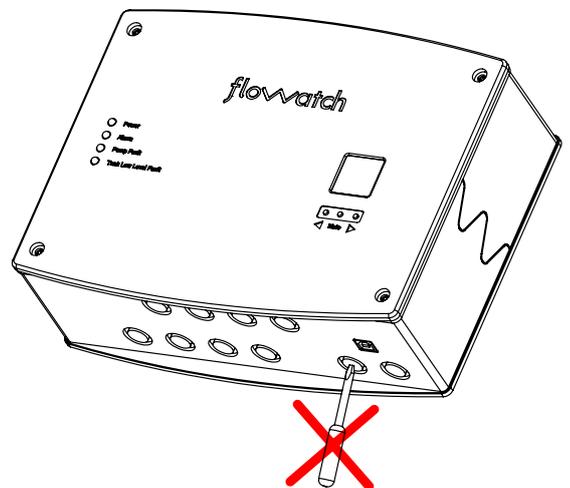
Electrical Details

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

Battery Backup

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

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

For systems with up to 4 expansion modules FloWatch recommend:
Yuasa 12V 2.9Ah (Mfr Part No: Y2.9-12) for fitting into the Master panel.

The Master Panel accommodates a 75 (L) x 75 (W) x 175 (H) Battery (As per image) For larger systems consider using a knockout and installing a battery into an alternative enclosure.

Battery Back Up Offline - System functions as per page 4

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 back up.

The outputs will still function when utilising battery back up.

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

When connecting the battery

- Turn on the power supply to the master panel
- 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 -
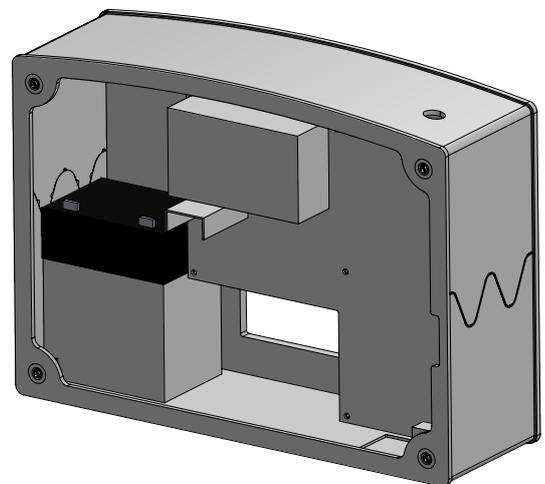
Table 1 : Battery Size for 24 Hour Back Up

FloWatch System Size	12V Battery (Ah required)
Master Panel	≥ 2.7
Master Panel + Up to 4 Expansion Modules	≥ 2.9
Master Panel + Up to 5 Expansion Modules	≥ 3.5
Master Panel + Up to 6 Expansion Modules	≥ 3.7
Master Panel + Up to 7 Expansion Modules	≥ 4
Master Panel + Up to 8 Expansion Modules	≥ 4.5
Master Panel + Up to 9 Expansion Modules	≥ 4.8
Master Panel + Up to 10 Expansion Modules	≥ 5.1
Master Panel + Up to 11 Expansion Modules	≥ 5.6
Master Panel + Up to 12 Expansion Modules	≥ 5.9
Master Panel + Up to 13 Expansion Modules	≥ 6.1
Master Panel + Up to 14 Expansion Modules	≥ 6.4
Master Panel + Up to 15 Expansion Modules	≥ 6.6
Master Panel + Up to 16 Expansion Modules	≥ 7.2

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Master Panel Wiring Diagram

MASTER PANEL

Outputs

JP4 — Fire / AI
JP3 — BMS / BMS

SIM Card

BMS Alarm Output (Use JP3 to set NO/NC)

Fire Alarm Output (Use JP4 to set NO/NC)

Network — VS / A / B / GND
Blue / Grey / Black / Brown — Network to Expansion Modules

Fuse 1A

Low Level / Pump Fault — GND / PF / GND / LL
Pump Fault Input
Low Level Input

Status Inputs — GND / FL4 / GND / FL3 / GND / FL2 / GND / FL1
Input 4
Input 3
Input 2
Input 1

Battery Connector

Power — N / E / L
Fuse 2A

Local Non-switched 5A Fused Spur
230VAC supply from

Input Termination Detail

'X' Series Resistor 100K Ω (Ohm)

'Y' EOL Resistor 100K Ω (Ohm)

Input Device Terminals — COM / NO / NC

FloWatch Master Panel Wiring Diagram

Revision 1

Inputs 1-4 can be configured as :
Flow Switch
Isolation Valve
Heating System
Pump Running

Cable Size:
2 Core FP200 1/1.5mm² for inputs
4 Core FP200 1/1.5mm² for network

Link to website wiring diagram

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Expansion Module Wiring Diagram

FloWatch 8 Way Expansion Module Wiring Diagram

Revision 1

Refer to Installation, Operational & Maintenance manual for 'Addressing' and connecting expansion modules

Inputs 1-8 can be configured as :

Flow Switch
Isolation Valve
Heating System
Pump Running

Cable Size:

2 Core FP200 1/1.5mm² for inputs
4 Core FP200 1/1.5mm² for network

Link to website wiring diagram

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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
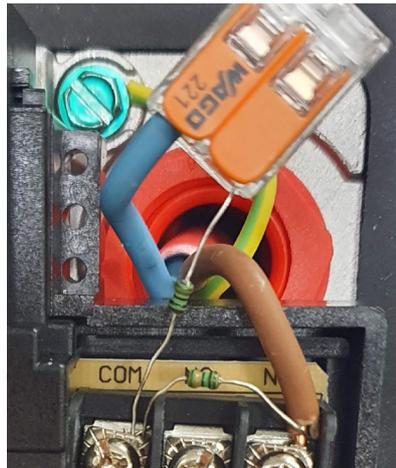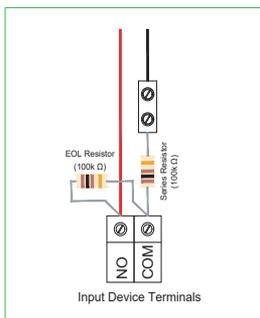
NO Input Device Resistor Detail
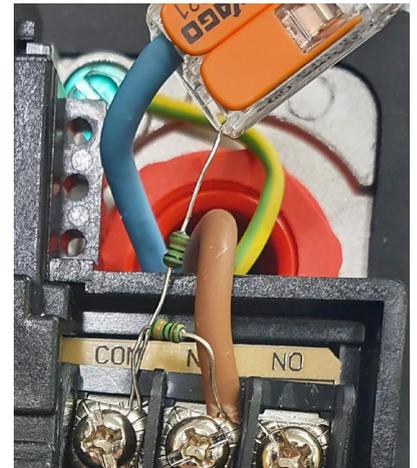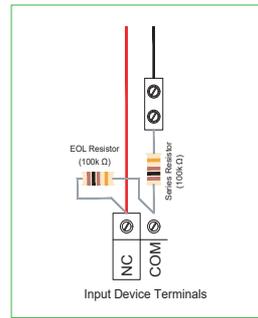
NC Input Device Resistor Detail

For input devices with a sealed switch unit, install a junction box as close as possible to the switch terminals (examples below).

Note: FloWatch recommends the use of a NC 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.
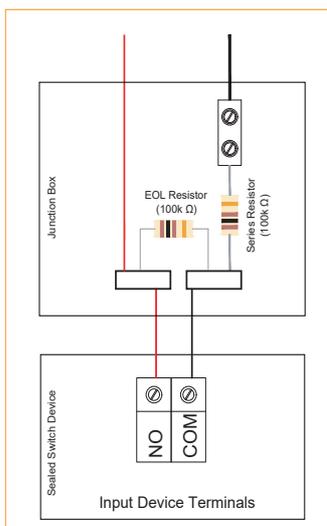
NO Sealed Switch Resistor Detail
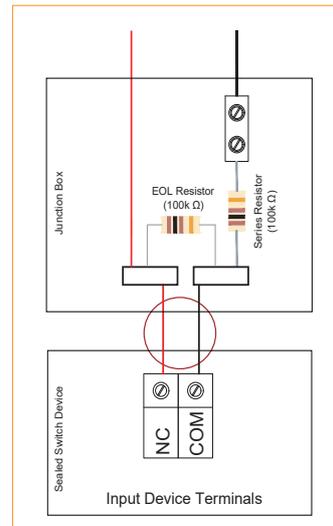
NC Sealed Switch Resistor Detail

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Connecting Expansion Modules

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

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, but the installer must satisfy themselves with the integrity of signal transmission

- 100m length of cable between the Master Panel and 1st Expansion Module
- 25m length of cable between expansion modules
- 20m length of cable between expansion modules and input devices

Examples of FloWatch systems using expansion modules:

**Termination Toggle
(Toggled right)**

Master Panel with 1x Expansion Module

Address as Expansion 0

Termination Toggle Left
Orange LED
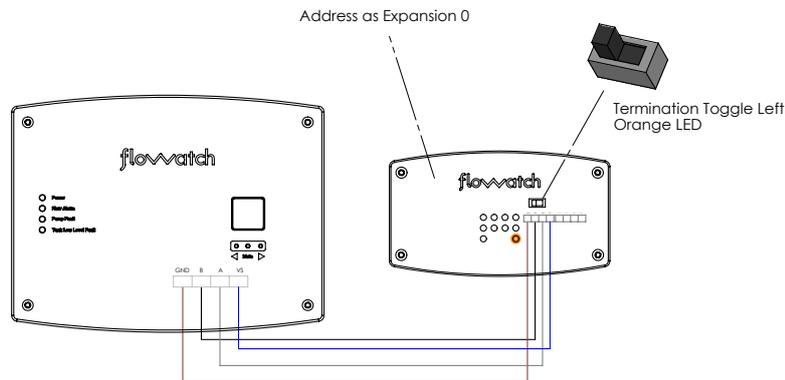
Master Panel with additional Expansion Modules

Address as Expansion 1

Address as Expansion 0

Toggle right

Termination Toggle Left
Orange LED

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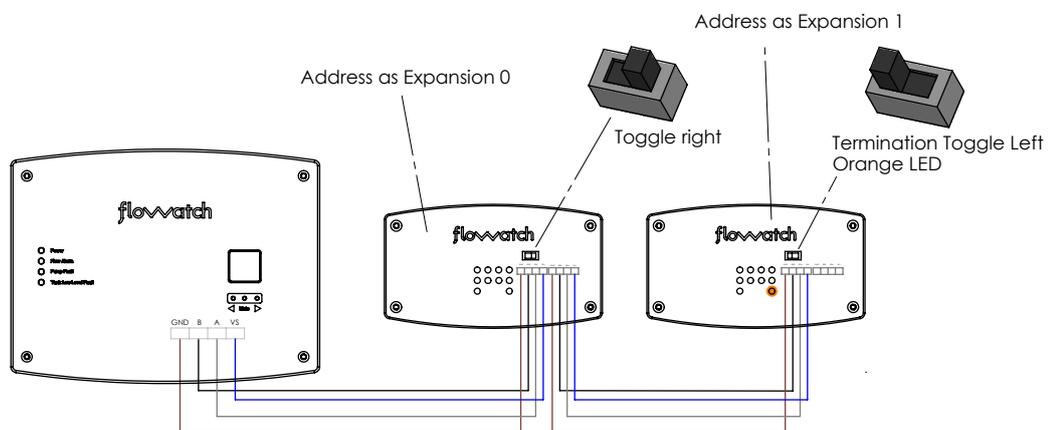
Addressing Expansion Modules

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 an address of each expansion module.
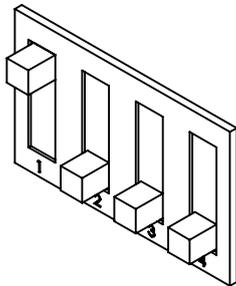
3D view of address switch set as Expansion 1

Note: Sequential order : 1st Expansion Module in line must be addressed as Expansion 0 (See Page 11 Images)

Expansion 0

Expansion 1

Expansion 2

Expansion 3

Expansion 4

Expansion 5

Expansion 6

Expansion 7

Expansion 8

Expansion 9

Expansion 10

Expansion 11

Expansion 12

Expansion 13

Expansion 14

Expansion 15
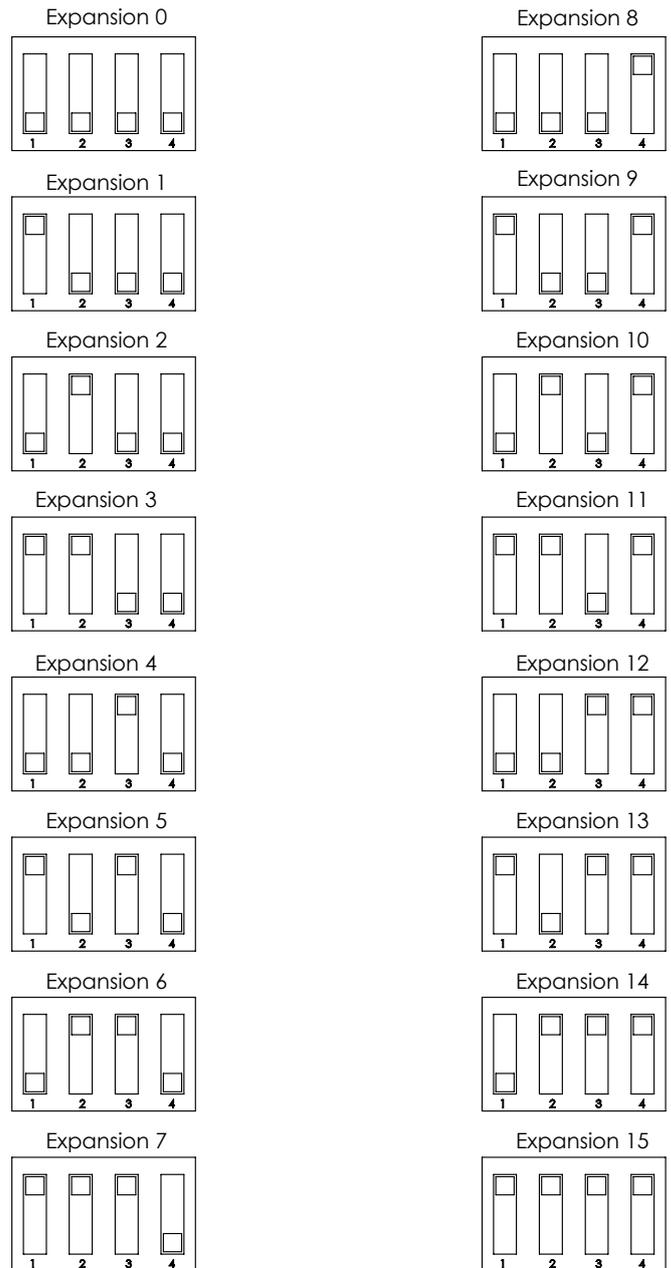
The 16 different configurations of switch address

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3. Software programming

In order to programme the FloWatch system, download the **latest** free windows based programming software from the FloWatch Website.

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

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

For ease of programming utilise the software programming template (Page 33-34)

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

- Name each input (except the 2 fixed inputs in the master panel - Low Tank, Pump Fault)
- Select the input type (Flow Switch, Isolation Valve, Heating System, Pump Running)
- 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

FloWatch
Configurator
V0.0.39

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 or Laptop

Please Connect your FloWatch 9251 Master Panel to your PC using the USB cable supplied.

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Click 'Next' when prompted

FIRST TIME SETUP

Next

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

①, ③ & ⑤ **can be modified after initial setup if any changes are required**

Note: Use vertical scroll ⑥ to navigate down. Note: **You may need to maximise the configurator (top right square on PC/laptop screen) to scroll down**

Click Next once relevant details have been filled in.

FIRST TIME SETUP - System Information

Site Details

Site Name
①

Building/House Number   Street   PostCode
①   ①   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.   ⑥

Install Details

Number of Expansion Modules Installed   Number of Inputs Installed
0 ④   0 ⑤

Next

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4A. System with Master Panel Only

The following screen will be displayed for a system with a Single **Master Panel** (up to 2 Fixed inputs, plus up to 4 additional inputs).

Utilising the software programming template (Page 33-34) programme the system accordingly.

Note: All settings can be modified once programmed.

If utilising the Pump Fault input - Enable the input by clicking the grey toggle ① - The toggle will turn blue indicating the input is enabled. Select the default state of the input to NO or NC, by clicking the grey toggle ②. Add any required delay time for both inputs if required ③ If no delay required leave the field blank.

Repeat above for the Low Level tank input. If not in use leave the inputs as 'Disabled'

Note: The 2 fixed inputs within the master panel cannot be renamed.

④ **Show Advanced Settings**

Master Module

Pump

Name

Pump Fault

Enabled: ① Disabled

Default State: ② NO

Delay(sec) ③

Tank

Name

Low Tank Level

Enabled: Disabled

Default State: NO

Delay(sec)

Flowswitch 1

Name

Enabled:

Type:

Default State:

Under Show Advanced Settings ④ - A time delay can be set for the 4 additional inputs.

Note: If setting a 'Flow Switch' It will set a delay for **all** inputs configured as 'Flow Switch' ⑤

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 ⑥ (Refer to Page 3 & Page 29 for function)

Advanced Settings

Alarm Delays

Flow Switch	Isolation Valve	Heating System	Pump Running
0 ⑤	0	0	0

BMS Relay Mode

All ▼ ⑥

Tank Low Only

All

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Configure the additional inputs connected to the Master Panel. The inputs on the software are in sequential order.

- Name each input in use ① - Maximum 16 Characters

- Enable the input by clicking the toggle bar ② - The bar will turn blue indicating the input is enabled

- Specify the input type that is connected ③ by selecting from the drop down box

- Select the default state of the input to NO or NC by clicking the icon bar ④

Note: Image below shows input 4 within software. This corresponds to the wiring of input 4 in the master panel
All settings can be modified once programmed.

Input 4

Name ①

Enabled: Enabled ②

Type: Flow Switch ③

Flow Switch
Isolation Valve
Heating System
Pump Running

Default State: NC ④

Tamper Switch

Enabled: Enabled ⑤

2 inputs enabled out of 2

| Back | Next |

Enable or disable the 'Tamper Switch' Lid Enclosure ⑤ - Disabled means the sounder will not emit when the enclosure lid is removed .

Key steps when using the software:

• **All Inputs that have been enabled must be named**

• **All connected expansion modules must be named**

• **Correct number of inputs must be enabled**

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

1 inputs enabled out of 1

| Back | Next |

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4B. System with Master Panel & Expansions Modules
The following screen will be displayed for systems with a **Master Panel** and additional **Expansion Module.**

FIRST TIME SETUP - Search for Expansion Modules

Discovered Modules

Indicates the expansion module address

Indicates the last expansion module with terminated toggle
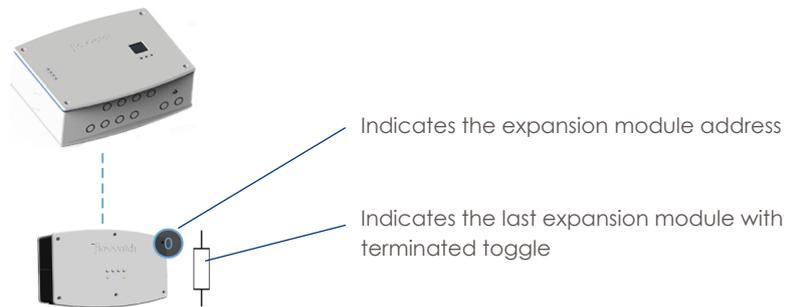
Found 1 expansion module(s). Is this correct?

No	Yes

The software will detect the correct number of Expansion Modules and identify the last Expansion Module. If correct proceed by clicking Yes. Refer to troubleshooting guide if the software does not detect all Expansion Modules.

Follow the same procedure process as per 4A. The Expansion Modules will be displayed in addition (As per image below). The Expansion Module address will be displayed so the user can correctly programme the system and its relevant inputs ①

The Expansion Module must also be named ② - Maximum of 16 Characters

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

FIRST TIME SETUP - Input Settings

Please enable the inputs that are in use and provide them with a name.

Expansion Module 0 ①   **Serial Number: Unknown**   **Firmware Version: 3.01**

Name
②

Input 1

Name

Enabled: Type:
Disabled   Flow Switch ▼

Default State:
NC

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5. The software will display a list of the programmed inputs. If correct 'Save settings to unit' If incorrect press back and modify accordingly.

FIRST TIME SETUP - Summary

Site Name: FloWatch   Building/House Number: 36 Ormside Way   Street: Holmethorpe   Postcode: RH1 2LW

Unit name	Input Name	Input Type	Default State
Master	1ST FLOOR FIRE	Flow switch	NC
Master		Tamper Switch	
EXPANSION 0	2ND FLOOR FIRE	Flow switch	NO
EXPANSION 0		Tamper Switch	

Back   **Save settings to unit**

Software will automatically upload the programme to the Master panel.

FIRST TIME SETUP - Updating Unit.

Update was successful

Unit has been updated succesfully.

First time setup complete

Click 'First time setup complete'

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The Software will display the image below and the Master Panel will be in 'Offline Mode'

Site Overview

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 in 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.

Refer to troubleshooting guide for additional faults.

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FloWatch reserves the right to change the design, materials and specifications without notice to continue product development

System setup

Firmware Version: V2.09 04/10/21		On Mains power

Site Overview	System Setup	Alarm History

SYSTEM SETTINGS

① Show Advanced Settings ② Switch To Online Mode ③ Rescan Network ④ Factory Reset

Master Unit
Alarm State: Inactive

⑤

---

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 module, click Rescan Network, exit configurator. Re-open configurator. Additional expansion module will be displayed.

④ Factory Reset - Clear all settings from the system - Note: You will need to turn power off and then on to reboot the panel.

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 31). 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)

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Online Remote Service

If connecting to the online remote service, call FloWatch (01733 830440) to activate the master panel. FloWatch will require the 9 digit code of the master panel and subscription contact details. The code 9 digit code can be found internally on the master panel, this step should be done prior to installation.

Select 'Switch To Online Mode' ①

Fill in 'Register' section. Create your relevant user name and password.
Unique code ② is located on underside of master panel.

Once complete select 'register and sync to the server' ③

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

The software can take up to 2 minutes to connect to the server.
Different user name will need to be created for each master panel.

te Overview | System S

SYSTEM SE

nced Settings   ①   Switch To Online Mode

Master Unit
Alarm State: Inactive
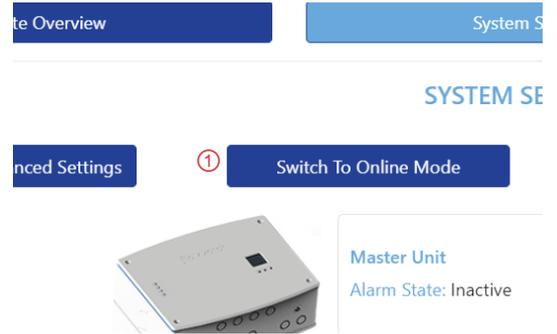
FIRST TIME SETUP - Register With The Online Service.

Login ④
If you have previously created an account with us.

Username
_____

Password
_____

Unique Code (Found on the bottom and inside of the Master Unit)
_____

Login and sync to the server

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

Username | Password

First Name | Last Name

Email | Phone

Company | Unique Code (Found on the bottom and inside of the Master Unit)
②

Register and sync to the server   ③

Or switch to offline mode if online mode is not required

Switch to offline mode

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.

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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
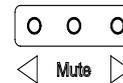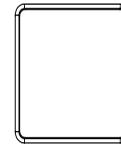
Aditional Functions

Factory Reset the programmed Master Panel.

a. Power off the Master panel.

b. Press and hold the two outer buttons.

c. Whilst pressing the two outer buttons, turn the power on - all 4 LED will flash red.

d. 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.

Upon 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:

① The Master panel & expansion module names (as named in the program software)
② The input names (as named in the program software)
③ The enclosure lid (TAMPER) switch state
④ Screen page number
⑤ Date
⑥ 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.

NOT SET UP
PLEASE RUN THE
PC APPLICATION

V2.09 04/01/21

✱

** : OK

TAMPER : OK

1/1

04/01/21

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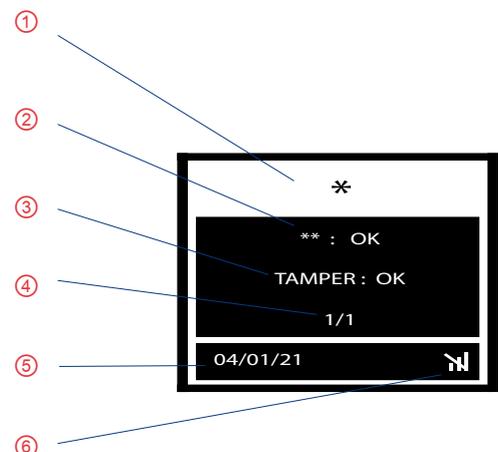
LCD Screen Display

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
Pump Fault	LOCAL ALARM PUMP FAULT ALARM	LOCAL ALARM PUMP FAULT Short Circuit	LOCAL ALARM PUMP FAULT Open Circuit
Tank Low Level Fault	LOCAL ALARM LOW TANK ALARM	LOCAL ALARM LOW TANK SHORT CIRCUIT	LOCAL ALARM LOW TANK OPEN CIRCUIT
Master Panel Configured Input	LOCAL ALARM ** ***	LOCAL ALARM ** SHORT CIRCUIT	LOCAL ALARM ** OPEN CIRCUIT
Expansion Module Configured Input	* ** ***	* ** SHORT CIRCUIT	* ** OPEN CIRCUIT

Note: LOCAL ALARM is referring to the master panel

* 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 0	The relevant expansion number	EXPANSION 0
Expansion 1		EXPANSION 1

NOTE: It is good practice not to name the expansion with the physical location where it is installed, as this may differ from area the inputs are received from.

** 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 System	'Trace heating'	TRACE HEATING
Pump Running	Location of pump or what building the pump supplies	'BLOCK A' PUMP

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

*** See table below.

Configured Input in use	LCD Display ***
Flow Switch	FLOW ALARM
Isolation Valve	VALVE CLOSED
Heating System	ALARM
Pump Running	ALARM

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LED Status - Master Panel

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

○ Power
○ Alarm
○ Pump Fault
○ Tank Low Level Fault

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. Alarm

One of the following input types: Flow Switch, Isolation Valve, Heating System or Pump Running

LED Colour	Status
Green	No Fault/Alarm detected
Red	Alarm (activation of input device)
Orange	Open or short circuit
No LED	No 'configured' inputs not in use

c. Pump Fault

LED Colour	Status
Green	No Fault/Alarm detected
Red	Pump Fault
Amber	Open or short circuit
No LED	Pump fault input not in use

d. Tank Low Level Fault

LED Colour	Status
Green	No Fault/Alarm detected
Red	Tank Low Level Fault
Amber	Open or short circuit
No LED	Tank Low Level input not in use
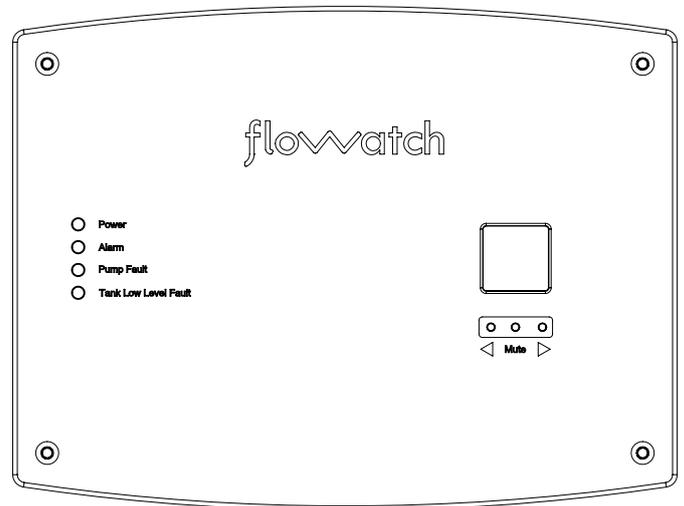
Note: If one configured input is in short circuit and another is in alarm the red led will take priority.

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○ Power
○ Alarm
○ Pump Fault
○ Tank Low Level Fault

◁ Mute ▷

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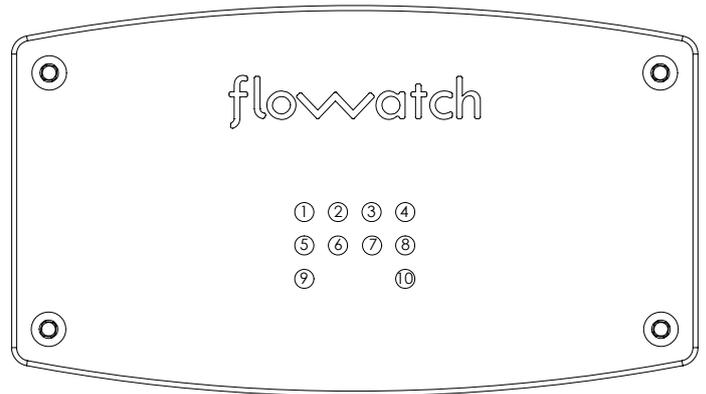
LED Colour	LED 1 - 8
Green	No Fault/Alarm state detected
Red	Alarm (activation of input device)
Amber	Open or short circuit
No LED	Input not in use

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
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 omit a sound of 52dB from approximately 1m away.

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Understanding System States

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

a. System OK - System/input device in normal operational state

b. Alarm - Activation of input device

c. Open Circuit - Detects a fault within the cable of the input device

d. Short Circuit - Detects 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

System OK	Open Circuit	Short Circuit	Alarm

NC SWITCH

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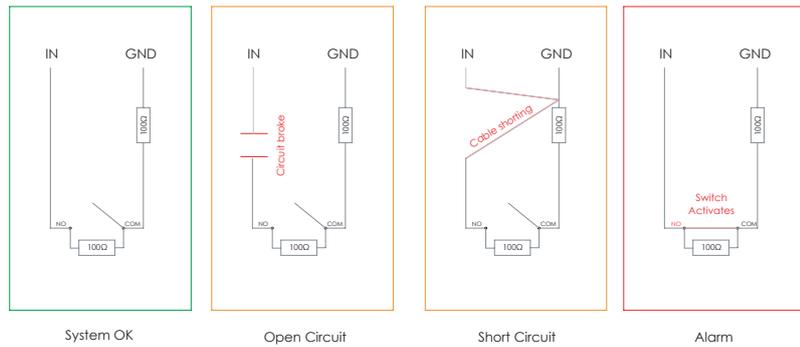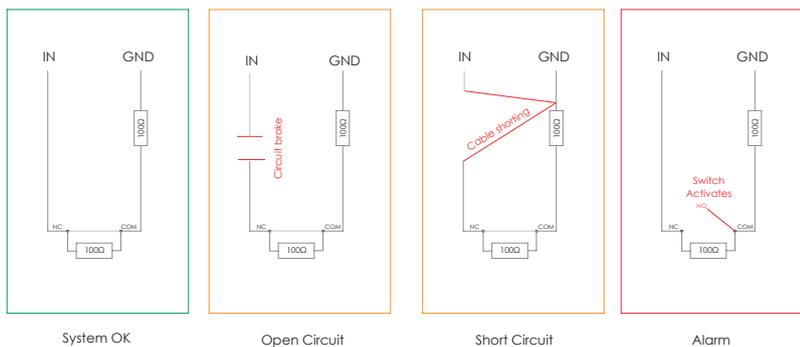
System State/Fault	System state - NO Input Device	System State - NC Input Device
System OK	The Master panel receives a 200k Ω (Ohm) resistance value	The Master panel receives a 100k Ω (Ohm) resistance value
Open Circuit	The master panel receives no current	
Short Circuit	The Master panel receives zero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

The above is intended to demonstrate the principle of installation of resistors. See page 27 for technical overview.

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Technical principle of operation

A low voltage signal is applied through each input device. An enclosed sensor installed on the circuit board at each input detects the level of light. The installed resistors create a voltage change or voltage drop. Varying the voltage changes the brightness of light. The coding converts the level of light to an analogue value of between 0-1023.

There are 4 threshold ranges that determine the 4 possible system states (Open,short, Alarm, System OK)

The latest firmware and configurator will display the expected threshold value of the circuit board device. In addition it will display the current value of the connected device (system state)

When a NC input device is connected, a typical value maybe 613, as per example below (system status OK) When the device is activated the value will increase above the expected threshold of 750 but no more than 999 - The system state would then change into alarm.

A NO device would function using the opposite principle.

NC input device

NO input device

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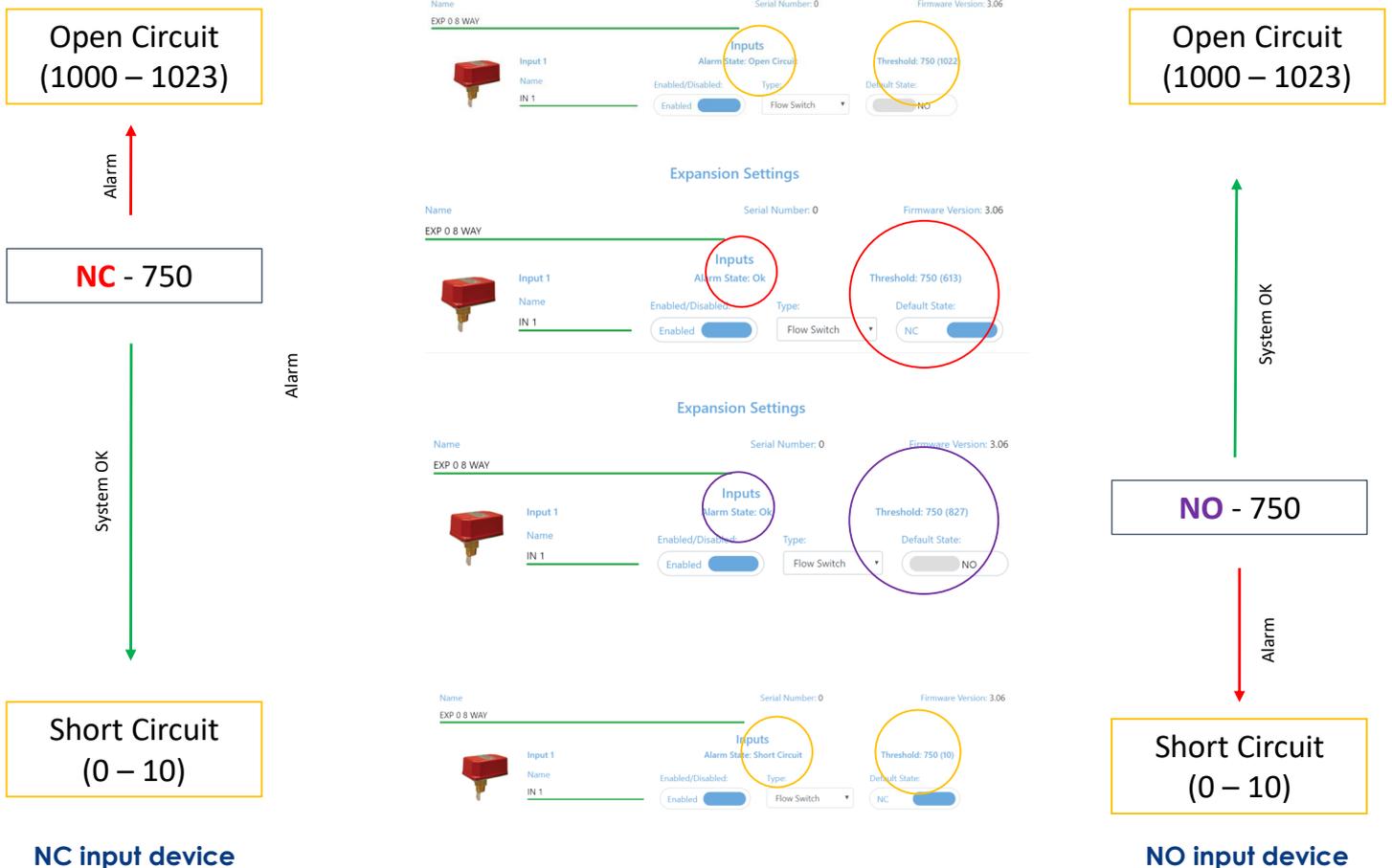
Online Remote Service Overview

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: V2.09 04/10/21   On Mains Power   Signal: 90%   Last Contact: 18/02/22 10:23:20

Site Overview   Site Setup   Alarm History   Stats

SITE OVERVIEW

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

To view multiple sites using the same user name (Login) contact a FloWatch representative.

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)

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 ①

Master Alert Email Address	Master Alert Phone Number
FloWatch@FloWatch.com ⑥	01733847510

Alert Email Addresses (Seperate with ';')   Enabled

FloWatch@FloWatch.com; ⑥   ⑥   ☑

Alert Phone Numbers (Seperate with ';')   Enabled

01733847510   ☑

Update

Email Alert example

Alert Cleared

Dear User,

09/11/22 11:05:02: Event has been cleared on input 06 on expansion module EXP 0.

Best Regards,
The Flowatch Team

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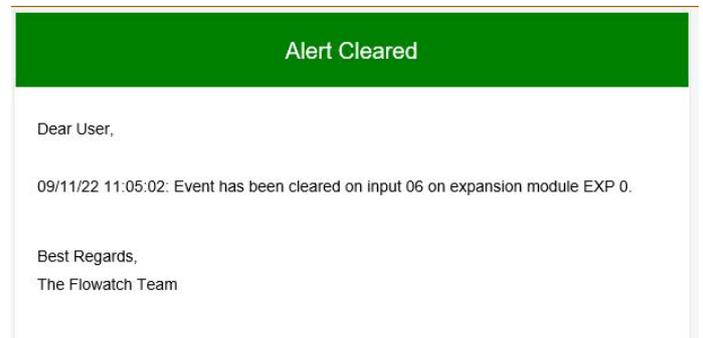
FloWatch Outputs - Fire alarm interface

The FloWatch Master Panel subject to the building fire strategy can be used in conjunction with a fire alarm panel. 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
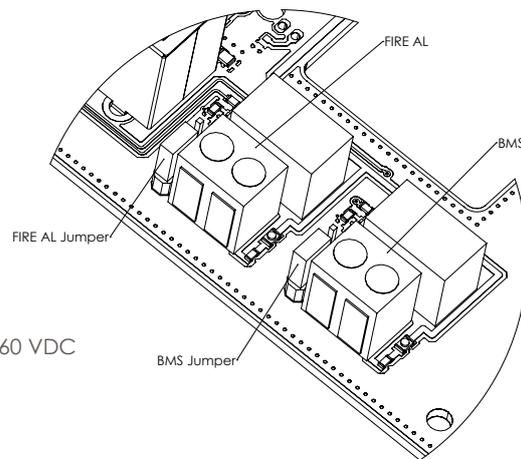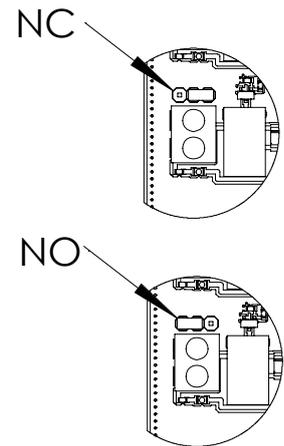
Output contact ratings:

Max Switching Voltage - 125 VAC, 60 VDC

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
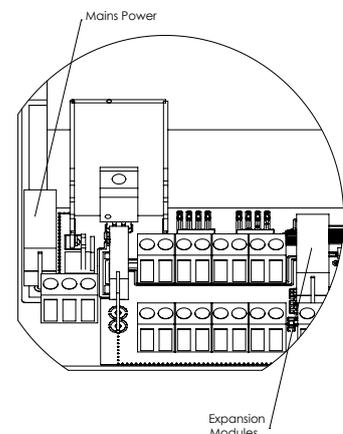
Expansion Module:

500mA to protect PCB

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Table of Operation

Configured Input' - Programmed within the programming software - Includes Flow Switch, Isolation Valve, Heating System, Pump Running

Condition	Power LED Green	Power LED Red Flashing	Power LED Red	Alarm LED Green	Alarm LED Orange	Alarm LED Red	Alarm LED Off	Pump Fault LED Green	Pump Fault LED Orange	Pump Fault LED Red	Pump Fault LED Off	Tank Low Level LED Green	Tank Low Level LED Orange	Tank Low Level LED Red	Tank Low Level LED Off	FIRE AL Output Off	FIRE AL Output On	BMS 'Tank Low' Off	BMS 'Tank Low' On	BMS 'All' Off	BMS 'All' On	Sounder Off	Sounder On
System Healthy (If Inputs Enabled)	×			×				×				×				×		×		×		×	
Loss of Mains Power (Battery Active)		×														×		×		×		×	
Expansion Module Lost			×													×		×		×		×	
Tamper Switch (Enclosures)																×		×			×		×
Configured Input' in Alarm						×		×				×					× (Flow Switch Only)	×			×		×
Open Circuit on 'Configured Input'					×											×		×			×		×
Short Circuit on 'Configured Input'					×											×		×			×		×
Tank Low Level Alarm														×		×			×		×		×
Tank Low Level Open Circuit													×			×		×			×		×
Tank Low Level Short Circuit													×			×		×			×		×
Pump Fault Alarm										×						×		×			×		×
Pump Fault Open Circuit									×							×		×			×		×
Pump Fault Short Circuit									×							×		×			×		×

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Commissioning

Download the excel based commissioning template from

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

Fill in the appropriate details

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36 Ormside Way, Redhill, Surrey, RH1 2LW
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Tel: 01737 481070

FloWatch 9521 Sprinkler Monitoring System
Controller Point Schedule

Project : Project Name   Revision : Draft
Job Ref. : Reference   Date : 03/04/2020
Design Eng. : E.D.S.   Status : Review

Module Ref	Input Channel	Point Type	Signal Type	Terminals		Description	Field Device	Switch State (NO/NC)	Tag Ref	100Ω ('X') Series Resistor	100Ω ('Y') EOL Resistor	Tested	Function Test / Comissioned	Client Witness
Master Unit — **Reception**				**Input Channels**										
	1	DI	v.f.c.	FL1	GND	Ground Floor North Riser Sprinkler Flow Switch	Flow Switch	NO	FS/G	✔	✔	✔	23/05/2020	
	2	DI	v.f.c.	FL2	GND	Ground Floor North Riser Sprinkler Isolation Valve	Isolation Valve	NO	IV/G	✔	✔	✔	23/05/2020	
	3	DI	v.f.c.	FL3	GND	First Floor North Riser Sprinkler Flow Switch	Flow Switch	NO	FS/1	✔	✔	✔	23/05/2020	
	4	DI	v.f.c.	FL4	GND	First Floor North Riser Sprinkler Isolation Valve	Isolation Valve	NO	IV/1	✔	✔	✔	23/05/2020	
	5	DI	v.f.c.	LL	GND	Sprinkler Storage Tank Low Level Alarm	Level Switch	NC	LS/1					
	6	DI	v.f.c.	PF	GND	Sprinkler Pump Set Common Alarm	Starter Panel vfc		***					
				Output Channels										
	1	DO	v.f.c.	FIRE	AL	Indication to Fire Alarm System	FAP / FIU		***					
	2	DO	v.f.c.	BMS	BMS	Indication to Building Management System	BMS Panel		***					
Expansion Unit Address 1 — **1st Floor Riser**				**Input Channels**										
	1	DI	v.f.c.	IN1	GND	Second Floor North Riser Sprinkler Flow Switch	Flow Switch	NO	FS/2	✔	✔	✔	23/05/2020	
	2	DI	v.f.c.	IN2	GND	Second Floor North Riser Sprinkler Isolation Valve	Isolation Valve	NC	IV/2	✔	✔	✔	23/05/2020	
	3	DI	v.f.c.	IN3	GND	*Spare Input*								
	4	DI	v.f.c.	IN4	GND	*Spare Input*								
	5	DI	v.f.c.	IN5	GND	*Spare Input*								
	6	DI	v.f.c.	IN6	GND	*Spare Input*								
	7	DI	v.f.c.	IN7	GND	*Spare Input*								
	8	DI	v.f.c.	IN8	GND	*Spare Input*								

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

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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. Ensure only the last expansion module has been terminated. Wire sequence
No Power to Expansion Modules	Check fuses in both expansion module and master panel
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:

CR2032 Battery Location :

- 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)

Firmware Update - The most recent firmware version can be downloaded from www.flowatch.co.uk/download.

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)

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.

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8. Templates

Programming Template

Master Unit	Software Programming Template			
	Input Terminal	Input Name (For Software Max 16 Characters)	Input Type (Flow, Isolation, Pump Running, Trace Heating)	Input Default State (NO/NC)
	PF	Pump Fault	Pump Fault	
	LL	Low Tank Level	Low Tank Level	
	1			
	2			
	3			
	4			

Expansion Module	Expansion Name (Max 16 Characters) :	Binary Addresss (0-15) :	Software Programming Template			
			Input Terminal	Input Name (For Software Max 16 Characters)	Input Type (Flow, Isolation, Pump Running, Trace Heating)	Input Default State (NO/NC)
			1			
			2			
			3			
			4			
			5			
			6			
			7			
			8			

Expansion Module	Expansion Name (Max 16 Characters) :	Binary Addresss (0-15) :	Software Programming Template			
			Input Terminal	Input Name (For Software Max 16 Characters)	Input Type (Flow, Isolation, Pump Running, Trace Heating)	Input Default State (NO/NC)
			1			
			2			
			3			
			4			
			5			
			6			
			7			
			8			

Expansion Module	Expansion Name (Max 16 Characters) :	Binary Addresss (0-15) :	Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump Running, Heating System)	Input Default State (NO/NC)
			1			
			2			
			3			
			4			
			5			
			6			
			7			
			8			

Expansion Module	Expansion Name (Max 16 Characters) :	Binary Addresss (0-15) :	Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump Running, Heating System)	Input Default State (NO/NC)
			1			
			2			
			3			
			4			
			5			
			6			
			7			
			8			

Expansion Module	Expansion Name (Max 16 Characters) :	Binary Addresss (0-15) :	Software Programming Template			
			Input Terminal	Input Name (For Software - Max 16 Characters)	Input Type (Flow, Isolation, Pump Running, Heating System)	Input Default State (NO/NC)
			1			
			2			
			3			
			4			
			5			
			6			
			7			
			8			

Top of Master panel

Top of Expansion module