FireSAFE+

Grundfos firefighting systems, domestic range

- Safety Instructions
- Installation & Operating Instructions
- CE & UKCA Declarations of Conformity

Table of Contents

1.0 Safety Instructions

Original Safety Instructions

These safety instructions give an overview of the safety precautions to be taken in connection with any work on this product. Observe these safety instructions during handling, installation, operation, maintenance, service, and repair of this product.

These safety instructions are an explanatory section, and all safety instructions will appear again in the relevant sections of the installation and operating instructions.

Keep these safety instructions at the installation site for future reference.

Read this document before installing the product. Installation and operation must comply with local regulations and accepted codes of good practice.

This appliance should not be used by children and persons with reduced physical, sensory, or mental capabilities or lack of experience and knowledge. Children shall not play with the appliance.
Cleaning and user maintenance shall not be made by children.

Hazard: Transporting the Product

WARNING - *Falling objects.*

Death or serious personal injury.

- Secure the product during transportation to prevent it from tilting or falling down.
- Do Not stack the product

CAUTION - *Crushing of feet/Harm of body.*

Minor or moderate personal injury.

- Wear safety shoes when moving the product.

Hazard: Handling the product

CAUTION - *Back injury/Harm of body.*

Minor or moderate personal injury.

- Use lifting equipment.

CAUTION - *Crushing of feet/Harm of body.*

Minor or moderate personal injury.

- Wear safety shoes and gloves when moving the product.

Hazard: Mounting

CAUTION - *Crushing of feet/Harm of body.*

Minor or moderate personal injury.

- Place the product on a solid, level foundation suitable for the weight of the product when full of water.

Hazard: Mounting (continued)

CAUTION – *Noise in operation, structural vibration*

Minor or moderate personal injury.

- Ensure that the foundation will not transmit noise and vibration created by the unit that could be harmful. Avoid loft space installations.

Hazard: Electrical installation

DANGER - *Electric shock.*

Death or serious personal injury.

If requiring repair consult Grundfos, details on back page.

DANGER - *Electric shock.*

Death or serious personal injury.

- Check that the supply voltage and frequency correspond to the values stated on the nameplate.

Hazard: Protection against electric shock, indirect contact

DANGER - *Electric shock.*

Death or serious personal injury.

- Ensure that the unit is connected to protective earth and provide protection against indirect contact in accordance with local regulations.

Hazard: Cable cross-section

DANGER - *Electric shock.*

Death or serious personal injury.

- Always comply with local regulations as to cable cross-sections.

Hazard: Mains supply

DANGER - *Electric shock.*

Death or serious personal injury.

- Always use the recommended fuse size.

Hazard: Additional protection

DANGER - *Electric shock.*

Death or serious personal injury.

- Only use Residual Current Breaker with Over-Current **(RCBO).**

Hazard: Changing settings

DANGER - *Electric shock.*

Death or serious personal injury

- Switch off the power supply to the unit.

Remove the plug from the socket. Wait at least 5 minutes before starting any work on the unit.

Make sure that the power supply cannot be accidentally reconnected.

Hazard: User interfaces

DANGER - *Electric shock*

Death or serious personal injury

- If the control panel is cracked, perforated, or damaged, immediately isolate, and contact **Grundfos,** details on back page, to arrange a repair/replacement.

Hazard: Repair/Servicing the product

DANGER - *Electric shock*

Death or serious personal injury

- Switch off the power supply to the unit.

- Isolate the product from the power supply. Wait at least 5 minutes before starting any work on unit. Make sure that the power supply cannot be accidentally reconnected. Any work should only be carried out by a skilled and qualified person

DANGER - *Magnetic field*

Death or serious personal injury

- Do not handle the motor or rotor if you have a pacemaker.

Hazard: Cleaning the product

DANGER - *Electric shock*

Death or serious personal injury

- Isolate the product from the power supply. Wait at least 5 minutes before starting any work on unit. Make sure that the power supply cannot be accidentally reconnected. Check that the front controller cover is intact before spraying water or any non-abrasive, non-solvent cleaning solution on the product.

Hazard: Disposing of the product

The crossed-out wheelie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities.

See also end-of-life information at www.grundfos.com/product-recycling.

2.0 When and how to use the FireSAFE+ Installation & Operating instructions

Prior to **Installation, Commissioning** and **System Verification** of this product, the installer should fully read these Safety, Installation and Operating instructions.

The Installation and operation must also comply with local regulations and accepted codes of good practice.

The user is responsible for periodic inspection of the product, at a recommended interval of no more than 12 months.

The use of this product requires experience with and knowledge of the product.

Children and persons with reduced physical, sensory, or mental capabilities must not use this product, unless they are under supervision or have been instructed in the use of the product by a person responsible for their safety.

2.1 Symbols used in this document

WARNING/CAUTION

If these safety instructions are not observed, it may result in personal injury or damage to property/equipment.

DANGER

If these safety instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.

2.2 Scope of these Instructions

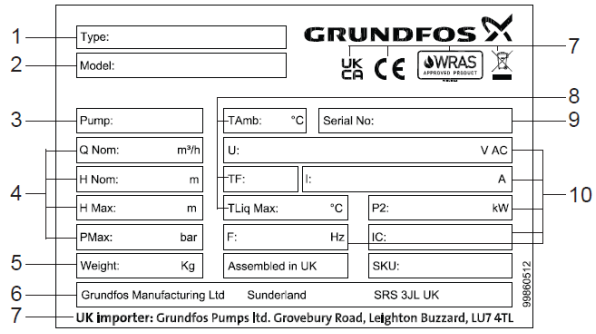
These Installation and Operating instructions apply to the: FireSAFE+
For Technical Information consult the FireSAFE+ Datasheet
For CM Pump specific information please consult the CM Installation and Operating manual and datasheets.

All the above documents can also be found on the Grundfos Product Centre website at: www.grundfos.com/uk

2.3 Product Identification

The FireSAFE+ unit has a silver nameplate attached to the back cover.

This label gives the following key information.



Pos.	Description
1	Product name - FireSAFE+
2	Pump type
3	Pump part number
4	Performance data
5	Weight
6	Address of manufacturer
7	Approvals
8	Temperature data
9	Model, Factory, Date code, Serial number
10	Electrical data

2.4 Product Description

The Grundfos FireSAFE+ (**S**afe **A**ctive **F**ire **E**quipment) range of pump packages is designed to comply with the requirements of the following:

(**BS 9251:2021** - Fire sprinkler systems for domestic and residential occupancies.
Code of practice)
(EN 16925:2018 - Fixed firefighting systems. Automatic residential sprinkler systems.
Design, installation, and maintenance
(LPS 1667 (pre-released version) - *Requirements for pump sets used in domestic and residential: automatic sprinkler and low-pressure water mist installations*

The following components are supplied with the **FireSAFE+** product:

Product, Installation and Operating Manual, Stop Operation sticker, CM Quick guide, and Pump booklet.

The following accessories are available from Grundfos:
Cooling line components (for user assembly). Grundfos reference: **92869350**

To make up a BS or LPC compliant system you will need the following additional components:

A - Flow switch
Grundfos only recommends the use of Fire standards approved flow switches.

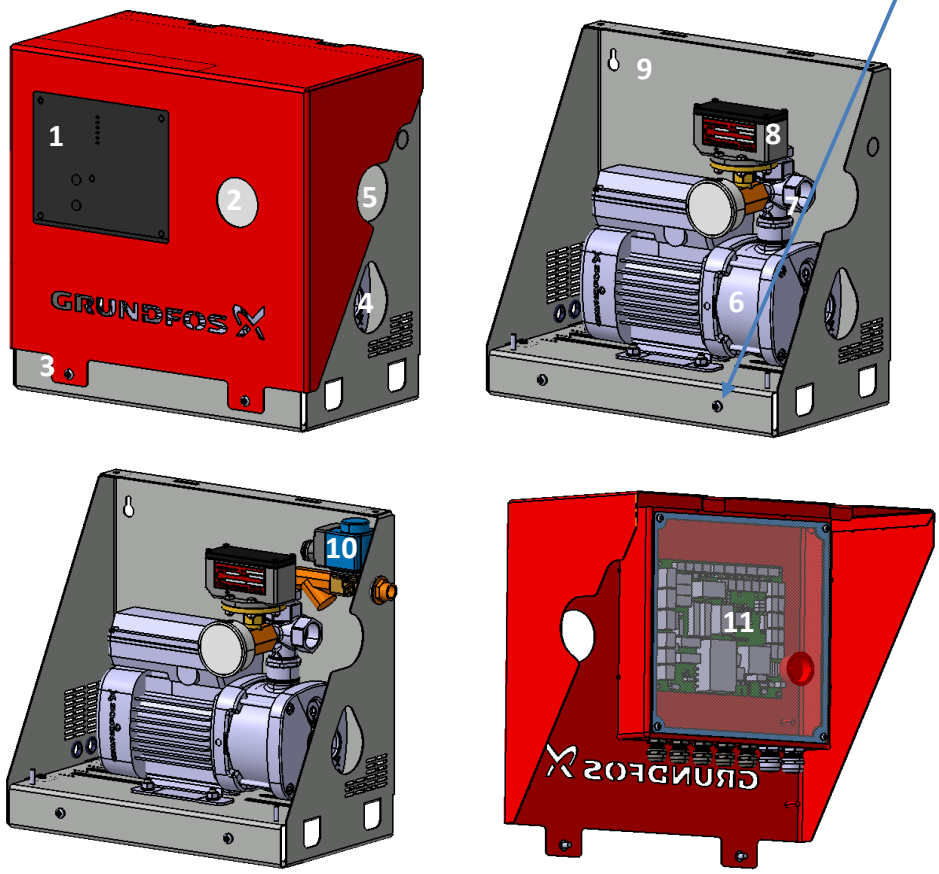
B - Cooling line (Solenoid Valve and Coil):
Manufacturer - Danfoss
Coil – **Part No.** - 018F6701 – **Description** - 230VAC, 50 Hz, 10W
Valve – **Part No**. - 032U1251 – G1/2”- **Description** - Normally Closed
We also recommend that a filtration component (Y-strainer or similar) is used to protect the Solenoid valve. This is available in the Cooling line accessory supplied by Grundfos.

Additionally, a **Battery Backup module** to sustain the buzzer alarm in the event of extended local power loss is available from RS. **RS Part number: 176-9373.**
Description - 2.4V NiMH Rechargeable Battery Pack (700mAh) with lead.

2.5 Key product components

The FireSAFE+ unit is contained within a two-piece steel cabinet.
The following components are integrated within the FireSAFE+ product

Access requires a TX30 security screwdriver



Images 1-4

Identification	Component Description
1	Controller Membrane, LED's and Buttons
2	Pressure Gauge
3	Security Screw – secured byTX30 screws (Security head)
4	Suction port and Priming screw
5	Discharge port
6	CM Pump
7	5-way valve including: ○ Non return valve ○ Drain cock ○ Flow check port
8	Twin head Pressure switch
9	Keyway for wall mounting
10	Accessory – Cooling line/Dump Valve
11	PCB Controller - secured by T20 screws

Pump (Item 6, Images 1-4)
From the Grundfos high quality CM centrifugal horizontal multi-stage range. Choice of seven sizes available within the FireSAFE+ range.
Refer to Pump data sheet for more info.

Pressure gauge (Item 2, Images 1-4)
Providing visual indication of the system pressure and for fine-tuning the pressure switch setting. Range of gauge 0 - 10 bar or 0 - 145 psi.

Pressure switches (Twin head device) (Item 8, Images 1-4)
The FireSAFE+ unit operates directly from a pair of integrated pressure switches. The Pressure switches need adjusting to meet the site-specific requirements. *Refer to section 4.13*

5 Way Valve (Item7, Images 1-4)
Includes:

- Integral non-return valve to prevent back flow.
- Draincock to tap off pressure when servicing.
  Also doubles as connection point for Cooling line.
- Flow test connection from PTFE sealed 1" BSP plug

If using a flow meter, it is possible that the pipe diameter may need up-sizing, see guide below.

The below provides the necessary diameter for each flow range:

Pipe diameter 1"	Flow range 20 -200 L/min
Pipe diameter 1.5"	Flow range 200 - 400 L/min
Pipe diameter 2"	Flow range over 400 L/min

- Discharge port for system connection.
- Pressure switch and Pressure gauge connection.

PCB Membrane/Controller (Items 1 and 11, Images 1-4)
User interface and PCB Controller for all functions and interactions.

Cooling Line/Dump valve (Accessory only, not included) (Item 10, Images 1-4)
Provision has been made for a Solenoid valve/Y strainer connection on the inside of the cabinet. This assembly can be purchased from Grundfos.
Grundfos recommendation can be found in section 2.4

3.1 Sequence of Operation

The Grundfos FireSAFE+ supplies water, usually from a storage tank, via a riser system within the building to a system of sprinkler heads.

Should the pressure in the sprinkler system decay, through minor leakage, then the FireSAFE+ unit will detect this pressure drop, via inbuilt pressure switches and run the pump to re- pressurize the system (**Jockey Mode**). If the pressure switches remain active or re-activate within a small-time window, then the FireSAFE+ will enter **Possible Fire Mode.**

Possible Fire Mode runs the pump until it is manually stopped via the restoration of pressure in the system and the pressing and holding of the Reset button on the front of the cabinet.

If the unit is connected to a Fire Alarm panel, it will send a Fault signal from the FireSAFE+ unit to the Fire Alarm Panel. During **Possible Fire Mode** the cooling line is active. This protects the pump from a potential no flow condition.

Should a sprinkler head activate then the resulting flow in the system will trigger the system flow switch which will report a flow of water to the FireSAFE+ unit which in turn will put the pump in **Fire Mode**. **Fire Mode** runs the pump until it is manually stopped via the restoration of pressure in the system, resulting in the end of the flow signal, and the pressing and holding of the Reset button on the front of the cabinet. If the unit is connected to a Fire Alarm panel, it will send a Fire signal from the FireSAFE+ unit to the Fire Alarm Panel.

The FireSAFE+ unit also performs an **Auto test** on a weekly basis to ensure that it is fault free and the pump is available on demand. During this test the Cooling line valve opens, releasing a small amount of water, causing a system pressure drop. The controller monitors both pressure switches and detects the drop in pressure. The controller activates the pump and continues to monitor. It runs the pump to increase the pressure until it detects the de-activation of both pressure switches. Upon de-activation of both pressure switches, the pump is stopped, and the system should be back up to desired pressure. The **Auto test** result is recorded in the Log file. A failed **Auto test** results in the unit flagging a Fault condition.

Auto test can be replicated at any time, *Refer to section 3.2*

All Controller/Pump activities are logged in the FireSAFE+ units' memory for extraction via USB in report formats.

3.2 Modes of Operation

The FireSAFE+ unit has been specifically designed by Grundfos to assist system designers and installers with complying to the BS, EN and LPS standards, integrating key system signals, monitoring system conditions and to operate automatically.

The FireSAFE+ controller has the following modes of Operation:

- **Jockey Mode** - Pressure maintenance
- **Possible Fire Mode** – Pressure Switch triggered only
- **Fire Mode** – Flow switch confirmed Fire
- **Auto Test Mode** – Weekly self-test
- **Manual Test Mode** – Same as Auto Test Mode

Jockey Mode – System pressure maintenance.

If the system pressure decays enough to activate one or both pressure switches, the FireSAFE+ unit will run the pump for a programmable short period of time (Factory set at 10 seconds). This should be sufficient to re-pressurize the system.

The maximum number of maintenance cycles within a 7-day period before the system registers this as a fault is programmable up to a maximum of 30 (Factory set at 10 starts/week). It can also be programmed off, but this is the responsibility of the installer/user thereafter. This cycle count excludes the automatic weekly pump self-tests.

On exceeding the maximum maintenance cycles the Fault LED on the Control panel and Fault Digital output is activated requiring attendance to reset. The FireSAFE+ units' operation is not impaired.

Possible Fire Mode – Dual Pressure switch detected Fire, Flow switch failure

Following a Jockey Mode operation, the FireSAFE+ monitors the pressure switches during a small programmable time frame window. If the pressure switches remain active or re-activate during this time window, the FireSAFE+ will run the pump in Possible Fire Mode.

Possible Fire Mode runs the pump until it is manually stopped via the restoration of pressure in the system and the pressing and holding of the Reset button on the front of the cabinet. Possible Fire Mode activates the Fault LED on the Control panel and Fault Digital output requiring attendance to reset. The FireSAFE+ units' operation is not impaired.

During Possible Fire Mode the cooling line is active, protecting against running the pump against a potential no flow condition. A Fire Alarm signal will not be generated; hence no contact will be made to the Fire Brigade. A Fault alarm will be raised.

Fire! Mode – Flow switch = **Confirmed Fire**
Should a sprinkler head activate then the resulting flow in the system will trigger the system flow switch which will report a flow of water to the FireSAFE+ unit which in turn will put the pump in Fire Mode. Fire Mode runs the pump until it is manually stopped via the restoration of pressure in the system, resulting in the end of the flow signal, and the pressing and holding of the Reset button on the front of the cabinet. Fire Mode activates the Fire! LED on the Control panel and Fire Digital output requiring attendance to reset.

Auto test Mode – Weekly test

The FireSAFE+ unit performs an Auto test on a weekly basis to ensure that it is fault free and the pump is available on demand. During this test the cooling line valve opens, releasing a small amount of water, causing a system pressure drop. The controller listens for the activation of both pressure switches then runs the pump to restore the pressure while listening for the de-activation of both pressure switches.

The Auto test result is recorded in the Autotest Log file. A failed Auto test results in the activation of the Fault LED on the Control panel and Fault Digital output requiring attendance to investigate the problem and reset.

Manual test Mode
Auto test can be replicated at any time, this is called the Manual test. Refer to section 3.5

3.3 Integration of Signals.

The FireSAFE+ unit has been specifically designed with the ability to power and relay digital signals. The signals could be from any source, but Grundfos suggest the following important signals are used:

- Flow Switch
- Low Water Level

The Flow switch device, the only device allowable under BS9251:2021 to determine the presence of a fire and to activate Fire Mode. Water flow switches normally incorporate an adjustable delay option. This should be optimized with the programmable delay in the controller to the site conditions to prevent activating the Fire Alarm unnecessarily or delaying Fire activation. Consult the documentation supplied with your device.

The Low water level switch device, to give a warning once the water storage capacity has been reduced below the low-level mark. The signal needs to be present for more than the programmable delay in the units' settings, Factory set at 3 seconds, before the controller activates the output.

The digital inputs are supplied with a current limited 12V DC Voltage which can be applied to digital switching devices. Upon switching, the digital inputs are coupled to the volt-free outputs. This allows Volt-Free output to Alarm Control Panels, Sirens, etc.

Voltage wetted inputs negate the requirement for an additional power source to supply the digital signalling device. The inputs are optically connected to the outputs and therefore voltage/current isolated from each other.

3.4 Mains power monitoring / Controller internal fuse monitoring

On the application of mains electrical power, the Power LED on the controller front panel illuminates and the Fault output moves to its healthy position.

Upon failure of the mains power or the controller's internal fuse the LED extinguishes, the Fault relay moves to its unhealthy position and after more than 2 hours without power the internal buzzer activates for 1 second every 30 minutes. This will continue until the mains power is restored or the internal battery fails. The loss of mains power and the restoration of mains power are both recorded in the data logs.

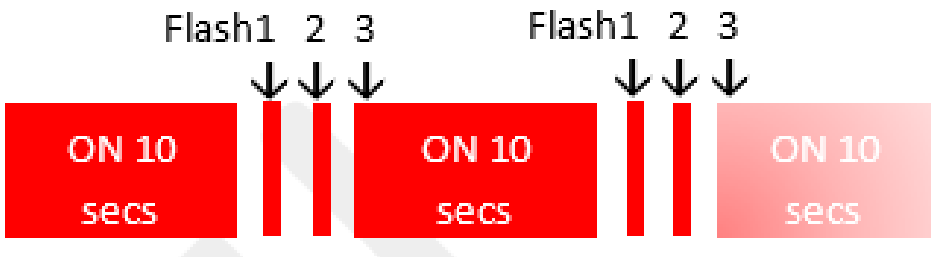
3.5 Button Press Functions

Function	Button	Action
Run Pump	Press and hold **Test** for 1-2 secs but <5 secs	Runs pump for duration of Jockey mode.
Manual Test	Press and hold **Test** for >10 secs, until beep	Manual weekly test
Silence sounder	Press and hold **Reset** for 1-2 secs	Silence sounder
Stop pump	Press and hold **Reset** for >10 secs	Stops pump – when in Fire/Possible Fire mode. Only if pressure and flow signals stop.
Emergency start	Press and hold **Test** + **Reset** for >10 secs	Emergency start (Fire mode)
Clear Faults	Press and hold **Reset** for >20 sec till second beep.	Clears faults.
Service reminder	Press and hold **Reset** for >25 secs, till third beep.	Set/Reset Service reminder for another period
Auto Test	Press and hold **Reset** for >10 secs till beep, followed by Press and hold **Test** > 10 secs till beep	Sets/Resets Auto Test timer on second beep

3.6 LED Operation

LED	Function
PUMP	ON = Pump running
FAULT	ON, Two Flashes = Auto Test Failure ON, Three Flashes = Low Water ON, Four Flashes = Pressure Switch 1 Failure ON, Five Flashes = Pressure Switch 2 Failure ON, Six Flashes = Excessive Operation ON, Nine Flashes = Cooling line Failure ON, Ten Flashes = Possible Fire Mode
FIRE!	ON, Flashing = Fire Mode
SERVICE	ON = Service required
TESTING	ON = Cooling line open ON = Auto test in progress ON = Writing to/from USB
POWER	ON = Mains power available

How to Count the Flashes



3.7 Programming settings

FireSAFE+ is factory-configured with standard settings that should be suitable for most installations. These settings should be verified onsite by the commissioning engineer. Where required, these settings can be changed. See below for instructions on downloading advanced settings from a USB memory stick.

The USB configuration feature is intended for use by qualified installers ONLY.
Changing the settings incorrectly could result in the system failing to operate correctly.

USB device requirements:
Formatted FAT32, Size 1Gb < > 65Gb, no other files on the device, root directory only to be used (no folders).

This process is only for suitably qualified electrical persons, not the end user.

Process: (Programming settings/Extracting Data Logs):

- TURN OFF - **Follow a Safe Isolation Procedure before working on the unit.**
- Remove the Front cover and lay it flat, face down on a soft surface to prevent scratching of the paint.
- Remove the Red plug in the PCB cover.
- Insert USB memory stick device into the USB port.
- Turn ON, wait a few seconds for the unit to beep.
- TURN OFF - **Follow a Safe Isolation Procedure before working on the unit.**
- Remove USB memory stick device, replace the Red plug, re-assemble the Front cover.

Programming settings
A text file called settings.txt, available from Grundfos, can be used to customize the unit values with the aid of a laptop before saving these to the USB device. Then performing the process described above.

This text file is pre-formatted and allows for the customization of settings by editing the values with a laptop/pc in the Windows Notepad editor.

Settings files MUST follow the settings.txt file syntax exactly.
Additional or missing characters and spaces are not permitted and may prevent correct operation. All text after the semi-colon (;) are comments only and are not used by the system.

The USB configuration feature is intended for use by qualified installers ONLY.
Changing the settings incorrectly could result in the system failing to operate correctly.

On completion the unit will be updated, USB device will have a record saved to it from the FireSAFE+ unit of the settings and history before the change. The settings.txt file will also have been changed to settings.old. This is a safety measure to prevent it be accidentally used again. To revert the settings.old file to settings.txt simply rename the extension back to .txt.
Time and date enables an approximate time/date to be set on the FireSAFE+ for time stamping of activity logs.

3.8 Extracting Data logs

Perform the above process. The USB memory device will now have 4 text files on.

- *Autotest Log*

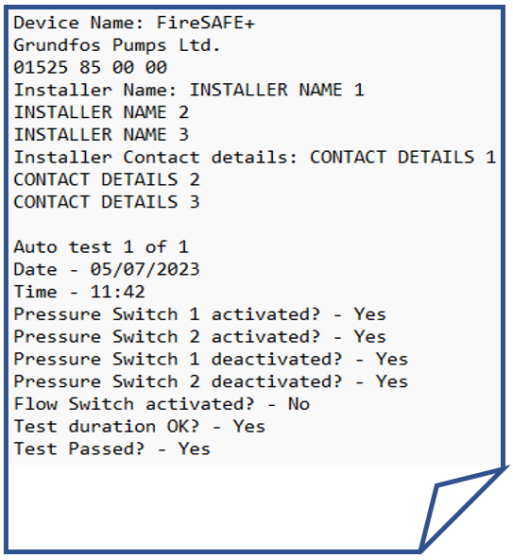
  (records results of all Autotest cycles, Auto or Manually initiated)
- *Fault*

  (records the number and name of the fault and when it occurred)
- *Configuration*

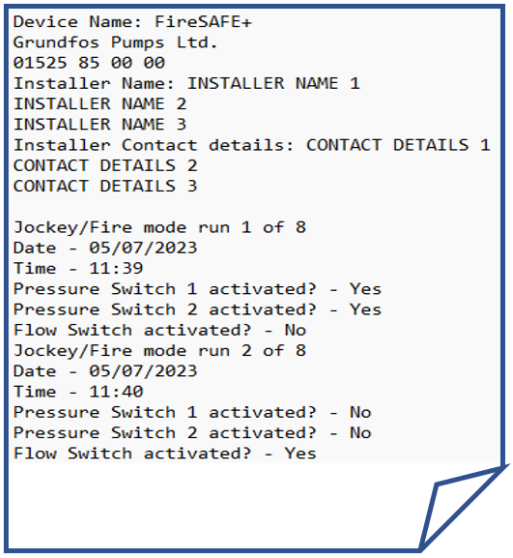
  (records current configuration of the unit)
- *Pump Run Log*

  (records Pressure switch and flow switch activation)

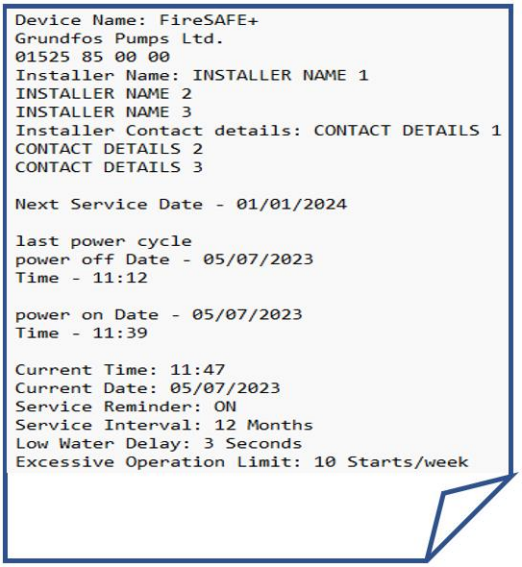
The name of these files will have a date and time stamp on them.
Examples of Log Files.



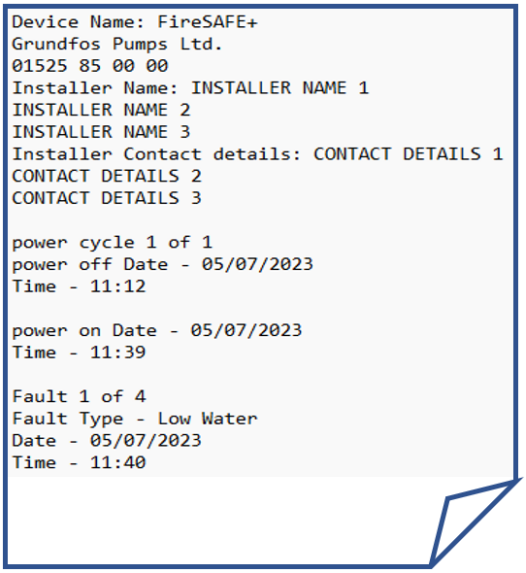
Auto Test



Pump Run



Configuration



Fault

3.9 Factory settings

The FireSAFE+ unit will come preset with the below values. The Time and Date will be programmed in the factory and supported by the internal battery, however if not connected to a power supply for an extended time (> 4 weeks) then the Time and Date will need to be checked and possibly updated.

Current Time:-{{Time}}; *See note above*
Current Date:-{{Date}}; *See note above*
Service Reminder:-ON; ON or OFF
Service Interval:-12; 1 to 12 Months
Low Water Delay:-3; 0 to 60 Seconds
Maximum Run:-OFF; click to change
Maximum Run Time:-480; 1 to 480 Minutes
Excessive Operation Limit:-10; 0 to 30 Starts/week
Jockey Pump Duration:-10; 5 to 120 Seconds
Flow Switch Delay:-1; 0 to 25 Seconds
Pressure Switch Delay:-3; 0 to 10 Seconds
Fire Mode Wait:-5; 1 to 30 Seconds
Device Name:-FireSAFE+
Grundfos Pumps Ltd.
01525 85 00 00; three lines each less than 21 characters
Installer Name:-INSTALLER NAME 1
INSTALLER NAME 2
INSTALLER NAME 3; three lines each less than 21 characters
Installer Contact details:-CONTACT DETAILS 1
CONTACT DETAILS 2
CONTACT DETAILS 3; three lines each less than 21 characters
Auto test Duration:-60; 60 to 600 Seconds
Auto test Open:-5; 1 to 90 Seconds
Auto test Period:-7; 1 to 30 Days
Cooling line Duration:-5; 0 to 60 Seconds
Cooling line Cycles:-30; 1 to 60 times/hour
Model Variant:-1; 0 watchdog 1 domestic 2 residential
Timer override:-0; 0 to 60 minutes set to zero normal for operation

Note –
The device name, Installer name, Installer Contact details are also programmable up to 21 characters.

We recommend that these settings are suitable for most installations, but the system designer will still need to confirm, and the installer will still need to verify the operation.

3.10 Optional Features – Power Loss Alarm back up

Optional rechargeable NiMH battery can be fitted to extend the life of the audible alarm in the event of a power failure (2.4V NiMH Rechargeable Battery Pack (700mAh) with lead).
RS Part number: 176-9373. Fit to J35, *Refer to section 4.14*

3.11 Annual service reminder (12 month)

At the end of every 12-month period the Service LED is activated to remind the user that the unit is due its yearly service, *Refer to sections 5.6 & 5.7*

3.12 Excessive pump operation / Leak detection (> 10 operations in a 7-day period)

If the pump is activated more than ten times in any 7-day period, the system is deemed to have a leak and hence maintenance is required. The Fault Digital output and Fault LED are activated. *These can be reset after being attended too refer to section 3.5*

4.0 General information

4.1 Delivery and handling

The FireSAFE+ unit is supplied from the factory in a cardboard box which will be mounted on a wooden pallet suitable for handling by forklift equipment.

The weight and size of the FireSAFE+ unit may require the use of proprietary lifting equipment to be handled safely. Please observe the weight indicated on the box label before selecting lifting method. Do not stack items on top of the box. Do not drop the pallet. The weight of the unit can also be found in the *Product range – Weights section 6.4.*

4.2 Delivery inspection upon receipt

The FireSAFE+ should be immediately unpacked and inspected.

Any damage must be reported to the supplier within seven days in writing.
It is important that this Installation and Operating manual is studied carefully before any installation takes place. The installation and operation should also be in accordance with local regulations and accepted codes of practice.

Under no circumstances should the unit be operated until correctly installed in the system pipework and ensure that the controller box cover and product cover are secured in their appropriate positions.

4.3 Warranty

1. The Grundfos warranty covers all defects within the FireSAFE+ originating from faulty workmanship and/or materials for a period of two years from the date of installation or thirty months from the date of dispatch from the factory, whichever is the shorter.
2. The warranty covers the replacement of any faulty parts and our labour cost to replace the faulty parts. It does not cover the cost of removing, returning, and refitting the FireSAFE+ unit or any secondary losses arising from the failure.
3. Under no circumstances should faulty equipment be dismantled.
   Failure to comply with this instruction could invalidate the warranty.
4. Defects arising from incorrect installation, installation outside temperature limits (+3°C to 40°C), water containing debris, water containing harmful chemicals, inadequate electrical protection, faulty ancillary equipment, lightning, or other circumstances beyond our control, are not covered by the warranty.

4.4 Site storage

It is strongly recommended once the FireSAFE+ unit has been delivered to site, that it is placed immediately into a dust, moisture and frost-free area which has been secured to prevent unauthorised interference.

4.5 Frost protection

The FireSAFE+ unit must be protected from freezing conditions. The unit may require trace heating or lagging. If the FireSAFE+ unit is being stored during periods of frost the whole unit should be drained to avoid damage. Remove all drain and vent plugs and allow the pump to drain. Do not replace the plugs until the FireSAFE+ unit is to be used again.

The pump must be vented/primed before it is started again. Loosen but do not remove the priming screw until water flows from the hole.

4.6 Operating environment

The FireSAFE+ unit must not be used in an environment which has been classified as hazardous where it could provide a source of ignition and therefore cause an explosion by flame path.

Grundfos do not accept any responsibility for the use of FireSAFE+ unit to pump liquids which could be construed as being hazardous to health either by touch, ingestion or inhalation of fumes or gases given off by the liquid.

4.7 Installation location

Careful consideration must be given to the location of the FireSAFE+

unit. The following are minimum requirements:

The FireSAFE+ unit should ideally be placed in a location where the Control panel LEDs can readily be seen, and the internal buzzer heard without obstruction.

These are primary warning and alarm events and should be available to be observed and heard. Additional system provision for alerting the inhabitants to the **FireSAFE+** warnings/alarm must also be made.

The FireSAFE+ also needs to be protected against the extremes of temperature such as during a Fire or during the winter. Provision to maintain the FireSAFE+ within operating conditions needs to be made within the overall system design.

The FireSAFE+ unit should be sited in a dry, well ventilated, and frost-free position, where it will not be subjected to extremes of temperature.

The FireSAFE+ may be located outdoors in a weather, frost, and rodent proof enclosure with adequate ventilation especially during hot weather. All pipe work subject to freezing conditions must be adequately protected. Alternative system provision must be made for alerting the inhabitants to the FireSAFE+ warnings and alarms.

To enable maintenance and service of the FireSAFE+ unit to be carried out satisfactorily, the area should have adequate lighting for this work to be carried out safely.

Ensure that the FireSAFE+ is positioned to allow access for examination and service. A minimum of 50cm should be left all around the FireSAFE+ unit with 100 cm infront. Adequate drainage facilities and protection from water damage in the immediate vicinity of the FireSAFE+ unit must be provided.

The FireSAFE+ unit should not be installed in an unventilated small space, ensure adequate ventilation for the motor.

4.8 Break tanks and mains water connection

With the permission of the Water Utility company, it may be possible to connect the FireSAFE+ unit directly to the town water mains. A dedicated suction pipe will be required, the diameter of which should match the pump suction as an absolute minimum. Suitable backflow prevention devices as per byelaws should be included.

In situations where the town mains supply cannot be utilized directly it will be necessary to install a water storage tank (break tank) between the incoming mains water supply and the FireSAFE+ unit, it must however have a type AB Air Gap and be supplied and installed in accordance with the Water Byelaws Regulations.

Check that the water storage tank has adequate capacity to meet/exceed the demand. Refer to the standards requirements.

4.9 Installation - General requirements

The suction and discharge pipework must be at least the same size as the FireSAFE+ suction and discharge ports, as a smaller size may result in reduced pump performance or increased system resistance leading to a reduced flow.

The installation suction and discharge pipework may need to be properly supported before being connected to the FireSAFE+ unit so that the FireSAFE+ unit is not stressed.

The pipework installation to and from the FireSAFE+ unit should be in accordance with local water authority regulations, best industry practice and according to the design recommendations in BS 9251 latest revision.

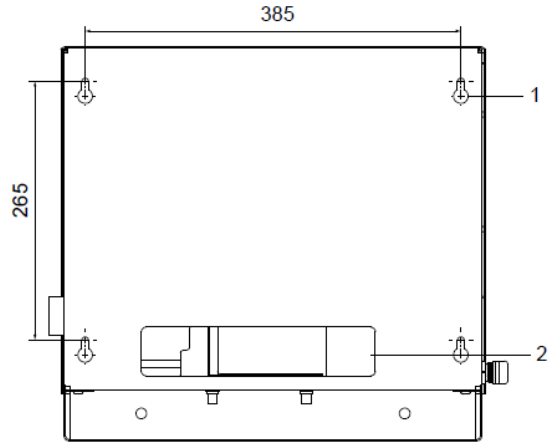
The electrical installation of the FireSAFE+ unit should be in accordance with the latest issue of the I.E.E. regulations and according to BS 9251 latest revision.

4.10 Wall fixing dimensions

All **FireSAFE+** units must be installed with the unit orientated such that the pump is in the horizontal plane. The **FireSAFE+** unit should be stood on a solid surface that will not transmit the small amount of vibration that the rotation of the pump will generate.

The FireSAFE+ unit can be stood on another surface providing vibration insulation is used. The CM3 and CM5 FireSAFE+ units are designed with the possibility of wall mounting. The wall will need to be a suitable load bearing wall. Fixings are **not** supplied with the unit and consideration should be given to vibration insulation between the unit and the wall.

The unit should be fitted with the minimum of spacing of 50 cm all around for ventilation and 100 cm in front for Service access.



Installation dimension, rear view

Pos.	Description
1	Wall mounting keyholes
2	Access to pump fasteners

Floor fixing holes are also provided. Fixing to a sold surface is strongly recommended by Grundfos.

4.11 Operating Conditions

Electrical supply: 230 V +6 / -10%.
Controller fuse: F1 – 500 mA(T).
Pump Fuse: F2 - 15 A.
Cooling line valve Fuse: F4 – 500 mA(T)
Electrical load: see Product Range – Electrical Requirement, *refer to section 6.1*
Pollution Degree: 3
Noise level: <65 dB(A) at full speed.
Liquid temperature range: +3°C to +60°C.
Ambient temperature: From +3°C to 40°C.
Relative humidity: up to 95 % non-condensing.
Altitude: use up to 2 km above sea level.
Usage: Indoor (Outdoor, subject to restrictions found)
Type of protection: Class 1 (earthed) equipment.
Equipment type: Stationary, fixed equipment.
Construction Type: Fixed construction, no moveable parts.
EMC Environment: B (light industrial, commercial, and residential)
Pressure switch: (Bailey & Mackey Ltd.) Range: 0.5 to 11 bar
Pressure gauge range: 0 to 10 bar **Pump casing pressure rating:** 10 bar
Pump generated pressure: *refer to section 6.2*

4.12 Installation and commissioning recommendations

We recommend that System Design, Installation and Maintenance of FireSAFE+ unit should only be carried out by Engineers holding UKAS accredited certification (FIRAS/LPCB/IFCC).

All electrical connections should be carried out by a qualified and authorized electrician in accordance with the wiring diagram supplied within the control panel/this manual, the latest I.E.E. regulations and in accordance with BS9251 latest revision.

All mechanical connections should be carried out by a qualified and authorized person in accordance with BS9251 latest revision and the relevant codes of practice.

The FireSAFE+ unit must be earthed.

Do not attempt to start the pump even to check the direction of rotation until the system has been filled with water and both the pump and the system have been primed/vented. Running the pump dry may permanently damage it. This will not be covered by warranty.

Do not remove the controller enclosures, controller components, motor terminal box cover, electrical cables, or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated and cannot be switched back on.

Do not attempt to supply electricity to the controller/unit and run the pump electric motor without ensuring that all electrical fittings, cables, and enclosures are intact and suitably electrically isolated from human touch during operation.

Do not attempt to supply electricity to the electric motor or re-pressure the pipe work system without first ensuring that all protective coverings are held securely in their correct positions.

4.13 Pressure switch setting

The FireSAFE+ Pressure switches are factory set according to the following table.

Model	Closed Valve Head (m / bar)	Pressure Switch setting (bar)
CM3-3	27.3 / 2.67	2.0
CM3-5	45.9 / 4.50	4.0
CM5-3	27.9 / 2.74	2.0
CM5-4	37.3 / 3.66	3.0
CM5-5	46.6 / 4.56	4.0
CM10-2	31.0 / 3.04	2.5
CM10-3	46.6 / 4.56	4.0

The factory setting may not be ideal for the site application, this can be changed to suit. The operating range of the pressure switches are 0.5-11 Bar.

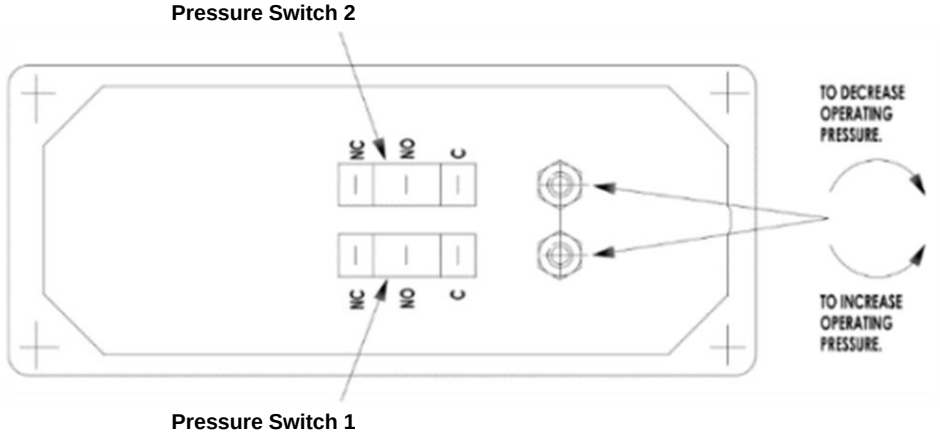
The pressure switch is found inside of the cabinet, on top of the pump, access is via the removal of the top cover screws.

Adjustment is made with a Socket or spanner.

NOTE – Two pressure switches to be adjusted.

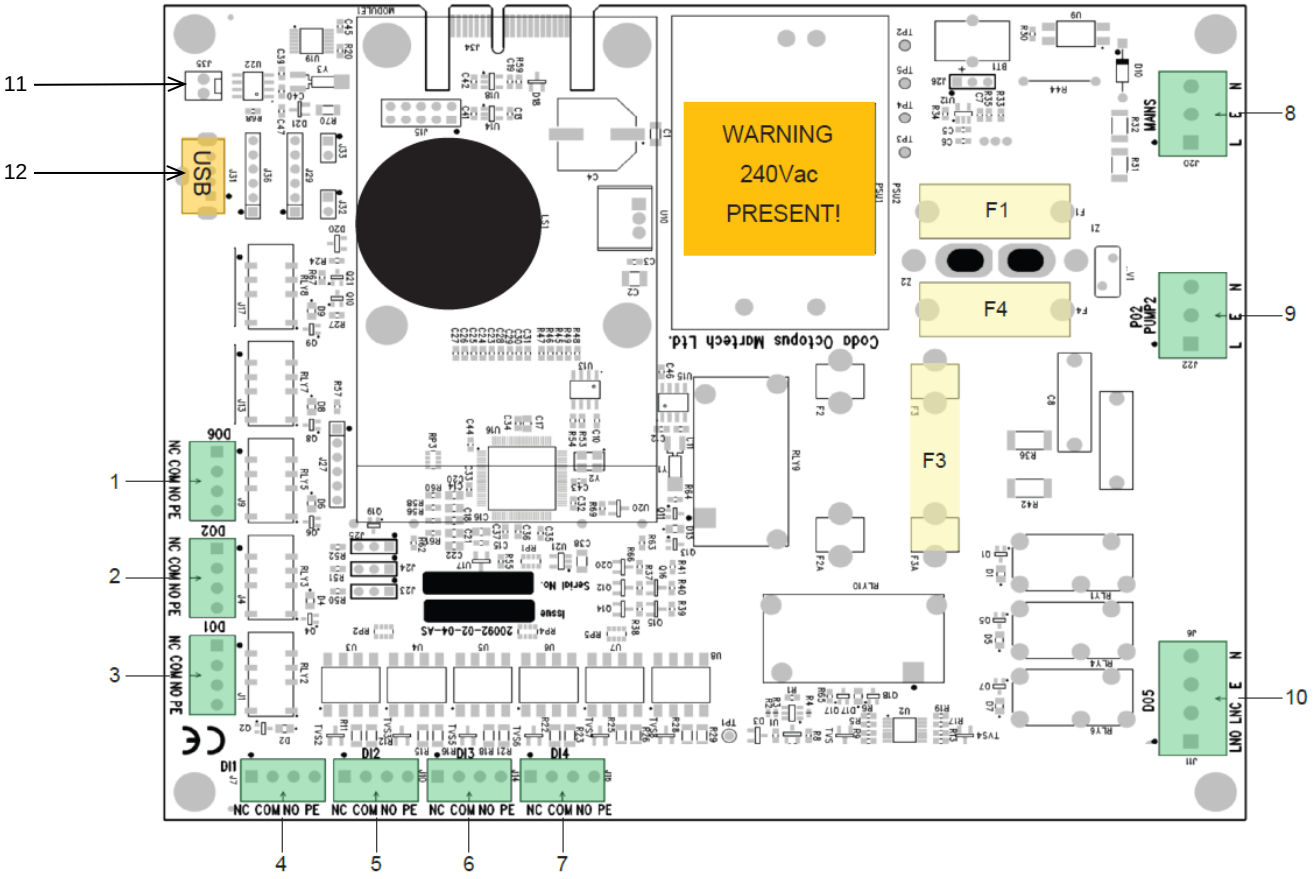
Set the system to desired pressure. Adjust the nuts until the microswitch triggers.

The triggering can also be verified by using a multi-meter to confirm the contacts are open/closed while adjusting nuts.



Removing the pressure switch case exposes the user to electrical voltage and must only be carried out by authorised/competent persons.

4.14 Electrical Connections

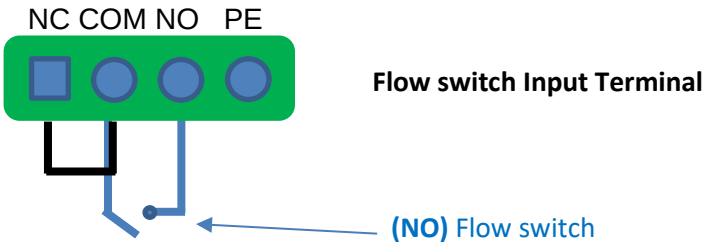


Pos.	Description	Remark
1	**Low water output**	COM-NO closes on low water condition. COM-NC opens on low water condition. *Outputs Volt free change-over contacts, maximum 5 A.*
2	**Fault output**	COM-NC closes on fault, or power failure condition. COM-NO opens on fault or power failure condition. *Outputs Volt free change-over contacts, maximum 5 A.*
3	**Fire alarm output**	COM-NO closes when in fire mode condition. COM-NC - opens when in fire mode condition. *Outputs Volt free change-over contacts, maximum 5 A.*
4	**Pressure SW1 input**	COM-NC switch to open on low pressure, close on high pressure. *Voltage wetted, 12 VDC on COM terminal.*
5	**Pressure SW2 input**	COM-NC switch to open on low pressure, close on high pressure. *Voltage wetted, 12 VDC on COM terminal.*
6	**Flow switch input**	NC-COM switch to open on flow, close on no flow. NO-COM switch to close on flow, open on no flow. *In this configuration, the COM-NC contacts must also be linked.*

7	**Water level input**	COM-NC switch to open on low water condition.
8	**Mains Input**	*LEN, 240 VAC, 15 A*
9	**Pump 2**	*LEN, 240 VAC, 13 A maximum*
10	**Cooling line Valve**	LNC, E & N – Normally closed valve LNO, E & N – Normally open valve *240 VAC, 5 A maximum*
11	**Optional Backup battery**	J35 – extends the life of the buzzer after power loss.
12	**USB**	USB Type A Port
F1	**Controller Fuse**	*Factory fitted with fuse 500 mA(T)*
F3	**Pump Fuse**	*Factory fitted with fuse 15 A (T)*
F4	**Cooling Line Valve Fuse**	*Factory fitted with fuse 500 mA(T)*

If **not** using a Low Water switch, then you will need to link together the Low Water input terminals **NC** and **COM.** The controller will ignore the input.

If using a Normally Open **(NO)** Flow switch, then you must disable the Normally closed input by linking together the Normally closed input terminal and Common (**COM** and **NC**) Flow switch input and use **COM** and **NO**.



No software update or programming is required for either of these adjustments.

Digital Input and Output terminals are suitable for max. 0.5mm^2 cable.
Digital Inputs are wetted with 12V DC
Digital Output terminals are suitable for 5A max

5.0 Installation checklist

During the installation phase:
DO NOT apply mains power to the unit. DO NOT apply water to the unit.

Step	Done	Activity	Action/Check/Notes
1	❑	Fully read and study this manual.	
2	❑	Unpack, inspect for completeness and any damage.	*Report to supplier/customer Do not use.*
3	❑	Ensure that the installation location meets all the requirements in this manual and the latest applicable Standard.	
4	❑	Transport the unit to the chosen location.	*Caution - handling*
5	❑	Test proposed location of unit for suitability, fit, access and ventilation.	*50 cm all round and 100 cm in front*
6	❑	Make wall/floor fixings.	*Recommended*
7	❑	Remove the two screws retaining front cover. Lift and remove front cover. Place in front of unit.	*Do not disconnect earth wire bonding the back box and front cover. Requires T30X screwdriver*
8	❑	Locate unit and fasten down unit as required.	*Recommended*
9	❑	Make the suction port connections to the water supply.	*Do not turn on water. Union type connection recommended*
10	❑	Make the discharge port connections to the sprinkler riser.	*Do not turn on water. Union type connection recommended*
11	❑	Assemble Cooling line components	
12	❑	Fit Cooling line to final location	*Fit external/internal*
13	❑	Make the Cooling line connections to drain or re-circulate to tank	
14	❑	Remove the four fixing screws retaining the back plate of the controller and open the controller.	*Connection diagram found on back plate of the controller and in the I&O manual.*
15	❑	Wire digital inputs from water tank and flow switch through grommets on side wall of the back cabinet through, controller box glands and to connector blocks on PCB (as required). Label wires. Perform continuity check.	*Connection diagram found on back plate of the controller and in the I&O manual.* ***Maximum wire CSA = 0.5mm²***
16	❑	Wire digital outputs through grommets on side wall of back cabinet, through controller cable gland and to connector blocks on PCB. Label wires. Perform continuity check.	*Connection diagram found on back plate of the controller and in the I&O manual. Caution – Ensure there are no voltages on the Digital input wires from other sources.* ***Maximum wire CSA = 0.5mm²***
17	❑	If adding the optional Power Loss Alarm back up unit. Cable tie and stick base to side wall of box.	*Refer to sections 3.10 & 4.14*
18	❑	Re-fit the controller back plate and front cover.	*Requires Torx T20 screwdriver*
19	❑	Connect the other end of the electrical power cable to the mains power supply. **This should be to a lockable isolator.** Lock off the isolator to ensure mains power cannot be applied to the unit.	*Do not connect mains power to the unit Ensure mains power cannot be applied and is locked OFF. System must be earthed.*
20	❑	Review all the above actions, if the commissioning phase does not follow immediately after, replace the front cover and screws. Leave the unit in a safe condition.	*Isolate Electrically and hydraulically.*
21	❑	**System is ready to be Commissioned.**	

5.1 Commissioning checklist

Before the commissioning phase starts ensure that the **Installation checklist** has been completed and check the state of the mains power and water supplied to the unit.

Step	Done	Activity	Action/Check/Notes
1	❑	Fully read and study this manual.	
2	❑	Ensure that the installation location meets all the requirements in this manual and the latest applicable Standard.	
3	❑	Check mains power and water to the unit are both OFF	*Ensure both are OFF and cannot be accidentally turned ON.*
4	❑	If necessary, remove the two screws retaining front cover. Remove front cover. Place to one side.	*Do not disconnect earth wire bonding the back box and front cover. Requires T30X screwdriver*
5	❑	Inspect the Installation, check everything in the **Installation** checklist has been completed.	*Check supply tank is full and the correct capacity.*
6	❑	Check the factory setting of the pressure switch are according to the design calculations for the system. Make note of any differences for correction later. Step 11.	*May require further adjustment against the pressure gauge later*
7	❑	Close the system isolating valve on the discharge side of unit. Open the system isolating valve on the suction side of the unit. Apply water to the unit.	
8	❑	Prime the CM pump and the whole system as necessary. Open the discharge isolating valve. Inspect for leaks	*Refer to CM pump I&O manual for guidance. Fix any leaks.*
9	❑	Remove the controller Back cover and check all supplementary wiring. If changing the settings, insert the USB stick with the settings file on. Refit the Back cover controller cover and review all the above actions. Apply the mains power. The controller will auto detect and apply the settings upon power up.	*Requires Torx T20 screwdriver* *Refer to section 3.7*
10	❑	Pump will start, Jockey cycle, and pressurize the system. If necessary, prime/vent the system again. Check the pressure gauge value is as expected. Inspect for any leaks	*Fix any leaks*
11	❑	Tune the pressure switch settings for the system against the gauge readings and the designed pressures settings by draining off water and allowing the unit to respond observing values on gauge.	
12	❑	Check the Digital Inputs give the expected outputs when activated. • Low water level input -> **Fault output** Y / N (Ring answer) • Flow switch input -> **Fire! output** Y / N (Ring answer)	*Optimize any delay on flow switch with delay in program.* *Refer to section 4.14*
13	❑	Remove the USB stick. Replace front cover and re-fit the two screws	
14	❑	Set the Auto Weekly Test time and Annual Service reminder	*Refer to section 3.5*
15	❑	Clean up area and ensure safe for user, Mains isolator is in the ON position, Isolating valves are in the OPEN position. Put system into Operation, Clear any faults.	*Refer to section 3.5*
16	❑	**System is ready for Verification**	*Update the history log at back of this manual*

5.2 System Verification checklist

Before the system is signed off and handed over to the customer the whole system needs to be performance verified.

Step	Done	Activity	Action/Check/Notes
1	❑	Fully read and study this manual.	
2	❑	Inspect the installation, check everything in the installation and commissioning check list has been completed.	
3	❑	With the system active, pressurised and fault free.	
4	❑	Partly open the FireSAFE+ draincock or other drain point creating a very slow pressure drop	*Pressure maintenance function test*
5	❑	Observe the pressure decaying and the point at which the system re-acts on the pressure gauge.	*Check values against installation requirement. Change as necessary. Repeat as necessary.*
6	❑	Close the drain point and seal the system. Observe the **FireSAFE+** unit restoring the system pressure and returning to a healthy state after Jockey cycle.	*Observe Controller LEDs*
7	❑	Activate the Low water switch. Observe the LEDs on the front panel. Fault ON. This will activate after the Low water delay and will go OFF once the Low water switch signal has been stopped. Activate the Flow switch. Observe the LEDs on the front panel. Pump ON, Fire! ON. Press and hold the Reset button to stop	*Fire Alarm mode Continuous operation*
8	❑	Check the Digital Inputs give the expected outputs when activated. • Low water level input -> **Fault output** Y / N (Ring answer) • Flow switch input -> **Fire! output** Y / N (Ring answer)	*Refer to section 4.14*
9	❑	Clear all active faults	*Refer to section 3.5*
10	❑	System should return to healthy operation state, Run Manual Test to check the Cooling line/Dump valve operation	*Refer to section 3.5*
11	❑	Use the USB stick to record the system parameters. Check off all the values and logs. Check the Time and Date are current. Update if required.	Refer to section 3.7 & 3.8
12	❑	Place the **Stop System after fire activation** sticker in a clearly visible location near or on the FireSAFE+ unit.	*Sticker included in document pack. Gives the user quick shut down instructions.*
14	❑	Clean up area and ensure safe for user. Mains isolator is locked in the ON position. Isolating valves locked in the OPEN position.	*Inform customer and any monitoring services that the system is operational. Handover this manual.*
15	❑	**System is ready to use**	

5.3 Operation

After completion of the **Installation**, **Commissioning** and **Verification** checklists the FireSAFE+ unit is ready for operation. The FireSAFE+ unit has been designed for automatic operation with the minimum of user input.

The user does have the following 8 option:

1 – Test Pump
2 – Manual Auto Test
3 - Silence Sounder
4 - Stop Pump (if in Possible Fire/Fire Mode)
5 - Emergency Start into Fire Mode
6 - Clear Faults (not logs)
7 - Reset/Set Service Reminder
8 - Set Auto Test time

Refer to section 3.5

Visual periodic inspection for Service and Fault LED is required.

5.4 User Inspection

It is the customer's responsibility to inspect the FireSAFE+ unit in addition to any service contract to ensure the safety and correct operation of the set during the interim period between service visits. The FireSAFE+ unit should be inspected at regular intervals of not more than six months.

This can be done by the user, following the checklist below.

The Record of the inspection should be added to the History Log at the back of this manual.

Step	Activity	Action/Check/Notes
1	Check that there are no leaks/corrosion from the system pipework. Inspect as far as reasonably possible.	*Report as necessary. Schedule maintenance*
2	Check the controller display **Fault** or **Service** LED is not lit.	*Refer to fault finding checklist. Schedule a service or maintenance visit.*

Any large deviations from the system designed settings should be investigated for a possible fault. Should any faults be found check the symptoms with the fault-finding checklist first, and if necessary contact the facilities manager or installer in the first instance.

Details may be found on the front of this manual and in the History log section.

5.5 User maintenance

There are **NO** user serviceable parts in the FireSAFE+ unit.

5.6 Service & Annual test/Inspection

BS 9251:2021 recommends that the full fire protection system is tested and inspected every twelve months. This includes the FireSAFE+ unit and ensures that the system remains in first class working order.

The FireSAFE+ unit should be tested annually by a suitably qualified and competent person.

Following the below checklist gives some minimum activities that need to be completed at each service and annual test. Other activities will need completing according to the system design and any fault rectification required.

Should any maintenance work be required then the water and electricity supply may require isolating prior to commencing work.

The building will be without the fire protection that the FireSAFE+ unit gives during this period and alternative measures should be considered. The owner of the building and any inhabitants should be informed of this.

Ensure any outgoing signals from the FireSAFE+ unit are not going to cause activation of:

- Fire alarms/beacons
- Fire alarm control panel
- Fire service response or fire monitoring service response
- Any other warning/monitoring devices installed (eg. SMS to mobile device)

Consideration should be given to contacting any response services beforehand and informing them of the Service and annual test activity of the FireSAFE+ unit.

Before removing the terminal box cover from the electric motor or before any removal/dismantling of the pump/motor unit takes place, ensure that the electricity supply to the control panel has been suitably isolated and cannot be switched on.

Once any maintenance work is completed, ensure that the isolating valves are opened fully, locked in the open position and that the electricity supply to the FireSAFE+ unit is restored, and locked in the ON position.

Check that the correct system pressure is achieved.
Inform the necessary people that the system has been restored.

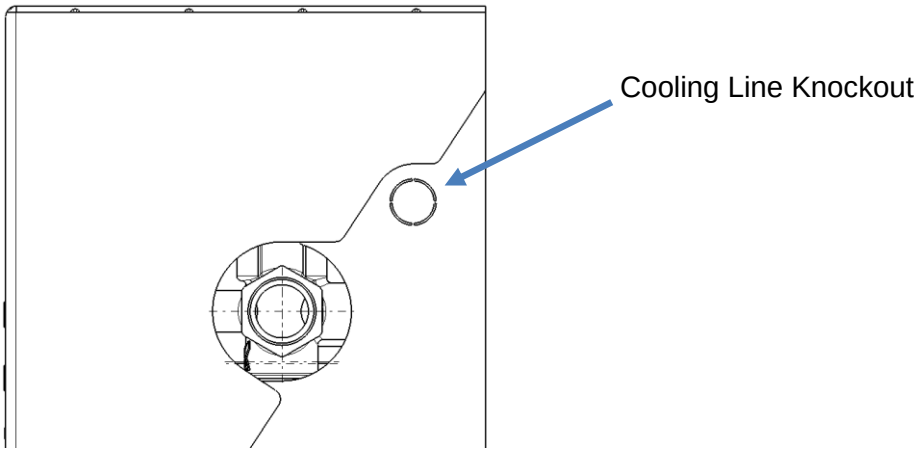
5.7 Service & Annual test checklist

Step	Done	Activity	Action/Check/Notes
1	❑	Inspect the control panel for any LED Fault indications. Investigate and resolve any Fault conditions first.	*Refer to section 8*
2	❑	**TURN OFF** - Follow a Safe Isolation Procedure before working on the unit.	
3	❑	Remove the two screws retaining front cover. Remove front cover. Place to one side. General inspection for loose fittings, pump fixings, cabinet fixings General inspection for leaks, corrosion, and damage.	*Do not disconnect earth wire to the front cover.* *Fix any leaks.* *Report any corrosion.* *For leaks from pump shaft seal. Refer to CM pump I&O.*
4	❑	Inspect all external electrical wiring for wear and tear, nicks, breaks, exposed conductors, and poor fitting/termination etc.	*Repair/replace as necessary.*
5	❑	Inspect all internal electrical wiring for wear and tear, nicks, breaks, exposed conductors, and poor fitting/termination etc. Check Pressure switch terminals for corrosion and connector fully engaged	*Repair/replace as necessary.*
6	❑	Access the PCB controller and Inspect: PCB, fuses, and wiring.	*Repair any wiring.* *For fuses refer to spare parts list.*
7	❑	Inspect for leaks and corrosion.	*Fix any leaks.*
8	❑	Re-assemble the unit. Review all the above actions then follow the Safe Isolation Procedure for safe re-energisation. **TURN ON.**	
9	❑	Perform Annual system test.	*As per BS 9251 requirements.*
10	❑	Check unit responds to pressure drop, and enters: • System pressure maintenance mode (Jockey Mode) • Possible Fire mode Check Flow switch enables • Fire Mode	*Refer to section 3.5* *To exit Possible Fire mode, restore system pressure and press and hold Reset button.* *To exit Fire mode, stop flow signal and press and hold Reset button*
11	❑	Check the Digital Inputs give the expected outputs when activated. • Low water level input -> **Fault output** Y / N (Ring answer) • Flow switch input -> **Fire! output** Y / N (Ring answer)	*Refer to section 4.14*
12	❑	Perform Manual Auto Test to test cooling line	
13	❑	With the USB stick take a copy of the unit log files and inspect. Check the Time and Date, update if required.	*Refer to section 3.7 & 3.8*
14	❑	Set the pump test time. If desired.	*Refer to section 3.5*
15	❑	Reset/Set the Annual Service Reminder	*Refer to section 3.5*
16	❑	Clean up area and ensure safe for user, Mains isolator is locked in the ON position Isolating valves locked in the OPEN position	*Refer to section 3.5*
17	❑	**System is ready to operate.**	*Inform customer that the system is operational. Handover this manual.*

5.8 Cooling Line Accessory

If using the Grundfos Cooling line accessory, then this can be fitted internally or externally to the FireSAFE+ product.

To fit internally the knockout plug located on the right-hand side of the FireSAFE+ unit must be removed, and any sharp edges taken off with a file. It is also recommended that any exposed metal is painted/primed before fitting the Cooling Line.



The recommended cooling line characteristics can be programmed through the USB route and the settings file. Grundfos have approved one setting that suites all pump models.

The cooling line opens for 5 seconds every 2 minutes, releasing approximately 2 litres of water each time.

Any changes to this are the user's responsibility.

Further details are provided with the *Cooling line Accessory*

6.0 Technical Information

6.1 Product Range – Electrical Requirement

Model	Start up Current (A)	FLC (A)	Motor Power
FireSAFE+ CM3-3	16.43	3.1 - 2.8	0.50
FireSAFE+ CM3-5	16.43	3.1 - 2.8	0.50
FireSAFE+ CM5-3	16.43	3.1 - 2.8	0.50
FireSAFE+ CM5-4	17.16	4.4 - 4.0	0.67
FireSAFE+ CM5-5	23.22	5.4 - 5. 0	0.90
FireSAFE+ CM10-2	28.56	8.4 - 8.0	1.30
FireSAFE+ CM10-3	40.7	11.0 - 10.0	1.70

6.2 Product Range – Pressures and Flows (consult Product Data sheets for Pump curves)

Model	Nominal Head (m / bar)	Nominal Flow (l/min)	Closed Valve Head (m / bar)
FireSAFE+ CM3-3	20.3 / **2.0**	51.6	27.3 / **2.67**
FireSAFE+ CM3-5	34.5 / **3.38**	51.6	45.9 / **4.50**
FireSAFE+ CM5-3	22.8 / **2.23**	78.3	27.9 / **2.74**
FireSAFE+ CM5-4	30.7 / **3.00**	78.3	37.3 / **3.66**
FireSAFE+ CM5-5	38.6 / **3.78**	78.3	46.6 / **4.57**
FireSAFE+ CM10-2	24.6 / **2.41**	166.6	31.0 / **3.04**
FireSAFE+ CM10-3	38.0 / **3.72**	166.6	46.6 / **4.56**

6.3 Product Range – Overall Dimensions

Model Description	Width (mm)	Height (mm)	Depth (mm)
FireSAFE+ CM3-3	435	404	228
FireSAFE+ CM3-5	435	404	228
FireSAFE+ CM5-3	435	404	228
FireSAFE+ CM5-4	435	404	228
FireSAFE+ CM5-5	435	404	228
FireSAFE+ CM10-2	545	439	277
FireSAFE+ CM10-3	545	439	277

6.4 Product Range – Weights

Model	Gross Weight	Net Weight (Kg)	Wet Weight
FireSAFE+ CM3-3	31.5	23	25
FireSAFE+ CM3-5	32.5	24	26
FireSAFE+ CM5-3	33.5	25	27
FireSAFE+ CM5-4	33.5	25	27
FireSAFE+ CM5-5	35	26.5	28.5
FireSAFE+ CM10-2	50.5	41	44
FireSAFE+ CM10-3	52.5	43	46

7.0 Spare Parts List

Part no.	Description
92910215	I & O Manual
92910216	CM3-3 Pump
92910217	CM3-5 Pump
92910218	CM5-3 Pump
92910219	CM5-4 Pump
92910220	CM5-5 Pump
92910221	CM10-2 Pump
92910222	CM10-3 Pump
92910652	CM3/5 Discharge assembly
92910653	CM10 Discharge assembly
92910658	Twin Pressure switch
92910659	Pressure Gauge
92910670	Controller
92910671	Fuses
92910672	Small fixings and back cover
92910673	CM3/5 Metalwork
92910674	CM10 Metalwork

7.1 De-commissioning

De-commissioning is the process of taking out of service the FireSAFE+ unit. Reasons for this could be:

- Replacing with another unit
- Upgrading the unit
- Removing the system altogether

7.2 Dismantling

Always make sure that adequate provision is made to capture any water drained from the system and **FireSAFE+ unit** when dismantling.

Always make sure that adequate water spill protection for flooring etc is in place before dismantling and draining any part of the system or FireSAFE+ unit.

Appropriate PPE must be worn:

- Foot Protection – Safety Boots. EN ISO 20345:2011.
- Eye Protection – Safety glasses. EN166-1F.
- Basic Hand Protection – Gloves. EN388

Ensure any outgoing signals from the FireSAFE+ unit are not going to cause activation of:

- Fire alarms/beacons
- Fire alarm control panel
- Fire service response or fire monitoring service response
- Any other warning/monitoring devices installed (eg. SMS to mobile device)

Consideration should be given to contacting any response services beforehand and informing them of the de-commissioning and dismantling of the FireSAFE+ unit.

- Isolate the electrical supply ensuring it cannot be turned back on
- Disconnect the electrical supply from the FireSAFE+ unit
- Press the Test/Reset button on the control panel to silence the internal buzzer
- Close the system isolating valve on the suction side of the FireSAFE+ unit
- Remove the two screws holding the front cover in place
- Lift off the front cover and disconnect the earth bonding wire to the front cover and place the cover in safe place out of the way
- The sprinkler system may still be pressurised from the FireSAFE+ internal non- return valve to the sprinkler head. Drain the water from the system from the system drain point; beware of pressure in the system. Close the system isolating valve on the discharge side of the FireSAFE+ unit
- Drain the FireSAFE+ unit and system pipework from the point chosen to disconnect the FireSAFE+ unit on the suction side of the unit.
- Drain the FireSAFE+ unit by removing the drain plug in the pump
- Dismantle the pipework and base/wall fixings.
- Remove the set with appropriate handling equipment and procedures.

7.3 Disposal

The **FireSAFE+ unit** has valuable recyclable components.

Disposal of this product or parts of it must be carried out according to the following guidelines:

- Use the local public or private waste collection service.
- The materials/components used need to be segregated according to the disposal receivers' requirements.
- In case such waste collection services do not exist or cannot handle the materials used in the product, please deliver the product or any hazardous materials from it to your nearest Grundfos company or service workshop.

Local and National environmental legislation must always be complied with.

8.0 Fault finding

Fault event, LED	Fault Detected
Power LED not illuminated.	**No Power to the unit.** **Controller fuse failure.**
Fault LED Flashing 2 times.	**Auto Test Failure.** One of the pressure switches has not activated or de-activated. Pump could not restore the pressure within the given time period.
Fault LED Flashing 3 times.	**Low Water Signal.** Low water level in tank has been detected or the Low water input is not being used and has not been linked out.
Fault LED Flashing 4 times.	**Pressure switch 1 Failure.** During Auto test/Jockey mode Pressure switch 1 failed.
Fault LED Flashing 5 times.	**Pressure switch 2 Failure.** During Auto test/Jockey mode Pressure switch 2 failed.
Fault LED Flashing 6 times.	**Excess Consumption/leak.** Pump starts has exceeded the weekly programable value.
Fault LED Flashing 9 times.	**Cooling line failure.** During Auto test neither Pressure switches activated. Cooling line is protected by a fuse and the open time is programmed.
Service LED ON.	**12-month Service due.**

For more specific details take a copy of the logs files and interrogate.

System operation problems can be diagnosed using the following checklist:

Fault	Possible cause(s)	Corrective Action(s)
Pump does not run when "Test" button is pressed for 1-2 seconds but less than 5 seconds.	1) No electrical supply to Pump/FireSAFE+ control panel. 2) Pump fuse failure. 3) Controller fuse failure. 4) Faulty Controller. 5) Power wiring to	A) Check power LED ON. B) Check Pump and Controller fuse. C) Check electrical supply to pump.
Pump does not reach the duty point but continues to run until it goes into Possible fire mode.	1) Not enough water getting into the pump. 2) Air trapped in pump and or system. 3) Small demand from system or leak. 4) Incorrect pump installed for demand.	a) Check suction isolating valve is fully open. b) Bleed air, system & pump. c) Check system for demand / leak. d) Check pump and unit nameplate matches performance required.
Pump does not reach the duty point while running and shuts off.	1) Pressure switch setting too low. 2) Pressure switch fault.	a) Check settings of the pressure switches are not too low. b) Replace pressure switch. c) Check unit is suitable for duty point required.
Pump delivers correct pressure but does not stop with no demand and enters Possible Fire or Fire Mode.	1) Pressure switch set too high. 2) Pressure switch fault. 3) Demand from system/leak. 4) NRV not sealing properly. 5) Wrong flow switch type installed. (Normally Open)	a) Check settings of the pressure switch are not too high. b) Replace pressure switch. c) Inspect system. d) Stop pump check if system is holding pressure. e) Check pressure switch type and wiring. Normally Open switches require Normally closed terminals linking out.
Pump does not start Alarm! LED ON Buzzer ON	1) Pump fault. 2) Pump fuse failure. 3) 4) Wiring fault.	a) Check pump and pump fuse. b) Check pump wiring.
Possible Fire Mode engaged, pump on but no sprinkler head activated	1) Leak in system great enough to cause pressure drop and engage Possible Fire Mode.	a) Find and fix leak. b) Reset system.
Contact your system Installer/Grundfos Service for anything else.		

9.0 UKCA Declaration of Conformity

We, **Grundfos**, declare under sole responsibility that the products to which the declaration below relates, is in conformity with the UK regulations, standards and specifications to which conformity is declared, as listed below:

Valid for Grundfos products: **FireSAFE+**

- **Supply of Machinery (Safety) Regulations 2008/1597**
  Standards used: BS EN ISO 12100:2010
  Standards used: BS EN 809:1998+A1:2009
- **Electrical Equipment (Safety) Regulations 2016/1101**
  Standard used: BS EN 60335-1:2012+A15:2021
  Standard used: BS EN 60335-2-41:2003+A2:2010
- **Electromagnetic Compatibility Regulations 2016/1091**
  Standard used: BS EN 55014-1:2017+A11:2020, BS EN IEC 55014-2:2021
  Standard used: BS EN IEC 61000-3-2:2019+A1:2021, BS EN 61000-3-3:2013+A2:2021
  Standard used: BS EN 61000-6-1:2007, BS EN 6100-6-3:2007+A1:2011
- **Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012/3032**
  Standard used: BS EN IEC 63000:2018

The Grundfos **FireSAFE+** range is designed to comply with the recommendations of Standards *BS 9251:2021, EN16925: 2018 and LPS1667 (pre-release)*

This UKCA declaration of conformity is only valid when accompanying Grundfos instructions (Publication number **92914802**).

Bjerringbro, 02/03/2023 **Signature**

Elliot Watt
Engineering Manager
Grundfos Holding A/S.
Poul Due Jensen Vej 7
DK-8850 Bjerringbro, Denmark.

Manufacturer and person empowered to sign the UKCA Declaration of Conformity.

If further details are required, please contact the Grundfos offices listed on the back page of these instructions.

CE 10.0 EU Declaration of Conformity

We, **Grundfos**, declare under sole responsibility that the product **FireSAFE+,** to which the declaration below relates, is in conformity with Union harmonisation legislation, standards and specifications to which conformity is declared, as listed below:

- **Machinery Directive (2006/42/EC)**
  Standards used: EN ISO 12100:2010
  Standards used: EN 809:1998+A1:2009
- **Low Voltage Directive (2014/35/EU)**
  Standard used: EN 60335-1:2012+A14:2019
  Standard used: EN 60335-2-41:2003+A2:2010
- **EMC Directive (2014/30/EU)**
  Standard used: EN 55014-1:2017+A11:2020, EN 55014-2:1997/A2:2008
  Standard used: EN 61000-3-2:2014, EN 61000-3-3:2013
  Standard used: EN 61000-6-1:2007, EN 6100-6-3:2007/A1:2011
- **Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations (2011/65/EU and 2015/863/EU)**
  Standard used: EN IEC 63000:2018

The Grundfos FireSAFE+ range is designed to comply with the recommendations of Standards *BS 9251:2021, EN16925: 2018 and LPS1667 (pre-release)*

This EU declaration of conformity is only valid when accompanying Grundfos safety instructions (Publication number **92914802**).

Bjerringbro, 02/03/2023 **Signature:**

Elliot Watt
Engineering Manager
Grundfos Holding A/S.
Poul Due Jensen Vej 7
DK-8850 Bjerringbro, Denmark.

Manufacturer and person empowered to sign the EU Declaration of Conformity.

If further details are required, please contact the Grundfos offices listed on the back page of these instructions.

Service and Spare parts

Grundfos Service Delivery UK & Ireland
Building 3,
Daten Park,
Kelburn Court,
Warrington.
WA3 6JA

Service, Telephone: 01942 263 628
Service, email: servicesupportuk@grundfos.com
Technical Assistance, Telephone: 01525 850 000

Part number and description for this manual
Part no: 92914802 – Installation and Operating Manual – **FireSAFE+**
ECM: 1372796 dd 14/07/2023 Rev. 1.2