Welcome HCT WaterSOLV™ Switch Owner

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Well-Klean® Solutions
Water Well Rehabilitation

WaterSOLV™
Making Water a Better Solution

Well-Klean®, WaterSOLV™ Water Treatment for Agronomy, WaterSOLV™ GROW & WaterSOLV™ pHix are tradenames of HCT, LLC

Select Solutions Registered with:

Certified to NSF/ANSI 60

ANSI Accredited Program PRODUCT CERTIFICATION

Standards Council of Canada
Conseil canadien des normes

California Department of Food and Agriculture

Just to reiterate what we have here;

1. One Switch Box, the when plugged in, and it senses flow, it will activate power to activate pumps that are in the on mode.
2. The pumps will administer the chemistry they are set at to administer.
3. The pumps will stop operating when the flow sensor senses no flow.
4. The flow sensor is included in the NEMA 4 enclosure in its' own box.
    a. You'll place the flow sensor upstream of the chemical injection quills, as to NOT have any acid chemistry running across the sensor.

5. One to three pumps.
6. Each pump is designed to suck chemistry, but ideally the suction line is NOT farther than 6 ft. or the line is under some sort of gravity feed pressure if longer. Pumps are designed to pump, not suck.
7. The pump line should be no further than 20 ft..
    a. Ideally cover the pump line with the flexible electrical poly cord to deter wear, traffic and UV rays.
    b. The pump will operate a suction tube, a pump line, and another line to prime the pump back into the container.
8. The factory pump injection quill is modified. It is a longer length and designed that way so that you can cut down the quill to be in the middle of your piping. Modification of the quill to place it into the center of the piping is important to aid in good chemical distribution during flow.
9. Placement of pumps should be made to minimize the suction tube length but also for easy removal to place on new containers. Poly cutting boards tend to work very well to screw onto, have handles and drill holes for the lines to pass into the container for suction and priming.

10. Placement of pump lines.
    a. WaterSOLV™ Curative and or WaterSOLV™ pHix are injected on the discharge/pressurized side of the pump station
    b. WaterSOLV™ BC is injected into the wet well. It is compatible with bowl alloys and this will help keep the wet well cleaner from biology.

11. Pump setting – use HCT's mobile phone app. Search Apple or Android for HCT WaterSOLV™.
    a. The way it works, your system flow rate, gpm
    b. The chemical use rate, ppm (gallons per million gallons of water)
    c. The maximum operating pressure of your system
    d. Your good to go, we can make and fit what will work for you!

Questions, comments, recommendations, we're here to serve. Give us a shout! Same day responses.

Sincerely,

Todd Eden, Principal
HCT, LLC
(480) 650-6955
teden@hctllc.com

Basic Overview and Modes of Operation

The chemical injector panel consists of an electrical control panel that controls three outlets that are designed for chemical pumps, and a sensor that detects flow to trigger the pumps autonomously. The panel has three modes to select from with those being automatic mode, manual mode, and off mode. The modes can be selected by changing the position of the switch on the front of the panel.

Automatic Mode

In automatic mode, the selector switch will be flipped to the AUTO position. While in auto, the pump's functionality is completely dependent on whether or not there is flow in the system. While the flow switch detects flow, the outlets on the bottom of the panel will energize and allow the chemical injector units to run. When the sensor does not detect flow, the outlets will de-energize and not allow the units to function.

Manual Mode

In manual mode, the selector switch will be flipped to the MAN position. While in manual, the outlets will always be energized, allowing the units to function constantly. It is not recommended to leave the panel in manual mode without supervision.

Off Mode

In off mode, the units will never energize and all functionality of the system is disabled.

Installation

The panel is a wall-mounted panel. Use the ears on the top and bottom of the panel to secure to a surface. Supply power to the panel by plugging it into a wall outlet. Connect the injector units by plugging them into the plugs hanging on the bottom of the panel. To enable power to the system, rotate the disconnect handle clockwise until it snaps into place and sits vertically.

Flow Switch

Mounting

1.) To mount the flow switch, take the ½" NPT adapter that is provided and thread it into the thread-o-let port on the piping of the station. Make sure to use sealant or Teflon tape to ensure a water-tight fitment.
2.) Take the flow switch and insert the probe into the hole of the adapter.
3.) Tighten the adapter nut on the flow switch.
4.) Connect the M12 threaded five pin plug to the flow switch.

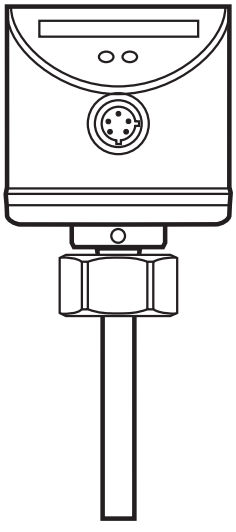
Calibration

To calibrate the flow switch, make sure the control panel is on, and both two-amp breakers are flipped in the on position in the panel. Press the left and right buttons on the highlighted interface to set the minimum flow setpoint indicated by a red light. The green indicator is the actual flow that the sensor is reading.

Operating instructions
Flow monitors

SI5006

UK



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1 Preliminary note

1.1 Symbols used

▶ Instruction

> Reaction, result

[…] Designation of buttons, switches or indications

→ Cross-reference

Important note
Non-compliance can result in malfunctions or interference.

UK

2 Safety instructions

- The device described is a subcomponent for integration into a system.
  - The manufacturer is responsible for the safety of the system.
  - The system manufacturer undertakes to perform a risk assessment and to create a documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the manufacturer of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Functions and features).
- Only use the product for permissible media (→ Technical data).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the unit must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.

3 Functions and features

This is a class A product. This product may cause radio interference in domestic areas.

▶ If required, take appropriate EMC screening measures.

3.1 Application area

The unit monitors the flow of liquid and gaseous media.

3.2 Operating principle flow monitoring

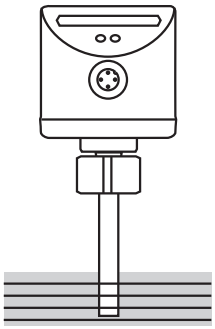
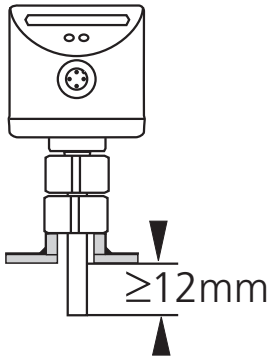
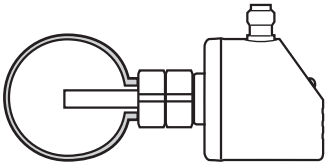
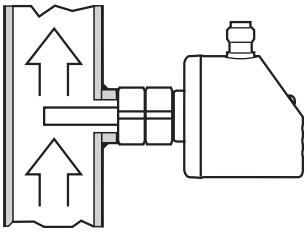
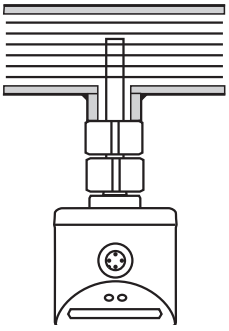
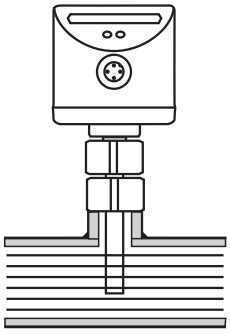
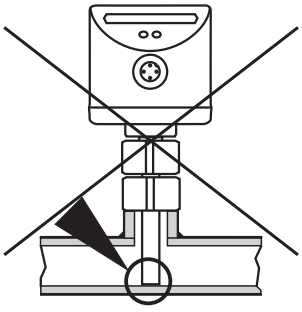
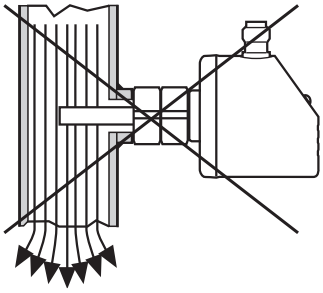
- The unit detects the flow speed to the calorimetric measuring principle and switches the output:
  - output closed if medium is flowing / output open if no medium is flowing.
  This applies to the unit on delivery: output = normally open. In case of need you can change the output to normally closed (→ 8.2). It then applies: output open if medium is flowing.
- If the flow speed increases, the switching status changes when the switch point is reached.
- If the flow speed falls again, the switching status changes if the value "SP minus hysteresis" is reached.
  The hysteresis changes with the flow speed and it is essentially influenced by the set monitoring range.
  It is 2...5 cm/s for the setting 5...100 cm/s (= factory setting), it increases with higher flow speeds.
- The typical response time of the unit is 1...10 s. It can be influenced by the setting of the switch point:
  - Low switch point = quick reaction with rising flow.
  - High switch point = quick reaction with falling flow.

4 Installation

Using process adapters the unit can be adapted to different process connections.

- Adapters have to be ordered separately as accessories.
  A correct fit of the unit and ingress resistance of the connection are only ensured using ifm adapters.
- For small flow rates ifm adapter blocks are available.

4.1 Installation location

General • The sensor tip is to be completely surrounded by the medium. • Insertion depth of the sensor: minimum 12 mm.		
Recommended • For horizontal pipes: mounting from the side. • For vertical pipes: mounting in the rising pipe.		
Conditional • Horizontal pipe /mounting from the bottom: if the pipe is free from build-up. • Horizontal pipe /mounting from the top: if the pipe is completely filled with medium.		
To avoid • The sensor tip must not be in contact with the pipe wall. • Do not mount in downpipes that are open at the bottom!		

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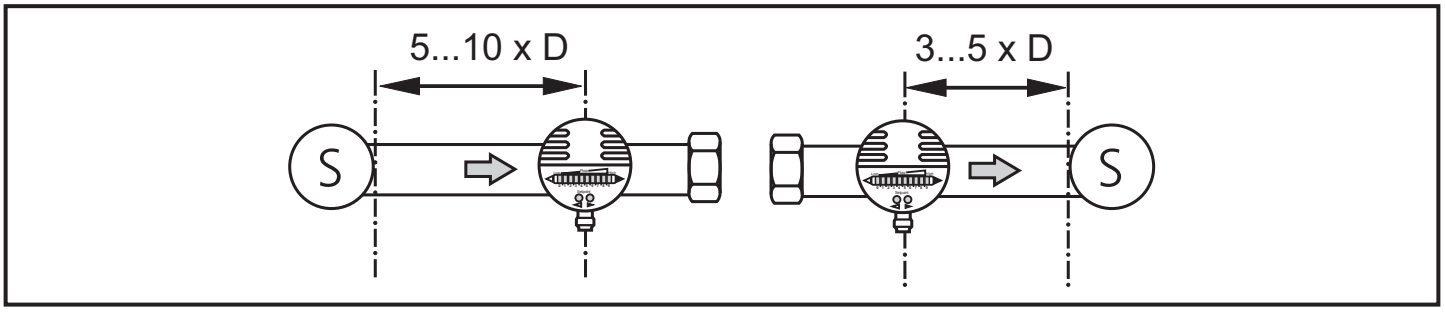
4.2 Sources of interference in the pipe system

Components integrated in the pipes, bends, valves, reductions, etc. lead to turbulence of the medium. This affects the function of the unit.

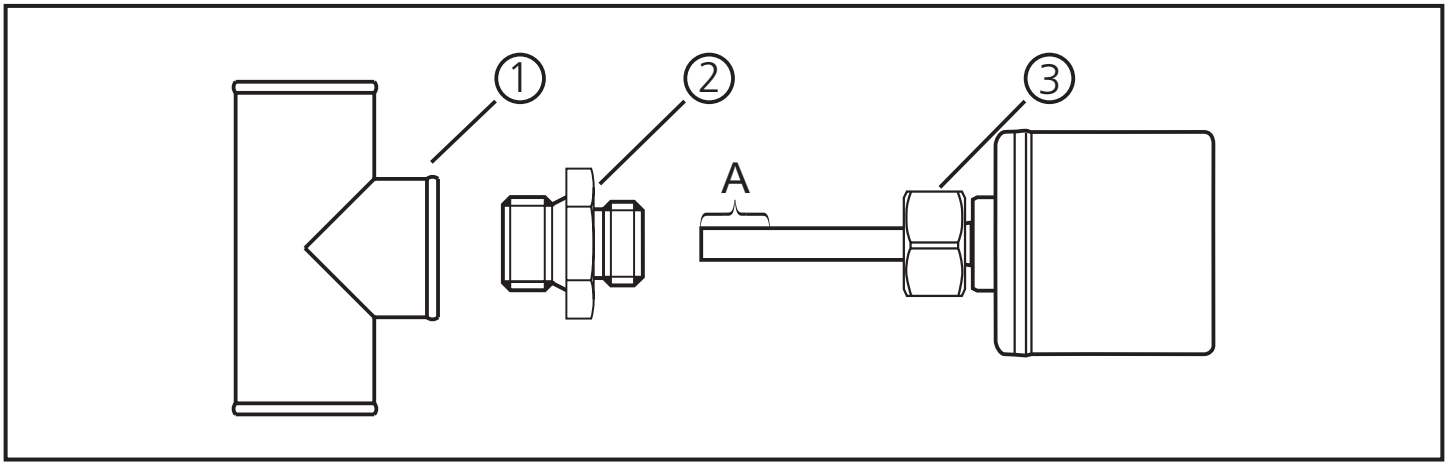
Recommendation: Adhere to the distances between sensor and sources of interference:



D = pipe diameter; S = sources of interference

4.3 Mounting operation

- ▶ Ensure that the system is free of pressure during installation.
- ▶ Ensure that no media can leak at the mounting location during installation.



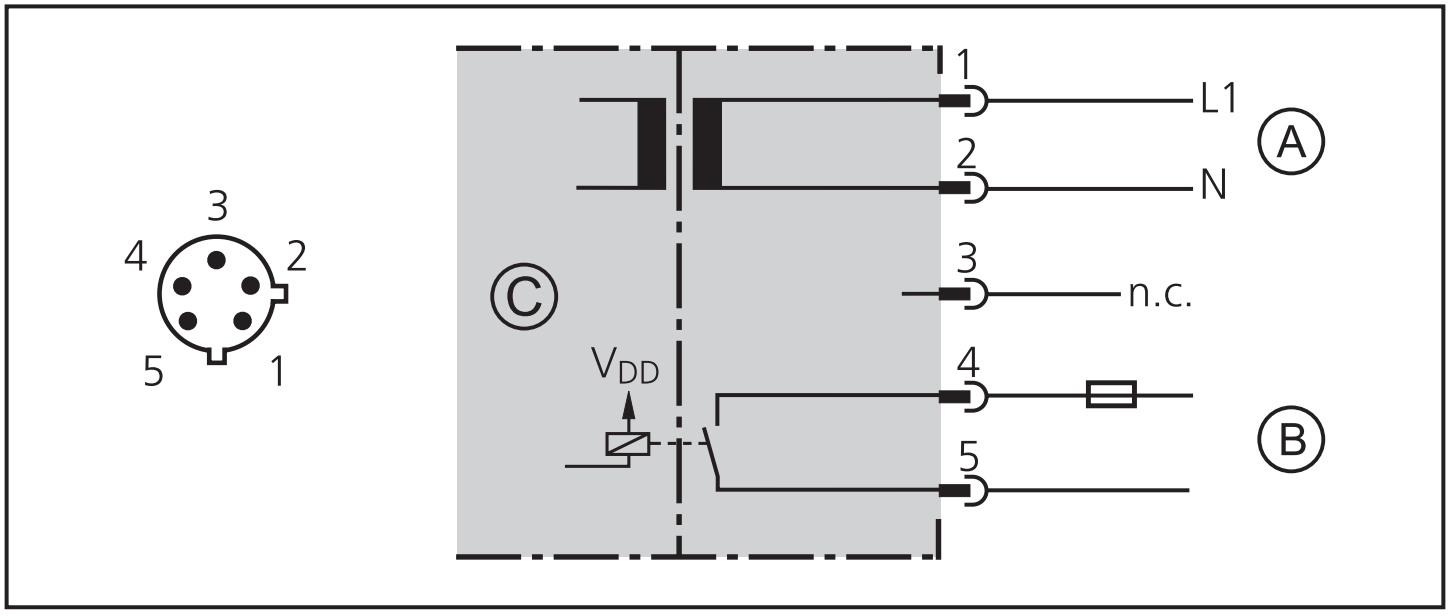
- ▶ Grease the threads of the process connection (1), adapter (2) and nut (3).
  Note: The sensor tip (A) must not be in contact with grease.
- ▶ Screw the suitable adapter into the process connection.
- ▶ Place the flow monitor onto the adapter and tighten the nut. Tightening torque 25 Nm. Ensure that the unit is correctly oriented.

5 Electrical connection

- The unit must be connected by a qualified electrician.
- The national and international regulations for the installation of electrical equipment must be adhered to.
- The unit complies with overvoltage category II.
- Caution: For the output circuit the same protective measures as for the supply circuit must be taken.
- Insert a miniature fuse according to IEC60127-2 Sheet 1 (≤ 5 A fast acting).
- The permissible potential difference between supply and output circuit is max. 300 V.
- The metal parts of the housing must be properly grounded. For this, you can, for example, attach a grounding clip to the connector and ensure the grounding using a potential equalisation cable.
- The design of the unit complies with protection class II (EN 61010).
- Due to the integrated EMC filters, leakage currents of typ. < 0.5 mA can flow via the potential equalisation to the earth potential.
- If several units are used in parallel, take into account that the leakage currents add.
- The applicable standards must be adhered to.

▶ Disconnect power.

▶ Connect the unit as follows:



A: supply circuit; B: output circuit

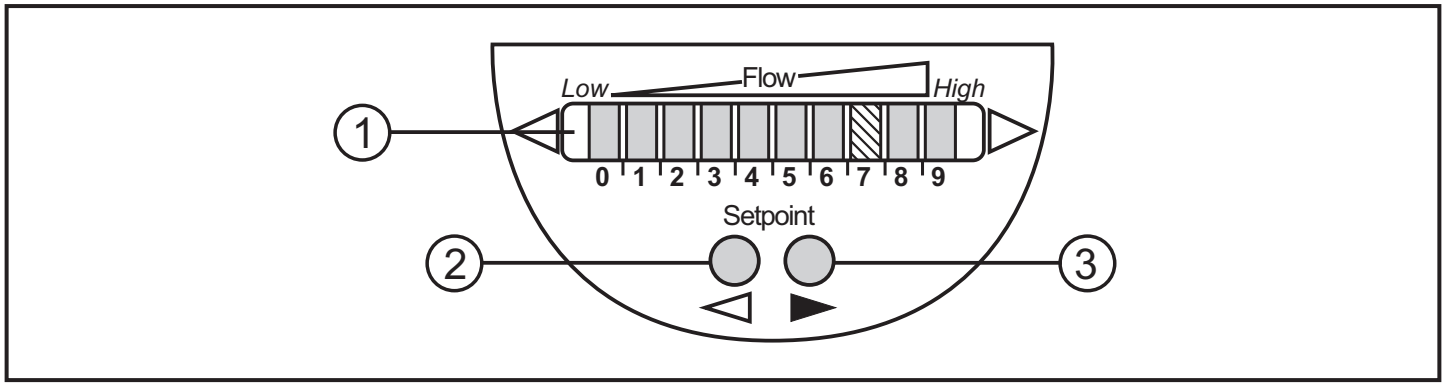
—— · —— · —— : safe separation

Core colours of ifm sockets:

1 = BN (brown), 2 = BU (blue), 4 = BK (black), 5 = WH (white)

For information about available sockets go to www.ifm.com.

6 Operating and display elements



1: Operation display
• The green LEDs indicate the current flow (the LEDs 0 to 9 represent the range between no flow and maximum flow). • A lighting LED indicates the position of the switch point (orange = output closed, red = output open).
2, 3: Setting buttons for adjustment and configuration

7 Set-up and settings for water

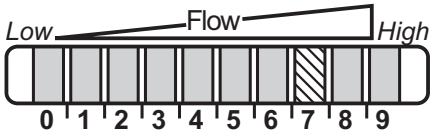
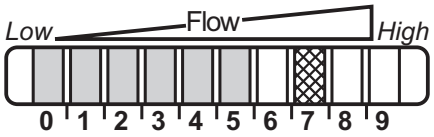
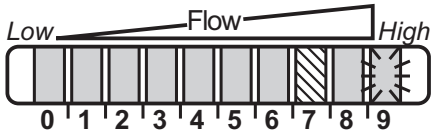
(For media other than water → 8.1: Low flow adjustment).

▶ Switch on the supply voltage.

> All LEDs light and go out again step by step. During this time the output is closed (if configured as normally open). The unit is in the operating mode.

▶ Let the normal flow circulate in the installation.

▶ Check the display and determine further actions.

1		The factory setting is suitable for the application. ▶ No further settings are required.
2		Your normal flow is below the representation range of the display. 2 setting options: ▶ Change the switch point (→ 7.1). ▶ Carry out high flow adjustment (→ 7.2).
3		Your normal flow exceeds the representation range of the display (LED 9 flashes). ▶ Carry out high flow adjustment (→ 7.2).

You can restore the factory setting any time. (→ 8.3).

7.1 Change the switch point (optional)

For the factory setting the switch point is at LED 7. A change makes sense in the folowing cases:

- the display shows example 2.
- the flow fluctuates much or pulsates.
- a faster response time of the unit is requested (low switch point = fast response with rising flow, high switch point = fast response with falling flow).

▶ Briefly press the pushbutton ◁ or ▶.

> The switch point LED flashes.

▶ Press the pushbutton ◁ or ▶ as often as required. Each press of the pushbutton shifts the LED by one position in the indicated direction.

Note: If no pushbutton is pressed for 2 s, the unit returns to the operating mode with the newly set value.

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7.2 High flow adjustment (optional)

The unit determines the existing flow as normal flow and adapts the display representation (all LEDs except the switch point LED light green).

▶ Let the normal flow circulate in the installation.

▶ Press the pushbutton ► and keep it pressed.

> LED 9 lights, after approx. 5 s it flashes.

▶ Release the pushbutton.

The unit is now adapted to your flow conditions. It passes into the operating mode, the display should now show example 1.

Note: The adjustment affects the switch point: It is increased proportionally (maximum up to LED 7).

8 Additional settings (optional)

8.1 Low flow adjustment

If the unit is used in media other than water, you should additionally adapt the unit to the minimum flow.

Note: The following adjustment must only be carried out after the high flow adjustment.

▶ Let the minimum flow circulate in the installation or ensure flow standstill.
▶ Press the pushbutton ◁ and keep it pressed.
> LED 0 lights, after approx. 5 s it flashes.
▶ Release the pushbutton. The unit adopts the new value and passes into the operating mode.

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8.2 Configure the switching output

The unit is delivered as normally open. In case of need you can change the output to normally closed:

▶ Press the pushbutton ◁ for at least 15 s.
> LED 0 lights, after approx. 5 s it flashes.
> After 10 s the current setting is displayed: LEDs 5...9 light orange (= output normally open).
> After approx. 15 s LEDs 0...4 flash orange.
▶ Release the pushbutton. The output is changed to normally closed operation.

For a new changeover repeat the operation.

8.3 Restore the factory setting (reset)

▶ Press the pushbutton ► for at least 15 s.
> LED 9 lights, after approx. 5 s it flashes.
> After approx. 15 s LEDs 0...9 flash orange.
▶ Release the pushbutton. All settings are reset to the factory setting:
- operating area: 5 ...100 cm/s for water
- switch point: LED 7
- output function: NO
- unlocked.

8.4 Lock / unlock the unit

The unit can be locked electronically to prevent unintentional settings.

▶ Press both setting pushbuttons simultaneously for at least 10 s in the operating mode.

> The indication goes out, the unit locks or unlocks.

On delivery: unlocked.

9 Error during adjustment

If no adjustment is possible, all LEDs flash red. The unit then passes into the operating mode with unchanged values.

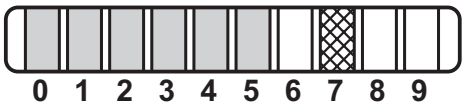
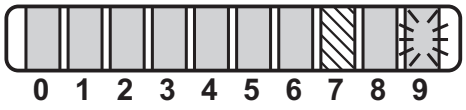
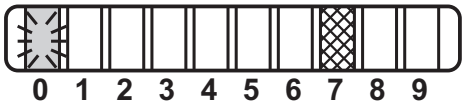
Possible cause /aid:

Error during installation.	▶ Read chapter 4 Installation. Check whether all requirements have been met.
The difference between maximum flow and minimum flow is too small.	▶ Increase the flow difference and carry out the adjustment once again.
The sequence high flow /low flow adjustment was not adhered to.	▶ Carry out the two adjustment operations again in the right sequence.

10 Operation

After every power on all LEDs light and go out again step by step (during this time the output is closed if configured as normally open). The unit is then ready for operation.

In case of power failure or interruption all settings remain.

Operating indicators	
	Green LED bar: Current flow within the representation range. Indication of the switch point (SP): - LED orange: output closed. - LED red: output open.
	LED 9 flashes: current flow above the representation range.
	LED 0 flashes: current flow far below the representation range.
Interference indicators	
Display OFF (no LED lights):	Operating voltage too low (< 85 V AC) or failed. Ensure a correct voltage supply.

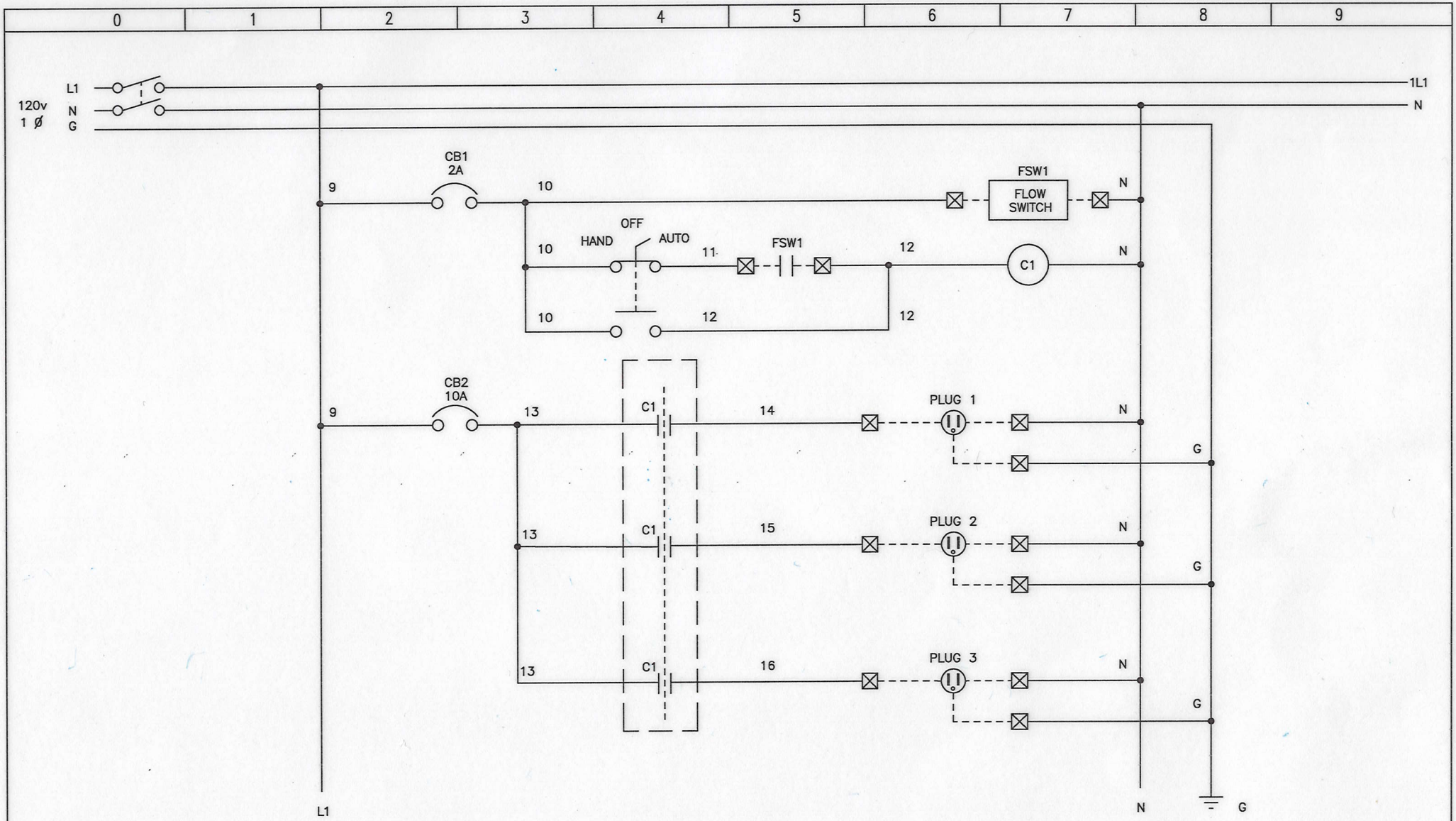
11 Maintenance

Recommended maintenance:

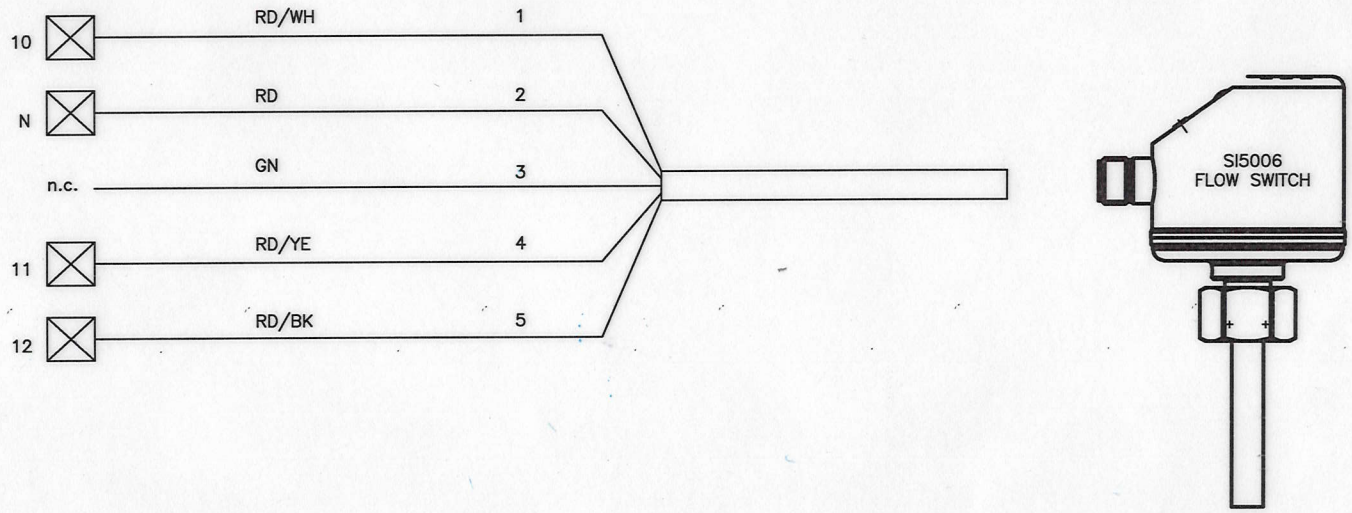
- ▶ Check the sensor tip for build-up from time to time.
- ▶ Clean it using a soft cloth. Stubborn build-up (e.g. lime) can be removed using a common vinegar cleaning agent.

12 Technical data

Technical data and scale drawing at www.ifm.com.



		ORDER NO. N/A	TSP Pumping Systems	MACHINE		SECTION
		CUSTOMER CHEM INJ PANEL	LIBERTY, SC 864-843-1176	SIZE B –	DRAWING NUMBER N/A	REV	LOCATION
REV	CHANGE						SHEET NUMBER 1



		ORDER NO. N/A	TSP Pumping Systems	MACHINE		SECTION
		CUSTOMER CHEM INJ PANEL	LIBERTY, SC 864-843-1176	SIZE B -	DRAWING NUMBER N/A	REV	LOCATION
REV	CHANGE						SHEET NUMBER 2

Item Code	Short Description	Manufacturer
DN-EB35-A	DIN Rail End Bracket	AUTOMATION DIRECT
DN-G10	35mm DIN rail mount, 10kA SCCR	AUTOMATION DIRECT
SJOOW-18-3BK-1	Mult-Cable Wire (3-conductor)	AUTOMATION DIRECT
L21MA03-3E20	3-position switch	BACO
PANEL-LABEL-CUSTOM	(MAN-OFF-AUTO)	BACO
BSPAX-21-W	Bimed cable gland, 3/8in NPT thread type, polyamide, black, accepts 5 to 10mm diameter cable, IP68. Package of 5. Mounting hardware included.	BIMED
FAZ-D10-1-NA-L-SP	Eaton miniature circuit breaker, current-limiting, 10A, 240 VAC / 48 VDC, 1-pole, D curve, thermal magnetic, 10kA SCCR, 35mm DIN rail mount.	EATON
FAZ-C2-1-NA-L-SP	Eaton miniature circuit breaker, current-limiting, 2A, 240 VAC / 48 VDC, 1-pole, C curve, thermal magnetic, 10kA SCCR, 35mm DIN rail mount.	EATON
SC-E02-110VAC	Fuji Electric IEC contactor, 9A, (3) N.O. power poles, 120 VAC (60Hz)/110 VAC (50Hz) coil voltage.	FUJI
SI5006	120V Flow Switch	IFM
E40107	Screw-in adapter for process sensors	IFM
E18242	10m Straight M12 Un-shielded Cordset	IFM
515CV-LIT	Leviton 515CV-LIT Grounding Lighted Cord End Replacement, 1 pack, Green	LEVITON
515PV	Leviton 515PV 15 Amp, 125 Volt, Grounding Plug, Yellow	LEVITON
SCE-1614PC	16X14 Polycarbonate enclosure	SAGINAW
SCE-16P14	16x14 Subpanel, Flat	SAGINAW
22003006-UL	65kA SCCR, DIN rail or panel mount, UL 508 rated, front or side operated, accepts 5 x 5mm size	SOCOMEC
14070532	Socomec shaft, 320mm length, 5 x 5mm. For use with S0 and S00 type handles. Shaft alignment	SOCOMEC
147D1111	Socomec handle, round, S00 type, black/blue, external front or right side mount, 2-position,	SOCOMEC
2202-1201	2-conductor through terminal	WAGO
2002-1291	End and intermediate plate0.8 mm	WAGO
2002-400	Adj. jumper	WAGO
793-5501	WMB marking cardas card, white	WAGO