

5000Q Programming Quick Guide

Operating elements of the controller

The 5000Q controller has four push-buttons and 5 LED's

-  All data gets stored
-  Next value of the menu
-  Previous value of the menu
-  Actual value gets stored

If the button  is pressed longer than 2 sec the 5000Q controller will go into the programming mode. The entries appear in the following sequence

DISPLAY	PARAMETER	DEFAULT
FLUSHPRO	Purging program	Prog 3
FLUSHTIM	Purging time	00:30
VALUE P1	Shutdown press.	01.0
VALUE P2	Signal press.	02.0
VALUE P3	Pre-purge press.	10.0
VALUE P4	Max. Press.	20.0
HYST	Leakage hysteresis	0.5
PROGR K2	Programming K2	C1
DELAY	Shutdown time K1	05
NUMBERPT	Number of PT's used	0
T-FV-PT1...3	Threshold T1	35
T-K2-PT1...3	Threshold T2	45
T-C1-PT1...3	Threshold T3	50
Bypass	Bypass	No
PASSWORD	Change password	0000

The 5000Q controller has 5 purging and pressurization programs available. Below are the programs:

FLUSHPRO

Selectable programs, 1 through 5

Purge 1

Purging Time:

The purging valve switches immediately. After the purging time the relay K1 will switch on. If the pressure P4 (max) is reached during purging, the purging time continues.

Operation:

If the internal pressure falls under the value of P1 during operation, **K1 does not switch off**. The device remains operating.

Purge 2

Purging Time:

The purging valve switches on by reaching the pressure P1. After purging, relay K1 switches on. If the value of P4 (max) is exceeded, the purging will continue. The display will read 'MAX' indicating P4 has been exceeded.

Operation:

If the internal pressure falls below the value of P1 during operating mode, **K1 does not switch off**. The device remains in operation.

Purge 3

Purging Time:

The purging valve switches on by reaching the pressure of P1. After purging, K1 switches on. If the pressure of P4 (max) is exceeded, the purging will continue. The display will read 'MAX' indicating P4 has been exceeded.

Operation:

If the internal pressure falls below the value of P1 during operating mode, **K1 will switch off after the delay timer**.

Purge 4

Purging Time:

The purging valve switches on by reaching the pressure of P1. After purging, K1 switches on. If the pressure of P4 (max) is exceeded, the purging will shut off.

Operation:

If the internal pressure falls below the value of P1 during operating mode, **K1 does not switch off**.

Purge 5

This program is for Zone 22 (Dust) areas only

Purging Time:

No purging is allowed or required for dust. Enclosure **must be cleaned out of all combustible dust**, then sealed, and pressurized.

Operation:

Pressurization should be above 2.5mbar for operation.

FLUSHTIM

The purging time is set at this function. After reaching and maintaining pressure P3, the timer begins. The display will show the remaining time. Push button  to read the internal pressure, and button  to read remaining time.

VALUE P1

If the pressure can not be maintained above P1, then the unit will switch off after the delay time. This will depend on the program used. The pressure P1 is used for switching the purging valve SV1 on.

VALUE P2

Pressure P2 is used to activate K2 relay and can be used as a early indication of loss of pressure. If the pressure drops below P2 then the purging valve (SV1) is turned on for a short duration to compensate for excess leakages.

VALUE P3

Pressure P3 is used to start the purge timer. Above this pressure the purge timer will run as long as the pressure is above P3. To read internal pressure and timer during purging, press button  and  to read values.

VALUE D4

Pressure P4 is a maximum over pressure value. In reaching this value the display will read 'MAX'. Purging will continue but if pressure is above P4 during operation mode, the unit will shut down.

HYST

Unexpected leakages from the enclosure or line pressure drops will decrease the pressure within the enclosure. If the pressure drops below P2, then the valve SV1 can be activated until P2 + Hyst is reached and will shut off. Compensating for leakages.

PROG K2

Relay output K2 can be programmed for several functions. These functions are as follows:

C1	Switch with K1
P1+	Switch on, if P1 exceeded
P1-	Switch off, if P1 exceeded
P2+	Switch on, if P2 exceeded
P2-	Switch off, if P2 exceeded
P3-	Switch on, if P3 exceeded
P4+	Switch on, if P4 exceeded
P4-	Switch off, if P4 exceeded
FT	Switch on during purging
TEMP AL	Switch on if temp is exceeded
Bypass	Switch on if bypass is active
DISJUNC	Switch on for internal failure

DELAY

During operation, if the pressure drops below P1, the delay of shutting down K1 can be implemented. The delay is selectable and from 0 to 60 seconds.



The use of the delay timer is the sole responsibility of the user

NUMBER PT

The 5000Q has 3 inputs for 2-wire PT100 temperature sensors which can be placed within the enclosure for monitoring various areas.

To implement the sensors the jumper next to each inputs must be put on the connector. This will give lead breakage and short circuit indication of the sensors.

T-FV-PT1...3

Each 2-wire PT100 sensor can be set to a max. temperature. When one of the set temperatures are reached, the purging valve will activate and cool the cabinet. When the temperature drops by 3 C, the valve will close.

T-K2-PT1...3

If any of the temperature sensors increase to this user set value, relay K2 will be activated. This can be used for an alarm for high temperature. The alarm K2 will deactivate when temperature goes 3 C below the set value.

T-C1-PT1...3

If the temperature sensors increase to this user set value, the system will be shutdown. The system will not restart again until the temperature of all of the sensors goes 3 C below set value and has to be manually reset.

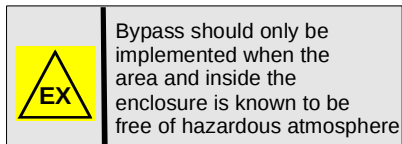
Press button  or button  to restart purge process.

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Bypass

The 5000Q can be bypassed so power to the enclosure can remain on when the door is open and loss of pressure. This should only be done when the area surrounding the enclosure is safe.



Bypass should only be implemented when the area and inside the enclosure is known to be free of hazardous atmosphere

The Bypass can be implemented by the following key strokes:

Push button **SET** longer than 2 seconds. The display will read

FLUSHPRO



Bypass



No



Yes



EXTERN



Bypass

Push the **SET** button for greater than 2 seconds and display will read:

ATWORK

After the **SET** button is released

Bypass !

Bypass is implemented and the LED's H2 and H4 will be on.

PASSWORD

Default password is '0000'. This can be changed at anytime.

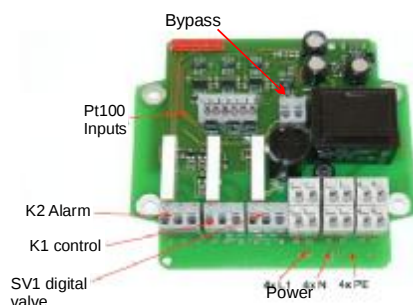
During Operation - LCD reading

min xx.x	Less than P1
P1 xx.x	$P1 < x.xx < P2$
P2 xx.x	$P1 < x.xx < P3$
P3 xx.x	$P2 < x.xx < P4$
Max xx.x	Greater than P4

During Purging - LCD reading

Px xx.x	Less than P3
FT xx:xx	Greater than P3
+	
Px xx.x	

Terminals

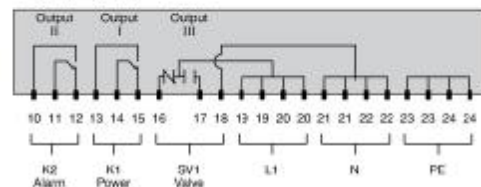
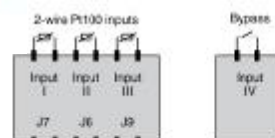


Power Connections

L (+)phase for AC 115V, AC 230, or plus for DC 24V

N (+)zero for AC 115V, AC 230V, or minus for DC 24V

PE for AC 115V, AC 230V, or DC 24V



Pt100 Connections

Input I: J7 - Jumper Pins 1&2
Input II: J8 - Jumper Pins 3&4
Input III: J9 - Jumper Pins 5&6

When Pt100 is installed add jumper to initiate temperature measurement for that input.

If the Pt100 is not installed for a channel, remove the jumper for that channel

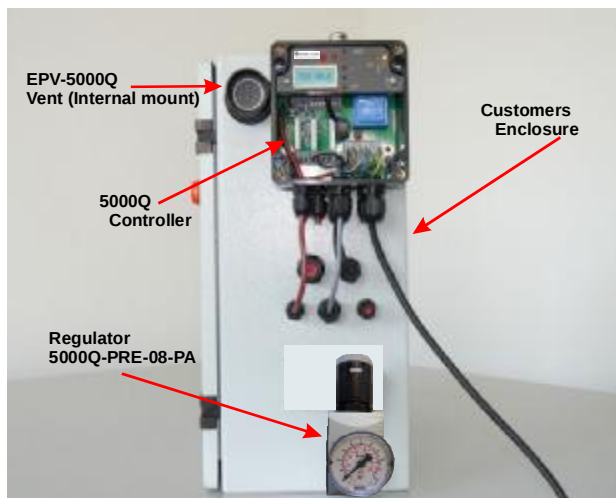
Fault	Possible Reason	Reaction
5000Q doesn't work	No voltage	Check power cables to 5000Q
	5000Q defect	Return 5000Q
5000Q switches on without purge	Purging program is wrong	Verify correct purge program
Purge timer does not count down	No purge gas	Check gas supply
	Digital valve does not open	Check voltage
		Check for blockage
	Not enough flow from digital valve	Line pressure to low
		Tubing to valve is too small
	Not enough flow to regulator	Line pressure to low
Tubing to valve is too small		
Too much leakage from enclosure		
Purging does not switch to compensation	Digital valve does not close	Check power to valve
		Check for blockage
		Gas supply is not clean
Temperature inside enclosure	Ambient temp. rise	Check location of enclosure to environment
Digital valve shuts off before purging complete	Too much leakage from enclosure	Seal enclosure
	Set point of D2 too high	Reduce set point of D2

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Typical Installation Setup

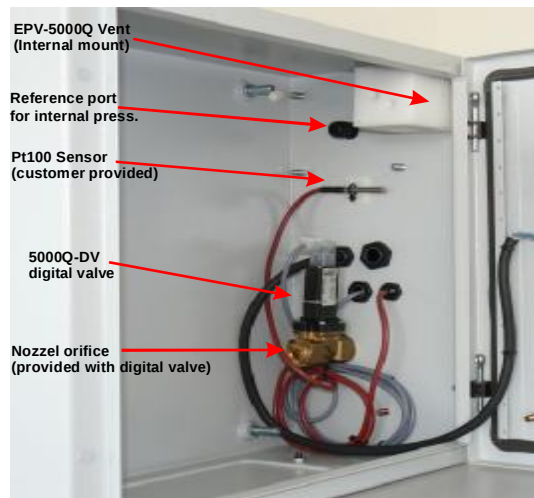
Typical installation and the identification of components, and location in the enclosure

The 5000Q control unit is mounted on the side of the enclosure but could easily be mounted on the top, or bottom. The EPV-5000Q vent is mounted inside the enclosure but could also be mounted outside the enclosure if room prohibits it. The EPV-5000Q vent should always be mounted so that the flow coming into the enclosure does not go directly through the vent. Adjacent corners are best. The regulator can be mounted away from the enclosure but can not tee off another pneumatic instrument. This line must be dedicated to the enclosure.



Mounting outside / Outside view

In this application the digital valve is mounted inside the enclosure but could also be mounted on the outside the enclosure. The 5000Q-DV valve is certified for hazardous area mounting. If using a different digital valve, it must also be certified for hazardous area mounting. When mounting the 5000Q controller on the outside, there must be an opening for the reference pressure port to the enclosure. When mounted inside the enclosure, the reference port kit is required to reference outside pressure (see manual for kit). Temperature sensors are 2-wire, PT100 RTD's.



Mounting outside / Inside view

Calculation of the Purging Time

The purging time for an enclosure is calculated using the formula below and is based on 5 volume changes.

For the 3.0mm Orifice at 2 bar:

$$\text{Time} = \text{Volume} / 21$$

For the 4.5mm Orifice at 2 bar:

$$\text{Time} = \text{Volume} / 44$$

T = Purging Time [min]
Volume = Free volume of the enclosure

Adjustment for pressurization of the digital valve

