Digital Low/High Press. Controller (FX32PR)

PreCaution for Use

1. This product may cause an electric shock in handling. Please do not attempt to open it with power turned on.
2. This product should be installed in a place fixed secured by a rack or panel.
3. This product can be used under the following environmental condition
   ① Indoor ②Pollution Degree 2 ③At an altitude of 2000m or below ④Installation Category II
4. To turn on or turn off power supply for this product, please the circuit breaker or switch of a standard product of IEC 60947-1 or IEC 60947-3 product and install it within a close distance allowing convenient operation by user.
5. Please be understood that if this product is dismantled or modified discretionary, after sales service will not be able to be provided.
6. An output wire to be used for this product should be inflammable grade FV1 (V-1 grade or above), the thickness of the wire should be AWG No. 20 or above. (0.50㎟)
7. In order to prevent it from an inductive noise, please maintain the high-voltage wire and power wire separated.
8. Please avoid installing the product in a place where a strong magnetism, noise, severe vibration and impact exist.
9. When extending the sensor wire, use a shield wire and do not extend it unnecessary long.
10. The sensor wire and signal wire should be away from the power and load wires using conduits separately installed.
11. Please avoid using the product near a device generating strong high frequency noise (high-frequency welding machine, high-frequency sewing machine, high-frequency radiotelegraph, high capacity SCR controller)
12. Product's damages other than those decribed in the guarantee conditions provided by the manufacturer shall not be respoinsible by us.
13. Please use with being attached to a dual safety device in case of using for controlling instruments which could be effective to human life or property (eg: controlling atomic energy, medical instruments, cars, trains, flights, burners, amusement instruments or safety machinery).

※ The Aforementioned precautions must be observed, and if you fail to do so, it may cause a product's breakdown.

Basic Specification

Model	FX32PR
Power	AC100 - 240V~, 50/60Hz (MAX 4VA)
Control	Intelligence Rotation Operation, Step Control
Connector	Screw Bolt Connector (1.5㎟ Wire is possible)
Input / Output	4~20mA type sensor input 1 point (included sensor loop power) Relay 4 points (3 points for controlling step, 1 point for alarm output)
Operation	Temp. -10~50℃ (No condensation only)
Storage	Temp. -20~60℃, Humidity Under 90%RH
Range	-19.9~99.9℃ : unit of 0.1℃ / Other range : unit of 1℃

Order Information

FX32PR - 00 : Basic Model
FX32PR - R4 : RS-485 Communication model (Comm. function, MODBUS RTU MODE) (※ Comm. cable is included)

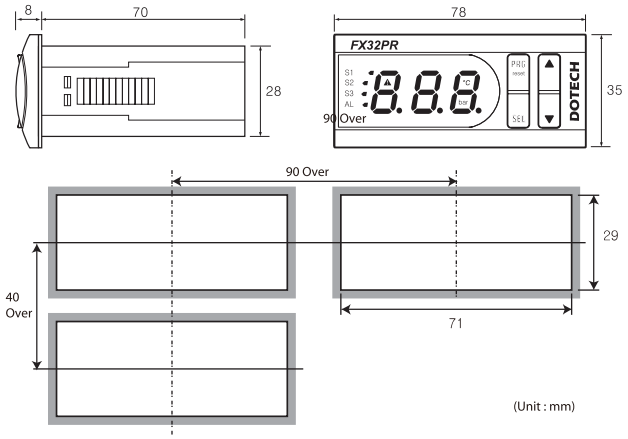
FX32PR - A1 : 4~20mA Trans output model

DP506.930A : Press sensor -1 ~ 9 bar, 4~20mA, 2wire (for refrigeration industry)

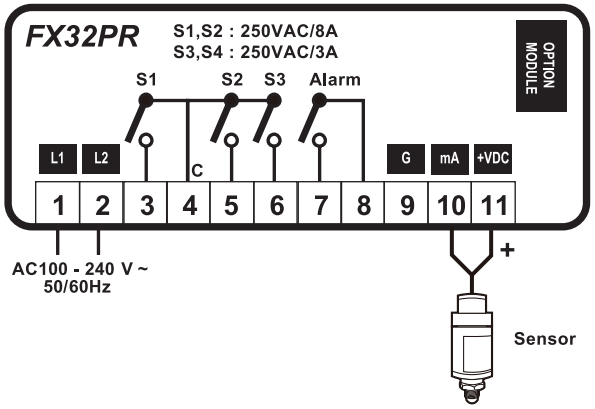
DP506.933A : Press sensor 0 ~ 30 bar, 4~20mA, 2wire (for refrigeration industry)

DP510 : Press sensor 0 ~ 16 bar, 4~20mA, 2wire (for compressed air)

Dimensions and Panel Cut-Out Form

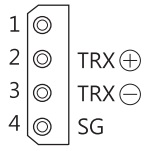


Connection Diagram

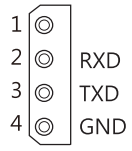


○ Option

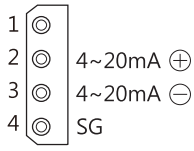
RS-485 COMM. OPTION MODULE



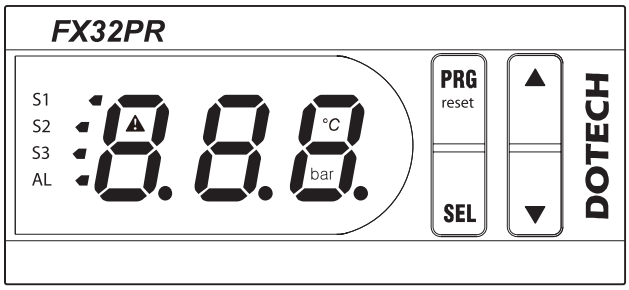
RS-232 COMM. OPTION MODULE



4~20mA Output OPTION MODULE



Constitution



Display Lamp

S1	Step output 1	High speed flicker : ON delay Low speed flicker : minimum OFF delay
S2	Step output 2	
S3	Step output 3	
AL	Alarm output	

⚠	Sensor input signal (On when error)

Operation Switchs

PRG reset	Use at program setup Clear alarm when manual return type error occurs (press twice quickly)
SEL	Execute selected menu or Input setup value
▲	Move between menus & Increase setup value
▼	Move between menus & Decrease setup value
PRG reset + ▼	**Initializing setup value** Press button for 10 sec.

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Outline

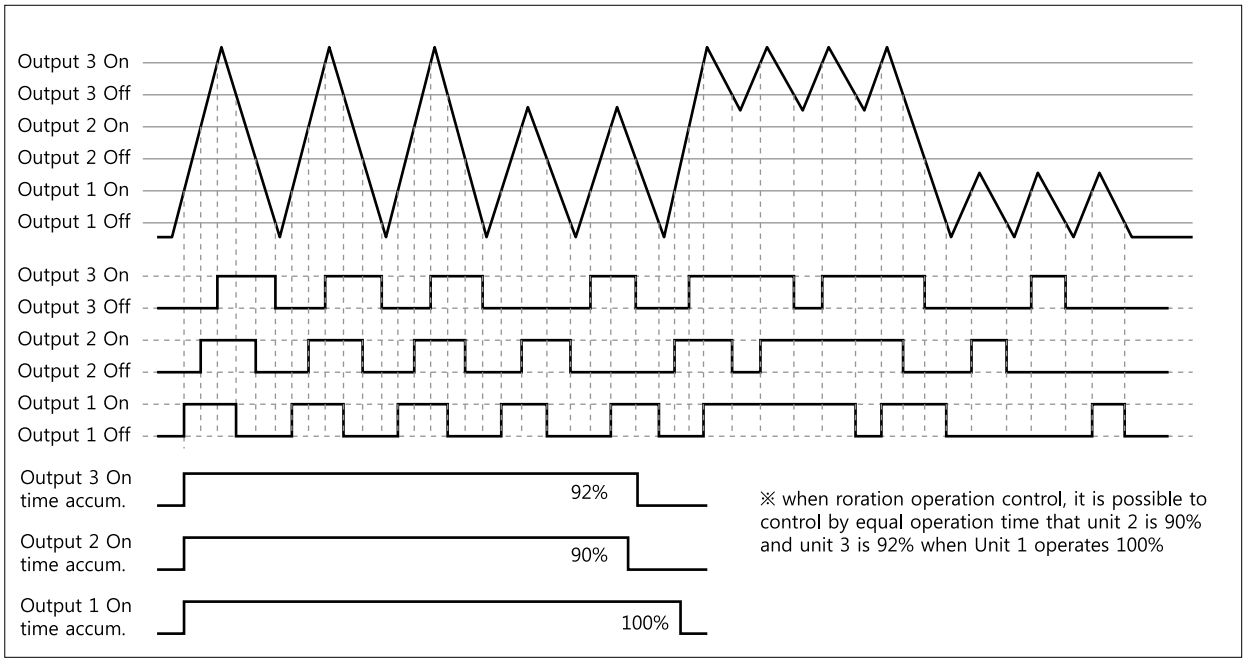
FX32PR has 4~20mA type sensor input 1 point, 3 relays for step control and 1 relay for alarm output for efficient step control.
This device can do efficient step control because It has many functions as follows : off value, on value, output delay by step and powerful timer function for minimum on output, minimum off output.

- FX32PR can retransmit value measured to another device because of embeded transmission output function. (FX32PR-A1 model)
- It is easy to interface with upper system because of embeded RS485 telecommunication function of MODBUS RTU/ASCII protocol.

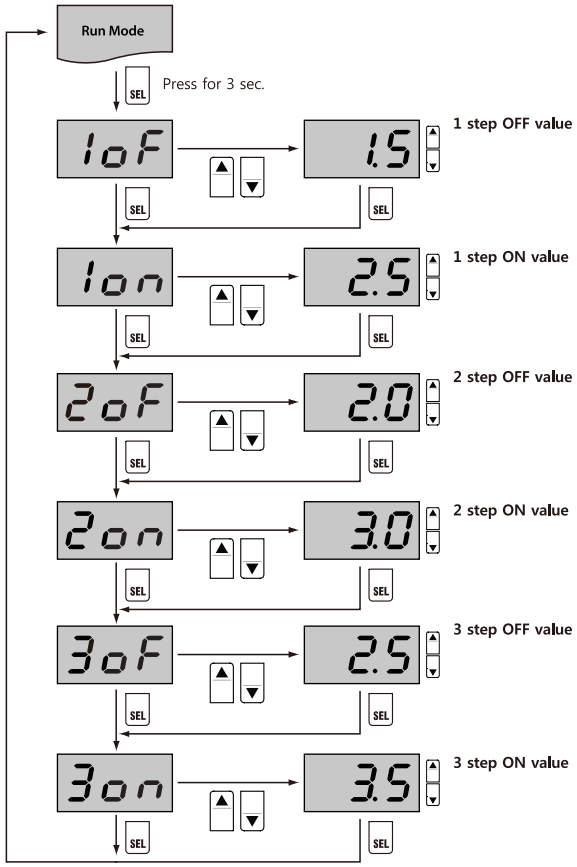
Step control for equal control

FX32PR carry out step control equally according to measure value of input sensor depending on user setup.

- No. of step control (1~3 steps), each step can be set on/off individually.
- Intelligence rotation operation : Turn On from step which remain OFF longest, Turn OFF from step which remain ON longest.
- Compulsory ON/OFF



Step Control Setup



● If OFF value is changed, ON value increases or decreases according to OFF value

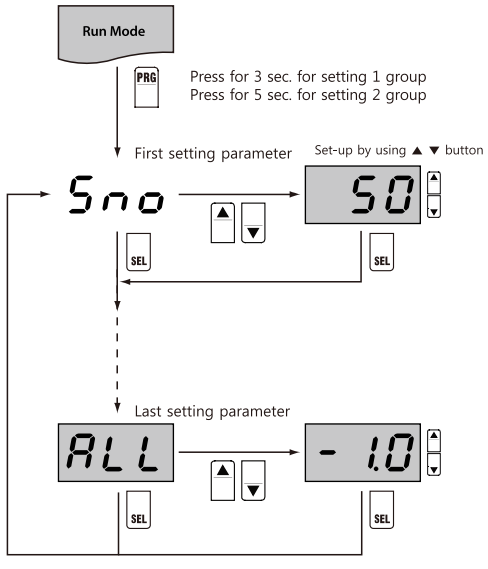
Simple Trouble Check Point

※ FX32PR controls by measured value which sensors detect. Please check sensors and wire connection with sensor if alarm occurs.

SHt	Sensor Short Circuit error (22mA above)
oPn	Sensor disconnection error (4mA below)
SYS	In Case of change of set value by an unknown case. **(Please reset after initializing parameter)**

※ In case of the above-mentioned error, it will be normally operated with cancelling error status if the reason of error is solved.

How to change setting 1 group and 2 group



● If there is no input for 180 sec. during setup, it returns to operation mode.
● If push SEL button for 3 sec. then setup is completed and returns to operation mode.

Setting 1 Group Table

● Compulsory parameter for operation ○ Second degree parameter for optimum operation

NO.	DESCRIPTION	CODE	UNIT	STEP	Min.	MAX.	DEFAULT	USER SETUP
● 100	Step Control No.	Sno	No.	1	0	3	50	
○ 101	Step 1 On delay time	1dt					0	
○ 102	Step 2 On delay time	2dt					5	
○ 103	Step 3 On delay time	3dt					10	
104	Step 1 Minimum OFF time	1Ft					0	
105	Step 2 Minimum OFF time	2Ft	SEC	1	0	999	0	
106	Step 3 Minimum OFF time	3Ft					0	
107	Step 1 Minimum ON time	1nt					0	
108	Step 2 Minimum ON time	2nt					0	
109	Step 3 Minimum ON time	3nt					0	
110	Step 1 Compulsory Output Function	1Pr	AUt Automatic Mode oFF Compulsory OFF on Compulsory ON				AUt	
111	Step 2 Compulsory Output Function	2Pr					AUt	
112	Step 3 Compulsory Output Function	3Pr					AUt	
113	Upper limit Alarm	AHH	-	0.1	ALL	SH	9.0	
114	Lower Limit Alarm	ALL	-	0.1	SL	AHH	-1.0	

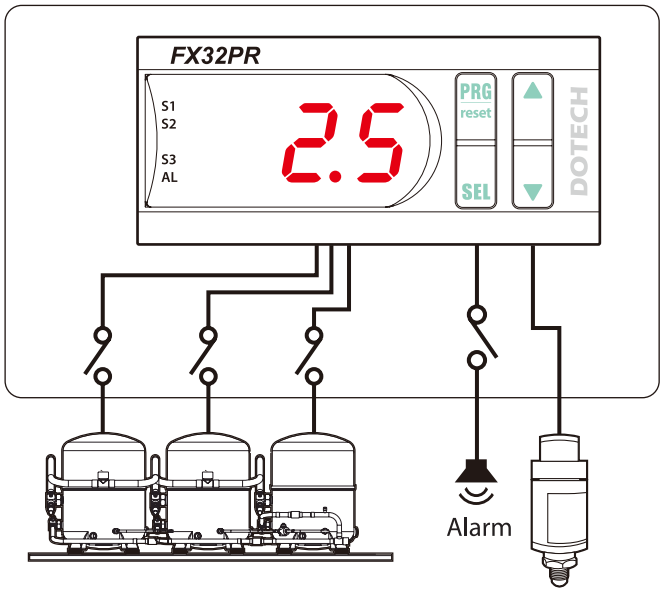
* Step Control No. : Input step no. for step control
* ON delay time : Delay time from ON to OFF
* Min. OFF Time : Once output is off, It keeps OFF compulsorily during min. off time even though It is under on condition.
* Min. ON Time : Once output is on, It keeps ON compulsorily during min. on time even though It is under off condition.
* Compulsory output function : It is used for operating compulsory regardless of error of sensor or setting standard value.
  Step control function works except steps which are set by compulsory output function.
* Upper limit Alarm : AHH alarm occurs if sensor input value is higher than upper limit alarm. AHH alarm clears if sensor input value is lower than (upper limit alarm - 0.2).
* Lower Limit Alarm : ALL alarm occurs if sensor input value is lower than lower limit alarm. ALL alarm clears if sensor input value is higher than (lower limit alarm + 0.2).
* Alarm output relay is on if AHH alarm or ALL alarm is ON and input sensor error occurs

Setting 2 Group Table

NO.	DESCRIPTION	CODE	UNIT	STEP	Min.	MAX.	DEFAULT	USER SETUP
500	Lock Setup	LoC	oFF: Lock clear LC1: Setting 1 Group Lock LC2: Setting 1 & 2 Group Lock LC3: Setting 1 & 2 Group, Quick Setup Mode Lock				oFF	
● 501	Control Mode	Ctr	dn : Control toward lower direction (reduce pressure when controlling pressure, control cooling when controlling temp) UP Control toward higher direction (increase pressure when controlling pressure, control heating when controlling temp)				dn	
● 502	Sensor Input Upper Limit Range	SH	-	1	SL	99	9	
● 503	Sensor Input Lower Limit Range	SL	-	1	-99	SH	-1	
● 504	Sensor Input Unit	Unt	- oFF : No Unit bAr : bar °C : 'C				bAr	
505	Decimal Point Display (1 or 0.1)	dP	- 0.1 : Display Unit by 0.1 1 : Display Unit by 1				0.1	
506	Error Correction	Cor	-	0.1	-19.9	19.9	0.0	
507	Sensor Input Filter Value	SFt	SEC	0.1	0.1	5.0	0.5	
508	Sensor Input Value Display Cycle	Sdt	SEC	1	0	50	1.0	
○ 509	Rotation Operation	rot	- oFF : No Use on : Use				on	
510	Comm. ID Setup (-R4 model)	Id	1 ~ 32 Channel				1	
511	Comm. Bandwidth Setup (-R4 model)	bdr	48 : 4800BPS, 96 : 9600BPS, 192 : 19200BPS, 384 : 38400BPS				96	

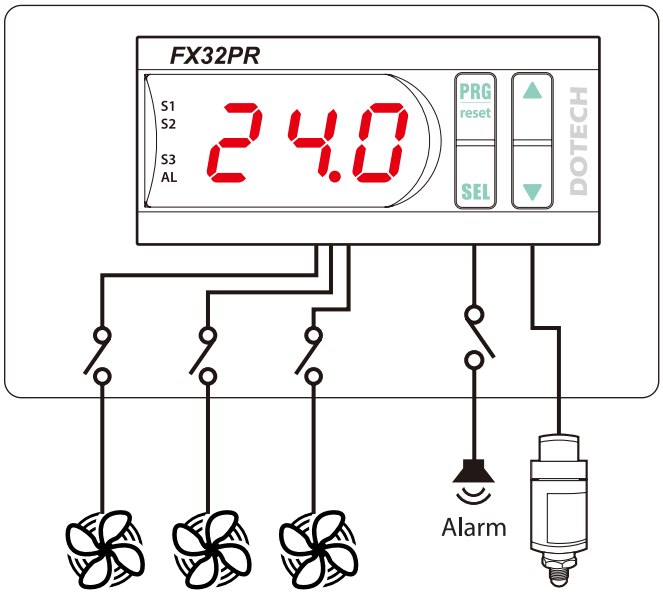
* Lock Setup : Lock control parameters
* Control Mode : Select control direction (toward lower or higher). Select heationg/cooling control when controlling temp.
  If control mode is changed, step control value ON and OFF are exchanged each other automatically.
* Sensor input upper/lower limit range : input 4~20mA output range of input sensor. SH is for 20mA, SL is for 4mA.
* Sensor input filter : Setup sensitivity of input sensor. Sensitivity is lower if filter value increases. Sensitivity is higher if filter value decreases. cycle of 0.5~1.0 sec. is mostly used.
* Sensor Input Value Display Cycle : Setup display cycle of measured value of input sensor. cycle of 1.0~2.0 sec. is mostly used
* Rotation operation : setup whether to use rotation operation or not.
* Comm. ID Setup (-R4 model) : Setup telecommunication ID
* Comm. Bandwidth Setup (-R4 model) : Setup telecommunication bandwidth (telecommunication type : RS485 MODBUS RTU/ASCII, Non-parity, 8 data bit, 1 stop bit)

Multi/Semi multi composition by suction pressure



Suction Pressure Sensor
-1~9 bar

Condensor fan control composition by discharge pressure



Dischard Pressure Sensor
0~30 bar

How to apply