

# Digital pressure switch (Remote display type)

## DPX200R

### User Manual

# DOTECH

## SENSING & CONTROL

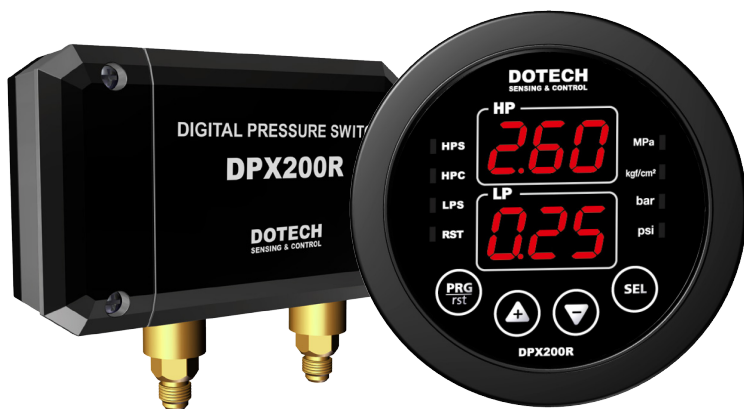


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#### Cautions

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 ② Pollution Degree 2 ③ At an altitude of 2000m or below
  4. Power input must be within the designated ranges.
  5. 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.
  6. Please be understood that if this product is dismantled or modified discretionarily, after sales service will not be able to be provided.
  7. An output wire to be used for this product should be inflammable grade FVI (V-1 grade or above), the thickness of the wire should be AWG No. 20 or above(0.50mm<sup>2</sup>).
  8. In order to prevent it from an inductive noise, please maintain the high-voltage wire and power wire separated.
  9. Please avoid installing the product in a place where a strong magnetism, noise, severe vibration and impact exist.
  10. When extending the sensor wire, use a shield wire and do not extend it unnecessary long.
  11. The sensor wire and signal wire should be away from the power and load wires using conduits separately installed.
  12. 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)
  13. Product's damages other than those described in the guarantee conditions provided by the manufacturer shall not be responsible by us.
  14. If this unit is used to control machineries (Medical equipment, vehicle, train, airplane, combustion apparatus, entertainment, processing and transportation equipment, elevator and various safety device etc.) enabling to effect on human or property, it is required to install fail-safe device.
- ※ The Aforementioned precautions must be observed, and if you fail to do so, it may cause a product's breakdown.  
 ※ The specifications, dimensions, and etc. are subject to change for enhancement without a prior notice.



## All in one type digital switch & pressure gauge for high, low pressure and fan of compressor

- Digital integration with analog switch and gauge
- An integrated control for high, low pressure protection and high pressure fan
- Various selectable display units such as MPa, kgf/cm<sup>2</sup>, bar, psi
- Automatic / Manual reset, Selection of various refrigerants
- Precise pressure control, Sensor offset, Sensor error detection

#### Display saturation temperature in accordance with selected refrigerant.

R22, R23, R-123, R-124, R-134a, R-404a, R-407c, R-410a, R-507

#### Range by unit of pressure

Unit	Minimum	Maximum
MPa	-0.10	5.00
kgf/cm <sup>2</sup>	-1.01	50.9
bar	-1.00	50.00
psi	-14.5	725

#### : Specifications

Pressure	
Measurement Range	-0.10 ~ 5.00 MPa
Accuracy	±1.0 %FS
Overpressure	150 %FS
Stability	±0.5 %FS/year
Shock	20 g sinusoidal, 11 msec
Vibration	x-y-z directions of 5 -2000Hz / 10g
Working Temp.	-40 ~ 120 °C
Connection	7/16UNF" / MALE
Pressure Type	Gauge
Display unit of pressure	MPa, kgf/cm <sup>2</sup> , bar, psi

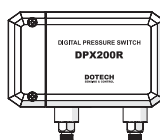
#### Common

Power	100 - 240Vac, 50/60Hz
Power Consumption	Max 10VA
Output	3P Relay Outputs / 250Vac, 5 A / HPS, LPS, HPC
Communication	RS485(Modbus RTU protocol)
Housing	PC-ABS
Dimensions	MAIN : 136(W)mm X 116(H)mm X 42(D)mm
	VIEW : Ø85 x 31(D)mm
Weight	MAIN : 320g, VIEW : 80g
Operation	Temperature -10~50 °C / Humidity 90%RH or less
Storage	Temperature -20~60 °C / Humidity 90%RH or less

#### : Ordering guide

DPX200R -	①	②	Description
① Sensor	HL		high, low pressure and fan
② Communication		00	Standard model
		R4	Communication model (RS485)

#### : Components



DPX200R-MAIN



DPX200R-VIEW



Remote cable

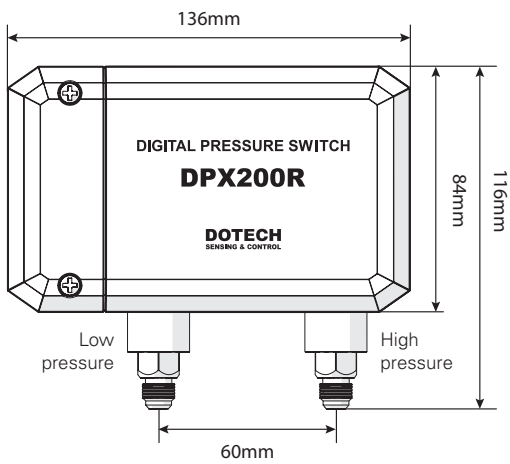


Bracket

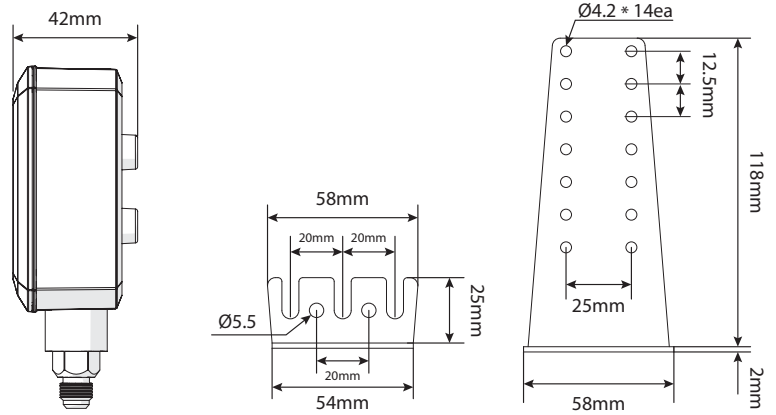


Flange nut 3ea  
Fixing bolt for bracket 4ea

Dimensions and Mounting



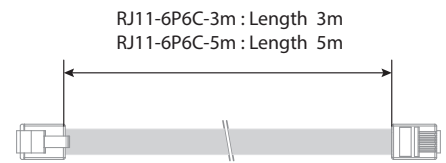
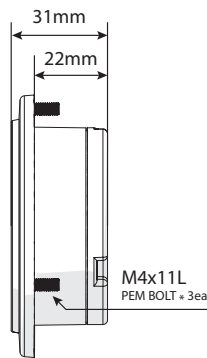
DPX200R-MAIN



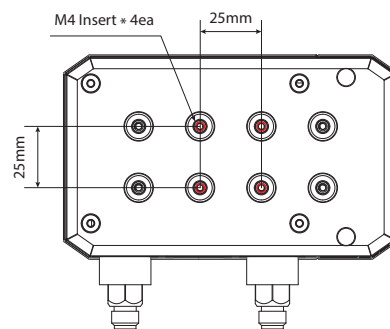
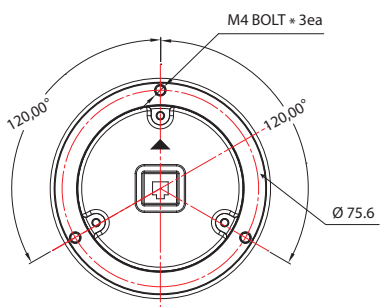
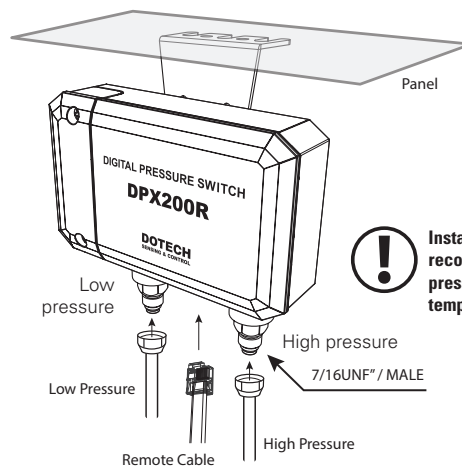
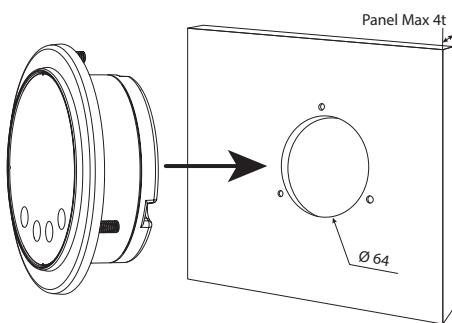
DPX-BRACKET



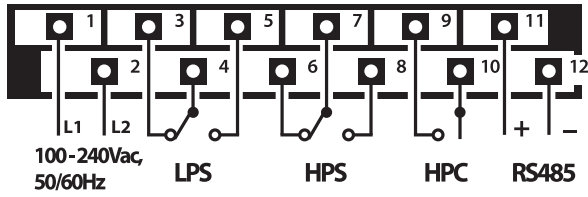
DPX200R-VIEW



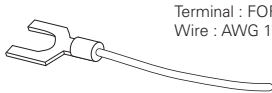
REMOTE CABLE



## Wiring



### Recommendations for terminal and wire



Terminal : FORK TYPE, Stud : 3, L : 14mm Less  
Wire : AWG 17 ~ 19 (AWG 18 Recommend)

PIN	Connection	Description
1	L1	100–240Vac, 50/60Hz Power Input
2	L2	
3	LPS (Low Pressure Switch)	Open when the low pressure is below lower limit
4		Common signal
5	HPS (High Pressure Switch)	Closed when the low pressure is below the lower limit
6		Open when the high pressure is above the upper limit
7	HPS (High Pressure Switch)	Common signal
8		Closed when the high pressure is above the upper limit
9	HPC (High Pressure Fan)	Closed when the high pressure is above the upper limit
10		Common signal
11	RS485	RS-485 + signal
12		RS-485 – signal

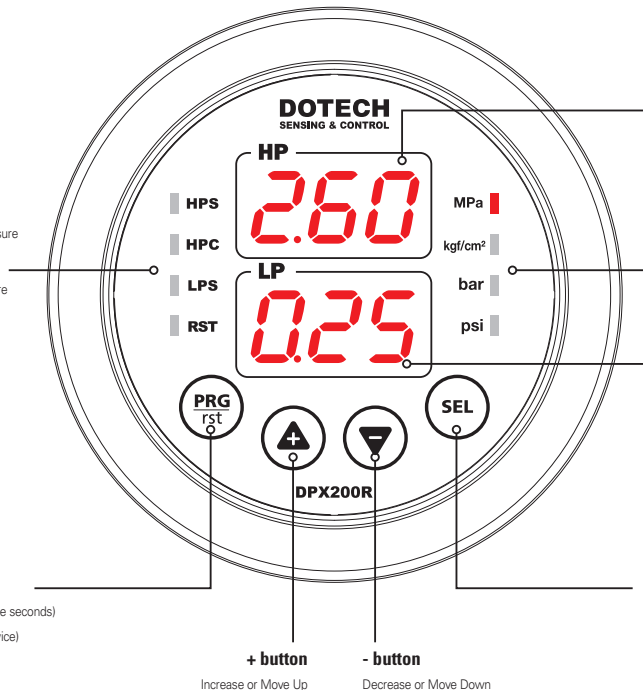
## : Structure & operation

### LED Status LED

- HPS** Switch On a LED lamp when upper limit of high pressure
- HPC** Switch On a LED lamp when fan is operating
- LPS** Switch On a LED lamp when Low limit of low pressure
- RST** Switch On a LED lamp when manual reset

### PRG / rst button

Access to parameters (Press button for three seconds)  
Manual reset (Continuously press button twice)



### Display high pressure value

Display value with unit its unit setting

### LED for unit of pressure

Switch On a LED lamp with its unit setting

### Display low pressure value

Display value with its unit setting

### SEL button

Selection and storage  
Display saturation temperature in accordance with refrigerants



### PRG / rst button + SEL button

Parameters initialization (Press PRG / rst and SEL button simultaneously)

## TRIP / ALARM MESSAGE

Code	Menu	Description / Instructions	Response at Detection	Reset Type
<i>SYS</i>	Internal Parameter Error	Change any parameters and turn off. Then restart.	Immediate Stop	Automatic Reset
<i>HoP</i>	High Pressure Sensor Open	Please check a high pressure sensor because it is open.	Immediate Stop	Automatic Reset
<i>HSH</i>	High Pressure Sensor Short	Please check a high pressure sensor because it is short.	Immediate Stop	Automatic Reset
<i>LoP</i>	Low Pressure Sensor Open	Please check a low pressure sensor because it is open.	Immediate Stop	Automatic Reset
<i>LSH</i>	Low Pressure Sensor Short	Please check a low pressure sensor because it is short.	Immediate Stop	Automatic Reset

※ When it alarms, it beeps and all the outputs are cut off. To stop the beep, press the reset.

## PARAMETER TABLE

※This manual is based on the standard model for MPa and the displays and settings of pressure unit are subject to change depending on the models for other pressure units.

Access to parameters (Press button for three seconds) / Parameters initialization (Press PRG / rst and SEL button simultaneously)

No	Menu	Code	Unit	Step	Min	Max	Default	CustomSetup
40021	Unit setting	<i>Unt</i>	<i>rPR</i> (0) = MPa <i>bAr</i> (2) = bar		<i>kgf</i> (1) = kgf/cm <sup>2</sup> <i>PSI</i> (3) = psi		<i>rPR</i>	
40031	High Pressure Switch Set Value	<i>HPS</i>	MPa	0.01	-0.10	5.00	2.60	
40032	High Pressure Switch Reset Mode (※1)	<i>HPH</i>	<i>R</i> (0) : Automatic , <i>H</i> (1) : Manual				<i>H</i>	
40033	High Pressure Switch Releasing Value	<i>HPF</i>	MPa	0.01	-0.10	<i>HPS</i> - 0.01	2.50	
40041	Set Value for Switching ON a Fan	<i>HPC</i>	MPa	0.01	-0.10	5.00	1.50	
40043	Set Value for Switching OFF a Fan	<i>HCF</i>	MPa	0.01	-0.10	<i>HPC</i> - 0.01	1.40	
40051	Low Pressure Switch Set Value	<i>LPS</i>	MPa	0.01	-0.10	1.00	0.25	
40052	Low Pressure Switch Reset Mode (※1)	<i>LPH</i>	<i>R</i> (0) : Automatic, <i>H</i> (1) : Manual				<i>R</i>	
40053	Low Pressure Switch Releasing Value	<i>LPF</i>	MPa	0.01	<i>LPS</i> + 0.01	1.00	0.35	
40055	Low Pressure Switch Delay Time (※2)	<i>LPC</i>	sec	1	0	999	0	
40061	Refrigerant Selection (※3)	<i>rFY</i>	<i>r22</i> (0) = R22 <i>124</i> (3) = R-124 <i>407</i> (6) = R-407c		<i>r23</i> (1) = R23 <i>134</i> (4) = R-134a <i>410</i> (7) = R-410a		<i>123</i> (2) = R-123 <i>404</i> (5) = R-404a <i>507</i> (8) = R-507	
40063	Communication ID	<i>id</i>	-	1	1	255	1	
40064	Communication BPS	<i>bdr</i>	<i>48</i> (0)= 4800bps, <i>96</i> (1)= 9600bps, <i>192</i> (2)= 19200bps, <i>384</i> (3)= 38400bps				<i>96</i>	
40071	Low Pressure Offset (※4)	<i>LoF</i>	MPa	0.01	-1.99	1.99	0.00	
40072	High Pressure Offset (※4)	<i>HoF</i>	MPa	0.01	-1.99	1.99	0.00	

(※1) Reset mode:

Automatic Reset (*R*): It will be reset automatically when reaching releasing pressure value.

Manual reset (*H*): It will not be reset when reaching release pressure value unless users press RST button twice consecutively.

(※2) Low pressure switch delay time : If output is activated, it maintains ON status during minimum ON time even under the OFF condition.

(※3) Refrigerant selection :

Display saturation temperature in accordance with selected refrigerant.

(※4) Offset :

Offset the differential for pressure sensor.

e.g) If displayed pressure value: 0.20MPa and actual pressure value: 0.22MPa. It is offset by inputting +0.02MPa.

## Communication

Item	Description
Transmission line connection	Multiple line
Communications method	RS485
BPS	BPS default 9600 BPS
Parity, Data, Stop bit	None, 8 Data, 1 Stop
Protocol Type	Modbus RTU Mode
Function Code	Read HOLD REGISTERS (0x03) , Preset Single Register (0x06)
Maximum Read Word	Modbus RTU Mode : 32Word
Poll interval	100msec

### ※ Recommendations for communication line

Use of industrial communication cables is recommended and wire communication line with equivalent in LG LIREV-AMESB AWG22, BELDEN 9841(2), FTP, UTP (in case of installing a number of channels at the same time).

Address	Menu	Unit	Type	Size (Word)	DPX200	MMI	Scale
40011	Output status code	-	Digital	INT 16	Refer to bit status below		-
Bit0	High Pressure Switch Set Value	-	Digital	Bit	0 : OFF	1 : ON	-
Bit1	Set Value for Switching ON a Fan	-	Digital	Bit	0 : OFF	1 : ON	-
Bit2	Low Pressure Switch Set Value	-	Digital	Bit	0 : OFF	1 : ON	-
40013	Alarm status code	-	Digital	INT 16	Refer to bit status below		-
Bit0	Low pressure sensor faulty	-	Digital	Bit	0 : Normal	1 : Alarm	-
Bit1	High pressure sensor faulty	-	Digital	Bit	0 : Normal	1 : Alarm	-
40023	Display of low pressure value	MPa	Analog	INT 16	-0.10 ~ 1.00	-10 ~ 100	1/100
40024	Display of high pressure value	MPa	Analog	INT 16	-0.10 ~ 5.00	-10 ~ 500	1/100
40026	Display of saturation temperature for low pressure	°C	Analog	INT 16	-150.0 ~ 200.0	-1500 ~ 2000	41649
40027	Display of saturation temperature for high pressure	°C	Analog	INT 16	-150.0 ~ 200.0	-1500 ~ 2000	41649

### ※ Pressure Unit Conversion Table

	MPa	bar	kgf/cm <sup>2</sup>	psi
1 MPa	1	1 x 10	1.0197162 x 10	1.450382 x 10 <sup>2</sup>
1 bar	1 x 10 <sup>-1</sup>	1	1.019716	1.4503824 x 10
1 kgf/cm <sup>2</sup>	9.80665 x 10 <sup>-2</sup>	9.80665 x 10 <sup>-1</sup>	1	1.4223393 x 10
1 psi	6.895 x 10 <sup>-3</sup>	6.8947 x 10 <sup>-2</sup>	7.0307 x 10 <sup>-2</sup>	1