

DPX300

User Manual

DOTECH
SENSING & CONTROL

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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 discretionary, after sales service will not be able to be provided.
 7. 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(0.50mm²).
 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.

1. OVERVIEW



※ FEATURES

- High pressure protection, Low pressure protection, Oil pressure protection, an integrated high pressure fan control
- Automatic / Manual reset, Selection of various refrigerants
- Precise pressure control, Sensor offset, Sensor error detection

: SPECIFICATIONS(STANDARD MODEL)

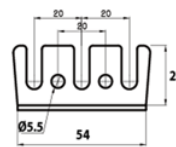
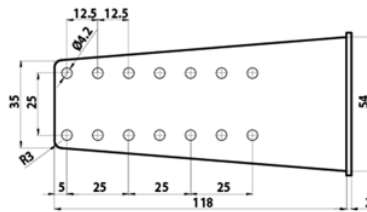
	Description	
Power	100 - 240 Vac, 50/60 Hz	
Power Consumption	MAX 10 VA	
Output	4P Relay Outputs / 250Vac, 30Vdc, 5 A	
Pressure Sensors	Measurement Range	-0.10 ~ 5.00 MPa
	Accuracy	±1.0%FS
	Overpressure	150%FS
	Stability	±0.5%FS/year
	Shock	20 g sinusoidal, 11 msec
	Vibration	x-y-z directions of 5 - 2000Hz / 10g
	Working Temp.	-40 ~ 120 °C
	Connection	7/16UNF" / MALE
Pressure Type	Gauge	
Dimensions	159(W)mm X 128(H)mm X 58(D)mm	
Operation	Temperature -10~50 °C / Humidity 90%RH or less	
Storage	Temperature -20~60 °C / Humidity 90%RH or less	

: SELECTION GUIDE

Model	Description
DPX300-HLO-00-MPA	Digital Pressure Switch Standard(Pressure Unit: MPa)
DPX300-HLO-R4-MPA	Digital Pressure Switch for Communication(RS485 Modbus)
DPX300-HLO-00-KGF	Digital Pressure Switch Standard(Pressure Unit: kgf/cm ²)
DPX300-HLO-R4-KGF	Digital Pressure Switch for Communication(RS485 Modbus)
DPX300-HLO-00-BAR	Digital Pressure Switch Standard(Pressure Unit: bar)
DPX300-HLO-R4-BAR	Digital Pressure Switch for Communication(RS485 Modbus)
DPX300-HLO-00-PSI	Digital Pressure Switch Standard(Pressure Unit: psi)
DPX300-HLO-R4-PSI	Digital Pressure Switch for Communication(RS485 Modbus)

- ※ Communication is not supported in standard models.
※ Specify the pressure unit when ordering.

: Supplied Contents



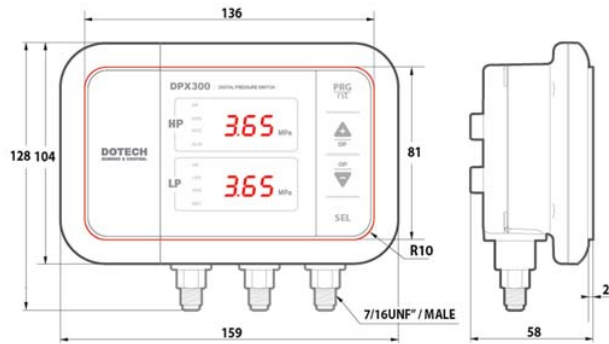
Bracket 1ea

User Manual

※ This item is provided for securing the bracket tightening all bolts please.

2. INSTALLATION

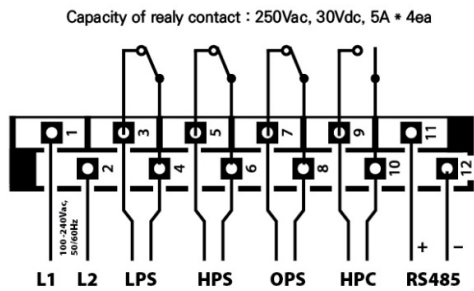
: DIMENSIONS AND MOUNTING(unit: mm)



※ Please install a siphon tube to protect from pulsating pressure and high temperature contact.

LP : Low Pressure | OP : Oil Pressure | HP : High Pressure (unit : mm)

: WIRING DIAGRAM



No	Connection	Description
1	L1	100-240Vac, 50/60Hz Power Input
2	L2	
3	LPS	Open when the low pressure is below lower limit
4		Common signal
5	HPS	Open when the high pressure is above the upper limit
6		Common signal
7	OPS	Open when the oil pressure is below lower limit
8		Common signal
9	HPC	Closed when the high pressure is above the upper limit
10		Common signal
11	RS485	TRX + signal
12		TRX - signal

3. USER INTERFACES

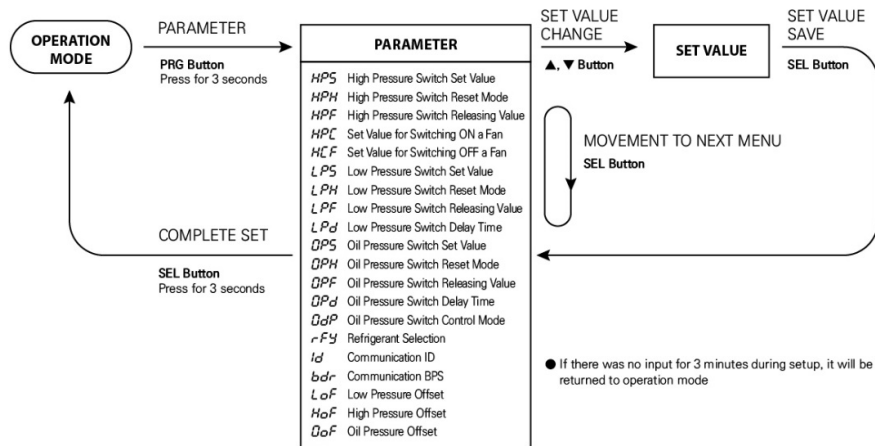
: DISPLAY AND CONTROLS



		Description
LED	DP	On when displaying differential pressure
	HPS	ON/OFF of Output / ON when Overpressure
	HPC	ON/OFF of Output / ON when Fan is Running
	ALM	On when alarm occurs
	OP	On when displaying oil pressure
	LPS	ON/OFF of Output / ON when Underpressure
	OPS	On/Off of output / On when oil pressure
Button	RST	ON when Manual Reset
	PRG/rst	Parameter Settings / Manual Reset (if pressed twice quickly)
	+	Increase or Move Up
	-	Decrease or Move Down
	SEL	Select & Save / Display of Saturated Temperature
	+ -	Display differential pressure value, oil pressure value
	PRG/rst -	Setup values will be initialized if pushing PRG button and - button for 10 seconds.

4. PARAMETER

: PARAMETER CHANGE



: PARAMETER TABLE

No	Menu	Code	Unit	Step	Min	Max	Default	CustomSetup
4 0031	High Pressure Switch Set Value	<i>HPS</i>	MPa	0.01	-0.1 0	5.00	2.60	
4 0032	High Pressure Switch Reset Mode (※1) (Manual / Automatic Reset)	<i>HPH</i>	<i>R</i> (0)= Automatic Reset		<i>H</i> (1)= Manual Reset		<i>H</i> (1)	
4 0033	High Pressure Switch Releasing Value	<i>HPF</i>	MPa	0.01	-0.1 0	HPS-0.01	2.50	
4 0041	Set Value for Switching ON a Fan	<i>HPC</i>	MPa	0.01	-0.1 0	5.00	1.50	
4 0043	Set Value for Switching OFF a Fan	<i>HCF</i>	MPa	0.01	-0.1 0	HPC-0.01	1.40	
4 0051	Low Pressure Switch Set Value	<i>LPS</i>	MPa	0.01	-0.10	5.00	0.25	
4 0052	Low Pressure Switch Reset Mode (※1) (Manual / Automatic Reset)	<i>LPH</i>	<i>R</i> (0)= Automatic Reset		<i>H</i> (1)= Manual Reset		<i>R</i> (0)	
4 0053	Low Pressure Switch Releasing Value	<i>LPF</i>	MPa	0.01	LPS+0.01	5.00	0.35	
4 0055	Low Pressure Switch Delay Time (※2)	<i>LPd</i>	sec	1	0	999	0	
4 0065	Oil Pressure Switch Set Value (※3)	<i>OPS</i>	MPa	0.01	-0.00	5.00	0.10	
4 0066	Oil Pressure Switch Reset Mode (※1) (Manual / Automatic Reset)	<i>OPH</i>	<i>R</i> (0)= Automatic Reset		<i>H</i> (1)= Manual Reset		<i>R</i> (0)	
4 0067	Oil Pressure Switch Releasing Value (※3)	<i>OPF</i>	MPa	0.01	OPS+0.01	5.10	0.20	
4 0068	Oil Pressure Switch Delay Time (※4)	<i>OPd</i>	sec	1	0	999	0	
4 0069	Oil Pressure Switch Control Mode (※5)	<i>OdP</i>	<i>O-L</i> (0)=OP-LP		<i>H-O</i> (1)=HP-OP		<i>O-L</i> (0)	
4 0061	Refrigerant Selection (※6)	<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	
4 0063	Communication ID	<i>Id</i>	-	1	1	255	1	
4 0064	Communication BPS	<i>bdr</i>	<i>48</i> (0)=4800	<i>96</i> (1)=9600	<i>192</i> (2)=19200	<i>384</i> (3)=38400	<i>96</i> (1)	
4 0071	Low Pressure Offset (※7)	<i>LoF</i>	MPa	0.01	-1.99	1.99	0.00	
4 0072	High Pressure Offset (※7)	<i>HoF</i>	MPa	0.01	-1.99	1.99	0.00	
4 0073	Oil Pressure Offset (※7)	<i>OoF</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.

(※2) Low pressure switch delay time:

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

(※3) Oil Pressure Switch Set Value:

If output is activated, it maintains ON status during minimum ON time even under the OFF condition.

(※4) Oil Pressure Switch Delay Time:

Differential pressure = Oil pressure - Low pressure

It becomes an ON condition for output if differential pressure valve (DP) is less than oil switch pressure switch set value (OPS). Output is de-activated if differential pressure value (DP) is higher than oil pressure switch releasing value (OPF) after output is activated.

Output will be activated after maintaining delay time which is set even though it is under the ON condition.

LED lamp will be turned on a light simultaneously with output after flickering during delay time.

(※5) Oil Pressure Switch Control Mode

Control mode for oil pressure switch: In case of using control mode for oil pressure switch as *O-L* (OP-LP),

it can be come to a output state of OPS due to pressure equalizing at the status of compressor stop.

(※6) Refrigerant selection:

Display saturation temperature in accordance with selected refrigerant.

(※7) 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.

: TRIP / ALARM MESSAGES

No	Menu	Code	Description / Instructions	Response at Detection	Reset Type
1	Internal Parameter Error	545	Change any parameters and turn off. Then restart.	Immediate Stop	Automatic Reset
2	High Pressure Sensor Open	HoP	Please check a high pressure sensor because it is open.	Immediate Stop	Automatic Reset
3	High Pressure Sensor Short	HS H	Please check a high pressure sensor because it is short.	Immediate Stop	Automatic Reset
4	Low Pressure Sensor Open	LoP	Please check a low pressure sensor because it is open.	Immediate Stop	Automatic Reset
5	Low Pressure Sensor Short	LS H	Please check a low pressure sensor because it is short.	Immediate Stop	Automatic Reset
6	Oil Pressure Sensor Open	OpP	Please check a oil pressure sensor because it is open.	Immediate Stop	Automatic Reset
7	Oil Pressure Sensor Short	OS H	Please check a oil 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.

5. COMMUNICATIONS SPECIFICATIONS

: Communication Model (-R4)

	Description
Transmission line connection	Multiple line
Communications method	RS485 (2-wire, half-duplex)
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	16 Word
Media Type	BELDEN 9841 / 9842, LG LIREV-AMESB
Poll interval	100msec

: HOLD REGISTERS

Address	Menu	Unit	Type	Size (Word)	DPX200	MMI	Scale
4 0011	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	-
Bit3	Oil Pressure Switch Set Value	-	Digital	Bit	0: OFF	1: ON	-
4 0013	Alarm status code	-	Digital	INT 16	Refer to bit status below		-
Bit0	Internal control variables error (Internal control factor error)	-	Digital	Bit	0: Normal	1: Alarm	-
Bit1	High pressure sensor faulty	-	Digital	Bit	0: Normal	1: Alarm	-
Bit2	Low pressure sensor faulty	-	Digital	Bit	0: Normal	1: Alarm	-
Bit3	Oil pressure sensor faulty	-	Digital	Bit	0: Normal	1: Alarm	-
4 0023	Display of high pressure value	MPa	Analog	INT 16	-0.10 ~ 5.00	-10 ~ 500	1/100
4 0024	Display of low pressure value	MPa	Analog	INT 16	-0.10 ~ 5.00	-10 ~ 500	1/100
4 0025	Display of oil pressure value	MPa	Analog	INT 16	0.00 ~ 5.00	0 ~ 500	1/100
4 0026	Display of saturation temperature for low pressure	°C	Analog	INT 16	-150.0 ~ 200.0	-1500 ~ 2000	1/10
4 0027	Display of saturation temperature for high pressure	°C	Analog	INT 16	-150.0 ~ 200.0	-1500 ~ 2000	1/10
4 0030	Display of differential pressure value (Oil pressure - Low pressure)	°C	Analog	INT 16	0.0 ~ 5.10	0 ~ 510	1/100

※ Pressure Unit Conversion Table

	MPa	bar	kgf/cm ²	psi
1MPa	1	1 × 10	1.0197162 × 10	1.450382 × 10 ²
1bar	1 × 10 ⁻¹	1	1.019716	1.4503824 × 10
1kgf/cm ²	9.80665 × 10 ⁻²	9.80665 × 10 ⁻¹	1	1.4223393 × 10
1psi	6.895 × 10 ⁻³	6.8947 × 10 ⁻²	7.0307 × 10 ⁻²	1