Pressure switch type DG 51 E

Assembly instructions

Operating pressure p_{max}: 600 bar

Printing date / document generated on: 03-2020

HAWE HYDRAULIK

1 Overview of pressure switch type DG 51 E

Pressure switches are hydraulic accessories. They close or open electrical contacts when under pressure.
They are used to issue an electrical switching command or signal for further work steps when a predefined pressure value is reached.
Two independent switching points can be programmed. Pushbuttons or IO-Link can be used to carry out the setting.

Pressure switch type DG 51E

Features and benefits:

- Two switch outputs as normally closed contact or normally open contact, PNP or NPN programmable
- System pressure is constantly measured and shown on the display
- Optical switching point monitoring by LED
- IO-Link communication
- Compact design
- Option of integration into the HAWE modular system
- Operating pressures up to 1000 bar

Intended applications:

- General hydraulic systems
- Machine tools

2 Available versions, main data

Order coding example:

DG 51 E - A 250

250 — **Pressure range** Table 2 Pressure range

A — **Hydraulic connection** Table 1 Hydraulic connection

DG 51 E — **Basic type**

Table 1 Hydraulic connection

Coding	Description
- A	External thread G 1/4 A (BSPP)
- I	Internal thread G 1/4 (BSPP)

Table 2 Pressure range

Coding	Pressure setting (bar)
100	0 to 100
250	0 to 250
400	0 to 400
600	0 to 600

3 Parameters

3.1 General

Designation	Pressure switch
Design	Ceramic-Capacitive (100 bar) Metallic thin-film cell (250 bar, 400 bar, 600 bar)
Model	Screw-in part
Material	V2A, Plastic (250 bar, 400 bar, 600 bar) V4A, Plastic (100 bar)
Ports	M12, 4-pole
Tightening torques	25 to 35 Nm See chapter 4 "Dimensions" in D 5440 E/2
Material with contact to the medium	V2A (1.4542)
Installation position	As desired
Protection class	IP 67, mounted
Temperatures	Medium temperature: -25 to +80°C Ambient temperature: -25 to +80°C Storage temperature: -40 to +100°C

Pressure

		DG 51 E- to 100	DG 51 E- to 250	DG 51 E- to 400	DG 51 E- to 600
Measuring range	bar PSI	0 to 100 0 to 1450	0 to 250 0 to 3625	0 to 400 0 to 5800	0 to 600 0 to 8700
Maximum pressure	bar PSI	300 4350	500 7250	800 11580	800 11580
Bursting pressure	bar PSI	650 9400	1200 17400	1700 24650	2500 36250
Switching point SP1 and SP2	bar PSI	1 to 100 10 to 1450	2 to 250 40 to 3650	4 to 400 40 to 5800	4 to 600 40 to 8700
Reset point rP1 and rP2	bar PSI	0.5 to 99.5 5 to 1445	1 to 249 20 to 3600	2 to 398 20 to 5780	2 to 598 20 to 8680
Pressure difference Δp	bar PSI	0.5 5	1 20	2 20	2 20

3.2 Electrical data

Version	PNP/NPN switching, programmable
Operating voltage U_B	18 to 30 DC, protected against polarity reversal
Idle current I_L	< 35 mA
Insulation resistance R_{ISO}	> 100 MΩ

Outputs

Switching current I_A	< 200 mA, overload-proof
Voltage drop ΔU_A	< 2.5 V
Switching frequency f_S	≤ 170 Hz
Switching cycles N	> 100 million

Accuracy

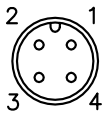
Switching point accuracy	< ±0.5
Hysteresis	< ±0.25
Repeat accuracy	< ±0.1

Reaction time

Startup	0.3 s
Response time of output T_S	< 3 ms
Delay time dS & dr	0 to 50 s, programmable

Electrical connection

Signal	Pin	Wire colour
U_B	1	Brown
OUT2	2	White
GND	3	Blue
OUT1/IO-Link	4	Black



1	+24 V
2	PNP switching signal
3	GND
4	IO-Link

3.3 IO-Link communication

Type	COM2, 38.4 kBaud
Revision	1.1
SDCI standard	IEC 61131-9
Device ID	100 bar: 915 d / 000 393 h 250 bar: 916 d / 000 394 h 400 bar: 917 d / 000 395 h 600 bar: 918 d / 000 396 h
Profiles	Smart Sensor, Process Data Variable, Device Identification, Device Diagnosis
SIO mode	Yes
Master port class	A
Analogue process data	1
Binary process data	2
Cycle time	> 2.3 ms

A superordinate IO-Link Master is required to use the IO-Link interface. Process and diagnostic data can be accessed directly using the IO-Link.

It is also possible to adjust the settings during ongoing operation.

The device-specific IODDS file will be provided on request.

3.4 Acceptance tests and environmental tests

EMC

Immunity to interference	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3

Environment test

Shock resistance	DIN EN 60068-2-27	50 g, 11 ms
Vibration resistance	DIN EN 60068-2-6	20 g, 10 to 2000 Hz
MTTF	201.44a	

For the scope of validity cULus:

The device shall be supplied from an isolating transformer having a secondary Listed fuse rated either

a) max 5 amps for voltages 0~20 Vrms (0~28.3 Vp) or

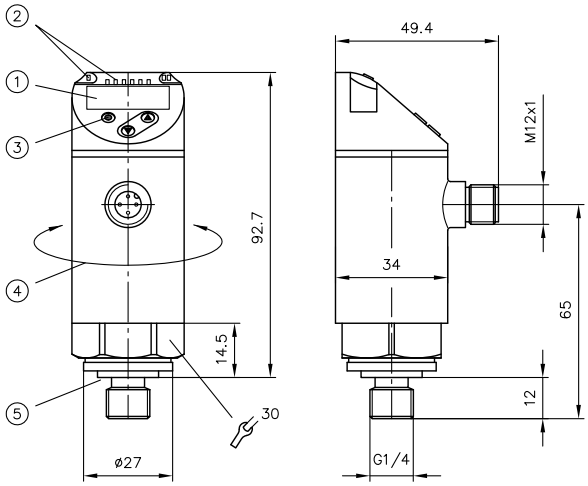
b) 100/Vp for voltages of 20~30 Vrms (28.3~42.4 Vp).

The device shall be connected only by using any Listed (CYJV/7) or R/C (CYJV2/8) cord in respect of Condition of Acceptability, having suitable ratings.

4 Dimensions

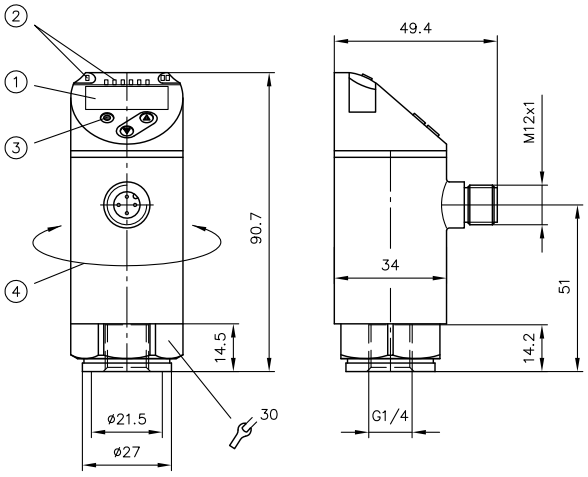
All dimensions in mm, subject to change.

DG 51 E- A -...



1 Four-digit 10-segment display, alphanumeric
2 Display unit/switching state
3 Programming buttons
4 Housing can be turned, max. 345°
5 FKM sealing ring

DG 51 E- I -...



1 Four-digit 10-segment display, alphanumeric
2 Display unit/switching state
3 Programming buttons
4 Housing can be turned, max. 345°

5 Installation, operation and maintenance information

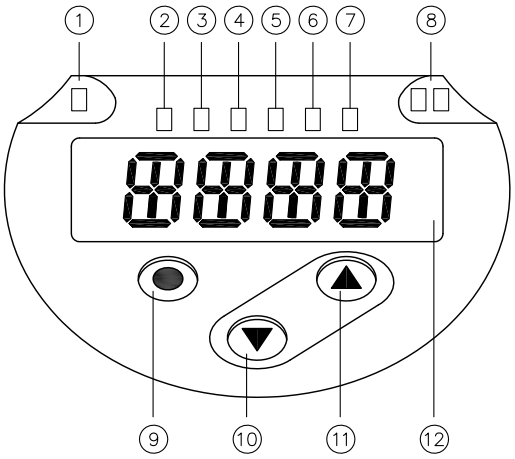
CAUTION

At an ambient temperature of 65°C or a working fluid temperature of 90°C, the following can occur:

- Hot surface
- Risk of burns

Please stick the enclosed warning label around the connected cable.

5.1 Control element and display element



Layout plan

Number	Element	Function/meaning
1	Yellow LED	OUT 1 is activated
2	Green LED	Display in bar
3	Green LED	Display in PSI
4	Green LED	Display in MPa
5 - 7	Green LED	Not assigned
8	Yellow LED	OUT 2 is activated
9	Enter button	Selection of the parameters and confirmation of the values
10	Arrow button down	Setting the parameter values Gradually by individual pressure, continually by continuous pressure
11	Arrow button up	Setting the parameter values Gradually by individual pressure, continually by continuous pressure
12	Alphanumeric display	Displays the current system pressure Displays parameters and parameter values

Further information

Additional versions

- Electronic pressure switch type DG 6: D 5440 F
- Electronic pressure transducer type DT 2: D 5440 T/1
- Electronic pressure transducer type DT 11: D 5440 T/2
- Pressure switch type DG: D 5440
- Fitting type X 84: D 7077

HAWE Hydraulik SE
Einsteinring 17 | 85609 Aschheim/Munich | Postfach 11 55 | 85605 Aschheim | Germany
Tel +49 89 379100-1000 | Fax +49 89 379100-91000 | info@hawe.de | www.hawe.com

D 5440 E/2 - DG 51 E - 3-2020-1.0.4