

BUCHER
hydraulics

BUCHER PRODUCTS AVAILABLE FROM HYDRATEC

DZE ELECTRONIC PRESSURE SWITCH
for detection of overload per EN 81-2 featuring
two adjustable switching points



*12 months
on-site warranty*

All our work comes with the assurance that any callbacks are covered including parts and labour



Our engineers are certified First Aiders so can even work when the site First Aider is absent

DZE Electronic Pressure Switch

1. SAFETY INFORMATION


This document contains various symbols corresponding to important safety instructions. It is essential that all personnel take note of the symbols and follow the instructions.

Important: indicates advice on using the equipment, and other particularly helpful information.


Attention: indicates a situation in which damage could occur. If the situation is not prevented, the product and/or other objects in its vicinity could be damaged.



Caution!
This draws attention to a hazard or an unsafe procedure that could result in injury to persons or damage to equipment.



Danger!
This draws attention to a direct and immediate danger that will result in serious injury or death.



Warning!
This draws attention to a grave risk. It is used to identify dangerous situations that could result in serious injury or death.

2. GENERAL DESCRIPTION

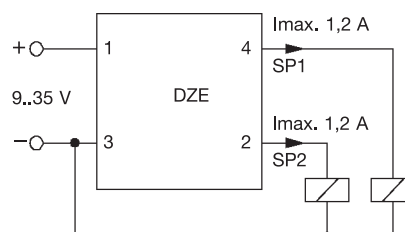
- Electronic pressure switch for detection of overload on a hydraulic lift as per EN81–2, Section 14.2.5.2
- Two individually adjustable switching points (e.g. min. pressure/max. pressure)
- Digital display of current pressure and switching point
- 2 switching points adjustable from 1.4 to 100 bar in steps of 0.2 bar
- Reset point (reset hysteresis) adjustable from 0.6 to 99 bar in steps of 0.2 bar
- Contacts can be programmed as normally open or normally closed

2.1 GENERAL DESCRIPTION

Hydraulic connection	G1/4" external thread Tightening torque 17 ... 20 Nm		
Measurement range	100 bar	400 bar	
Overload range	200 bar	800 bar	
Burst pressure	>500 bar	>2000 bar	
Accuracy	< + 1% FS max.		
Reproducibility	< + 0,25 % FS max.		
Supply voltage	9 ... 35 VDC		
Electrical connection	4-pole plug		
Switching output	PNP Transistor		
Switching current	1.2 A max.		
Art. No.	Pressure switch	7011768	7012858
	Plug	7011769	7011769

2.2 CONNECTION LAYOUT

The numbers refer to the connector plug



i Important: the outputs of the electronic pressure switch, connections 2 and 4, can be lead through a relay or directly through an opto-coupler or PLC input. The relay coils can be directly actuated with the voltages at 4/3 and 2/3 (typical voltage drop over the transistor is approx. 2 V). The relay contact must be linked into the elevator's safety circuit.

3. ADJUSTMENT OF SWITCHING POINT AND RESET HYSTERESIS

The switching points must be set with the switch installed in the lift system. The adjustments can be done very simply, using the buttons provided on the pressure switch.

4. FITTING AND OPERATING INSTRUCTIONS

4.1 FITTING THE DZE PRESSURE SWITCH

- The DZE pressure switch with G $\frac{1}{4}$ " external thread is screwed directly into the LRV-1 / VF-LRV lift control valve.
- After installation, the switch can be optimally positioned by turning it about its long axis. The display, including the operating buttons, can also be rotated for best alignment.

- Use the shortest possible connecting cables, and use screened cable (e.g. LIYCY 4 x 0.5 mm²)
- The cable screening must be expertly connected to ensure interference suppression

4.2 CONNECTING CABLE

Wiring diagram



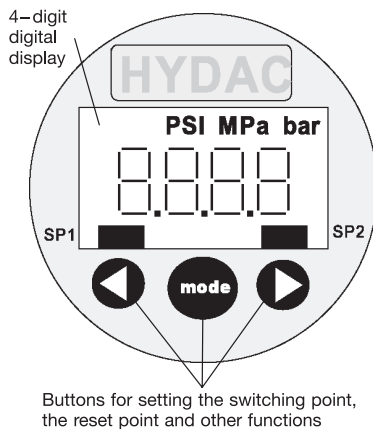
- Optionally, a connecting cable can be purchased
- Three cable lengths are available:
 - cable length 1m Art.No. 7011996
 - cable length 6m Art.No. 7011999
 - cable length 12m Art.No. 7012000

i Important: the switching outputs of the pressure switch (terminals 4-3 for switching output 1 and 2-3 for switching output 2) must be lead through a relay or directly through an opto-coupler or PLC input. The corresponding contact must be linked into the elevator control system.

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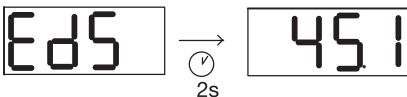
4.3 OPERATION AND ADJUSTMENT OF THE DZE PRESSURE SWITCH

4.3.1 Controls on the membrane keypad



4.3.2 Digital display

When the power supply is switched on, the instrument displays “EdS” briefly, then starts to display the current pressure.



The default display settings can be altered. The maximum value can be permanently displayed, for example. This is the highest pressure recorded since the unit was switched on or since the last reset operation. In a similar manner, a switching point can be displayed, or the display can be dimmed.

Depending on the default setting, “TOP”, “S.P.1”, “S.P.2” or “oFF” is briefly displayed after the switch-on confirmation. The current pressure can be displayed briefly by pressing the ^ or v buttons. When maximum pressure is selected as the default display, the maximum pressure value is reset.

Notes:

- If the actual pressure exceeds the pressure rating of the switch, it can no longer be shown and the display begins to blink.

- If the actual pressure is less than 1% of the rated pressure, then 0 is displayed.

4.3.3 Output characteristics

Switching outputs

The instrument has two switching outputs, of which one or both can be used.

The following switching behaviour can be set within the basic set-up procedure:

Setting the switching point (SP)

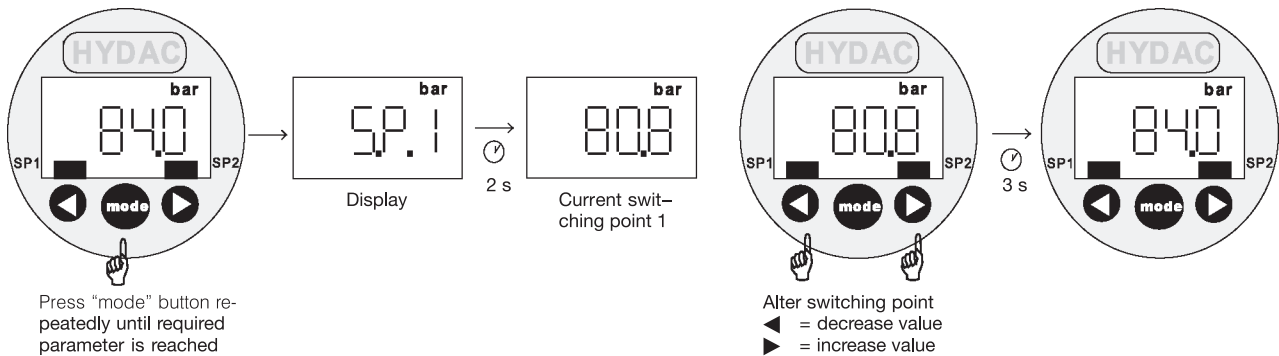
One switching point and one associated hysteresis can be set for each switching output. An output switches when the set switching point is reached and switches back when the pressure falls below the level of the reset point. The reset point is determined by the hysteresis value (reset point = switching point minus hysteresis).

Abbreviations:

- “S.P.1”, “S.P.2” = switching point 1 or 2
- “HYS.1”, “HYS.2” = hysteresis 1 or 2

4.3.4 Setting the switching point and hysteresis

- Press the “mode” button
- “S.P.1” or “Hi.1” is displayed
- Select the required parameter by repeatedly pressing the “mode” button (“S.P.1”, “HYS.1”, “S.P.2” or “HYS.2” is displayed if switching functions have been set up; “Hi.1”, “Lo.1”, “Hi.2” or “Lo.2” in the case of window (WIN) functions)
- After 2 seconds, the current setting flashes
- Use the ^ and v buttons to alter the setting
- As necessary, select further parameters using the “mode” button and alter the setting using the ^ and v buttons
- If no button is pressed within 3 seconds, the display reverts to normal and all settings are saved



Notes:

- If "LOC" is displayed during an adjustment attempt, this means that programming is disabled.

Solution: set the programming enable(s) to "free" (see section 4.4, Programming Enable)

- The value will be decremented or incremented automatically if the > or < button is held down during an adjustment
- If any setting is altered, "PRG" is displayed briefly when the display is switched over. The new setting has then been stored in the instrument.

Measurement range [bar]	Switching point, or upper switching value [bar]	Hysteresis (determines the lower switching value) [bar]	Step size [bar]
100	1.4 .. 100	0.6 .. 99.00	0.200
400	5.0 .. 400	2.0 .. 396.00	1.000

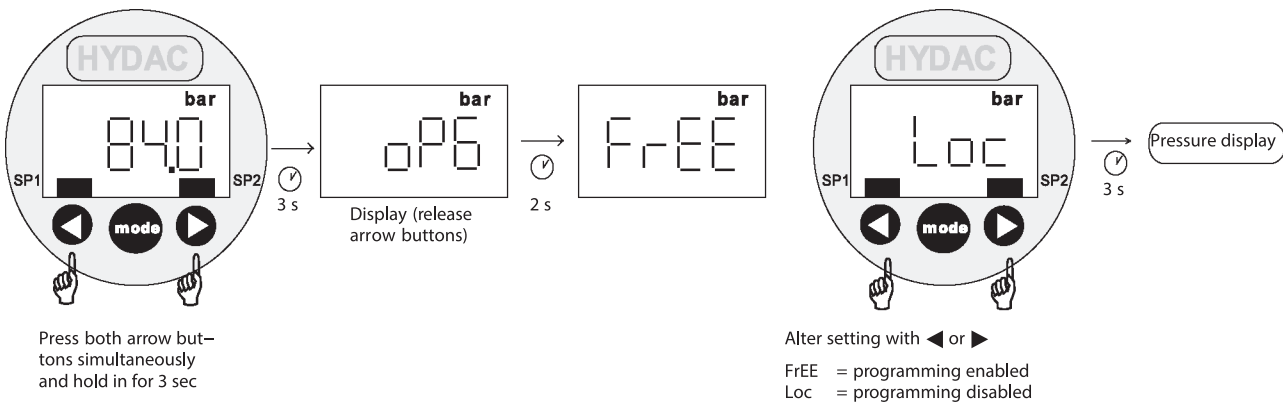
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4.4 PROGRAMMING ENABLE

The pressure switch has two programming enables, both of which have to be enabled in order to alter settings. The operating program enable can be enabled or disabled during operation. It offers protection against unintentional alterations. When pro-

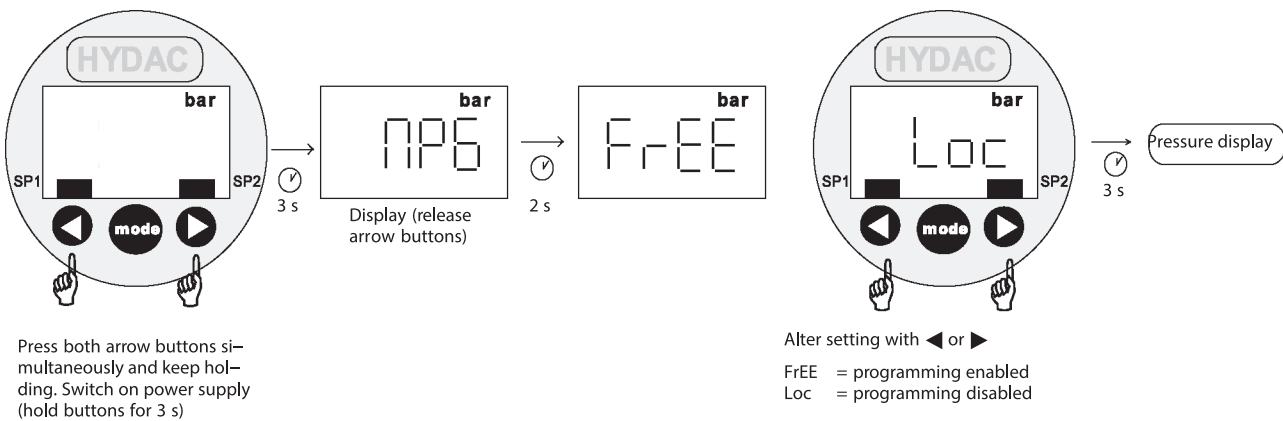
gramming is disabled by the main program enable, no settings can be altered during system operation. This can be used as a safety function, for example, or as security against unauthorised changes.

4.4.1 To change the operating program enable



4.4.2 To change the main programming enable

Switch off, or disconnect, the power supply



i Important: if any setting is altered, "ProG" is displayed briefly when the display is switched over. The new setting has then been stored in the instrument.

4.5 BASIC SETTINGS

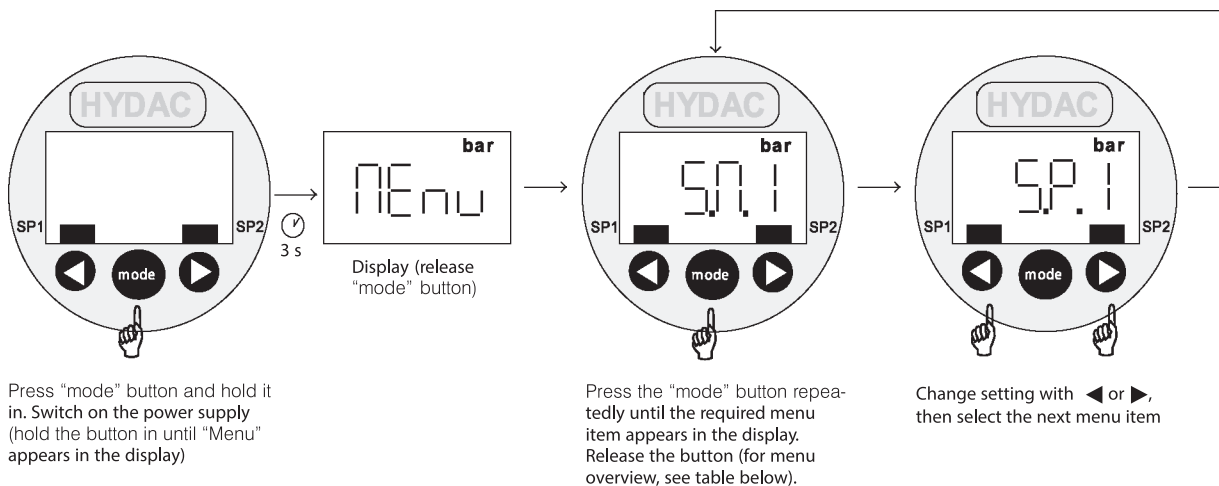
The basic settings can be modified as desired. However, there is no need for any change to the basic settings in order to operate the pressure switch as an overload device in a hydraulic lift system.



Important: while the menu is activated, the unit does not perform any switching functions!

4.5.1 To change the basic settings

Switch off, or disconnect, the power supply






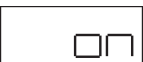


Exiting the basic settings menu:

Select the menu item "END" and change the setting to "YES". After 2 seconds, the DZE will revert to normal display mode.















Important: if no key is pressed for 25 sec, menu mode is automatically terminated and any changes made do not take effect.

The following basic settings are preset at the factory:

Settings	Display	Setting range	Preset
Switching mode for switching output 1 ($S_m 1$)  Switching output 1 operates in switching point / hysteresis function  Switching output 1 operates in window function		SP/Win	SP
Switching direction for switching output 1 ($S_d 1$)  normally open function  normally closed function		ON/OFF	ON

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SETTINGS	DISPLAY	SETTING RANGE	PRESET
<p>Switch-on delay for switching output 1 (T_{on} 1) The period in seconds for which the value must reach or exceed the respective switching point in order for a switching process to take place.</p>		0.00 .. 99.99 s	0
<p>Switch-off delay for switching output 1 (T_{of} 1) The period in seconds for which the value must fall below the respective switching point in order for a switching process to take place.</p>		0.00 .. 99.99 s	0
The parameters for switching output #2 are set in the same way as described above for switching output #1			
<p>Primary display (PriMarry) Value that is to be permanently shown in the display:</p> <p> Actual pressure</p> <p> Highest recorded pressure</p> <p> Switching point 1 or 2</p> <p> For function, see page 4, 4.3.2</p>		ACT/ Top/ S.P.1/ S.P.2/ OFF	ACT
<p>Reset time (rTiM) (only for Primary display" = Top") Determines for how long the most recently recorded highest pressure is shown on the display..</p>		0 .. 300 s	0
<p>Display filter (DiSPlay)</p> <p> Display reacts slowly to variations in pressure</p> <p> Display reacts normally to variations in pressure</p> <p> Display reacts quickly to variations in pressure</p>		SLOW/ MEDI/ FAST	MEDI





SETTINGS	DISPLAY	SETTING RANGE	PRESET
<p>Setting the display range (RANGe)</p> <p> The pressure is displayed in bar</p> <p> The pressure is displayed in PSI</p> <p> The pressure is displayed in MPa</p> <p> The display range can be freely scaled. When this setting is chosen, the position of the decimal point and the upper and lower display limits must also be set (see the following parameters).</p> <p>Example: If the display range is changed to 0 ... 215.5, then a display value of 215.5 corresponds to the unit's maximum pressure rating.</p> <p>Application: To display values in other units that are proportional to the pressure, e.g. kN, kg, etc.</p>		BAR/ PSI/ MPa/ BAR FREE	BAR
<p>Decimal point (Point) (only when the setting for RANG" = FrEE") The number of digits after the decimal point in the DZE display</p>		0 .. 0.000	0.0
<p>Lower display limit (rAnge Low) (only when the setting for RANG" = FrEE") The lower limit of the display range</p>		-999 .. 9899	0.0
<p>Upper display limit (rAnge High) Upper display limit (rAnge High) (only when the setting for RANG" = FrEE") The upper limit of the display range</p>		-899 .. 9899	1000
<p>Calibration of the sensor null point (CALibrate)</p> <p> The pressure existing at the time is stored as the new null point. This is possible within a range from 0 bar to 3 % of the unit's nominal pressure rating.</p> <p> The display shows when a new null point in the allowable range is stored, otherwise it displays</p> <p> This function is useful when, for example, there is always a residual pressure in a system, but it must be displayed as 0 bar.</p>		YES/NO	NO



Caution!

In the case of the 400 bar unit, for example, pressures of up to 12 bar could be displayed as zero after null- point calibration. Before working on the hydraulic system, it is important to ensure that all pressure has been vented.

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SETTINGS	DISPLAY	SETTING RANGE	PRESET
Version number (VErSion) Display of the current software version number (display only).			
Exiting from basic settings (End)  The basic settings menu will be exited.  The basic settings menu will continue to be available for further setting changes. If any basic setting is altered, ProG” is displayed briefly on exiting the basic settings menu and then the value specified in the “Primary display” setting appears in the display.		YES/NO	NO

4.6 ERROR MESSAGES

If an error is detected, then an appropriate error code is displayed. This can be cleared by pressing any button. The possible error codes are:

E.01

The switching points and hysteresis values have been set such that the resulting reset point is no longer within the permitted setting range.

Example The switching point is set to 180 bar, the hysteresis to 200 bar.

Solution Correct the settings.

E.10

A data error has been detected in the stored settings. Possible causes are severe electromagnetic disturbances or a component defect.

Solution Check all settings (programming enables, switching points, reset points and basic settings) and correct as necessary. If the error arises frequently, then please contact our Service Dept.

E.12

An error has been detected in the stored calibration data. Possible causes are severe electromagnetic disturbances or a component defect.

Solution Disconnect the instrument’s power supply, and then re-connect it. If the error code is still displayed, the switch must be returned to the factory for recalibration or repair.

E.20

A short-circuit has been detected in a switching output.

Solution Rectify the short – circuit



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