PSC8 • PSC16 • PSC24

Multichannel Pressure Scanner Simultaneous acquisition of 8 to 24 pressure signals

- Measuring ranges selectable from 125 Pa to 10bar uni- and bi-directional
- Non-linearity & hysteresis: typ. 0.1%, max. ±0.25% FSS
- Data transfer via USB without external power supply
- CAN bus, LAN and RS232 versions available
- Sampling rate per channel up to max. 100Hz
- Software and driver for LabVIEW and DBC files are included

General Description

The PSC pressure scanners are capable of measuring multiple pressure signals simultaneously. Temperature-compensated transducers feature high accuracy and minimal offset drift. In all devices each pressure channel range can be customized individually according to customer specifications.

The PSC24 has 24 pressure channels. Reference pressure lines of all sensors are connected to a single pressure port in standard configuration. A special differential version with reference ports for each line is also available.

The data is transmitted as ASCII text in the unit Pascal [Pa]. The transmission rate can be set in the range between 1 and 100 Hz (50Hz with 24 channel systems).

A tare function can be triggered either by pressing the TARE button or by a software command.

Power for PSC devices equipped with USB or CAN interface is supplied via USB or respectively via CAN-port. For the version with built-in magnetic valves and LAN interface an external power supply (9-24 V, 1 A) has to be connected with the device.

All PSC versions are equipped with an USB interface, allowing easy configuration. When connected via USB the pressure scanner identifies itself to the host PC as virtual COM port. Thus, any software supporting serial protocols can be used for communication. The LAN-version sends the data using the TCP-IP protocol. A direct connection can be set up via Telnet (Port 10001).

A recording software and an example program in LabVIEW (source code) are shipped with the device. For devices with CAN bus interface a DBC-file is included in the shipment.

On request there are different customization options:

- selection of different sensor pressure ranges
- parallel connection of sensors with different ranges for application where high accuracy is required

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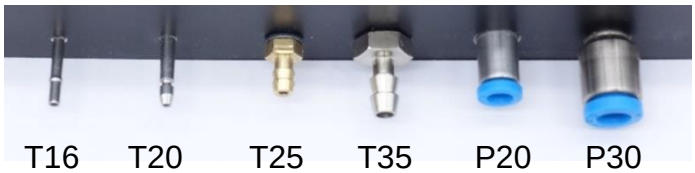
Technical Specifications

Accuracy and scan rates	
Nonlinearity & Hysterese	<0.1% typ. (max. ±0.25% FSS)
Scan rate per channel	1-50 Hz (PSC8: 100Hz)
Power supply	
via USB	USB-powered (no additional power supply required)
PSC-LAN / PSC-CAN	7-24 V, 50 mA
Environmental conditions	
Temperature	5° C…50° C
Humidity	0…95%, non-condensing
Operating medium	Air and non-corrosive gases
Dimensions	
Housing (standard)	130 x 55 x 170 mm (B x H x T)
Software and drivers	
Virtual COM-Port-Driver	
Configuration software	
LabVIEW-example program as sourcecode	
Supported operation systems	
Windows XP, 7, 8, 10, Linux	
Options	
All PSC systems can be optionally equipped with CAN bus, LAN or RS232	
Pressure connections	

Ref.	Diameter [mm]	Tube type (empfohlen)	Inner tube diameter [mm]	Max. pressure	Suitable for
T16	1,6	Silikon, PE, PVC	1,0 … 1,5	100kPa	All versions
T20	2,0	Silikon	1,5 … 1,8	35kPa	All versions
T25	2,5	Silikon	1,8 … 2,2	35kPa	All with a common reference
T35	3,5	Silikon	2,2 … 3,0	15kPa	All with a common reference
P20	2,0	PE, PU, PA		1,6MPa	All with a common reference
P30	3,0	PE, PU, PA		1,6MPa	PSC8, PSC16

DI Inner diameter
DA Outer diameter
* recommendation



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Pressure ranges

The PSC pressure scanners are available with many pressure ranges. In the low pressure ranges up to 35kPa, differential pressure sensors (uni- and bidirectional) are usually used.

For larger pressure ranges, either ambient pressure or vacuum related measuring ranges (gauge and absolute) are suitable.

The table below shows the available pressures in different units:

Mode *)	Range	Unit	Range	Unit	Range	Unit	Suffix
B/U	125	Pa	1,25	mbar	0,0181	PSI	125
B/U	250	Pa	2,5	mbar	0,0363	PSI	250
B/U	500	Pa	5	mbar	0,0725	PSI	500
B/U	1	kPa	10	mbar	0,145	PSI	1000
B/U	1,25	kPa	12,5	mbar	0,1813	PSI	1250
B/U	2,5	kPa	25	mbar	0,3625	PSI	2500
B/U	5	kPa	50	mbar	0,725	PSI	5000
B/U	7,5	kPa	75	mbar	1,0875	PSI	7500
B/U	10	kPa	100	mbar	1,45	PSI	10000
B/U	15	kPa	150	mbar	2,175	PSI	15000
B/U	20	kPa	200	mbar	2,9	PSI	20000
B/U/A	35	kPa	350	mbar	5,075	PSI	35000
A	50	kPa	500	mbar	7,25	PSI	50000
B/U/G/A	100	kPa	1	bar	14,5	PSI	100E3
G/A	200	kPa	2	bar	29	PSI	200E3
G	300	kPa	3	bar	43,5	PSI	300E3
G/A	400	kPa	4	bar	58	PSI	400E4
G	700	kPa	7	bar	101,5	PSI	700E3
G	1000	kPa	10	bar	145	PSI	10E5
G	1600	kPa	16	bar	232	PSI	16E5

*) Mode:
B: Bidirectional differential (measuring range from -range to +range)
U: Unidirectional differential (measuring range from 0 to +range)
G: Unidirectional referenced to ambient pressure (gauge) (measuring range from 0 to +range)
A: Absolute pressure (referenced to vacuum)

The measurement uncertainty is 0.25% of the measuring range (span min max). During factory calibration, a deviation from the nominal value significantly smaller than 0.1% of the measuring range is achieved.

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Serial Interface

The virtual COM port can be operated at any baud rate. We recommend 19200, 8 data bits, no parity, 1 stop bit. **DTR (Data Terminal Ready) must be asserted.**

Command	Function	Answer
`CAL a x`	Set scaling factor for sensor a to value x	`#Scaler=…. Offset=….`
`CAL? A`	Read scaling factors for sensor a	`#Scaler=…. Offset=….`
`EE_LOAD`	Load calibration data from EEPROM	`#EEPROM:loaded`
`EE_SAVE`	Save calibration data to EEPROM	`#EEPROM:saved`
`*IDN?`	Read device ID	`#PSC24-LAN 2.4.0 #SN35000`
`RATE x`	Define sample rate range x = 20 …5000 [ms] standard: 1000 [ms] → 1 [Hz]	`#Rate=x ms` `#Error: Rate-Range`
`RATE 0`	Activate request and trigger mode actual values are read only after manual command “?” is sent	`#Request-Mode active`
`?`	Read actual value (request-mode only)	
`*RST`	Load default settings	`#RESET`

`SCAN_A x`
`SCAN_B x`
`SCAN_C x`
	Defines a scanlist (channel selection)
	binary, each bit represents one channel	

`TARA`	Zero adjustment for all sensors	`#TARA`
`FILTER x`	Activate exponential filter 0 = deactivated; >0 = filter ranage in ms	`#FILTER=x`
Every command is terminated by a line break (CR, LF or CR+LF). The sensor enumeration of all devices starts at 1.		

-for CAN bus version only-		
`CAN_ID x`	Set CAN-ID	`#OK`
`CAN_IT x`	Set interface x = 0: normal (11 bit, CAN 2.0A) x = 1 extended 23 bit (23 bit, CAN 2.0B)	`#OK`
`CAN?`	Request CAN configuration	`#ID:0x[…]_Speed:[baud]_IDT:[0,1]`
`CAN_Speed x`	Set CAN bus rate 0: 125 kBaud 1: 250 kBaud 2: 500 kBaud 3: 1 MBaud	`#OK`

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Technical Drawing

Dimensions for a PSC24 device can be taken from the following drawing.

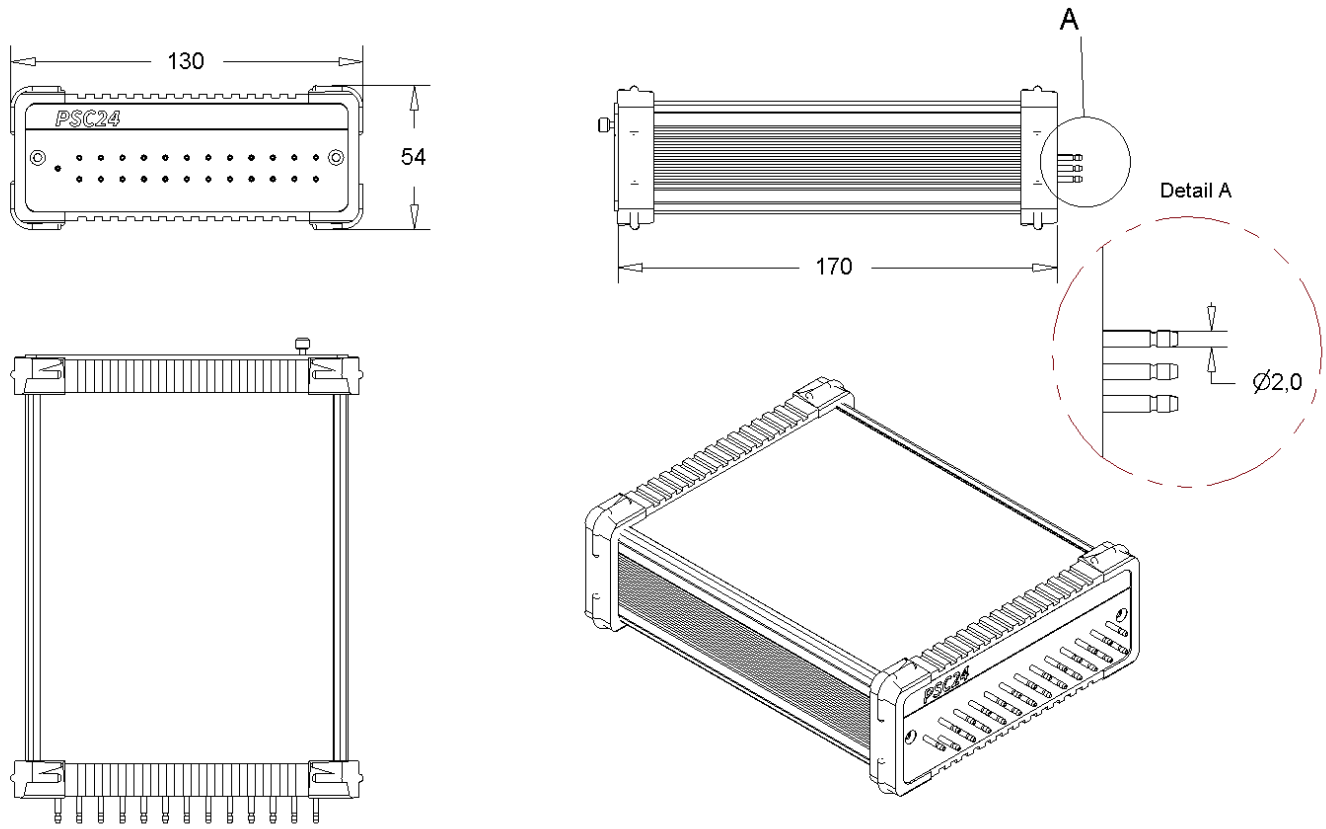

Figure: technical drawing and dimensions for a PSC24 pressure scanner.

Examples of custom devices

Devices with two separate reference ports, on the right additionally with 0-7bar

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