

DIGITAL PRESSURE GAUGE OPERATING MANUAL

Reference Type Q



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1. PRODUCT IDENTIFICATION

On the instrument enclosure, are marked in indelible laser all the information for the identification, the main configuration data, the symbols of conformity and waste disposal, the production date.



UNAUTHORIZED USES

Environments with explosive atmosphere.
Environments with inflammable or corrosive gas.



DISPOSAL

The instrument is a professional apparatus compliant to the Directives 2002/95/CE (RoHS) and 2002/96/CE (WEEE), then it must be disposed separately as electric and electronic waste. In different countries of European Community, it must be disposed as waste electric and electronic in accord to the laws of the country where the device is commercialized. Before to remove the instrument, you disconnect first the power supply and after the cables.

TRANSPORT

The device is made of electronic components. In case of transport pack it carefully. Pay attention to both strong shocks and humidity.

DELIVERY

Instrument is tested in any of its parts, it is supplied configured and calibrated.

2. SAFETY WARNINGS

The installation and maintenance of the product should be done only by trained and after reading this manual. There must also be complied all safety standards set by the law of the country where you will install it.

The manometer has been designed for measure and display of pressure and should not be used for different purposes: SIKA otherwise won't be responsible. In particular should be noted that the supplied product is not a safety device.

In designing SIKA has taken precautions to minimize risks to user's safety, but recommends persons who install it the analysis and removal of any residual risks.

Please note that the safe use of the product requires its complete integrity: for this reason should be paid attention to the transport and storage.



Throughout this manual are identified sensitive operations and/ or possible sources of risk to the user or the equipment itself, with the symbol next to.

3. INTRODUCTION

The digital pressure gauge Type Q is a 0.15% precision class programmable digital gauge realised with a microcontroller, parameters programming can be done through the keyboard or through the RS232C (on request). Pressure sensor, manufactured on a strain gauge technology, ensures a long term stability.

Electronic components, based on SMT and mixed traditional technology, make the gauge resistant to the mechanical stresses and reliable.

The main characteristics of analogue input section are

- sensor excitation in AC
- sampling speed up to 100Hz (filter 0).

Available outputs

- Two relay set-points with programmable thresholds for both positive and negative field, each set-point has a programmable deactivation threshold.
- Analogue output (on request) in tension 0÷10V/±10V or current 0÷20mA/4÷20mA.
- Serial output RS232C (on request) with a programmable Baud-rate or data continuous transmission with a fixed baud-rate.

Available Inputs

- 4 digital inputs associated to the functions of Zero, Peak, Hold

The indication is based on a red 7-segment display with five digits, Set point and Zero activation is signalled by red LEDs placed on the front panel. The Instrument can be fed either at 12 VDC or at 24 VDC depending on the model.

3.1. TECHNICAL DESCRIPTION

Hardware

The Instrument is handled by a microcontroller in flash technology which controls the peripherals, performs the calculations on the signal sampled by the A/D converter, handle the indications as well as input and output interfaces. The pressure transducer is fed by a carrying frequency (5V).

Analogue/digital converter is a component in sigma/delta technology which amplifies and samples the signal at variable frequency up to 100 Hz according to the selected filter; the converter works a ratiometric way.

Software

The program handles the measurements, filters the measured signal, calculates the analog output value and performs the ZERO suppression. Software handling is multitasking.

4. TECHNICAL DATA

RELATIVE PRESSURE	1 - 2.5 - 5 - 10 - 20 bar 50-100-250-350-500-700 bar 1000-1500-2000 bar
LINEARITY and HYSTERESIS	≤±0.15%
REFERENCE TEMPERATURE	+23°C
MAX WORKING TEMPERATURE	-10... +70°C
STORAGE TEMPERATURE	-20... +80°C
EFFECTS ON A 10°C TEMPERATURE VARIATION	
a) on zero	≤±0.015%
b) on full scale	≤±0.005%
POWER SUPPLY	12 VDC ±10% or 24 VDC ±10%
MAX POWER	1.2 W or 2.4 W
EXTERNAL FUSE	250 mA (F) 250 V
MAX CONVERSION SPEED	100 Hz (filter = 0)
INTERNAL DIVISIONS	±99999 div
DISPLAY	High efficiency 7 segment red
PROGRAMMABLE SET-POINT	0 ÷ ±99999
PROGRAMMABLE HYSTERESIS	0 ÷ 9999
PROGRAMMABLE RESOLUTION	1, 2, 5, 10, 20, 50, 100
PROGRAMMABLE DIGITAL FILTERS	5
ZERO FUNCTION	100%
PEAK FUNCTION	Positive and Negative
REMOTE INPUTS	Zero, Peak, Hold, Print
OUTPUT RELAYS CHARACTERISTICS (resistive load)	110 VAC, 0.2 A or 48 VDC, 0.2A
MECHANICAL LIMIT VALUES	
a) operating pressure	100% FS
b) limit pressure	150% FS
c) breaking load	>300% FS
d) highly dynamic pressure	75% FS
PROCESS COUPLING	1/2" BSP male
TIGHTENING SPANNER	27 mm
TIGHTENING TORQUE	28 Nm
PROTECTION CLASS - DIN 40050	IP 60
SENSOR EXECUTION MATERIAL	INOX 17-4 pH
CASE EXECUTION MATERIAL	Aluminium
ELECTRICAL CONNECTIONS	SUB D 25 pole Female

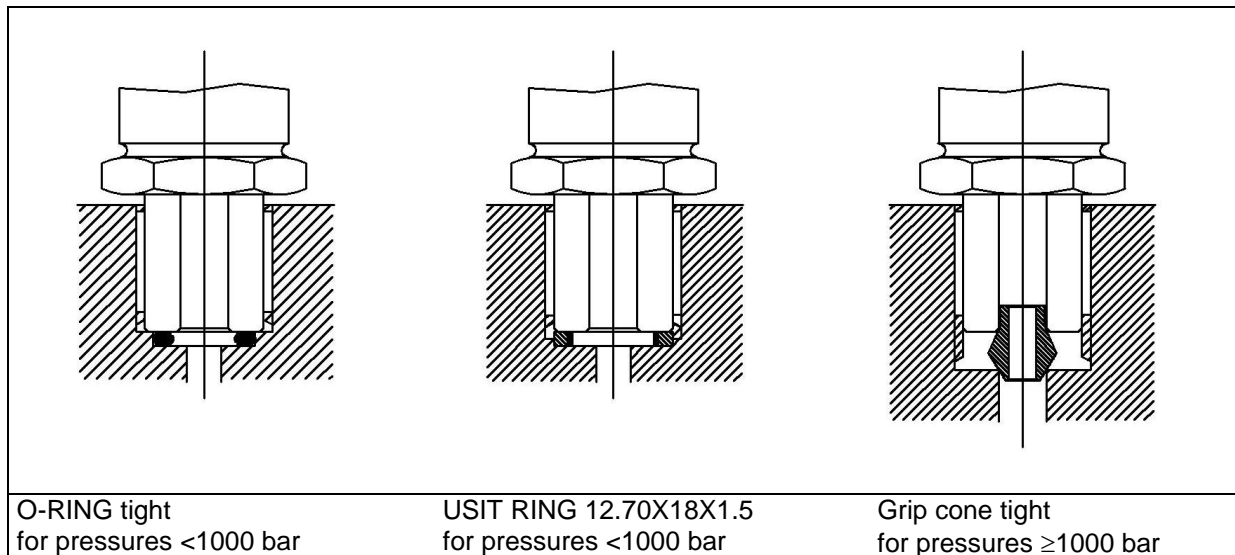
4.1. OPTIONS

ANALOG OUTPUT	0÷10/±10V(*) 0÷20/4÷20mA
SERIAL OUTPUT RS-232C (full duplex)	19200, 9600, 4800 baud
VACUUM (V) range	(-1/+1) (-1/+2.5) (-1/+5) bar

5. STANDARD FULL SCALE AND RESOLUTION

Nominal Pressure	Standard Full Scale	Vacuum FS (option)	Standard Resolution	
1 bar	1.0000 bar	-1.0000	0.0001 bar	0,1 mbar
2.5 bar	2.5000 bar	-1.0000	0.0005 bar	0,5 mbar
5 bar	5.0000 bar	-1.0000	0.0005 bar	0,5 mbar
10 bar	10.000 bar	/	0.001 bar	1 mbar
20 bar	20.000 bar	/	0.002 bar	2 mbar
50 bar	50.000 bar	/	0.005 bar	5 mbar
100 bar	100.00 bar	/	0.01 bar	10 mbar
250 bar	250.00 bar	/	0.02 bar	20 mbar
350 bar	350.00 bar	/	0.05 bar	50 mbar
500 bar	500.00 bar	/	0.05 bar	50 mbar
700 bar	700.00 bar	/	0.05 bar	50 mbar
1000 bar	1000.0 bar	/	0.1 bar	100 mbar
1500 bar	1500.0 bar	/	0.2 bar	200 mbar
2000 bar	2000.0 bar	/	0.5 bar	500 mbar

6. RECOMMENDED MECHANICAL MOUNTING



6.1. POSITIONING

Instrument must be connected to the hydraulic structure through a suitable fitting, it is not a built-in or a desk gauge. Position it a well light place and properly protected against atmospheric agents.

6.2. INSTALLATION

Installation shall be done by authorized personnel only.

This instrument has been produced in conformity to the norms EMC according to the Directive 2004/108/CE. In order to have the conformity respected it is necessary to perform the electrical connections according both to what written in this manual and to the markings present on the instrument. For the mounting please follow the indications.

7. CONNECTIONS

	Description	Terminal	Name
<p>DB25 female connector (front view)</p>	Earth protection	1	EARTH
	Power supply (-)	4	0V
	Power supply (+)	5	+12Vdc
	Power supply (+)	9	+24Vdc
	RS-232 Receive	2	RX
	RS-232 Send	3	TX
	RS-232 Common	7	GND
	Tension output	6	VOUT
	Analogue outputs common	19, 21	GND
	Current output	8	IOOUT
	Relay 1 common	11	CR1
	Relay 1 normal open	12	NO1
	Relay 1 normal close	13	NC1
	Relay 2 common	24	CR2
	Relay 2 normal open	22	NO2
	Relay 2 normal close	23	NC2
	Digital input 1	14	PEAK
	Digital input 2	16	ZERO
	Digital input 3	18	PRT
	Digital input 4	20	HOLD
	Digital inputs common	15,17,19,21	GND

7.1. RS-232C SERIAL OUTPUT CONNECTION

The instrument can be equipped (as an option) with a serial port to communicate with other devices. The connecting terminals are as follows:

Receive	Terminal 2	RX
Send	Terminal 3	TX
Common	Terminal 7	GND

7.2. ANALOGUE OUTPUT CONNECTION

An analogue output can be either in voltage or in current, connecting terminals are listed below, for the connection use shielded cable.

Voltage output characteristics

RL min 10 k Ω

resolution referred to FS(bit) 0...10 V = 16 bit
 +/-10 V = 15 bit

Current output characteristics

RL max 500 Ω ,

resolution referred to FS(bit) 0...20 mA = 15 bit
 4...20 mA = 15 bit

The current outputs can indicate higher values than FS, max. up to 24 mA.
 4...20 mA output varies from 0...4mA to show negative values.

voltage output	Terminal 6	VOUT
voltage output	Terminal 19	GND (common)
Current output	Terminal 8	IOOUT
Current output	Terminal 21	GND (common)

7.3. RELAY OUTPUT CONNECTION

Max contacts rate (resistive load)	115 VAC, 0.2 A
	48 VDC, 0.2 A
Operations number at specified rating	100'000

Relay outputs are not protected. It is necessary to externally protect the contacts against the transients which generate in commutation on inductive loads in AC with varistors or RC modules, in DC with varistors or diodes.

Relay 1 common	Terminal 11	CR1
Relay 1 normal open/close	Terminals 12/13	NO1/NC1
Relay 2 common	Terminal 24	CR2
Relay 2 normal open/close	Terminals 22/23	NO2/NC2

7.4. DIGITAL INPUT CONNECTION

The Digital input performs the functions listed below; to activate the functions, close the corresponding terminals.

The outputs associated to PEAK and HOLD functions, are sensitive to the logic status

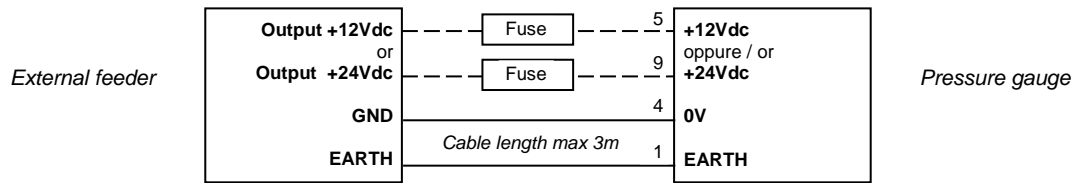
- closed = enabled function
- open = disabled function

The output associated to ZERO is sensitive to logic status and to closing time

- closed 50...1000 msec. = enabled function
- closed >3000 msec. = disabled function

Digital Input 1	Terminals 14-15	PEAK
Digital Input 2	Terminals 16-17	ZERO
Digital Input 4	Terminals 20-21	HOLD

8. POWER SUPPLY



To ensure the safety rules and the instrument integrity, the feeding input must be protected with a F type 250 mA / 250 V fuse.

The electric safety norms referred to the appliances permanently connected to the feeding require:

- A switch or dis-connector which shall be incorporated in the building electric plant.
- Such switch or dis-connector must be placed close to the appliance and be easily reachable by the operator.
- Such switch or dis-connector shall be marked as the interruption device of the appliance.

8.1. POWER ON

Instrument does not have any switch. Connect the instrument through the DB25 connector placed on the back side, to a 12 VDC or 24 VDC power supply.

Connect input/output signal to DB25 connector, as showed, fix the connector to the instruments through the screws. Feed the instrument.

At instrument power on all outputs are activated later to enable the instrument to stabilize itself.



Power must be done by authorized personnel only.

For a better reading accuracy it is advisable that the instrument reach his thermal stability (~15 minutes).

8.2. POWER OFF

Disconnect the electric net.

9. ERROR MESSAGES

UPPER

Positive overload. Manometer measures a pressure higher than its nominal rate.

LOWER

Negative overload. Manometer measures a depression (vacuum) higher than a -1 bar.



After high overloads occurs, check whether calibration has not been changed.

Error 1 / Error 2 / Error 4

Error on internal peripheral.

Error 3

Calibration error

Error 5 / Error 6

The instrument detects a positive/negative analogue signal too high that it can't manage.

10. KEYS DESCRIPTION

<p>SET ENTER</p>	<p>This key has two functions</p> <ol style="list-style-type: none"> 1) From main page (pressure indication) it enters into setting parameters MENU. 2) In Menu it performs ENTER function, confirms the data and show next parameter. <p>By pressing SET - the string SP1 P appears. By pressing ENTER - it go a step forward, the data associated to SETP1 P appears, by pressing repeatedly ENTER, it enters the next parameters, after the last parameter, it exits from Menu and pressure is showed.</p>
<p>ZERO ↓</p>	<p>This key has two functions</p> <ol style="list-style-type: none"> 1) In the main page (pressure indication) it activates/deactivates the ZERO function. 2) In the Menu ↓ decreases the number or change the character on the display. If kept pressed it rapidly decreases the number on the display. <p>By pressing ZERO - the instrument display is set to zero and the corresponding LED on the display switches on By pressing ZERO key for about 3 sec. - ZERO function is disabled and the LED is switches off.</p>
<p>PEAK ↑</p>	<p>This key has two functions</p> <ol style="list-style-type: none"> 1) In the main page (pressure indication) it activates/deactivates the PEAK function; When the PEAK function is enabled, then the display flashes. 2) In the Menu ↑ increases the number or changes the character on the display. If kept pressed it rapidly increases the number on the display. <p>By pressing PEAK – the peak function is either enabled or disabled. The PEAK function stores the max. value reached either in pressure or in vacuum.</p>

11. PARAMETER PROGRAMMING

The instrument can be programmed through the parameter MENU:

- | | |
|--------------------------------------|----------------|
| • Set point 1 | SP1 P or SP1 n |
| • Hysteresis 1 | HYS1 |
| • Set point 2 | SP2 P or SP2 n |
| • Hysteresis 2 | HYS2 |
| • Password | P0000 |
| ○ Protected parameters - password | P0007 |
| ▪ Measurement resolution | r 001 |
| ▪ Digital Filters | FL 1 |
| ▪ Serial communication | SEr 0 |
| ▪ Peak | PE P or PE n |
| ▪ Analogue output | RoUt |
| ▪ Analogue output zero | dAC0 |
| ▪ Analogue output FS | dACF |
| ○ Analogue output amplitude | dACR |
| ○ Calibration suppression - password | P4256 |
| ○ Calibration parameters - password | P3 124 |
| ▪ P0...P6 | P0...P6 |
| ▪ Decimal Point | dP |

12. SOFTWARE VERSION

At starting the instrument displays the software version, e.g. "rel. 1.0". This indication takes approx. three seconds then the instrument shows the pressure and it is ready to perform operator instructions/commands.

If something, different from above described procedures happens, please check error messages and troubleshooting section.

Measurement display is performed through 5 digit, red 7-segment display, 14 mm height placed on instrument front part; data are displayed in a numeric way while messages use mixed characters.

13. PARAMETER SETTINGS

13.1. HOW TO GET ACCESS TO THE MENU

- In the main page (pressure indication) press MENU key - on the display the string “SP1 P” appears, this is the first parameter in the menu.
- Press ENTER to display the parameter value associated to “SP1 P”.
- Press ENTER to step to the next parameter.

To exit from the MENU repeat to press ENTER, after the last parameter the instrument shows again the main page and indicates the pressure.

13.2. HOW TO SET PARAMETER VALUES

- Press ↑ to increase the number or the character on the display, if kept pressed, after one second a rapidly increases of the value will happen.
- Press ↓ to decrease the number or the character on the display, if kept pressed, after one second a rapidly decreases of the value will happen.
- Press ENTER to store the desired value and the next parameter will show.

14. PARAMETER DESCRIPTION

14.1. SET POINT 1

When the measuring value reaches the set point, then relay R1 and the LED corresponding to SP1 are activated. Set-point can be programmed either in positive or in negative field.

Setting of set point utilization field P = positive field
n = negative field

Selectable values (NNNNN) -99999...+99999

14.2. HYSTERESIS 1

Calculate the set point deactivation value.
Deactivation value = (SP1 value - Hysteresis1 value).
Relay R1 and the LED corresponding to SP1 are disabled.

Selectable values (NNNN) 0000...9999

14.3. SET POINT 2

When the measuring value reaches the set point, then relay R2 and the LED corresponding to SP2 are activated. Set-point can be programmed either in positive or in negative field.

Setting of set point utilization field P = positive field
n = negative field

Selectable value (NNNNN) -99999...+99999

14.4. HYSTERESIS 2

Calculate the set point deactivation value.

Deactivation value = (SP2 value – Hysteresis2 value).

Relay R2 and the LED corresponding to SP2 are disabled.

Selectable values (NNNN) 0000...9999

14.5. PASSWORD

A Password is required to get access to the following MENU

- Protected parameters (0007)
- Calibration suppression (4256)
- Calibration parameters (3124)



Before entering gauge calibration or calibration suppression, please check the user manual.

15. PARAMETERS PROTECTED BY PASSWORD 0007

15.1. MEASUREMENT RESOLUTION

This function enables the operator to define the variation of the last two digits.
This system is implemented to increase measurement stability in dynamic application at the expense of reading accuracy.

Selectable values 1 / 2 / 5 / 10 / 20 / 50 / 100

15.2. DIGITAL FILTERS

A digital filter can be inserted by selecting a value different from zero (look at the table).

Digital Filter	0	1	2	3	4	5
Time Table	10ms	20ms	50ms	100ms	200ms	280ms
Measurement Frequency	100Hz	50Hz	10Hz	5Hz	2.5Hz	1.8Hz
Display Frequency	25Hz	25Hz	12.5Hz	10Hz	5Hz	3.1Hz
Integration Time	10ms	20ms	100ms	200ms	400ms	560ms

Selectable filter values 0= off, 1...5

15.3. SERIAL COMMUNICATION

The Pressure gauge can be equipped with a serial port (on request) for remote communication with a PC/PLC, communication can be performed in two ways:

Master-Slave mode

By programming one of the three available baud-rate, the pressure gauge works as Slave, instrument reacts only to the serial commands coming from the external master.

Master-mode (or data logger)

By programming the instrument to cyclic transmission of the measured value.

Selections 0 = Serial Disabled
1 = 4800 baud
2 = 9600 baud
3 = 19200 baud
t = Continuous transmission of the value

Master-Slave communication protocol (4800, 9600, 19200) N 8 1
Continuous transmission protocol 9600 N 8 1

15.4. PEAK

To select the type of Peak type

Selectable values P = positive Peak
n = negative Peak

15.5. ANALOGUE OUTPUT

Selecting Y+ENTER operator accesses to analogue output parameters.
Selecting n+ENTER, the operator jumps to the next parameter.

Selectable outputs Disab = disabled (about 0 V)
 P 10 = +10 V
 Pn 10 = +/-10 V
 0-20 = 0...20 mA
 4-20 = 4...20 mA

Notes: The analogue output varies proportionally to analogue output full scale, the maximum resolution is 15 bits for all outputs; the operator can change output signal amplitude from 000.00...109.00% by setting the desired value in dACA parameter.

15.6. ANALOGUE OUTPUT ZERO CORRECTION

This parameter is used to adjust analogue output zero, the change of such parameter updates in real time analogue output.

Connect a multimeter to analogue output, to get the wanted value, go nearer with the quick increase/decrease, then continue step by step for fine regulation.

Selecting Y+ENTER operator accesses to parameter change.
Selecting n+ENTER, the operator jumps to the next parameter.

Selectable values 0000...30000

15.7. ANALOGUE OUTPUT FULL SCALE

This is the analogue output full scale value.

Instrument calculates analogue output value according to set value. Analogue output full scale value can be different from instrument full scale value.

Selecting Y+ENTER operator accesses to parameter change.
Selecting n+ENTER, the operator jumps to the next parameter.

Selectable values 00000...+99999

15.8. ANALOGUE OUTPUT SIGNAL AMPLITUDE

This parameter changes the analogue output amplitude.

100.00 value coincides with analogue output standard amplitude (9.7V((±3%) F.S.), varying such value operator can amplify or attenuate analogue output signal.

The analogue output changes in real time with the change of this value, to get wanted value, go nearer with the quick increase/decrease then continue step by step for fine regulation.

E.g.: changing the value from 000.00% to 109.00% operator gets values of signal included between 0.00...10.4 V or between 0...24 mA.

Selecting Y+ENTER operator accesses to parameter change.
Selecting n+ENTER, the operator jumps to the next parameter.

Selectable values 000.00...109.00%

16. PARAMETERS PROTECTED BY PASSWORD 4256

16.1. CALIBRATION CANCELLATION



This function enables to delete the manometer calibration. After having activated this function the manometer shall be re-calibrated.

To delete the calibration, press \uparrow key and select “Y” character, then press Enter to confirm the selection.

17. PARAMETERS PROTECTED BY PASSWORD 3124

17.1. INSTRUMENT CALIBRATION



This procedure must be performed by authorized Calibration Center only and in case of real need only. SIKA declines any responsibility for measurements errors or bad functioning caused by calibrations performed not correctly which make lose certification on manometer as well.

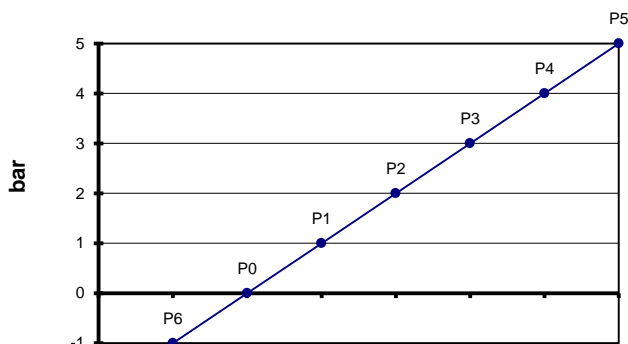
Calibration allows to correct at max. +/-30% of full scale.

Full scale adjustment is performed through a calibration per points which allows to linearize the pressure sensor too.

Regarding the positive scale (pressure) it is necessary that the manometer learns all the full scale points: P0=0%, P1=20%, P2=40%, P3=60%, P4=80%, P5=100%.

Regarding the negative scale (vacuum) it is necessary that the manometer learns P6 only which equals to -1 bar (vacuum scale is handled as an option).

Example: manometer having full scale 5 bar



17.2. CALIBRATION PROCEDURE

Enter into the protected menu by pressing SET, then press ENTER until "PASSW" is shown, press ENTER to get access to the password setting, set "3124" to enable the manometer calibration, press ENTER to confirm. "P0" parameter will appear.

P0 (zero point)

Set the manometer at zero pressure by opening the hydraulic circuit, confirm through ENTER, the manometer shows an internal offset value, set to zero by pressing ZERO, confirm with ENTER. "P1" parameter appears.

P1 (20%)

Set the manometer in pressure up to 20% of full scale, confirm through ENTER, a value appears, adjust the value through ↑ ↓ keys, confirm with ENTER. "P2" parameter appears.

P2 (40%)

Set the manometer in pressure up to 40% of full scale, confirm through ENTER, a value appears, adjust the value through ↑ ↓ keys, confirm with ENTER. "P3" parameter appears.

P3 (60%)

Set the manometer in pressure up to 60% of full scale, confirm through ENTER, a value appears, adjust the value through ↑ ↓ keys, confirm with ENTER. "P4" parameter appears.

P4 (80%)

Set the manometer in pressure up to 80% of full scale, confirm through ENTER, a value appears, adjust the value through ↑ ↓ keys, confirm with ENTER. "P5" parameter appears.

P5 (F.S.)

Set the manometer in pressure up to 100% of full scale, confirm through ENTER, a value appears, adjust the value through ↑ ↓ keys, confirm with ENTER. "P6" parameter appears.

P6 (vacuum)

Set the manometer in vacuum at -1 bar, confirm through ENTER, a value appears, adjust the value through ↑ ↓ keys, confirm with ENTER. "dp" parameter appears.

17.3. DECIMAL POINT

Selectable values 0...4

Set decimal point through ↑ ↓ keys, confirm with ENTER. Instrument exits from calibration and comes back to main page to show the pressure.

18. ZERO FUNCTION

The ZERO function is used to set the instrument indication to zero.

The displayed value of the instrument, before function activation, will be deducted from measured value, the result (0) is showed on the display. The function acts on the entire measurement range (100%).

The function status is stored permanently. At instrument start the function comes back to the status stored before switching off. When the ZERO function is activated, then the ZERO LED placed on the front panel is switched on.

To activate the ZERO function, keep pressed ZERO for about 5 seconds. To deactivate the function keep pressed ZERO for about 10 seconds.

The ZERO function is also available as a remote digital input.

19. PEAK FUNCTION

The PEAK function detects the minimum and maximum value of a measurement. To enable the function press PEAK, when the function is activated, the display lights. The reading speed is proportional to the used filter value. In order to work at max speed, set filter = 0 (10 msec).

When the instrument will be switched off, then the PEAK function will deactivated.

The PEAK function is also available as remote digital input (terminals 14-15).

20. HOLD FUNCTION

The HOLD function locks the instrument display. The HOLD function is associated to remote digital inputs only.

The HOLD function activation/deactivation is got by opening/closing the remote digital input associated to terminals 20-21.

21. SERIAL COMMUNICATION COMMANDS

The serial communication is made through reading and writing commands in ASCII codes. When a command is recognized, then the instrument answers with the string:

\$ II ACK <cr>

\$	ASCII CHAR \$(36)	String beginning
II	00 ASCII CHAR \$(48)\$(48)	Identification Number
ACK	ASCII CHAR \$(6)	Recognized command
<cr>	ASCII CHAR \$(13)	String Terminator

Communication protocol : Baud, N, 8, 1
Baud = 4800, 9600, 19200

WRITING COMMANDS	MESSAGE	ANSWER	VALUE
ZERO ENABLED	\$ZEII<cr>	\$IIACK<cr>	
ZERO DISABLED	\$ZDII<cr>	\$IIACK<cr>	
PEAK ENABLED	\$PEII<cr>	\$IIACK<cr>	
PEAK DISABLED	\$PDII<cr>	\$IIACK<cr>	
PEAK TYPE	\$PSIIN<cr>	\$IIACK<cr>	N=0=Peak+ N=1=Peak-
DIGITAL FILTER	\$FDIIN<cr>	\$IIACK<cr>	
RESOLUTION	\$RDIINNN<cr>	\$IIACK<cr>	NNN=1 2 5 10 20 50 100
SET-POINT 1	\$P1IISNNNNN<cr>	\$IIACK<cr>	NNNNN = 0÷99999
SET-POINT 2	\$P2IISNNNNN<cr>	\$IIACK<cr>	NNNNN = 0÷99999
HYSTERESIS 1	\$D1IINNNN<cr>	\$IIACK<cr>	NNNN = 0÷9999
HYSTERESIS 2	\$D2IINNNN<cr>	\$IIACK<cr>	NNNN = 0÷9999
ANALOG OUTPUT FS	\$OAIISNNNNN<cr>	\$IIACK<cr>	NNNNN = 0÷99999
CALIBRATION RESET	\$CRII<cr>	\$IIACK<cr>	
FIELD 1	\$I1IINNNNNNNNNNNNNNNNNNN<cr>	\$IIACK<cr>	N = ASCII char
FIELD 2	\$I2IINNNNNNNNNNNNNNNNNNN<cr>	\$IIACK<cr>	N = ASCII char
FIELD 3	\$I3IINNNNNNNNNNNNNNNNNNN<cr>	\$IIACK<cr>	N = ASCII char
DECIMAL POINT	\$DPIIN<cr>	\$IIACK<cr>	N = 0÷5

READING COMMANDS	MESSAGE	ANSWER
MEASUREMENT VALUE	\$DAII?<cr>	\$IISNNNNNNUUU<cr>
DIGITAL FILTER	\$FDII?<cr>	\$IIN<cr>
RESOLUTION	\$RDII?<cr>	\$IINNN<cr>
PEAK TYPE	\$PSII?<cr>	\$IIPEAK+<cr> or \$IIPEAK-<cr>
SET-POINT 1	\$P1II?<cr>	\$IISNNNNN<cr>
SET-POINT 2	\$P2II?<cr>	\$IISNNNNN<cr>
HYSTERESIS 1	\$D1II?<cr>	\$IINNNN<cr>
HYSTERESIS 2	\$D2II?<cr>	\$IINNNN<cr>
ANALOG OUTPUT F.S.	\$OAII?<cr>	\$IISNNNNN<cr>
FIELD 1	\$I1II?<cr>	\$IINNNNNNNNNNNNNNNNNNN<cr>
FIELD 2	\$I2II?<cr>	\$IINNNNNNNNNNNNNNNNNNN<cr>
FIELD 3	\$I3II?<cr>	\$IINNNNNNNNNNNNNNNNNNN<cr>
DECIMAL POINT	\$DPII?<cr>	\$IIN<cr>

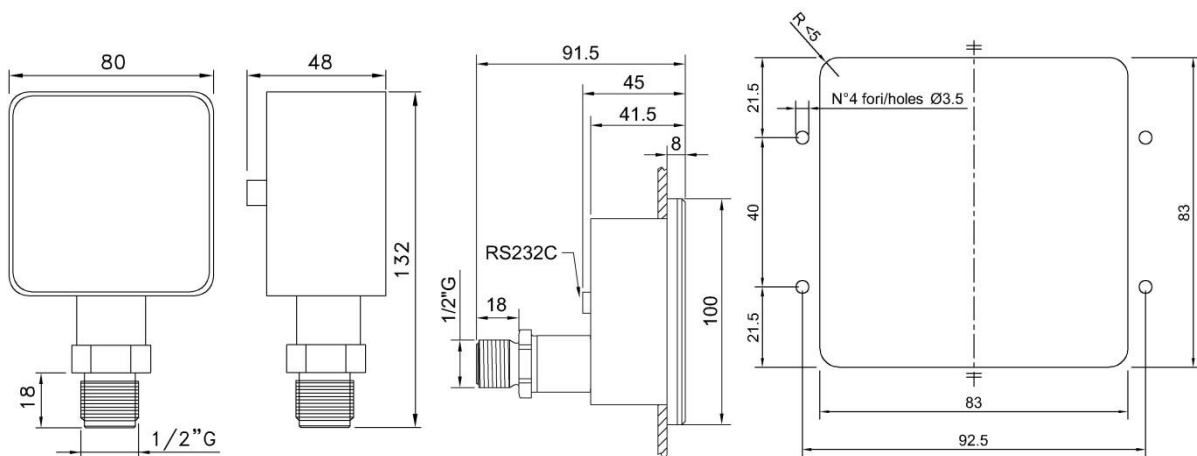
22. MAINTENANCE

Maintenance shall be done by authorized personnel only. Instrument does not require any periodical maintenance; in case of troubles check the Error Message and troubleshooting sections. Clean occasionally the front panel with a non-abrasive cloth soaked with non-corrosive substances.

22.1. TROUBLE SHOOTING

- Instrument does not switch on. Check whether feeding cables are connected and check external fuse efficiency.
Such operation shall be performed by authorized personnel.
- Instrument displays in an intermittent way the introduction page (software rel). This is an electric problem, please contact the supplier.
- The instrument does not display anything even if correctly fed. Possible problem on the display, please contact the supplier.
- Instrument displays Err 1, Err 2, then starts from the beginning. Possible fault on an internal peripheral, please contact the supplier.
- Instrument displays Err 5 or Err 6, bad functioning on input analogue section. Switch off and on the instrument, if message appears again, please contact the supplier.

23. DIMENSIONS



SIKA holds the right to make any change, when necessary, without notice. The data contained in this manual are just indicative and the manufacturer declines any responsibility for errors or discrepancies with respect to this manual.