



ISOMAG®

The friendly magmeter

DATA SHEET

CS3900



CE

ISOIL

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TECHNICAL DATA

OVERALL FEATURES

Size for pipe line Ø	☐ 10 / 15 / 20 / 25 / 32 / 40 / 50
Minimum conductivity	☐ 50 µS/cm
Altitude	☐ -200m up to 4000 m
Humidity Range	☐ 0÷100% (IP 67)
CE Certification	☐ Yes

STANDARD FEATURES

Protection Rate	☐ IP 67
Power Supply/Consumption	☐ min10 / max30 V --- - 1W
Electrical connections	☐ 5 pins connector M12X1 complete with plug/2 m of 5 poles cable Already Connected
Full scale value	☐ 0,4...10m/s
Protocols	☐ MCP
Output	☐ N° 1 channel freely programmable OUTPUT for volume pulses/alarms
Data Storage	☐ F-ram not volatile
Programming Plug In	☐ Mini USB
Temperature measure	☐ measure of temperature -10 .. +100 (it can be set as analog out on 4-20 mA)
Bi-Directional	☐ Yes
Nominal pressure	☐ 1600 kPa
Process connection	☐ Threaded end
Version – protection rating	☐ Compact IP67
Lining material/gasket	☐ Ptfе/FPM
Liquid temperature	☐ -10°C° ÷ 100°C compact version
Electrodes material	☐ Aisi 316

OPTIONAL FEATURES

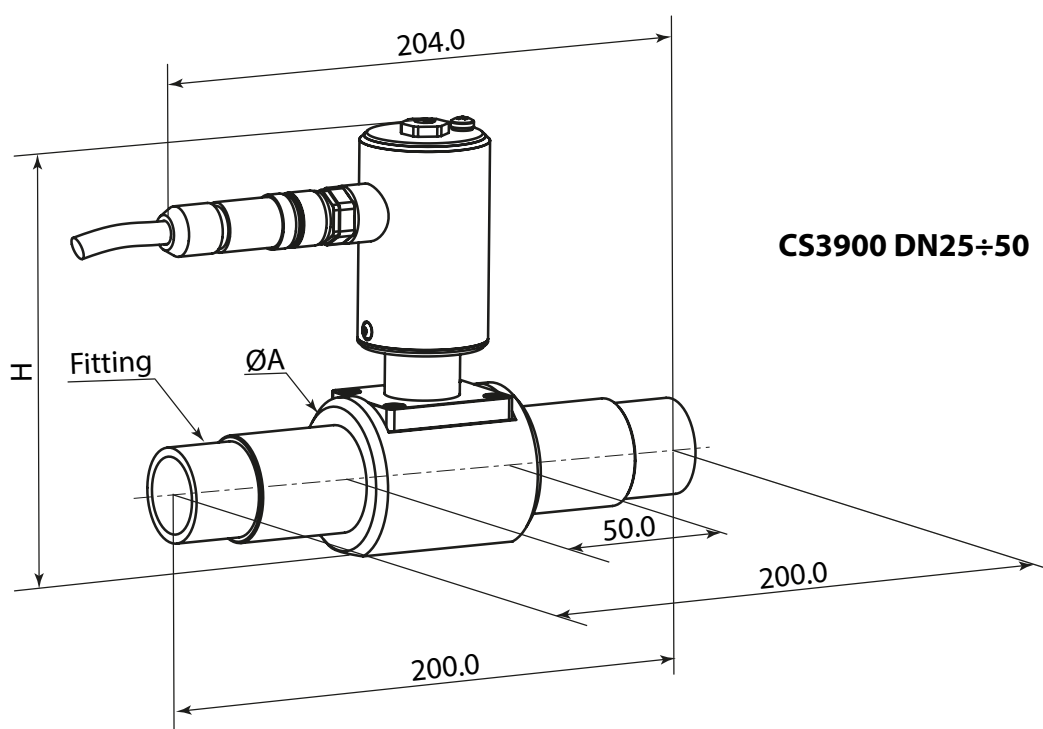
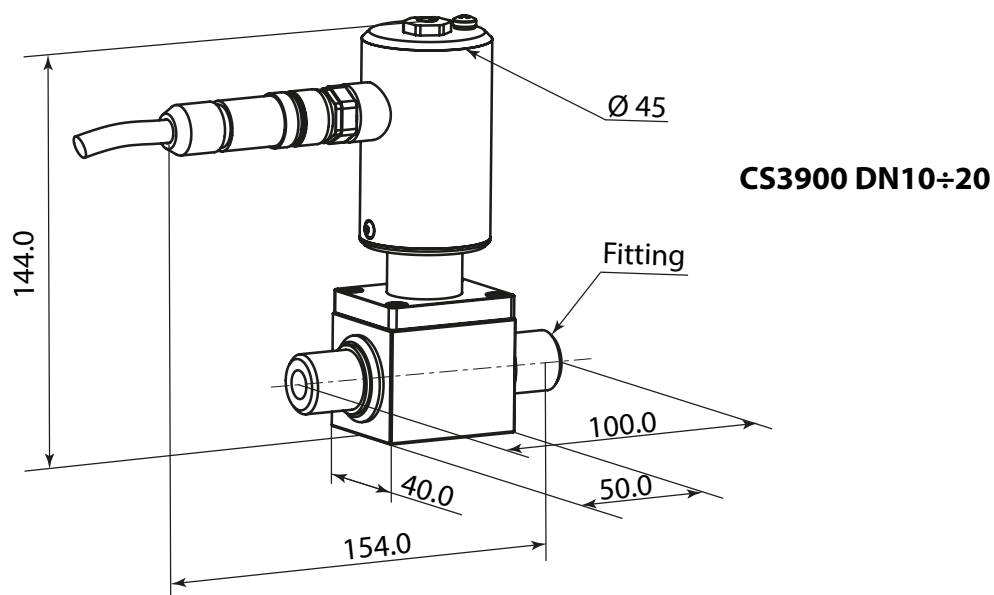
(CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)

Pulses/ Alarm Output	☐ N°1 Digital Output
Current Output	☐ N°1 , 0/4...20mA – RL=500 Ω
Process connection	☐ Others on request
Electrodes material	☐ Others on request

ACCURACY

Measurements tolerance (board)	☐ Volume = ±0,2% v.l. ☐ Out 4/20 mA = ± 0,2 % v.l.
Accuracy (whole system)	☐ FLOW RATE/VOLUME +/- 1 % r.v. (UP TO 0,5% ON REQUEST) ☐ TEMPERATURE : +/- 2°C

OVERALL DIMENSIONS



DN	FITTINGS	A	H
10	1/2"	---	---
15	3/4"	---	---
20	1"	---	---
25	1"	56	148
32	1"1/4	56	148
40	1"1/2	62	156
50	2"	69	164

EXPLODED LAYOUT

PG9 USB plug

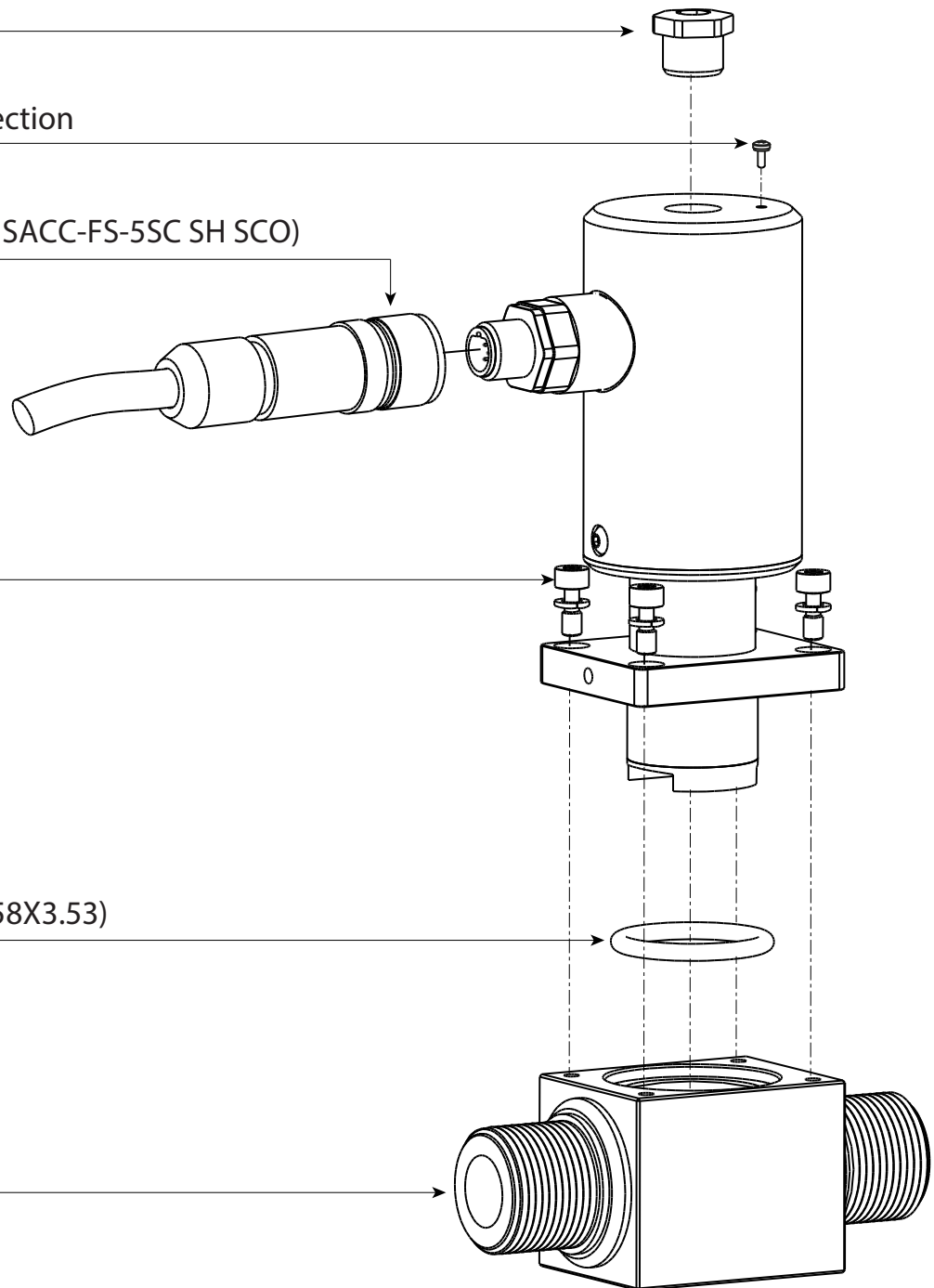
Grounding connection

5-poles plug
(phoenix contact SACC-FS-5SC SH SCO)

M4 screws

O-Ring 4106 (26.58X3.53)

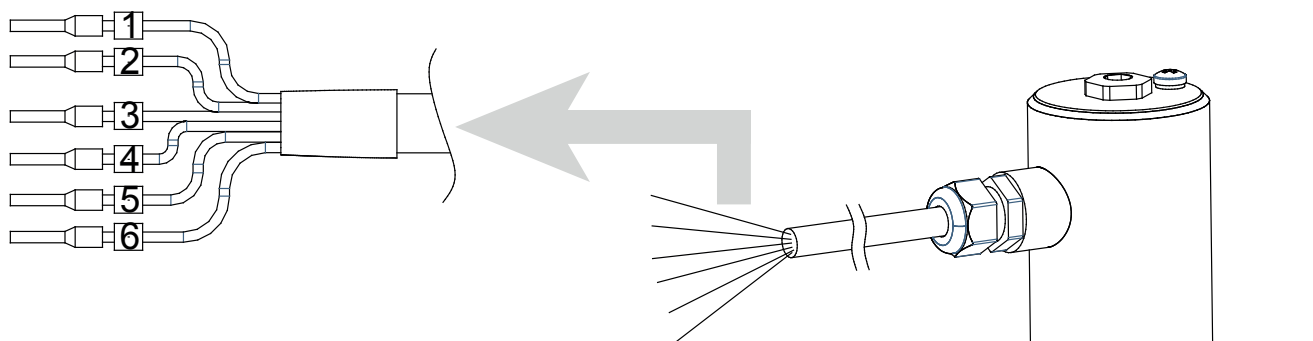
Lined body



TORQUES	
PG9 plug	4Nm
5 poles conn./cablegland PG9	4Nm
M4 screws	3Nm

ELECTRICAL CONNECTIONS

POWER SUPPLY/OUTPUTS (CONNECTOR)



1 (+) POWER SUPPLY

2 (+) OUTPUT 1

3 (+) OUTPUT 2 (OPTIONAL)

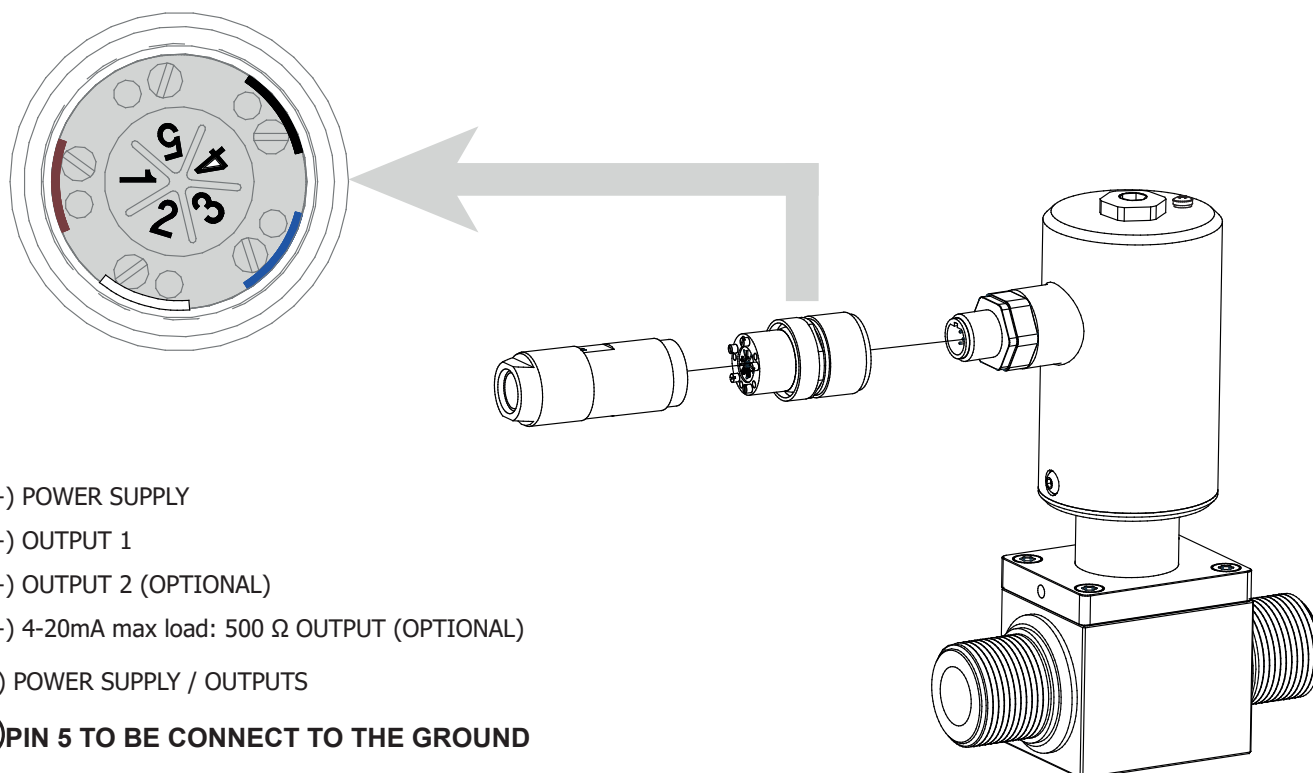
4 (+) 4-20mA max load: 500 Ω OUTPUT (OPTIONAL)

5 (-) POWER SUPPLY / OUTPUTS

6 (SH) SHIELD

 PIN 5/6 TO BE CONNECT TO THE GROUND

POWER SUPPLY/OUTPUTS (CABLE)



1 (+) POWER SUPPLY

2 (+) OUTPUT 1

3 (+) OUTPUT 2 (OPTIONAL)

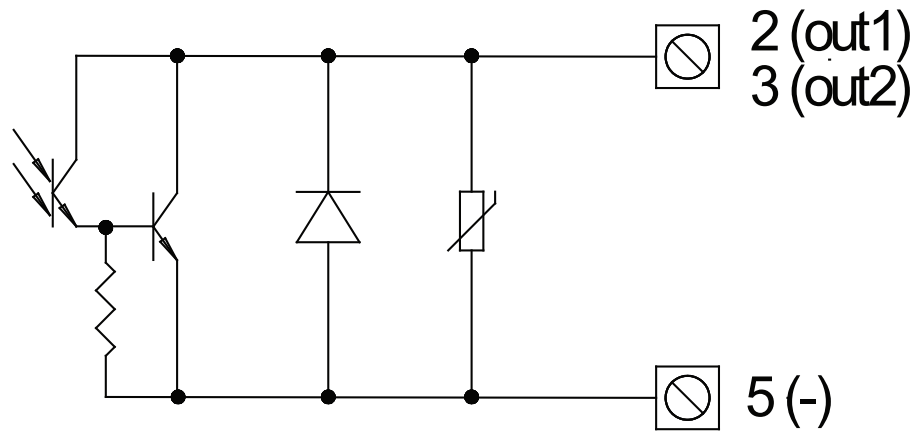
4 (+) 4-20mA max load: 500 Ω OUTPUT (OPTIONAL)

5 (-) POWER SUPPLY / OUTPUTS

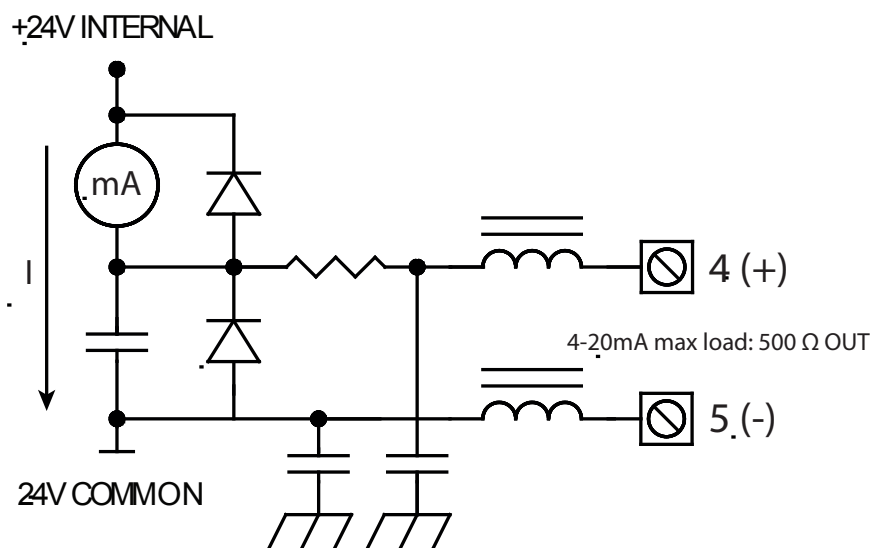
 PIN 5 TO BE CONNECT TO THE GROUND

OUTPUTS: SCHEMATICS

Digital Outputs

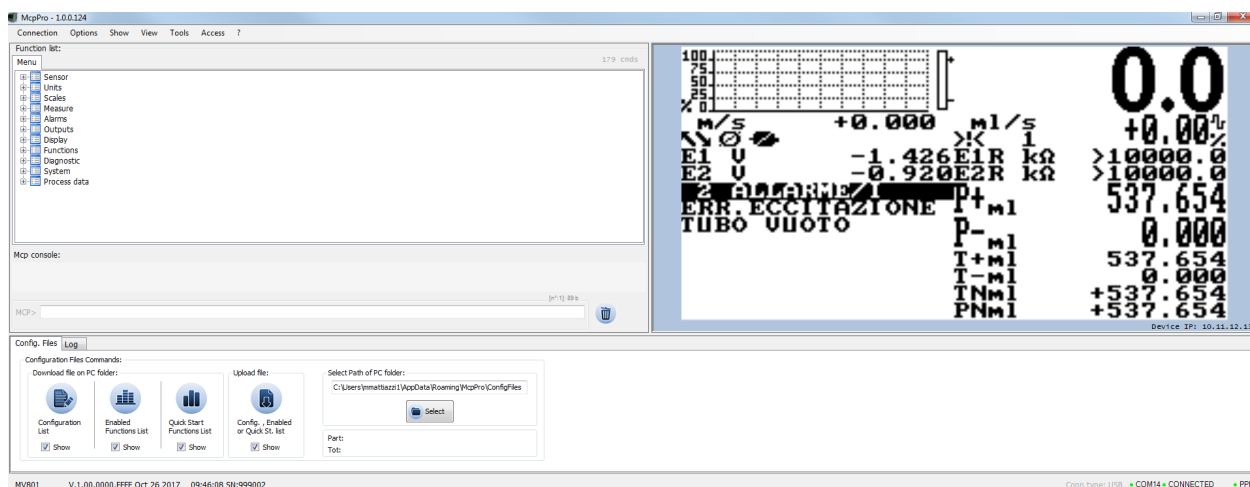


Analog Output

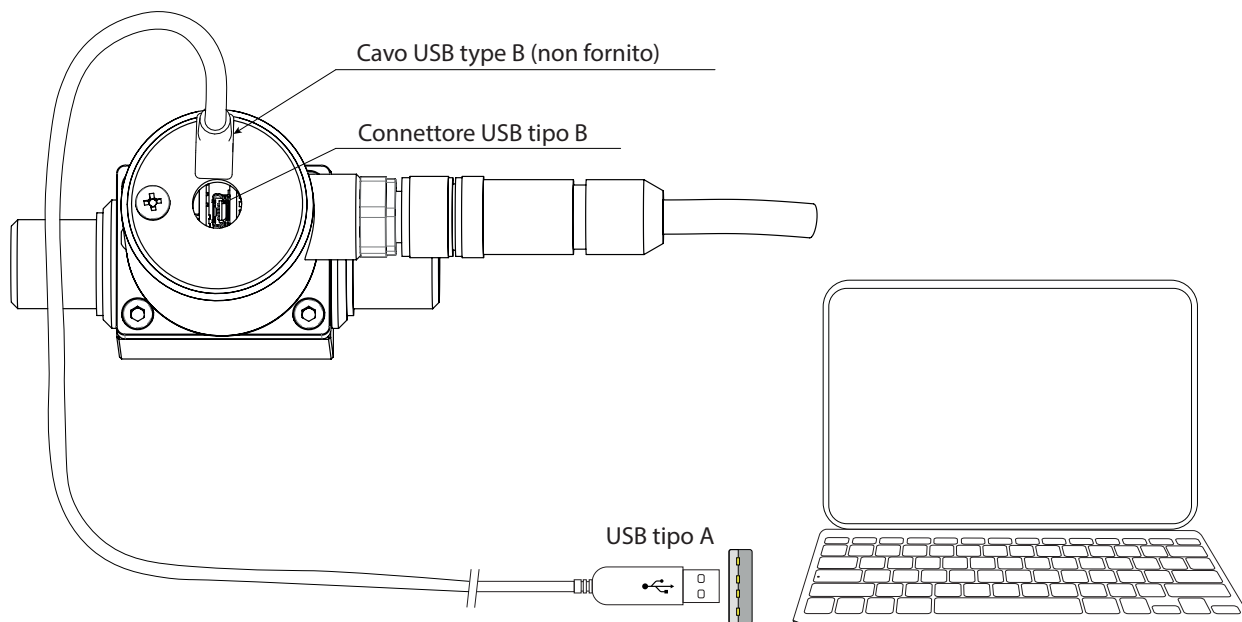


USER INTERFACE

CS3900 can be programmed by MCP interface (USB cable is required see below)



Make the USB connection as shown in the following picture.



PROGRAMMING FUNCTIONS

Sensor

```

MAIN MENU
1-Sensor
2
3 SENSOR
4 S.model= 000
5 Lining= UNSPEC.
6 S.type= F.BORE
7 U.type= METRICHE
8 Diam.=mm 25
9
10 KA= +00.7771
11 KA= 01.0000
12 KZ= +0000000
13 KD= +000000
Ins.position= 0
KP dynamic= OFF
Ki= +01.8727
Kp= +01.0000
KC= 1.00000
C.Curr.=mA 025.0
C.Reg.PB= 010
C.Reg.DK= 025
S.Freq.=Hz 10
E.P.Detect= ON
R.max=kohm 0500
S.err.delay= 010
Sens.verify= OFF
Zero point cal.
KL=00 -000000001
    
```

- 1.1 Sensors model: Enter the first two characters of the serial number of the sensor
- 1.2 Flow sensor lining material type
- 1.3 Type of sensor: fullbore or insertion
- 1.4 Type of measure units for sensor parameter: metric or imperial
- 1.5 Insert ND of sensor (0-2500)
- 1.6 Calibration data of sensor
- 1.7 Calibration data of sensor
- 1.8 Sensor coefficient KZ (zero point)
- 1.9 Sensor coefficient KD
- 1.10 Insertion position
- 1.11 KP dynamic, coefficient for insertion
- 1.12 Sensor coefficient Ki
- 1.13 Sensor coefficient Kp
- 1.14 Sensor coefficient KC
- 1.15 Sensor excitation current
- 1.16 Current regulator proportional band
- 1.17 Current regulator derivation constant
- 1.18 Measure sampling frequency
- 1.19 Enables the empty pipe detection feature
- 1.20 Empty pipe detection threshold
- 1.21 Signal error delay (n. sample)
- 1.22 Automatic sensor verify enable
- 1.23 Pipe hydraulic zero calibration
- 1.24 Linearization coefficient

Units

```

MAIN MENU
1-Sensor
2-Units
3
4 UNITS
5 Diam.= mm
6
7 FR.unit= METRIC
8 Pl1 unit= METRIC
9 Pl2 unit= METRIC
10
11 T+ unit= METRIC
12 T+ D.P.= 3
13 P+ unit= METRIC
P+ D.P.= 3
T- unit= METRIC
T- D.P.= 3
P- unit= METRIC
P- D.P.= 3
Temp.unit= °C
Mass units= ON
Sg=kg/dm³ 1.0000
    
```

- 2.1 Nominal diameter measure unit
- 2.2 Flowrate type measure unit: metric or imperial
- 2.3 Pulse 1 type measure unit: metric or not metric
- 2.4 Pulse 2 type measure unit: metric or not metric
- 2.5 Total direct totalizer measure unit type: metric or imperial
- 2.6 Total direct totalizer measure unit
- 2.7 Total direct totalizer decimal point position
- 2.8 Partial direct totalizer measure unit type: metric or not metric
- 2.9 Partial direct totalizer measure unit
- 2.10 Partial direct totalizer decimal point position
- 2.11 Total reverse totalizer measure unit type: metric or not metric
- 2.12 Total reverse totalizer measure unit
- 2.13 Total reverse totalizer decimal point position
- 2.14 Partial reverse totalizer measure unit type: metric or not metric
- 2.15 Partial reverse totalizer measure unit
- 2.16 Partial reverse totalizer decimal point position
- 2.17 Temperature measure unit
- 2.18 Enable/disable the selection of mass units on full scale set
- 2.19 Specific gravity coefficient

Scales

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4
5 SCALES
6 FS1= g/s 4908.7
7 FS2= g/s 4908.7
8 Pls1= 1000.0
9 Tpls1gms 1000.00
10 Frq1=Hz 0050.0
11 Pls2= 1000.0
12 Tpls2=ms 1000.00
13 Frq2=Hz 0050.0
    
```

- 3.1 Full scale flow rate 1
- 3.2 Full scale flow rate 2
- 3.3 Pulse value on channel 1
- 3.4 Duration of the pulse generated on channel 1
- 3.5 Full scale frequency for channel 1 (0.1Hz-1000.0Hz)
- 3.6 Duration of the pulse generated on channel 2
- 3.7 Pulse value on channel 2
- 3.8 Full scale frequency for channel 2 (0.1Hz-1000.0Hz)

Measure

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-
6-
7-
8-
9-
10-
11-
12-
13-
MEASURE
Damping= SMART
Cut-off=% 00.0
Cal.verify= ON
Autorange= ON

```

- 4.1 Measure filter
- 4.2 Low flow zero threshold: 0-25% of full scale value
- 4.3 Automatic calibration verify
- 4.4 Automatic change of measurement range

Alarms

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-alarms
6-
7-
8-
9-
10-
11-
12-
13-
ALARMS
Max.thr+=% 000
Max.thr-=% 000
Min.thr+=% 000
Min.thr-=% 000
Hysteresis=% 03
mA v.alarm=% 010
Hz v.alarm=% 125

```

- 5.1 Maximum value alarm set for direct flow rate
- 5.2 Maximum value alarm set for reverse flow rate
- 5.3 Minimum value alarm set for direct flow rate
- 5.4 Minimum value alarm set for reverse flow rate
- 5.5 Hysteresis threshold set for the minimum and maximum flow rate alarms
- 5.6 Current output value in case of failure
- 5.7 Frequency output value in case of alarms

Outputs

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-Alarms
6-
7-Outputs
8-
9-
10-
11-
12-
13-
OUTPUTS
Out1= FREQ.-
Out2= PULSES+/-
Out mA1=4-22 -0+
AIs= g/s 4908.7

```

- 7.1 Output 1 functions
- 7.2 Output 2 functions
- 7.3 Choice of the function and the range of current output
- 7.4 Full Scale value for analog out

Display

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-Alarms
6-
7-Outputs
8-
9-Display
10-
11-
12-
13-
DISPLAY
Language= GB
D.rate=Hz 1
Part.tot.= ON
Neg.tot.= ON
Net tot.= ON
Quick start= ON

```

- 9.1 Choice of the language
- 9.2 Display updating frequency: 1-2-5-10 Hz
- 9.3 Partial totalizer enable
- 9.4 Negative totalizer enable
- 9.5 Net totalizer enable
- 9.6 Quick start menu visualization

Functions

```

FUNCTIONS
T+ reset
P+ reset
T- reset
P- reset
Load Sens.f.def
Load Conv.f.def
Save Sens.f.def
Save Conv.f.def
Calibration
12-Diagnostic
13-System

```

- 11.1 Execute immediate reset of total direct totalizer
- 11.2 Execute immediate reset of partial direct totalizer
- 11.3 Execute immediate reset of total reverse totalizer
- 11.4 Execute immediate reset of partial reverse totalizer
- 11.5 Load sensor factory default
- 11.6 Load converter factory default
- 11.7 Save sensor factory default values
- 11.8 Save converter factory default values
- 11.9 Execute immediate internal circuit calibration

Diagnostic

```

DIAGNOSTIC
Self test
Sens.verify
Flow sim.= OFF
Display measures
Disp.comm.vars
Display graphs
Firmware info
S/N=
WT=
12-Diagnostic
13-System

```

- 12.1 Self test diagnostic function
- 12.2 Sensor verify diagnostic function
- 12.3 Flow rate simulation enabling
- 12.4 Display internal measured value
- 12.5 Display comm. diagnostic values
- 12.6 Display measure as graphs
- 12.7 Firmware version/revision
- 12.8 Board serial number
- 12.9 Total working time

System

```

SYSTEM
L1 code=*****
L2 code=*****
L3 code=*****
L4 code=*****
L5 code=*****
L6 code=*****
Restr.access=OFF
Device IP addr=
Client IP addr=
Network mask=
KT= 1.00000
KS= 1.00000
KR= 1.00000
DAC1 4mA= 02460
DAC1 20mA= 11050
FW update
13-System

```

- 13.1 Access level 1 code
- 13.2 Access level 2 code
- 13.3 Access level 3 code
- 13.4 Access level 4 code
- 13.5 Access level 5 code
- 13.6 Access level 6 code
- 13.7 Restricted access level
- 13.8 Device IP network address
- 13.9 Client IP network address
- 13.10 Network mask
- 13.11 Calibration coefficient KT
- 13.12 Calibration coefficient KF
- 13.13 Calibration coefficient KR
- 13.14 DAC1 out 4mA calibration point
- 13.15 DAC1 out 20mA calibration point
- 13.16 firmware update

HOW TO ORDER

EXAMPLE CODE	CODE / EXAMPLE	
Size		
1	1	10 mm (thread 1/2")
	2	15 mm (thread 3/4")
	3	20 mm (thread 1")
	4	25 mm (thread 1")
	5	32 mm (thread 1"1/4)
	6	40 mm (thread 1"1/2)
	7	50 mm (thread 2")
Materials : body / lining / electrodes / internal gasket		
A	A	Materials : PTFE coated Steel body, Sensor body in AISI304 (head in PTFE), electrodes in AISI316 , gasket in FKM
	B	Materials : PTFE coated SS AISI 304 body (UP to 1"), Sensor body in AISI304 (head in PTFE), electrodes in AISI316 , gasket in FKM
	Z	Sensor material: to be specified
Mounting		
0	0	UNI 338 (GAS)Thread Male
	1	NPT-Thread Male
	9	Special connection
Electronic board / Electrical Connections		
A	A	MV801 (Complete of n° 1 Freely programmable digital I/O) Electrical Connections : 5 poles connectors
	B	MV801 (Complete of n° 1 Freely programmable digital I/O) Electrical Connections: 2 meters of N° 5 poles cable ALREADY CONNECTED
ANALOG Output		
0	0	without Analog Out
	1	with Analog Out
DIGITAL Output		
A	A	without Additional Digital Out
	B	n° 1 additional digital out

Complete code
example for
order



CS3900-1A0A0A

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