



ISOMAG

The friendly magmeter

DATA SHEET

CS3900



CE

ISOIL 
I N D U S T R I A



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■ TECHNICAL DATA

OVERALL FEATURES

Size for pipe line Ø	☐ 10 / 15 / 20 / 25 / 32 / 40 / 50 / 65
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

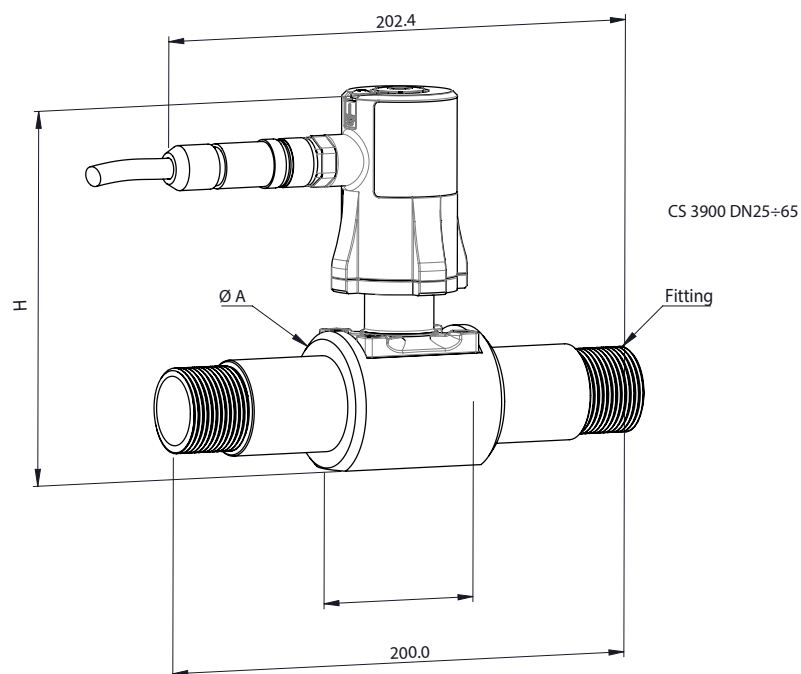
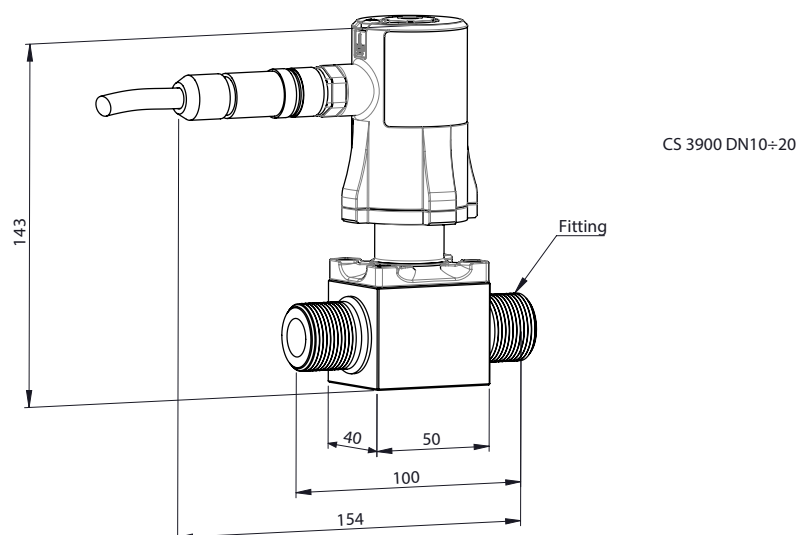
(CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)

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
65	2"1/2	87	183

EXPLODED LAYOUT

PG7 for IF23 plug

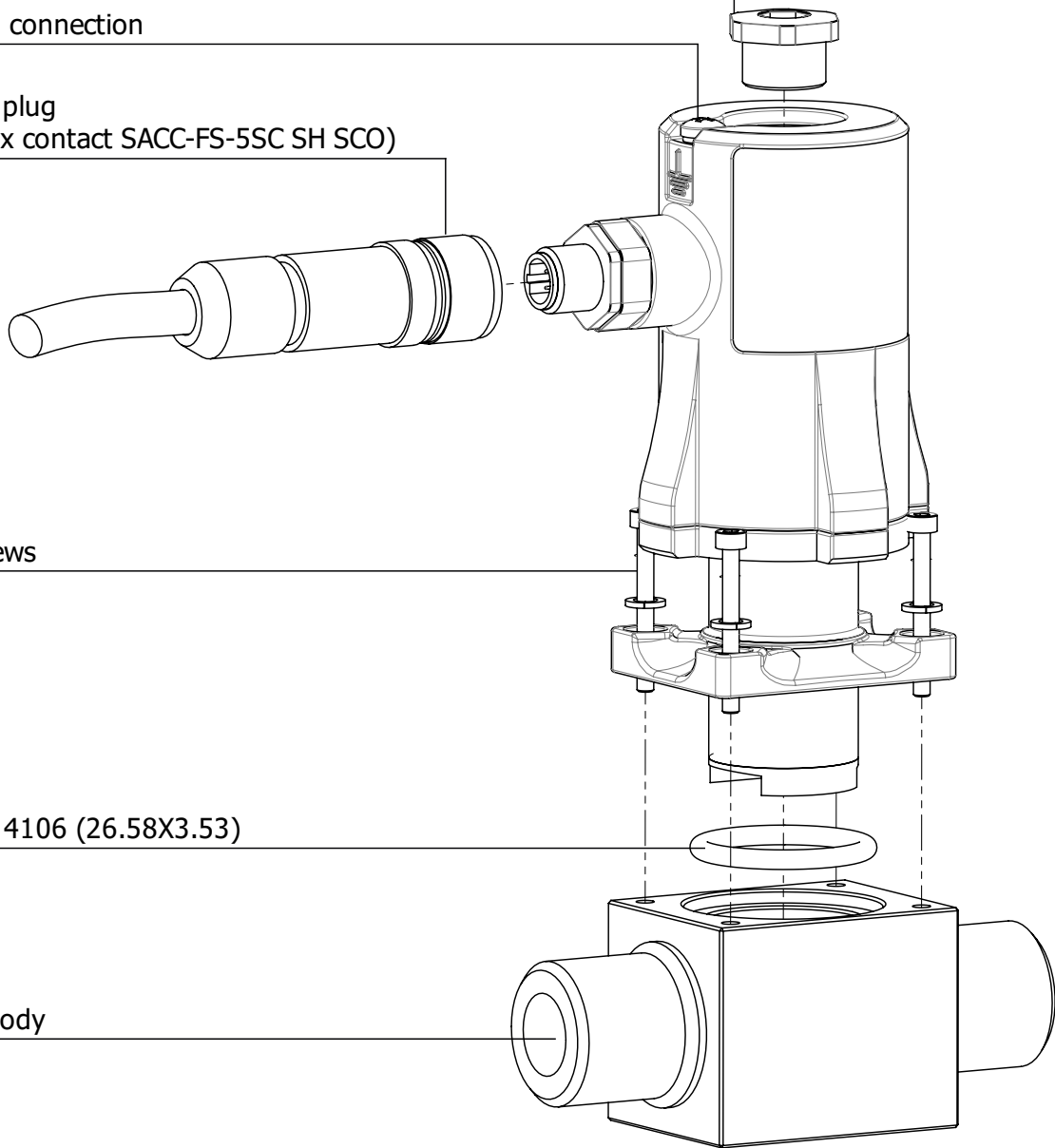
Ground connection

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

M4 screws

O-Ring 4106 (26.58X3.53)

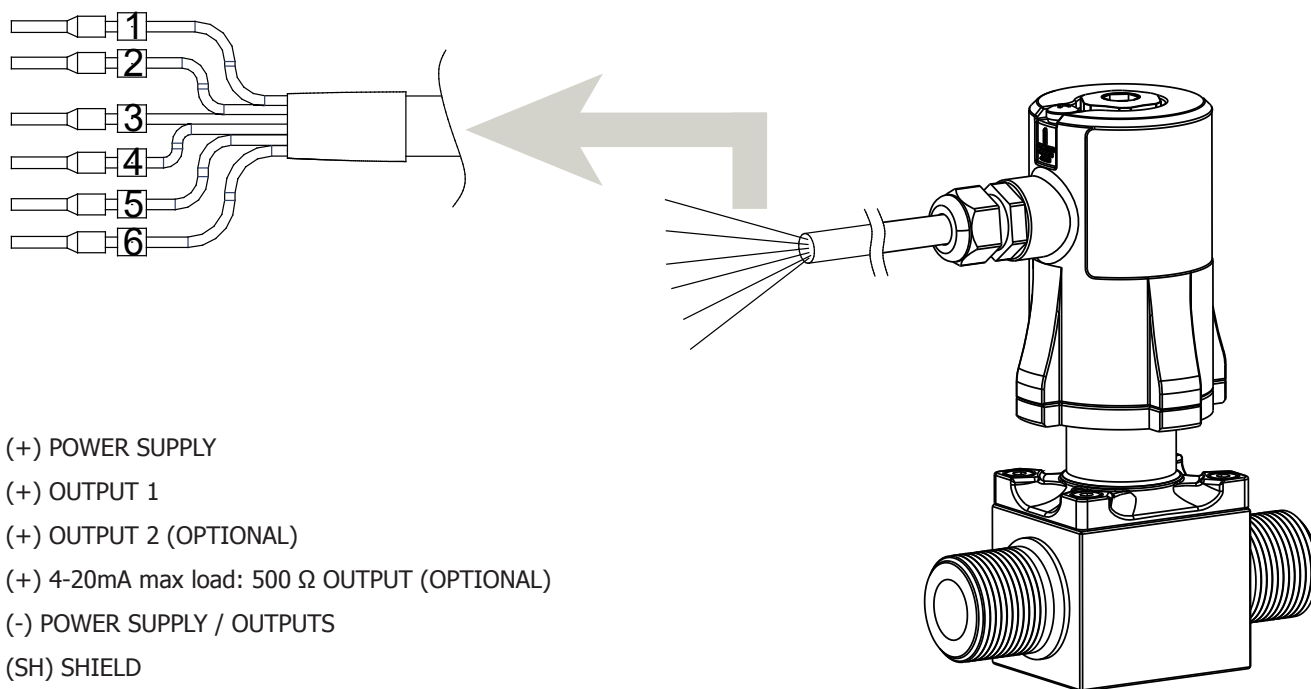
Lined body



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)

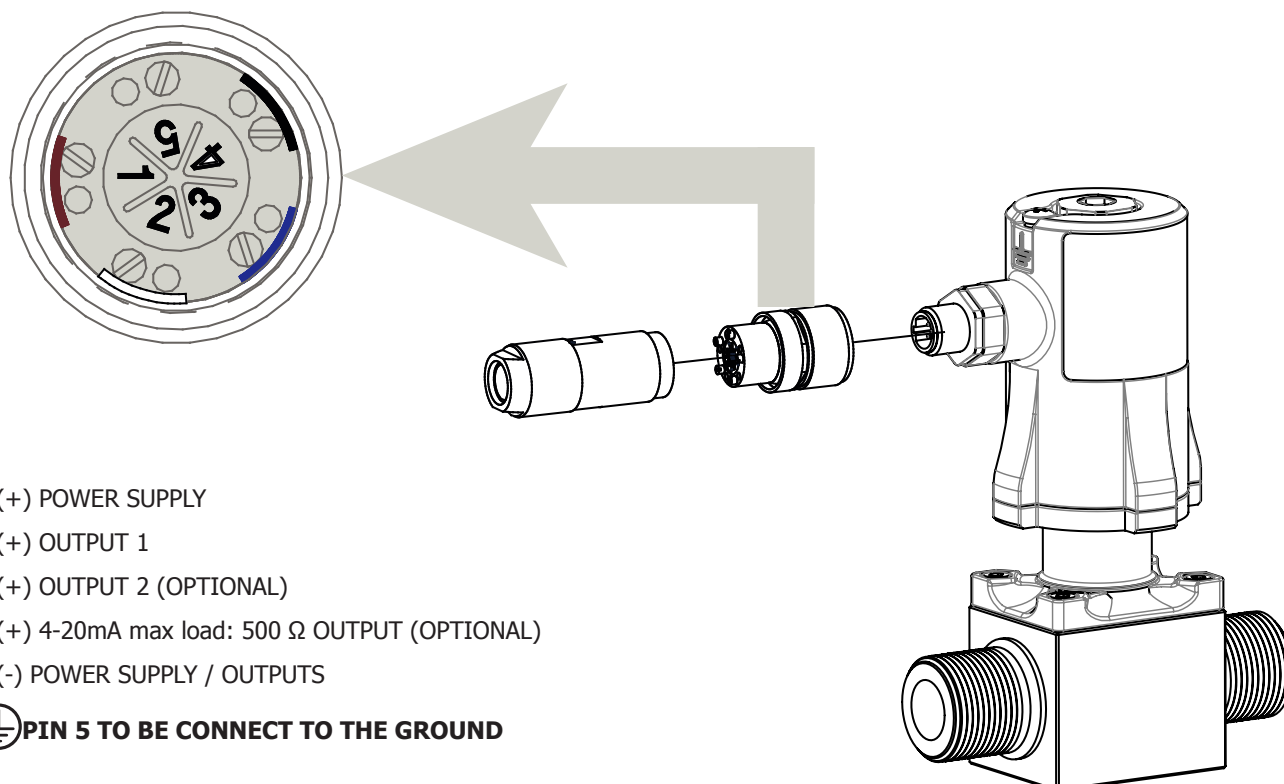
4 (+) 4-20mA max load: 500 Ω OUTPUT (OPTIONAL)

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

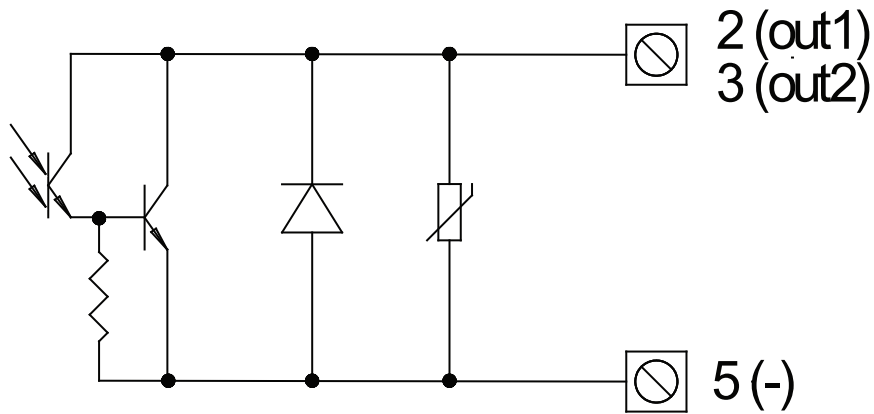
3 (+) OUTPUT 2 (OPTIONAL)

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

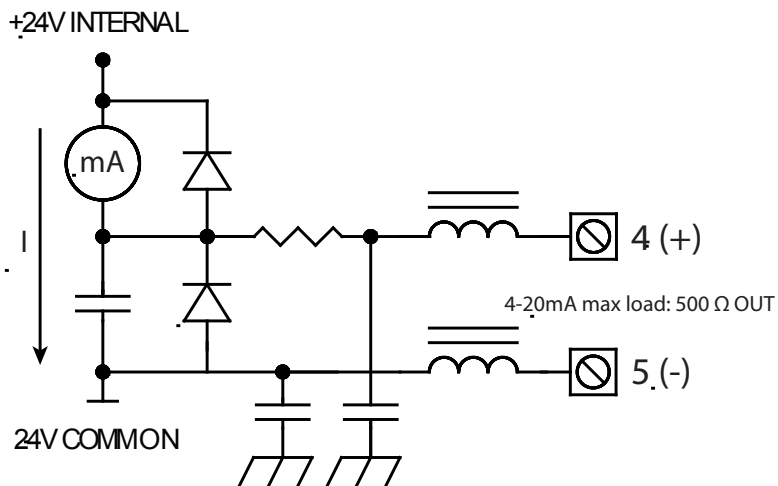
5 (-) POWER SUPPLY / OUTPUTS

 **PIN 5 TO BE CONNECT TO THE GROUND**

■ OUTPUTS: SCHEMATICS



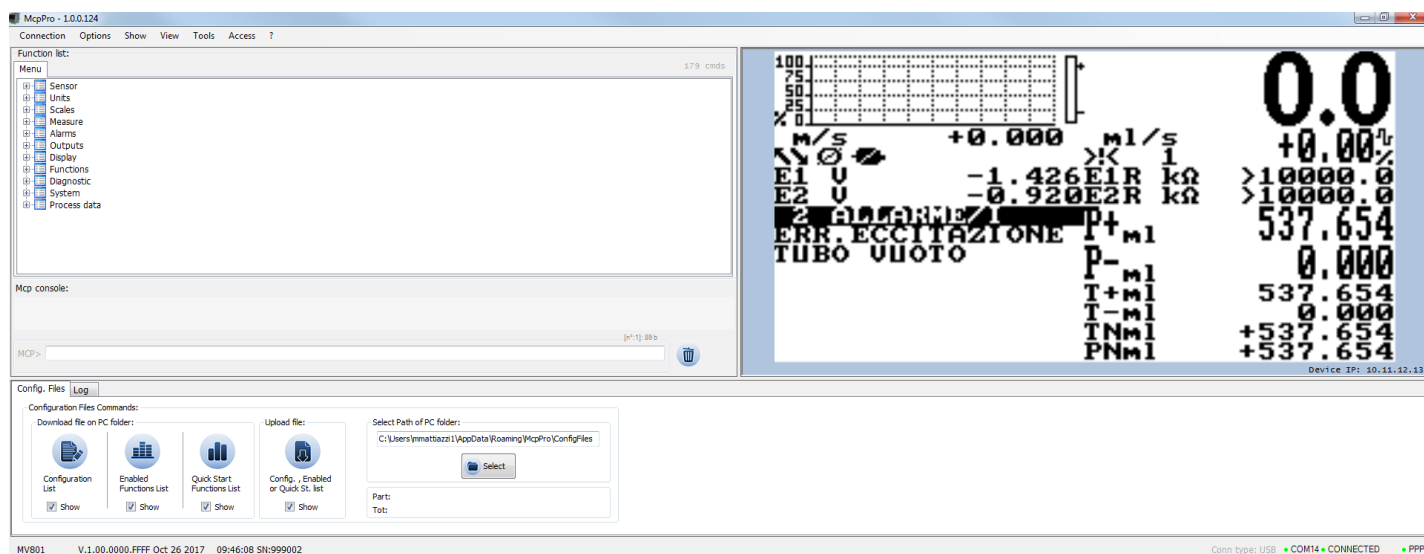
DIGITAL OUTPUTS



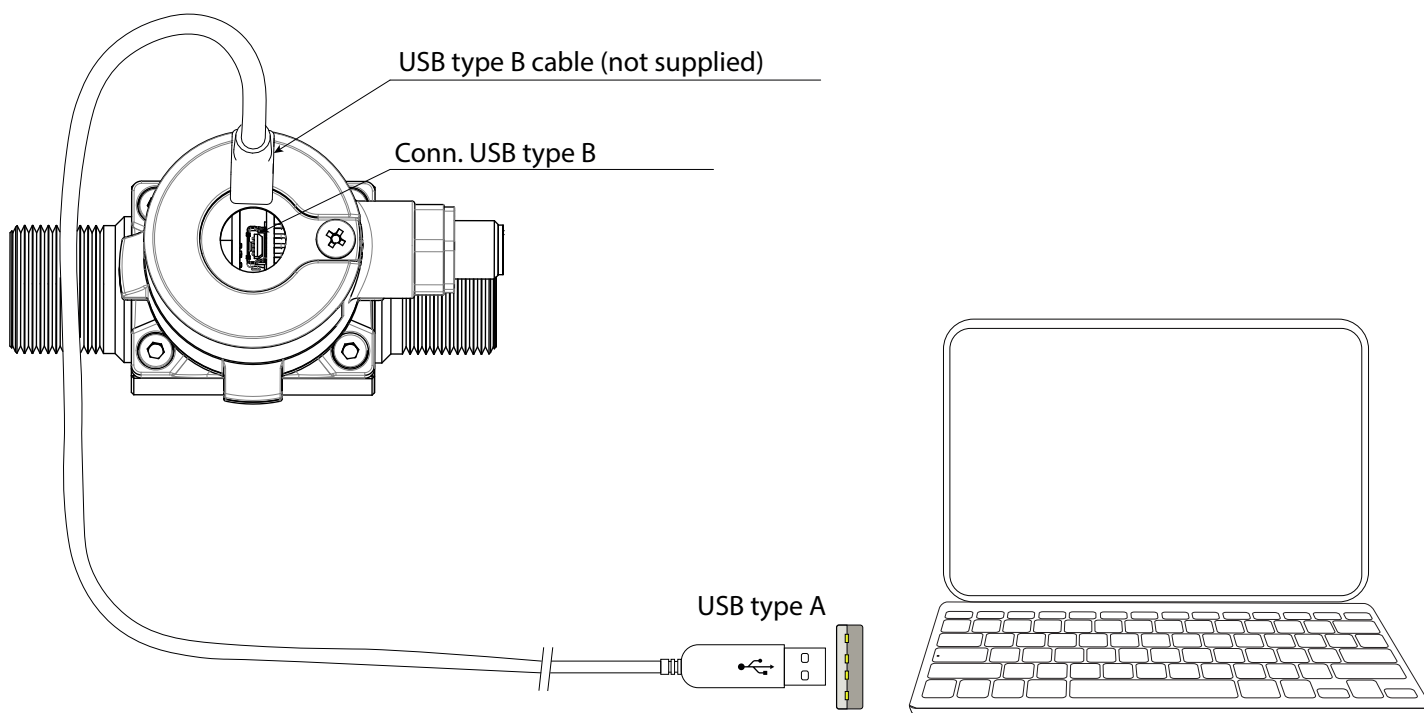
ANALOG OUTPUT

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

MAIN MENU	
1-Sensor	
2-SENSOR	
3-S. model= 000	1.1 Sensors model: Enter the first two characters of the serial number of the sensor
4-Lining= UNSPEC.	1.2 Flow sensor lining material type
5-S. type= F. BORE	1.3 Type of sensor: fullbore or insertion
6-U. type= METRICHE	1.4 Type of measure units for sensor parameter: metric or imperial
7-Diam.=mm 25	1.5 Insert ND of sensor (0-2500)
8-KA= +00.7771	1.6 Calibration data of sensor
9-KA= 01.0000	1.7 Calibration data of sensor
10-KZ= +0000000	1.8 Sensor coefficient KZ (zero point)
11-KD= +000000	1.9 Sensor coefficient KD
12-Ins. position= 0	1.10 Insertion position
13-KP dynamic= OFF	1.11 KP dynamic coefficient for insertion
Ki= +01.8727	1.12 Sensor coefficient Ki
Kp= +01.0000	1.13 Sensor coefficient Kp
KC= 1.00000	1.14 Sensor coefficient KC
C.Curr.=mA 025.0	1.15 Sensor excitation current
C.Reg.PB= 010	1.16 Current regulator proportional band
C.Reg.DK= 025	1.17 Current regulator derivation constant
S.Freq.=Hz 10	1.18 Measure sampling frequency
E.P.Detect= ON	1.19 Enables the empty pipe detection feature
R max=kohm 0500	1.20 Empty pipe detection threshold
S.err.delay= 010	1.21 Signal error delay (n. sample)
Sens.verify= OFF	1.22 Automatic sensor verify enable
Zero point cal.	1.23 Pipe hydraulic zero calibration
KL=00 -000000001	1.24 Linearization coefficient

MAIN MENU	
1-Sensor	
2-Units	
3-UNITS	
4-DIAM.= mm	2.1 Nominal diameter measure unit
5-FR.unit= METRIC	2.2 Flowrate type measure unit: metric or imperial
6-Pl1 unit= METRIC	2.3 Pulse 1 type measure unit: metric or not metric
7-Pl2 unit= METRIC	2.4 Pulse 2 type measure unit: metric or not metric
8-T+ unit= METRIC	2.5 Total direct totalizer measure unit type: metric or imperial
9-T+ unit= g	2.6 Total direct totalizer measure unit
10-T+ D.P.= 3	2.7 Total direct totalizer decimal point position
11-P+ unit= METRIC	2.8 Partial direct totalizer measure unit type: metric or not metric
12-P+ unit= g	2.9 Partial direct totalizer measure unit
13-P+ D.P.= 3	2.10 Partial direct totalizer decimal point position
T- unit= METRIC	2.11 Total reverse totalizer measure unit type: metric or not metric
T- unit= g	2.12 Total reverse totalizer measure unit
T- D.P.= 3	2.13 Total reverse totalizer decimal point position
P- unit= METRIC	2.14 Partial reverse totalizer measure unit type: metric or not metric
P- unit= g	2.15 Partial reverse totalizer measure unit
P- D.P.= 3	2.16 Partial reverse totalizer decimal point position
Temp.unit= °C	2.17 Temperature measure unit
Mass units= ON	2.18 Enable/disable the selection of mass units on full scale set
Sg=kg/dm³ 1.0000	2.19 Specific gravity coefficient

MAIN MENU	
1-Sensor	
2-Units	
3-Scales	
4-SCALES	
5-FS1= g/s 4908.7	3.1 Full scale flow rate 1
6-FS2= g/s 4908.7	3.2 Full scale flow rate 2
7-Pls1= 1000.0	3.3 Pulse value on channel 1
8-Tpls1gms 1000.00	3.4 Duration of the pulse generated on channel 1
9-Frq1=Hz 0050.0	3.5 Full scale frequency for channel 1 (0.1Hz-1000.0Hz)
10-Pls2= 1000.0	3.6 Duration of the pulse generated on channel 2
11-Tpls2ms 1000.00	3.7 Pulse value on channel 2
12-Frq2=Hz 0050.0	3.8 Full scale frequency for channel 2 (0.1Hz-1000.0Hz)

MAIN MENU	
1-Sensor	
2-Units	
3-Scales	
4-Measure	
5-MEASURE	
6-Damping= SMART	4.1 Measure filter
7-Cut-off=% 00.0	4.2 Low flow zero threshold: 0-25% of full scale value
8-Cal.verify= ON	4.3 Automatic calibration verify
9-Autorange= ON	4.4 Automatic change of measurement range

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-ALARMS

```

```

11-ALARMS
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

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-ALARMS
7-Outputs

```

```

11-Outputs
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

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-ALARMS
7-Outputs
9-Display

```

```

11-Display
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
T+ reset
T- reset
P+ reset
P- reset
Load Sens.f.def
Load Conv.f.def
Save Sens.f.def
Save Conv.f.def
Calibration

```

- 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

```

11-Functions
12-Diagnostic
13-System

```

DIAGNOSTIC	
Self test	12.1 Self test diagnostic function
Sens.verify	12.2 Sensor verify diagnostic function
Flow sim.= OFF	12.3 Flow rate simulation enabling
Display measures	12.4 Display internal measured value
Disp.comm.vars	12.5 Display comm. diagnostic values
Display graphs	12.6 Display measure as graphs
Firmware info	12.7 Firmware version/revision
S/N=	12.8 Board serial number
WT=	12.9 Total working time
12-Diagnostic	
13-System	

SYSTEM	
L1 code=*****	13.1 Access level 1 code
L2 code=*****	13.2 Access level 2 code
L3 code=*****	13.3 Access level 3 code
L4 code=*****	13.4 Access level 4 code
L5 code=*****	13.5 Access level 5 code
L6 code=*****	13.6 Access level 6 code
Restr.access=OFF	13.7 Restricted access level
Device IP addr=	13.8 Device IP network address
Client IP addr=	13.9 Client IP network address
Network mask=	13.10 Network mask
KT= 1.00000	13.11 Calibration coefficient KT
KS= 1.00000	13.12 Calibration coefficient KF
KR= 1.00000	13.13 Calibration coefficient KR
DAC1 4mA= 02460	13.14 DAC1 out 4mA calibration point
DAC1 20mA= 11050	13.15 DAC1 out 20mA calibration point
FW update	13.16 firmware update
13-System	

HOW TO ORDER

Example code	CS 3900	
	DN	
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")
	8	65 mm (thread 2"1/2)
Sensor and electrodes material / lining / 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
Connection type		
0	0	UNI 338 (GAS)Thread Male
	1	NPT-Thread Male
	9	Special connection
Analog Output		
A	A	MV801 (Complete of n° 1 Freely programmable digital out) Electrical Connections : 5 poles connectors
	B	MV801 (Complete of n° 1 Freely programmable digital out) Electrical Connections: 2 meters of N° 5 poles cable ALREADY CONNECTED
Digital Output		
0	0	without Analog Out
	1	with Analog Out
Electrical Connections		



CS3900-1A0A0A (Complete code example for order)

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