ISOMAG

*The friendly magmeter*

# DATA SHEET

## CS3795

CE

ISOIL INDUSTRIA

**INDICE**

# TECHNICAL DATA

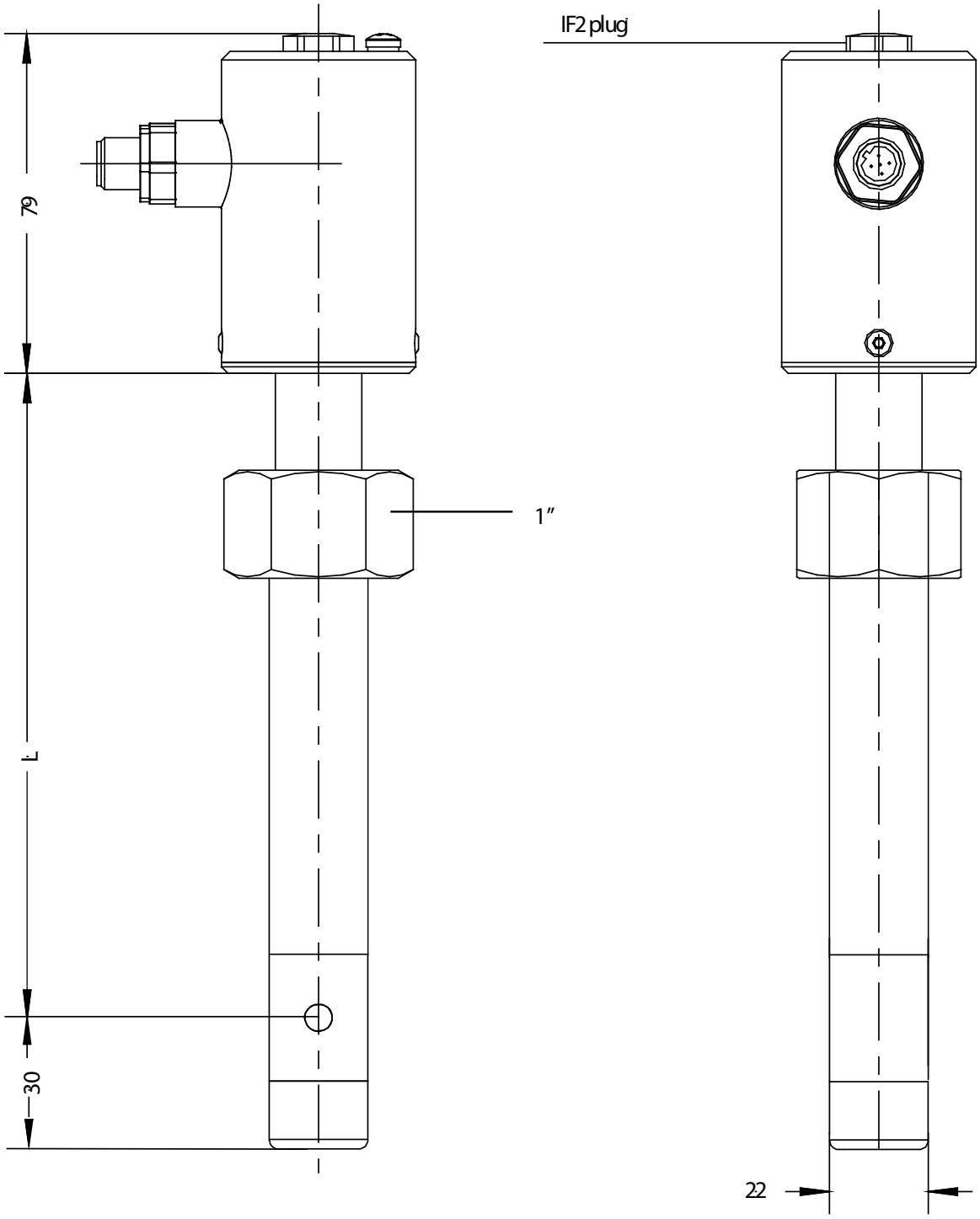
| OVERALL FEATURES | |
|---|---|
| **Size for pipe line Ø** | ❑ Size 1 Ø ≤ 500mm<br>❑ Size 2 Ø ≤ 1000mm<br>❑ Size 3 Ø ≤ 2000mm |
| **Minimum conductivity** | ❑ 20 µS/cm |
| **Altitude** | ❑ -200m up to 4000 m |
| **Humidity Range** | ❑ 0÷100% (IP 67) |
| **CE Certification** | ❑ Yes |

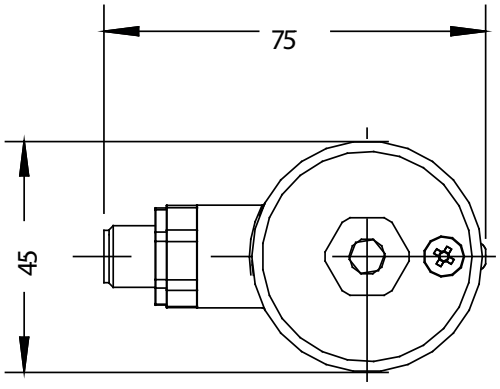
| STANDARD FEATURES | |
|---|---|
| **Protection Rate** | ❑ IP 67 |
| **Power Supply/Consumption** | ❑ min10 / max30 V ⎓ - 1W |
| **Electrical connections** | ❑ 5 pins connector M12X1 complete with plug/2 m of 5 poles cable ALREADY CONNECTED |
| **Full scale value** | ❑ 0,4…10m/s |
| **Protocols** | ❑ MCP via USB integrate |
| **Output** | ❑ N° 1 channel freely programmable OUTPUT for volume pulses/alarms |
| **Data Storage** | ❑ Eeprom values storing system in case of power failure |
| **Programming Plug In** | ❑ Protected plug for PC connection |
| **Bi-Directional** | ❑ Yes |
| **Body material** | ❑ Stainless steel AISI 316 |
| **Nominal pressure** | ❑ 1600 kPa |
| **Process connection** | ❑ 1"Threaded end |
| **Version – protection rating** | ❑ Compact IP67 |
| **Connection material** | ❑ Stainless steel AISI 304 |
| **Lining material/gasket** | ❑ PEEK/FPM/Electrodes in |
| **Liquid temperature** | ❑ -10°C° ÷ 100°C compact version |
| **Electrodes material** | ❑ HC 276 |

| OPTIONAL FEATURES<br>*(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 |
| **Size for pipe line Ø** | ❑ Other on request |
| **Nominal pressure** | ❑ Others on request |
| **Process connection** | ❑ Others on request |
| **Electrodes material** | ❑ Others on request |

| ACCURACY | |
|---|---|
| **Measurements tolerance (board)** | ❑ Volume = ±0,2% v.l.<br>❑ Out 4/20 mA = ± 0,2 % v.l. |
| **Accuracy (whole system)** | ❑ See table below |

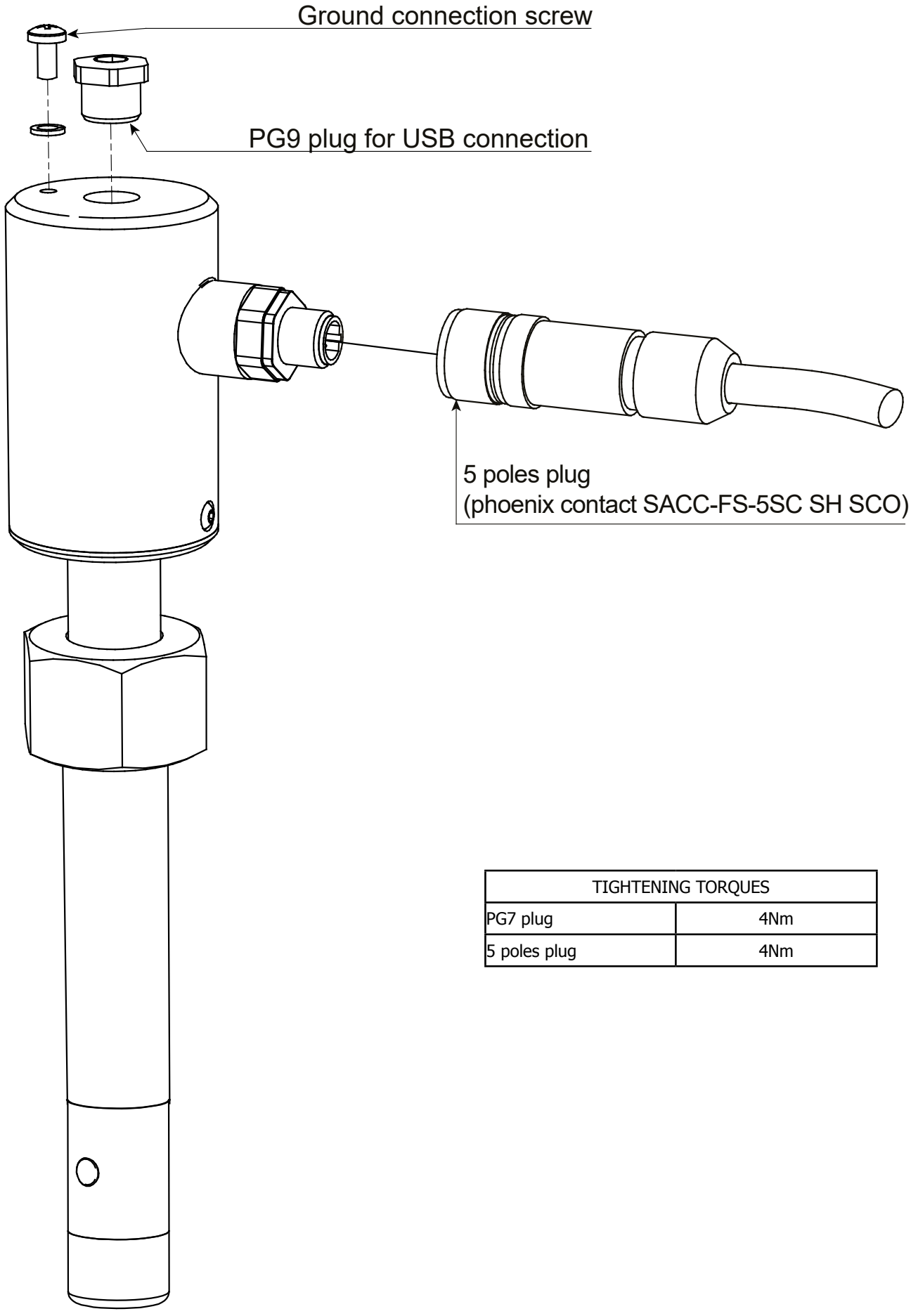
## OVERALL DIMENSIONS




| SIZE | "L" DIMENSION |
|---|---|
| 1 | 176mm |
| 2 | 244mm |
| 3 | 462mm |

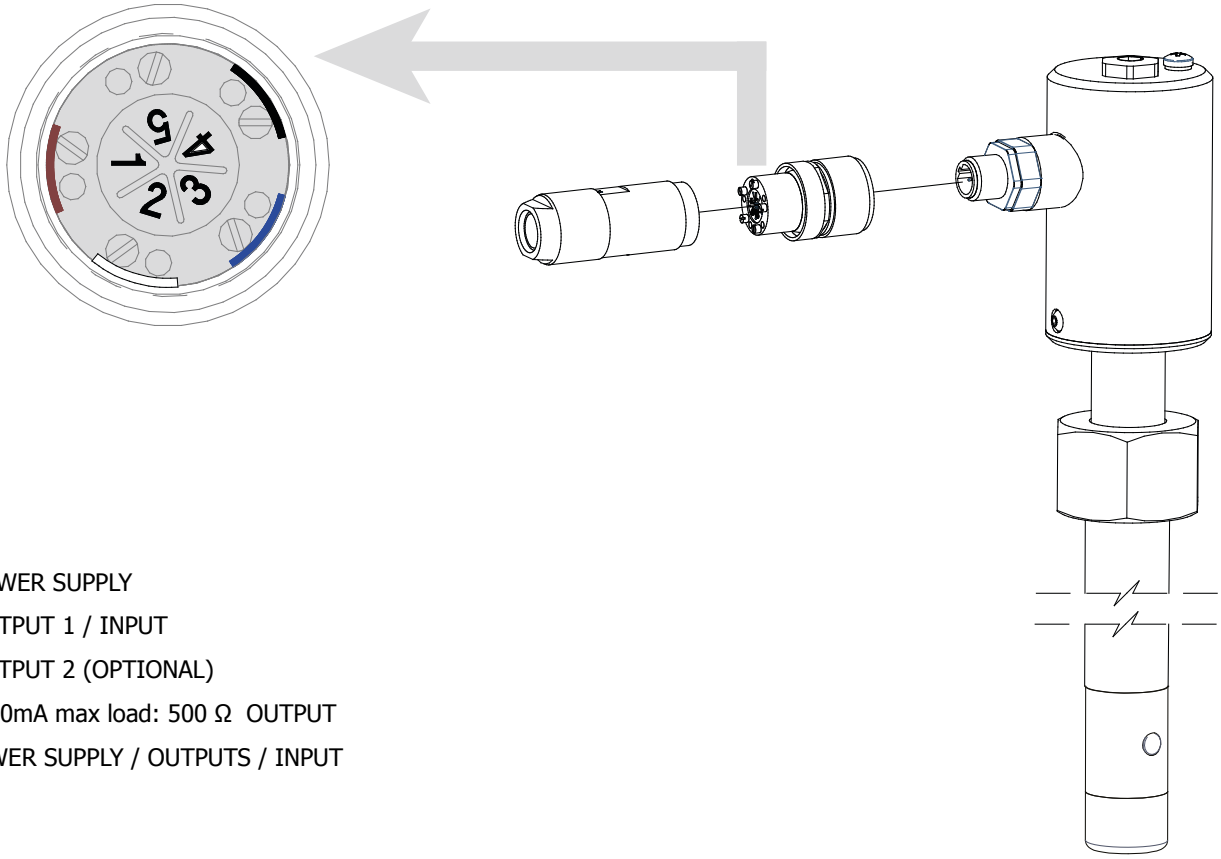
## EXPLODED LAYOUT




| TIGHTENING TORQUES | |
|---|---|
| PG7 plug | 4Nm |
| 5 poles plug | 4Nm |

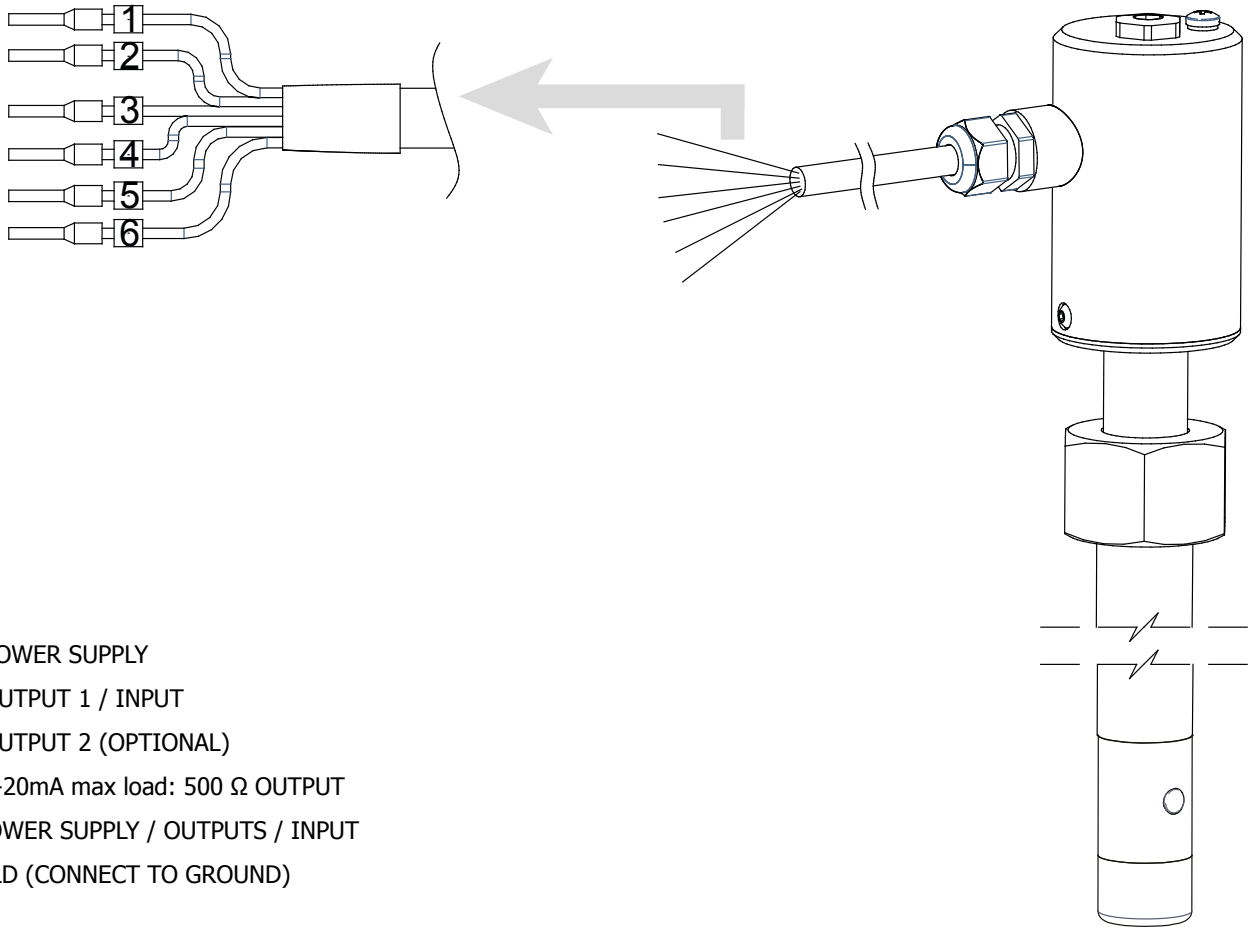
# ELECTRICAL CONNECTIONS

## INPUT/OUTPUTS (CONNECTOR)



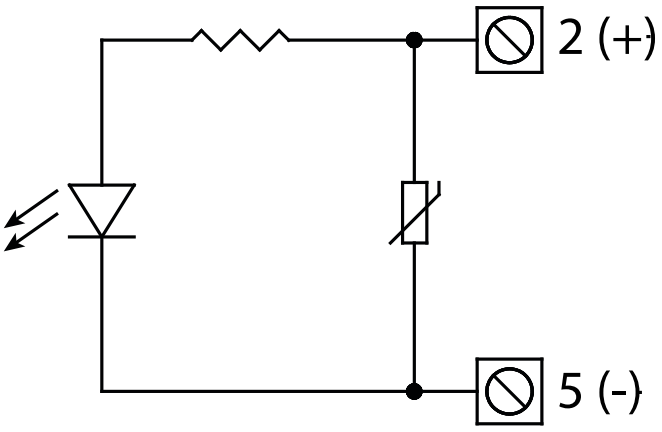

1 (+) POWER SUPPLY
2 (+) OUTPUT 1 / INPUT
3 (+) OUTPUT 2 (OPTIONAL)
4 (+) 4-20mA max load: 500 Ω  OUTPUT
5 (-) POWER SUPPLY / OUTPUTS / INPUT

## INPUT/OUTPUTS (CABLE)

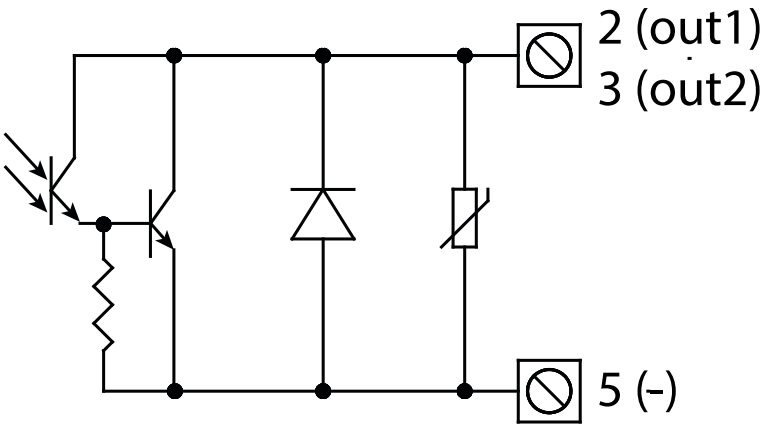



1 (+) POWER SUPPLY
2 (+) OUTPUT 1 / INPUT
3 (+) OUTPUT 2 (OPTIONAL)
4 (+) 4-20mA max load: 500 Ω OUTPUT
5 (-) POWER SUPPLY / OUTPUTS / INPUT
6 SHIELD (CONNECT TO GROUND)

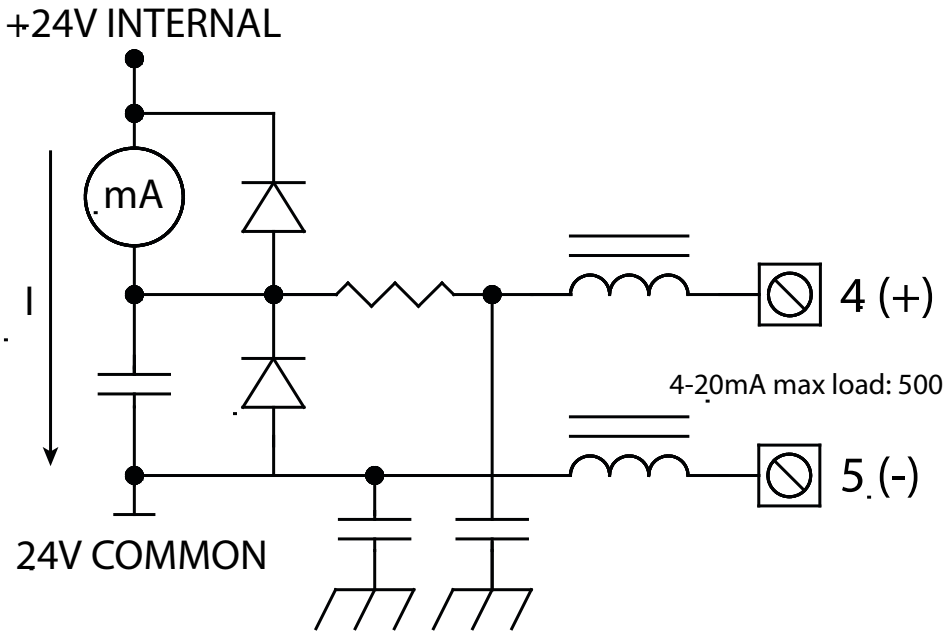
# INPUT/OUTPUTS: SCHEMATICS




**DIGITAL INPUT**



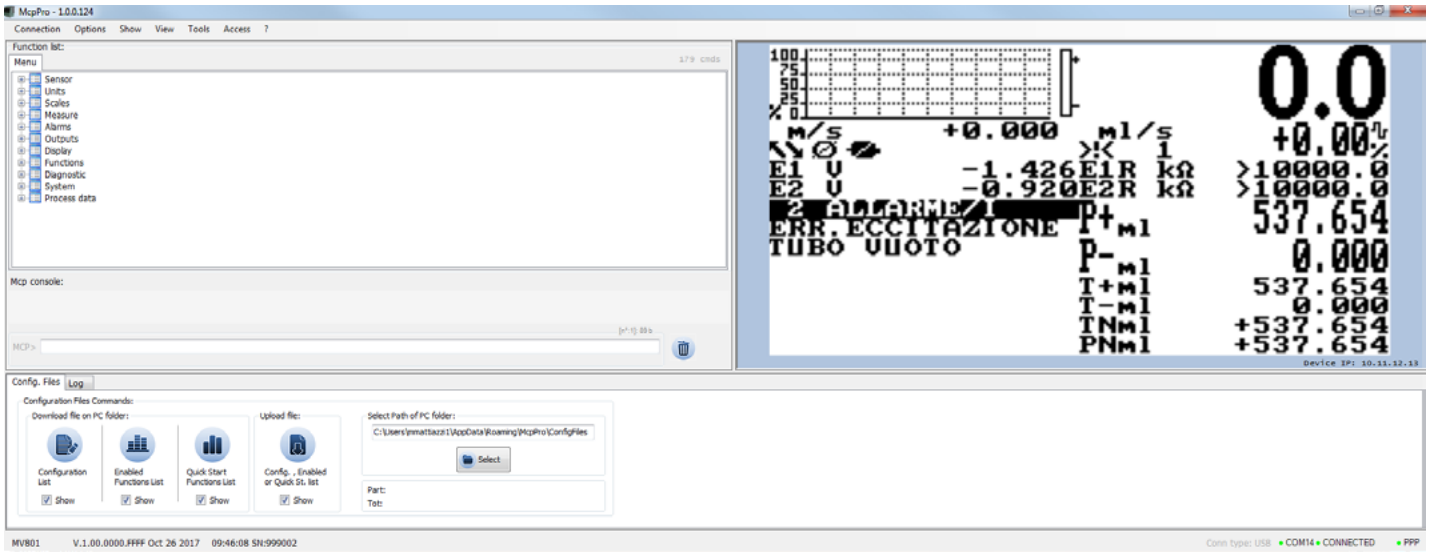

**DIGITAL OUTPUTS**



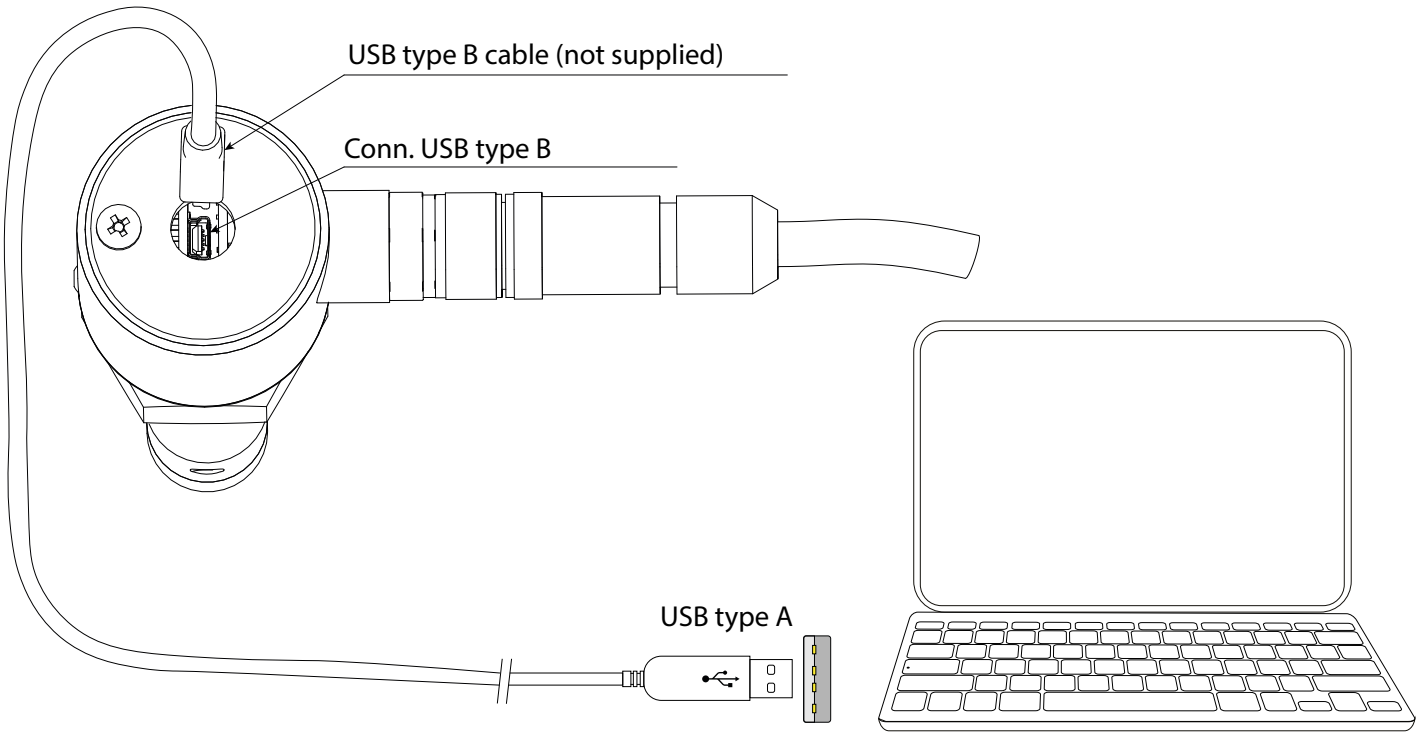

**ANALOG OUTPUT**

## USER INTERFACE

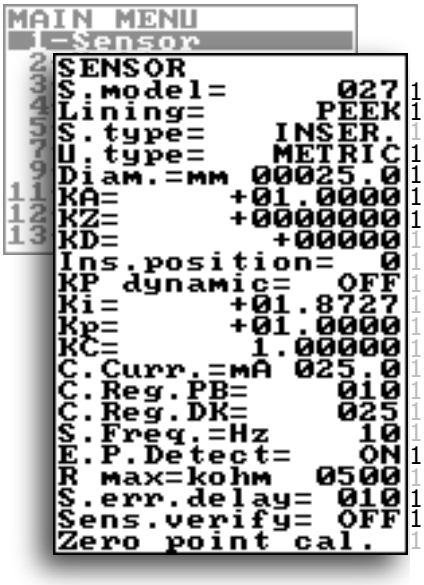
CS3795 can be programmed by MCP interface (USB cable is required see below)



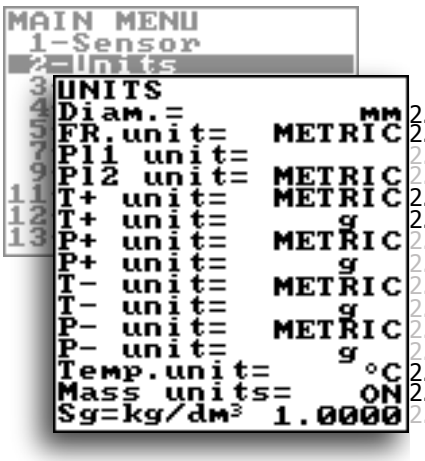

Make the USB connection as shown in the following picture.



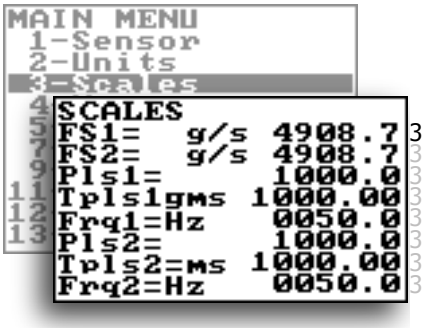
# PROGRAMMING FUNCTIONS




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 visualized on sensor's label
1.7 Sensor coefficient KZ (zero point)
1.8 Sensor coefficient KD
1.9 Insertion position
1.10 KP dynamic, coefficient for insertion
1.11 Sensor coefficient Ki
1.12 Sensor coefficient Kp
1.13 Sensor coefficient KC
1.14 Sensor excitation current
1.15 Current regulator proportional band
1.16 Current regulator derivation constant
1.17 Measure sampling frequency
1.18 Enables the empty pipe detection feature
1.19 Empty pipe detection threshold
1.20 Signal error delay (n. sample)
1.21 Automatic sensor verify enable
1.22 Pipe hydraulic zero calibration




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 Partial direct totalizer measure unit type: metric or not metric
2.8 Partial direct totalizer measure unit
2.9 Total reverse totalizer measure unit type: metric or not metric
2.10 Total reverse totalizer measure unit
2.11 Partial reverse totalizer measure unit type: metric or not metric
2.12 Partial reverse totalizer measure unit
2.13 Temperature measure unit
2.14 Enable/disable the selection of mass units on full scale set
2.15 Specific gravity coefficient




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)

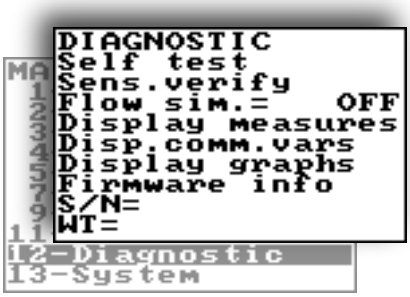

4.1 Measure filter
4.2 Low flow zero threshold: 0-25% of full scale value
4.3 Automatic calibration verify
4.4 Automatic change of measurement range


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


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


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

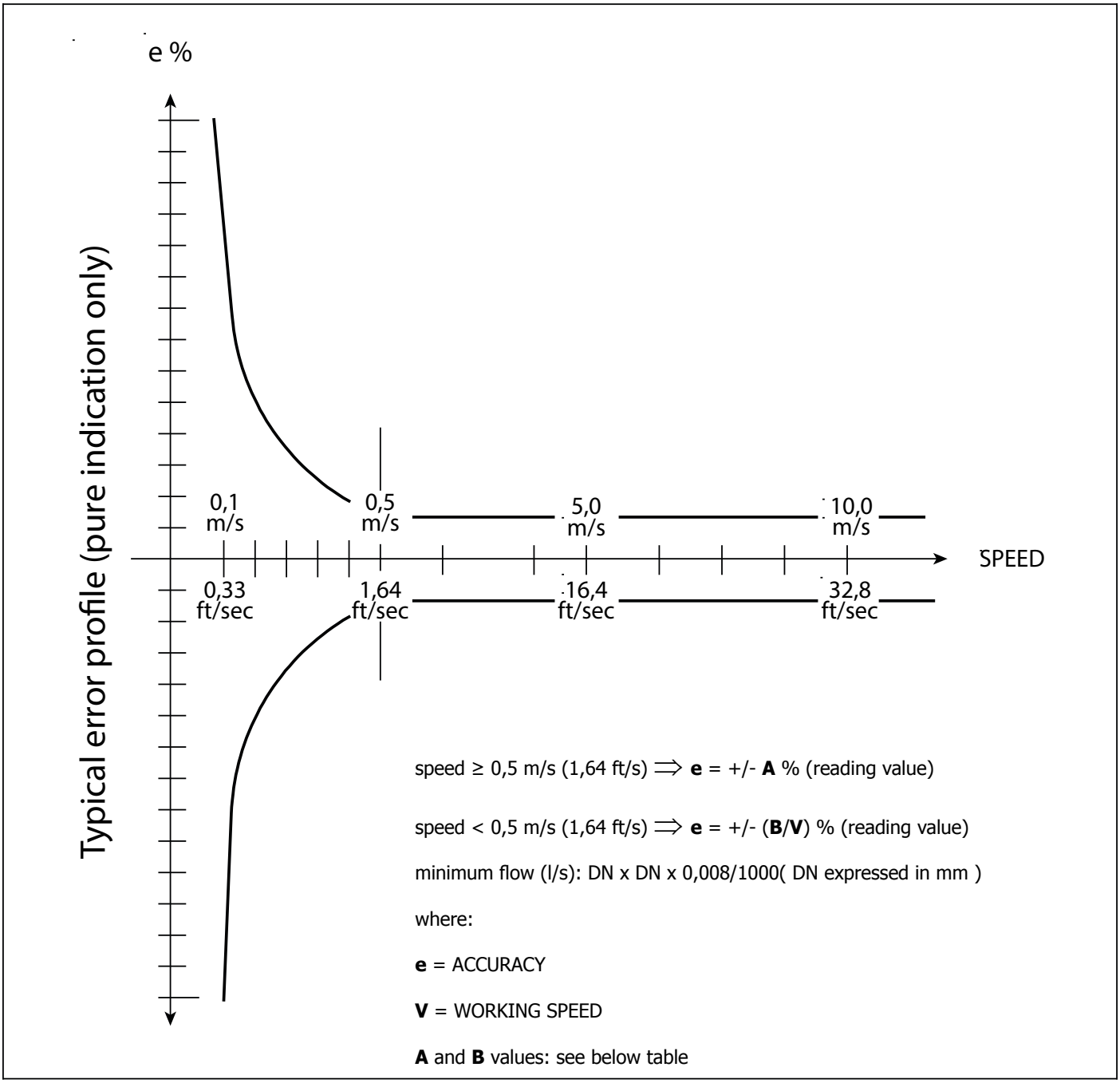

11.1 Execute immediate reset of total direct totalizer
11.2 Execute immediate reset of partial direct totalizer
11.3 Execute immediate reset of total reverse totalizer
11.4 Execute immediate reset of partial reverse totalizer
11.5 Load sensor factory default
11.6 Load converter factory default
11.7 Save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




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


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

## ACCURACY TABLE




| A | B (speed in m/s) | B (speed in ft/s) |
|---|---|---|
| 2 | 1 | 3,28 |

**Reference conditions:**

- ❑ Constant flow rate during the test
- ❑ Pressure: >30 kPa
- ❑ Flow condition : fully developed flow profile
- ❑ Zero stability +/- 0,005 %
- ❑ ID accuracy: mean value better than 1%, IDmin/IDmax>0,98

## HOW TO ORDER

| Example code | CS 3795 | |
|---|---|---|
| | ***DN*** | |
| A | **A** | Suitable for diameter < / = 500 mm ; with MV801 board, Complete of n° 1 freely programmable digital I/O |
| | **B** | Suitable for diameter < / = 1000 mm ; with MV801 board, Complete of n° 1 freely programmable digital I/O |
| | **C** | Suitable for diameter < / = 2000 mm ; with MV801 board, Complete of n° 1 freely programmable digital I/O |
| ***Sensor and electrodes material / lining / internal gasket*** | | |
| 1 | **1** | Materials : Sensor housing in AISI316 (head in PEEK), electrodes in HC276 , gasket in FKM |
| | **2** | Sensor material: To be specified |
| ***Connection type*** | | |
| A | **A** | 1" UNI 338 (GAS) female threaded connection |
| | **B** | 1" NPT female threaded connection |
| | **C** | Connection: to be specified |
| ***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 |
| ***Electrical Connections*** | | |
| 1 | **1** | 5 poles connector |
| | **2** | 2 meters of N° 5 poles cable ALREADY CONNECTED |

**CS3795-A1A0A1** (Complete code example for order)

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