Intsonic meter and software manual

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Version 1.2 -- 10/09/2021

Meter overview

Coming soon!

Display and button interface

Short press cycles the menu options. Long press selects the displayed option. The display is turned off automatically if it is not in use for 5 minutes. Wake up on button press.
The interface has the following structure:

- Volume in m^3, sum of V+ and V-. The default option is selected automatically if there is no user activity for 30 seconds.
- Flow speed in m^3/h.
- Liquid temperature in °C.
- Display settings Menu:
    - Time
    - Date
    - PULSE -- turns on or off the pulsed output. When turned on the user is given a choice of:
        - 0l
        - 10l
        - 100l
    - CLRWRN -- clears the warning indicator.
    - EXIT -- exit the settings menu.
    - LOCK -- lock the settings menu.

When a numerical value is displayed a long button press can be used for a prompt of what you are looking at.
When the display settings menu is locked the menu have the following structure:

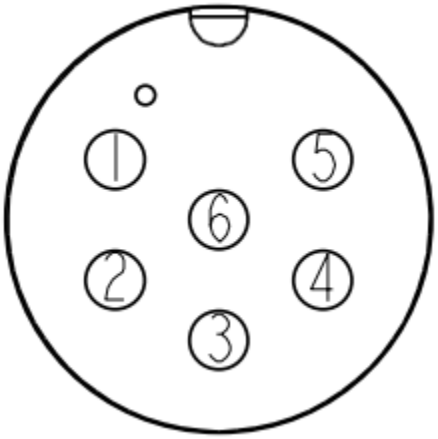
- Volume.
- Flow speed.
- Temperature.
- Time.
- Date.

The display settings menu cannot be unlocked using the button.

Serial interface and pulsed output

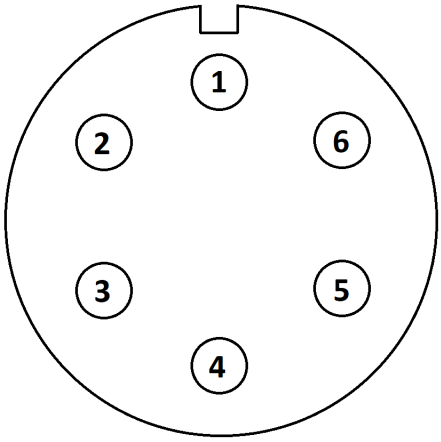
Meters are fitted either with a cable or with a 6-pin circular connector.
Below is the pinout for the connector (front view):

BEFORE 09/21 (old black connector):



- 1, 5 -- dry pulsed output (relay);
- 6 -- not connected;
- 2 -- RS485 A;
- 4 -- RS485 B;
- 3 -- GND.

AFTER 09/21 (new blue connector):



- 6, 5 -- dry pulsed output (relay);
- 4 -- not connected;
- 3 -- RS485 A;
- 2 -- RS485 B;
- 1 -- GND.

Pulsed output is rated for up to 100V currently.

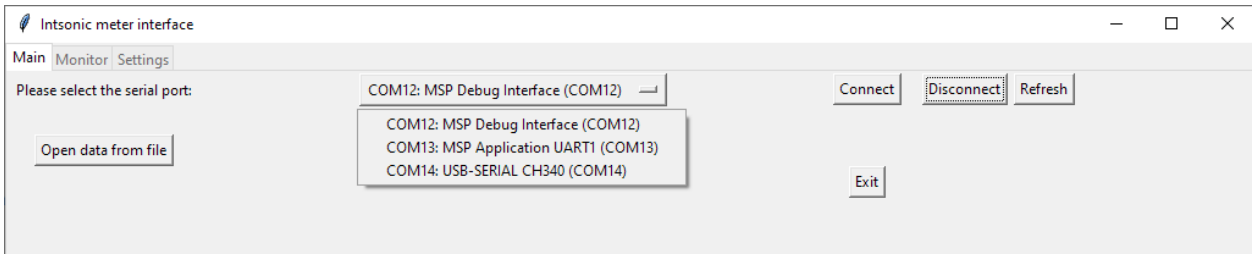
Please use the cable provided to connect.
Cables supplied by Intsonic with our meters use the blue twisted pair for the RS485 (solid blue is A), the green for pulsed output and brown for GND. For connections over 50m long GND may also be used when connecting to RS485, for anything under 50m it can be ignored.

Using the software

Software v1.2 has been tested with Windows 10.
Installation is not required. To start the program, launch the executable, this might take a minute.
On the first launch the program will create two folders reports/ and logs/ in the directory from which it has been launched. This is where the information will be stored.
Please contact us for builds for other operating systems.

Connecting the COM interface

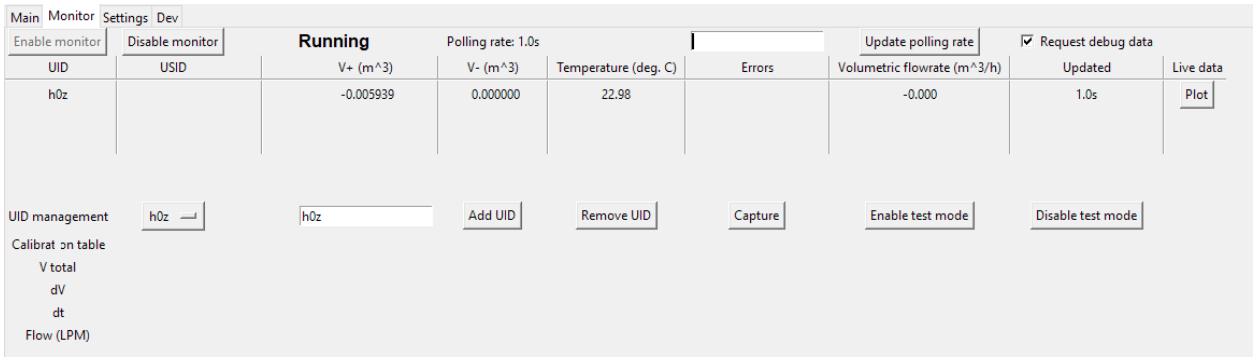
To connect the meter to PC a RS485 to USB adapter dongle should be used.
After the dongle has been plugged into the computer it should show up as a Serial COM interface. It should now show up on the list. A “refresh” button is available to update the list. If you device is not visible in the list please check your USB port, USB dongle and the drivers.



“Connect” will attempt to connect to the selected interface and a “success” or “error” message will appear.
If an error occurs please make sure that no other programs are using the interface and/or try replugging the adapter.

FAQ 1: What if I cannot identify which COM port I should connect to?
A: Disconnect the dongle, refresh the list. Take note of the devices on the list. Plug in the dongle, refresh the list -- the new device that has appeared on the list is the one you are looking for.

Monitor tab



Once the serial interface has been connected the monitor can be enabled.

The monitor polls the devices and displays that received and decoded data in the table.
To start polling a meter -- add its UID to the list. This can be done through the designated field. Enter the UID into the box and click “Add UID”. To stop polling a meter -- enter the UID into the box and click “Remove UID”.
The list is stored as a text file in the folder from which the program is launched. So the list is saved between program launches. It can also be transferred from device to device or edited manually before starting the program.

Meters are polled sequentially. Polling rate is set in seconds and can be updated at the top.
The fields are:

- UID -- unique meter ID.
- USID -- User set identifier.
- V+ -- Volume in the forward direction.
- V- -- Volume in the reverse direction. Please note that only speeds <-50 lph contribute towards V-. This may be adjusted in the future.
- Temperature -- Water temperature. Currently an experimental feature.
- Errors. Possible errors are:
    - Reverse flow -- flow more than 50l/h in the reverse direction.
    - Flooding -- the meter is submerged in water.
    - Overflow -- threshold for the warning is currently set to 70 m^3/h.
    - Empty pipe.
    - Low signal -- can occur if there are air bubbles or any contaminants present in the flow.
    - Overheated -- temperature above 50 °C.
    - Low battery.
- Updated -- time since last received response from the meter.
- Live data -- live VFR plot. Last 300 points are plotted and the data is averaged over the last 60 measurements for the graph.

The data file for each meter is automatically saved to ‘reports/”meter_id”_data’ file. For example data from the meter with UID “005” will be saved to reports/005_data.

FAQ 2: I do not know my meter UID, how can I determine it?
A: It should be marked on the meter body, on the top section near the display.

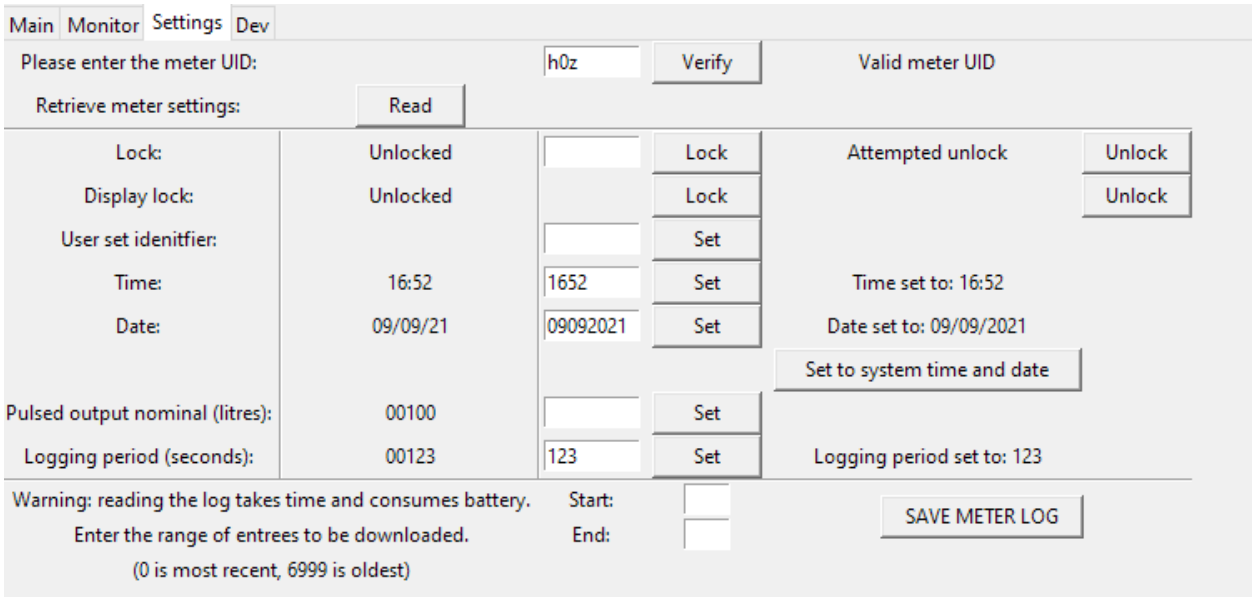
Calibration table

Section developed to aid calibration. Most end users do not require this.
After the UID has been entered into the field -- press the capture button to record the current volume.

There are two buttons to enable or disable test mode. In test modes the measurement frequency is 10Hz. So the time resolution in the calibration table is also improved. Test mode is automatically disabled after 1.5 hours.

Every time the Capture button is pressed a new snapshot is taken and the previous data is moved to the right-hand column.
A difference between the current and previous volumes is then calculated, as well as LPM since the last press. Aggregated volume (V+) + (V-) is used for the final calculation.

Settings tab



This section is targeted towards advanced users. We hope that the default settings would suit most users.

Each meter comes preprogrammed with a unique 3-symbol case-sensitive alphanumeric serial number and a 4-symbol password.
To read the current status of the meter please enter its ID, verify and press read. Sometimes a few presses are needed for the command to go through -- we are working on improving this.

- Lock -- executed when a correct meter password is entered in the field in the row. Locks the meter, preventing any settings from being changed.
- Display lock -- locks/unlocks the extended LCD menu.
- User set identifier (USID) -- 4-character ID that can be assigned to a meter. Unused characters are replaced with spaces.
- Time and date -- meter time and date. The meters do not currently support automatic summer time adjustments.
- Pulsed output nominal -- volume of water (in litres) for a single pulse.
- Logging period -- amount of time in seconds between the consecutive log entrees. The maximum meter log size is 7000 (to be confirmed), so the period should be selected accordingly. For example, if it is set to 3600 seconds (1 hour), then the meter will fill up the log in 7000 hours = 291 days. It will then automatically start overwriting it, so at any point the data for the last 291 days is stored.

Setting this to 0 disables logging, but is not recommended as logging consumes a negligible amount of power.
The logged parameters are as listed on the monitor tab.

- A small menu to download a range of log entrees from the meter. Entry 0 is the most recent entree.