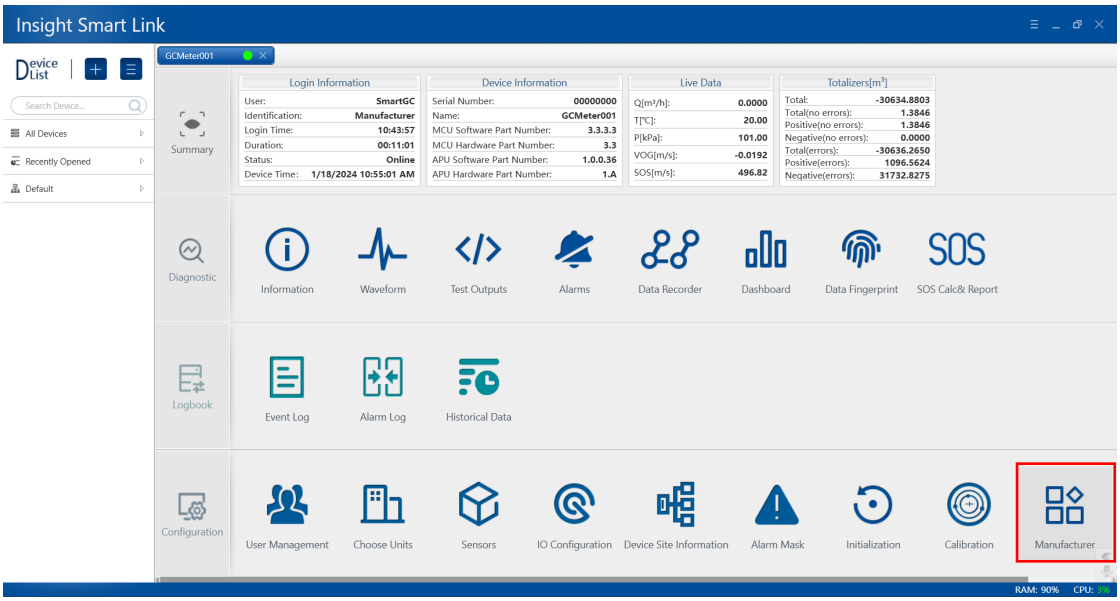
iSonic 8X – EVC Configuration

Contents

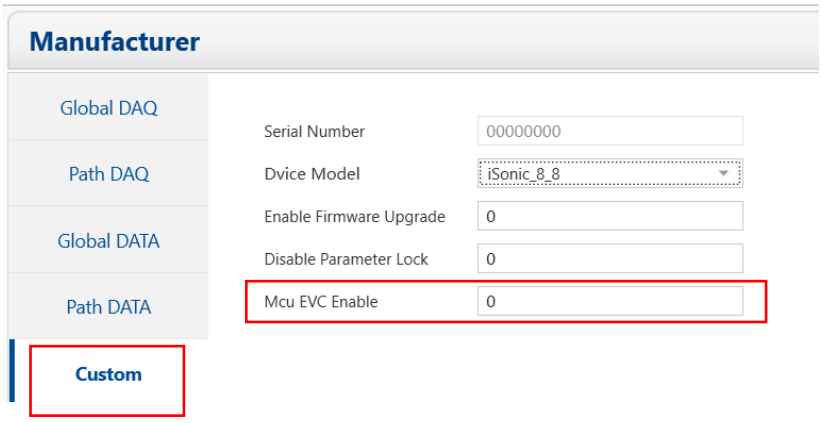
This user manual describes how to use SmartLink to turn on the iSonic 8X's ability to convert to "base" or "standard conditions". We use the term "EVC" which means "Electronic Volume Correction". In the iSonic 8X implementation – all EVC calculations are done on the MCU board. The APU flow calculations and totalizations are unaffected. The MCU takes the flow and totals from the APU every second and applies an "average" correction for that time window.

1 - SmartLink Configuration

Startup SmartLink – but you must log in as the “manufacturer” (see procedure on being the manufacturer).
Select “Manufacturer” (see red box lower right) – and then select “Custom”.



Then go to the “Custom” submenu and enable (“1”) the EVC mode and SAVE. Disabled is “0”



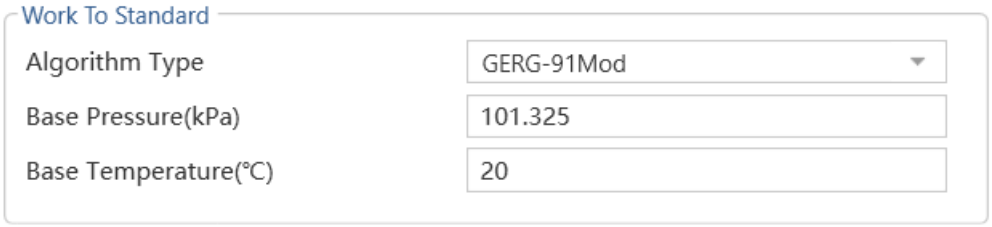
The parameters associated with the EVC functions are divided into three categories, "static parameters", "dynamic parameters" and "gas composition parameters". The configuration method follows.

1.1 Static Parameters

Enter the “Sensors” configuration

Select conversion algorithm and reference standard pressure and temperature parameters. (Temperature and pressure units are fixed).

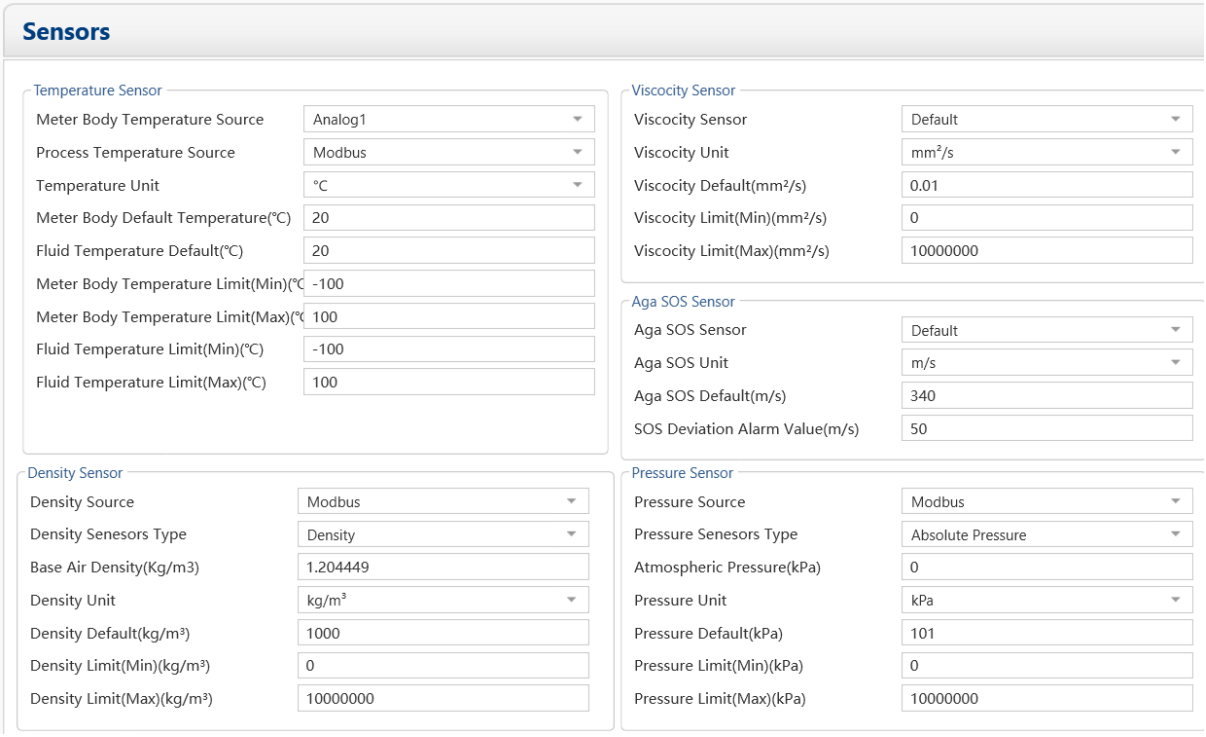
*Currently only supports Gerg-91 and NX19 - others have not yet been implemented. The default parameters are 20°C, 101.325 kPa.



1.2 Dynamic Parameters

The dynamic parameters are temperature, pressure, density, and gas constituents/composition. The parameters are configured through the "Sensors" menu.

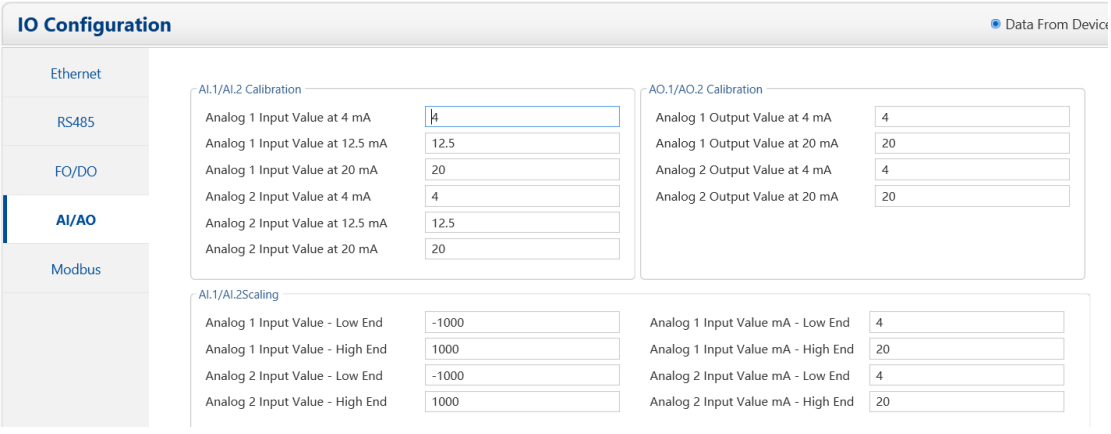
The sources of these three parameters can be selected as "Default (default value)", "Analog Input signal (4-20mA input)", and "Modbus (external Modbus slave device)". Select the unit for the input source value.



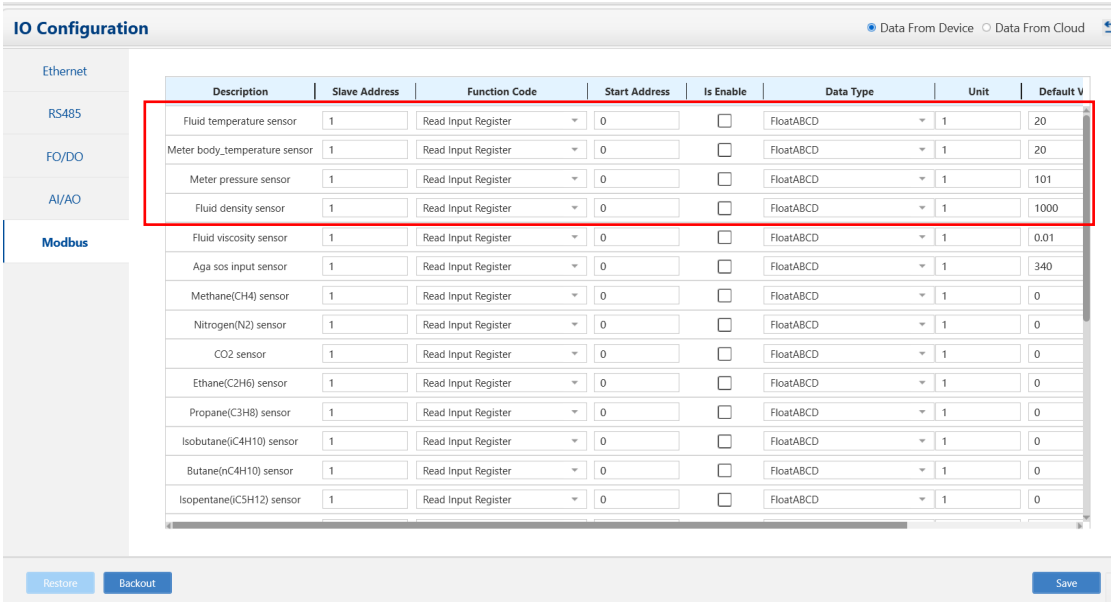
*Note: Whenever parameter data acquisition fails, the default value will be used.

1. Selecting "Default" - the result is the entered fixed value.

2. Selecting "Analog Signal", an external 4-20mA sensor is required. Further – the user should also enter "Configuration" --> "I/O Configuration" for analog input calibration and scaling (i.e., when the input equals 4 mA (or 20 mA), what value does it represent in order to perform input current and sensor value conversion).



3. When selecting Modbus, you need to configure the external Modbus slave device parameters and enter "Configuration" --> "I/O Configuration".



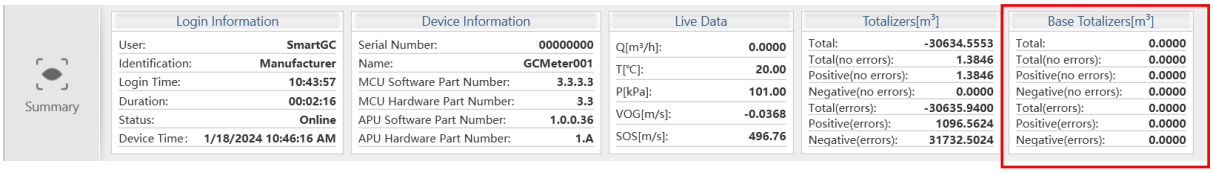
1.3 Gas Components

The gas component parameters can only be obtained from an external MODBUS device. The external Modbus needs to be configured to the equipment parameters. Enter the "configuration "->" I/O configuration ". See image above.

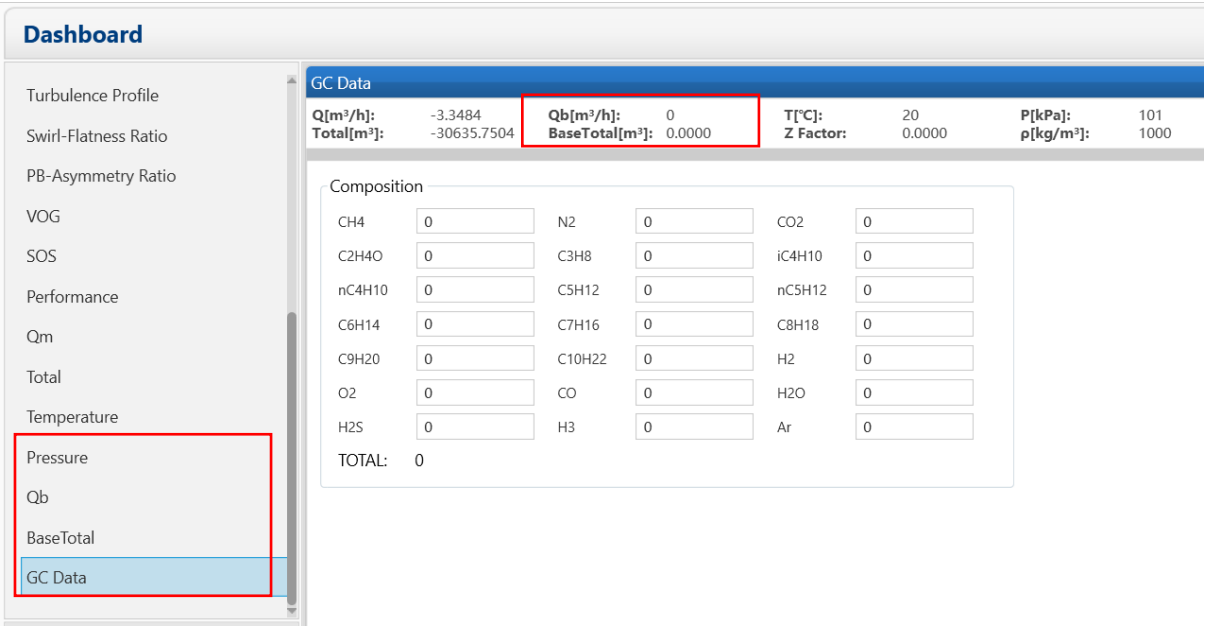
2 – EVC Data Presentation

2.1 SmartLink

After turning on the EVC functionality, the main interface of SmartLink will display a new “Base Totalizers” panel on the top right corner.



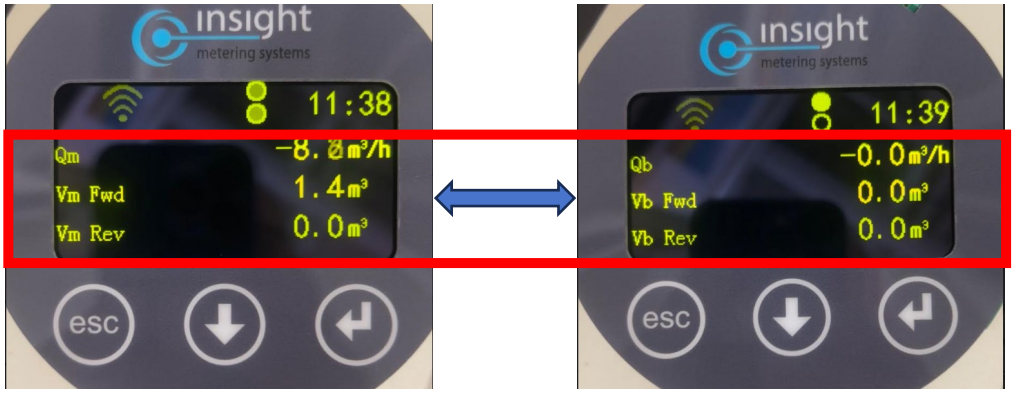
After turning on the EVC function, you can view "Instantaneous Volume under Standard Conditions", "Total Accumulated Volume under Standard Conditions", "Density, Compression Coefficient", "Gas Components", etc. through "Dashboard" --> "GC Data". Note – there are also new screens for “Pressure”, “Qb”, “Base Total”.



2.2 Transmitter Displays

Main Screen

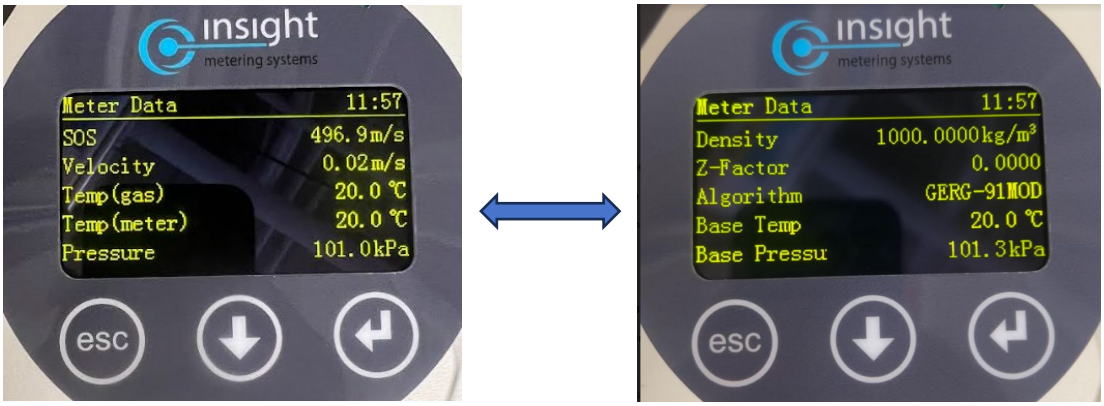
After turning on the EVC function, press the "Page Down" button (center button) on the default main interface and the display will switch between the "standard condition" screen and the "working condition" screen.



After turning on the EVC function, press the "Enter" key (rightmost key) to enter the "Main Menu."

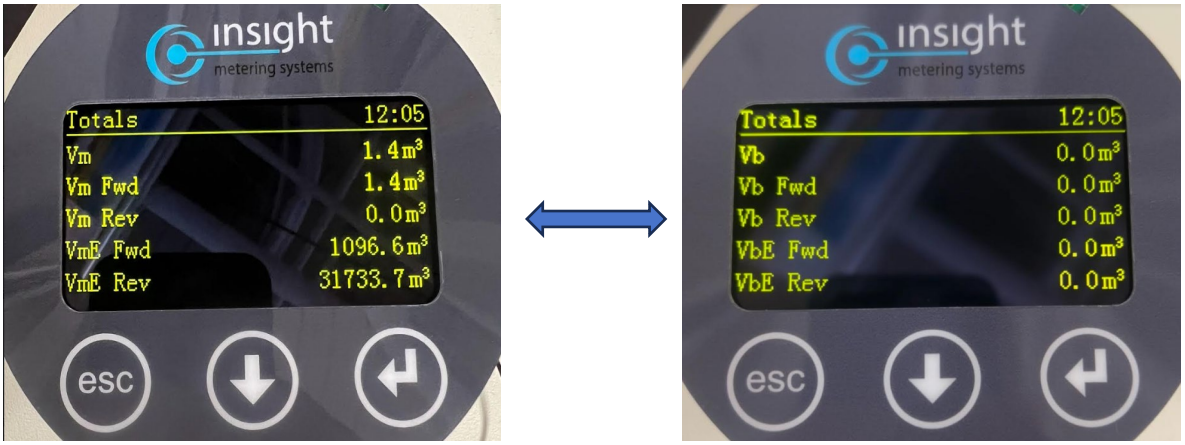
In the "Main Menu" --> "Status" --> "Meter Data" . Again, press the "Page down" key to switch the between the standard meter data (SOS, Velocity, Temp (gas), Temp (meter) and Pressure] to the EVC data ["Density" ", "Compression coefficient", "Algorithm", "Base temperature", "Base pressure"].

Meter Data



Total Data

From the "Main Menu" – use the "Enter Key" to get to "Main Menu" --> "Total". Again, press the "Page Down " key to view the "Standard Condition Accumulation Amount".


insight
metering systems
Totals 12:05
Vm 1.4m³
Vm Fwd 1.4m³
Vm Rev 0.0m³
VmE Fwd 1096.6m³
VmE Rev 31733.7m³
esc
insight
metering systems
Totals 12:05
Vb 0.0m³
Vb Fwd 0.0m³
Vb Rev 0.0m³
VbE Fwd 0.0m³
VbE Rev 0.0m³
esc

3 - Notes

To properly perform EVC calculations, it is stipulated that:

1. The pressure units entered through SmartLink are in absolute pressure. When the sensor is gauge pressure, it will automatically be converted to absolute pressure.
2. Density is all gas density. When configured as relative density, air density is automatically used to convert to gas density.
3. “b” is the abbreviation of the standard condition mark. ρ is density.
4. When configuring the minimum value, maximum value, and default value of the sensor - they are all fixed units. When the unit of the sensor is only used for external input, the input value is converted to a fixed unit.