



# **i - C o n s**

## ***A Complete Solution in Compact 19" Cabinet***

I-CONS is the most Advanced, Intelligent and Compact Extractive Sampling System based on Powerful Peltier cooler. It includes all the essential Sampling Components, Realtime Diagnostics with Auto Correction and Early Warnings, History and Modbus communications. It helps you to achieve quickest integration time with minimal tubings and electricals.

### **Advanced System**

- PLUG and PLAY
- Menu driven Controls and Functions
- Advanced Diagnostic and Self Correction
- History and Modbus Communication
- Engineered for Online Processes and Analysers
- Safe, Efficient and Maintenance free operations

### **Intelligent Features**

- Auto Start-up Sequence
- Auto Blowback on Flow Failure
- Pulsating Blowback for efficient cleaning
- Monitors Sample Flow
- Auto Shutdown on Hardware Failures
- Efficient Peltier Cooler with condensate Carryover protection

#### **Maintenance Reminder for**

- ☞ **Peristaltic Pump tube**
- ☞ **Sample Filter**
- ☞ **Sample Probe Filter**
- ☞ **Sample Pump kit**

- ☑ ***Consumes Less Panel Space***
- ☑ ***Needs very few external components***
- ☑ ***Enables fastest Integration time***
- ☑ ***Reduces Direct and Indirect Cost***



**Salient Features**

**i-Cons** is a Sample Conditioner based on Peltier Cooler - a solid state technology. It is highly efficient, robust and has a long life as compared to conventional system. It has inbuilt Condensate Sensor and Flow Sensor to detect fault and trip the Sample Pump thereby avoiding conditions which can give rise to faults. **i-Cons** also continuously monitors system health and hardware. In case of any fault, which is rare, it goes into Shutdown thus avoiding running the system with fault and causing complications & damages.

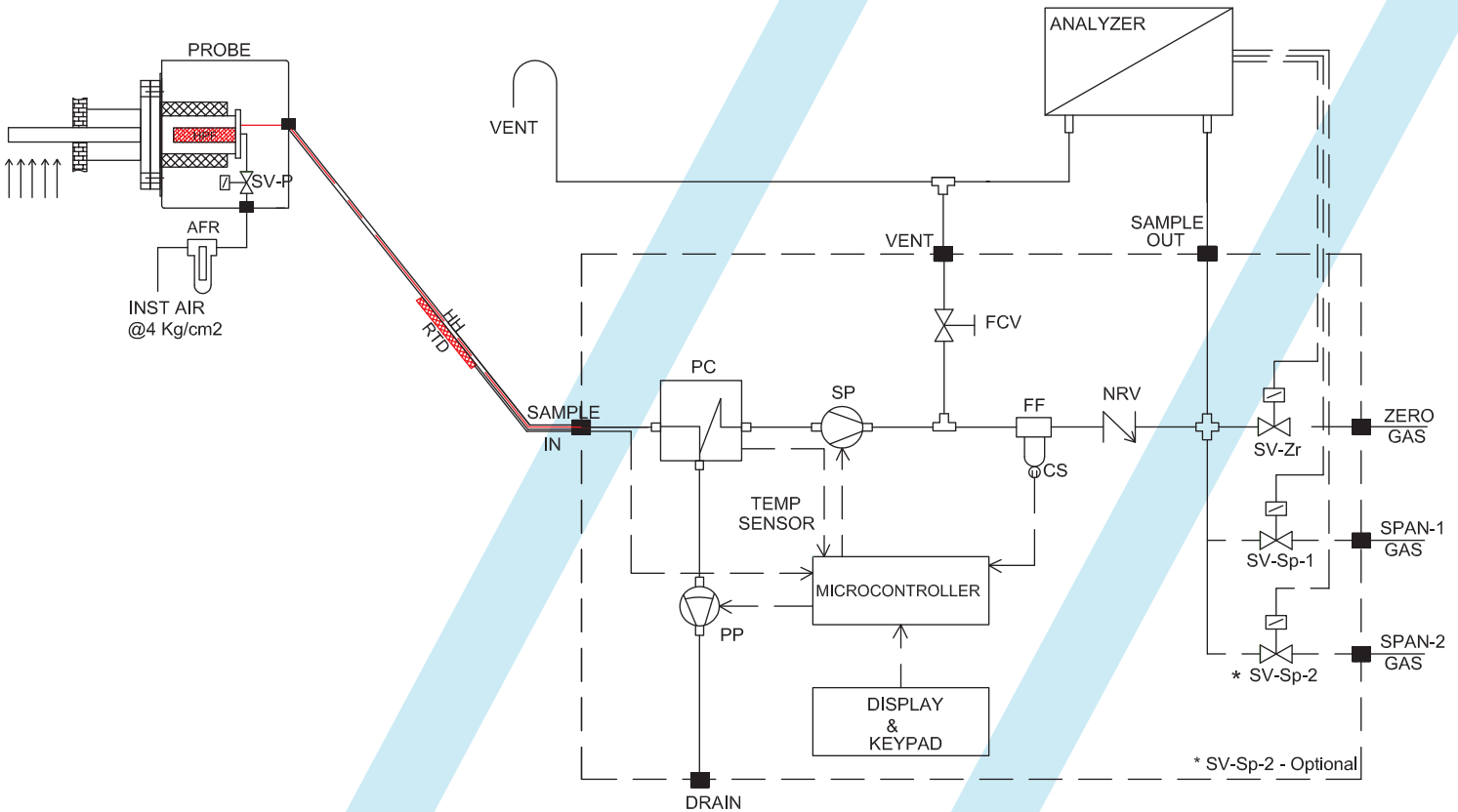
The Micro controller controls the following operations

- ✓ Sample Probe Blowback
- ✓ Heated Hose Temperature
- ✓ Sample Cooler Output Temperature
- ✓ Operates the Sample pump below 12° C
- ✓ Operates the Peristaltic Pumps periodically
- ✓ Trips the Sample Pump when condensate is detected
- ✓ Operates Blowback in case of Flow Failure
- ✓ Maintains History, Diagnostics and Maintenance Records

FAULT ALARM relay is Failsafe.

It is generated in following cases

- Blowback in Progress
- Heated Hose Temperature - Extra Low / Extra High
- Condensate detected in Sample Line
- Flow Fail Alarm
- Maintenance Alarms
- .... AND MANY MORE ....



**Sample Probe Blowback**

**i-Cons** controls the cyclic Blowback of the Filter in Sample Probe. The interval and duration of blowback is user settable. The Blowback is pulsating which ensures efficient cleaning of filter. In case the filter gets choked mid-cycle and Sample Flow fails, **i-Cons** will initiates an Automatic Blowback. This immediate automatic action avoids manual interventions. During blowback Sample Pump is OFF.

**Heated Sample Line**

The **i-Cons** controls the Heated Hose. The Sample Heated Hose temperature is user programmable. It is controlled based on RTD (Pt100) input from the Heated hose.

**Sample Pump and Autodrains**

**i-Cons** uses a sample pump to draw sample from the process. This Pump is off during Blowback and Calibration. It is also off during condensate detection and hardware fault.

The Auto-drains in **i-Cons** run periodically. The discharge rate of these auto-drains are user programmable.

**History & Maintenance Records**

**i-Cons** keeps a record of Faults and Usage of consumables or spares such as Filters, Autodrains Tubes and Sample Pump in real time. And at the end of life, it gives a message to Check and Replace the same. This feature is very helpful and act as an early warning system.

**Calibration in Progress**

**i-Cons** has a digital input which can be connected to the 'Cal-in-Progress' output of Analyser. So when the analyser goes into Calibration the Sample Pump and Blowback is switched OFF.

**Modbus on RS485**

**i-Cons** has a Modbus RTU communication. All the status, health, history and maintenance records are available remotely through modbus. The user can also set many parameters in **i-Cons** through modbus command.

**Hardware Specifications**

Display & Keypad: Backlit LCD, 4 Line x 20 Alphanumeric Character, with 7 Keys.

**Input (External):**

Analog: 1 x RTD (Pt100) from Heated Hose

Digital: 1 x Calibration in Progress from Analyser

**Outputs:**

1 x Triac To drive SSR / Contactor for Heated Hose

1 x Relay For Sample Probe Blowback Solenoid Valve

1 x Relay Fault

All outputs are rated @ 230V AC 1 A

All relays have 1 Changeover contacts

Communication: RS-485 with MODBUS RTU protocol

**Cooler Specifications:**

Heat Exchanger	1 x PTFE
Sample Inlet Temperature	Max 140° C
Sample Dew Point	65° C max
Sample Flow	240 LPH (4LPM)max
Sample Outlet Temperature	5° C
Sample Dust Level	< 3 micron

Peristaltic Pump: 1 No.

Sample Fine Filter: 0.1 Micron Coalescing Type

Condensate Sensor: Long life corrosion free Sensor

Sample Pump with Fast Loop Valve: Free Flow - 5 LPM

Optional: Free Flow - 9 LPM

**Material in contact with Sample:**

SS 316, PTFE, Viton, Silicon, Engineering Plastic

**Environmental Conditions**

Ambient Temperature: +10°C to + 40°C

Storage Temperature: +0°C to + 50°C

Relative Humidity: < 90% RH non-condensing

Area Classification: Safe Area

**Sample Condition @ Tapping Point**

Suitable for Sample where SO<sub>2</sub>, NO, CO < 1000ppm.

Not suitable for samples containing, HCL, HF, H<sub>2</sub>S and other highly Corrosive, Toxic and Flammable Samples.

Sample Dew Point: 60 °C

Dust Level: < 10 gm/Nm<sup>3</sup>

Sample Gas Velocity: between 5 - 20 m/sec

Sample Line Distance: Max 50m\*

Sample Temperature: 120 - 550 °C

Sample Pressure: 800 mbar - Atm

**Other Specifications**

Sample Connection	Inlet	- 1/4" OD PTFE
	Outlet	- 1/4" OD PTFE
	Bypass	- 1/4" OD PTFE
	Drain	- Flexible tube connection

Calibration Connections 1/4" OD PTFE

Enclosure	19" Rack / Panel mounted
Dimension	310 (H) x 483 (W) x 285 (D) mm
Protection	Suitable for Safe Area, IP 20
Weight	Approx. 16 Kgs

Power Supply 230 VAC, 50 Hz, 600 VA  
(excluding Heat Tracer)



**Optional Hardware**

**Sample Probe - SP 200** (for Low Dew Point Sample)  
with unheated Filter and Blowback Solenoid Valve

**Sample Probe - SP 300** (for High Dew Point Sample)  
with Heated Filter and Blowback Solenoid Valve

\*Refer catalogue for more details

**Heated Sample Line - Prefabricated Heated Hose**

Recommended Length - 50m Max Sample Tube - 1/4"OD PTFE

Power Supply - 230V AC 50Hz; 45 W/mtr

**Auto - Calibration**

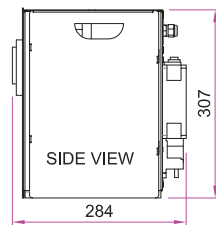
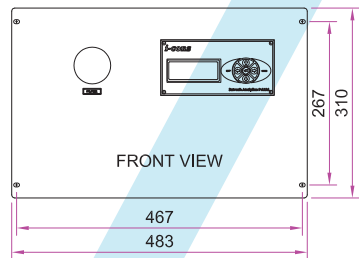
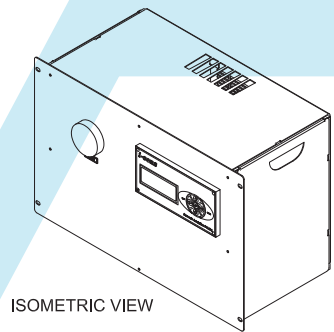
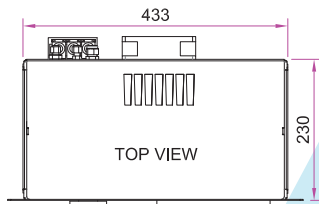
**i-Cons** can be internally fitted with either 2 or 3 Auto calibration solenoid valves. These solenoid valves needs to be controlled by Analyser directly through hard wire.

**Water Separator with Auto-drain**

This unit separates and removes excess water from Sample Gas. The collected water is removed by an auto drain controlled by **i-Cons**.

**Sample Pump - High Flow Rate**

This Sample pump should be selected when the sample line distance is between 60 - 90m. It has free flow of 9 LPM.



Notes:  
 - The final responsibility to check whether this product meets the requirement of the Process and / or Analyser remains solely with the customer.  
 - M/s SARVESH ANALYTICS PVT. LTD. has a policy of continuous improvement of product & services and hence reserves the right to change the specifications and features without prior notice.

Description	Order Code:										
		I	C	O	N	S	1				
<b>Sample Probe</b>											
None	X										
SP- 200 for Low Dewpoint Sample	2										
SP- 300 for High Dewpoint Sample	3										
<b>Probe Insertion Length</b>											
500 mm	0 5										
1000 mm	1 0										
1500 mm	1 5										
<b>Sample Line distance (in meters)</b>											
<b>Heated Hose</b>											
None	X										
Yes (Length = Sample Line Distance)	Y										
<b>Auto Calibration Solenoid Valves</b>											
None	X										
Yes - Zero + Span	2										
Yes - Zero + Span 1 + Span 2	3										
<b>Catchpot with autodrain</b>											
None	X										
Yes	Y										

