



## **i - C o n s**

**Complete Sampling System  
in a Compact 19" Enclosure**

**i-Cons** is the most Advanced, Intelligent and COMPACT Extractive Sampling System based on a 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 tubing and electricals.

### **Salient Features**

Plug n Play  
Menu Driven

Engineered for Online  
Processes Analysers

Auto Start-up Sequence

Peltier Cooler with  
PTFE heat exchanger

Controls output for Blowback,  
Sample SOVs & Heated Hose

Auto Blowback on  
Flow Failure

Peristaltic Pump with  
variable discharge rate

Built in Sample Pump,  
Condensate Sensor, Flow  
detector, Autocal SOVs & Filter

Pulsating Blowback  
for Efficient Cleaning

Alarm and Fault  
History

Remote Monitoring with  
Modbus RTU over RS 485

Auto Shutdown on  
Hardware Failure

Maintenance Reminder for  
- Peristaltic Pump tube  
- Sample Filter  
- Sample Probe Filter  
- Sample Pump kit

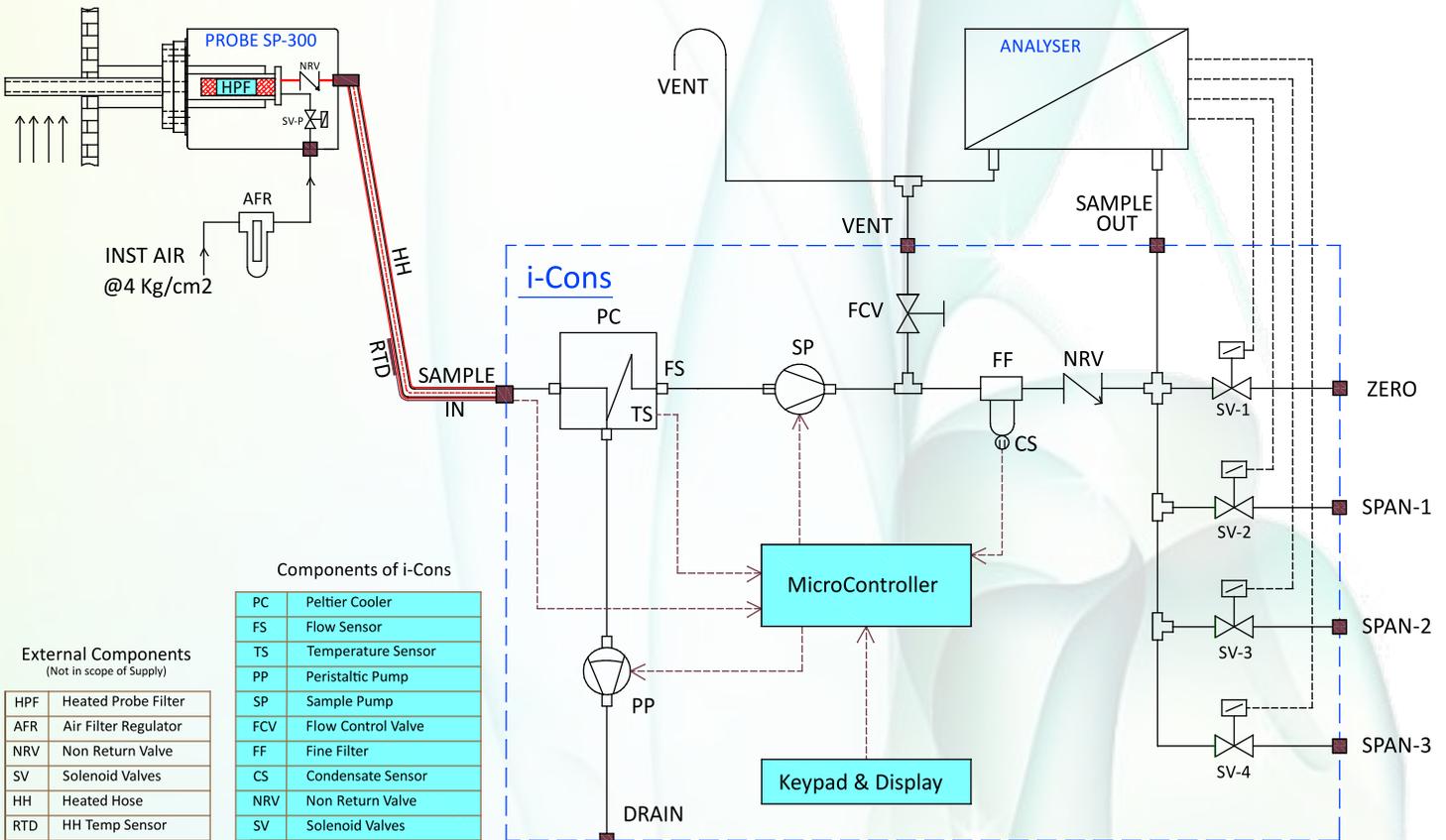
Consumes Less Panel Space  
Needs very few external components  
Enables fastest Integration time  
Reduces Direct and Indirect Cost

**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.

**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.

All the Sample Conditioning Components you need are in-built in **i-Cons**

- ✓ **Peltier Cooler** with **PTFE Heat Exchanger** to Cool Sample Gas and
- ✓ A **Peristaltic Pump** to remove the collected moisture and condensate
- ✓ A **Sample Pump** to draw the Sample gas and monitor the flow with a **Flow Sensor**
- ✓ A **Condensate Sensor** to trip the Sample Pump in case of condensate carryover
- ✓ A **Fine Filter** as a final stage filtration for your Analyser
- ✓ A **Flow Control Valve** to set the right flow through the Analyser and bypass the excess flow
- ✓ **Solenoid Valves** for Zero and Span gases for Auto-Calibration or Remote Calibration Check of your Analyser



The **i-Cons** does more than the PLC functions you need and it is User programmable -

- ✓ Controls the period Blowback of your Sample Probe
- ✓ Controls your Heated Hose Temperature with RTD input
- ✓ Controls the Sample Cooler Output Temperature and Operates the Sample pump only if it is below 12° C
- ✓ Operates the Peristaltic Pumps periodically
- ✓ Monitors the Sample Flow and Initiates Blowback in case of Flow Failure
- ✓ Maintains History and Maintenance Records



### Sample Probe Blowback

- **i-Cons** controls the Cyclic Blowback of the Filter in your Sample Probe. The user can set the interval and duration of Blowback, either through Keypad or over Modbus command.
- The Blowback is PULSATING which ensures efficient cleaning of filter.
- If Sample Probe Filter gets choked mid-cycle and Sample Flow fails, **i-Cons** will immediately initiates an Automatic Blowback . This needs no manual interventions.
- During Blowback Sample Pump is OFF.

### Heated Sample Line

The **i-Cons** has a in built Temperature Controller to controls your Heated Hose temperature. The user can program the temperature set point of the Heated Hose either through Keypad or Modbus command.

The RTD (Pt100) input from your Heated Hose is used to control the temperature.

### Sample Pump

- **i-Cons** uses a in-built Sample Pump to draw sample from your Stack or Process.
- There are two Pump options based on the Sample Line distance i.e. 60 or 90 meters.
- When Condensate is detected in Sample Line or any Hardware Fault is detected, the Sample Pump is immediately tripped.
- During Blowback or Calibration, the Sample Pump is kept Off.

### Peristaltic Pumps

- The Condensate collected by Peltier Cooler is removed by an in-built Peristaltic Pump.
- This Peristaltic Pumps in **i-Cons** run periodically.
- The discharge rate of these pumps are user programmable.
- If the Sample has excess water, you can connect a external Peristaltic Pump to **i-Cons**.
- This second Peristaltic Pump can also be programmed and controlled by **i-Cons**.

### History & Maintenance Records

**i-Cons** keeps a real time record of Faults and Remaining Life of Consumables such as Filters, Peristaltic Tubes and Sample Pump. At the end of life of consumables, it gives a message to Check and Replace the same.

This feature is very helpful and act as an early warning system for maintenance. The data of Consumable Life is also available over Modbus.

### Calibration in Progress

**i-Cons** has a 'Cal-in-Progress' Digital input. This should be wired to the 'Cal-in-Progress' Relay output of your Analyser.

Whenever your Analyser goes into Calibration the Sample Pump inside the **i-Cons** is kept OFF for the entire Calibration process.

### Modbus on RS-485

**i-Cons** has a Modbus RTU communication. The user can remotely get **i-Cons** Status, Health, History and Maintenance Records through Modbus. The user can also Set Parameters in **i-Cons** through Modbus command. The Calibration Solenoid Valves can be operated through Modbus.



### Hardware Specifications

<b>Cooler Specifications:</b>	
Heat Exchanger:	1 x PTFE
Sample Inlet Temperature:	Max 160° C
Sample Dew Point:	65° C max
Sample Flow (max):	240 LPH (4LPM)
Sample Outlet Temperature:	5° C
Sample Dust Level:	< 3 micron
Peristaltic Pump:	1 No.
Fine Filter:	0.1µ Coalescing Element
Condensate Sensor:	Long life SS Sensor
<b>Sample Pump with Fast Loop Valve:</b>	
	Free Flow - 5 LPM
Optional:	Free Flow - 8 LPM

### Other Specifications

<b>Sample Connection</b>	
Inlet -	1/4" OD PTFE
Outlet -	1/4" OD PTFE
Bypass -	1/4" OD PTFE
Calibration Connections	1/4" OD PTFE
Drain Connections	Flexible Tube connection
<b>Enclosure</b>	
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
<b>Power Supply</b>	
Power Supply	230 VAC, 50 Hz, 600 VA (excluding Heat Tracer)

### Electrical Specifications

<b>Display &amp; Keypad:</b>	Backlit LCD, 4 Line x 20 Alphanumeric Character, with 7 Keys
<b>Input (External):</b>	
Analog Input: 1 x RTD (Pt100) from your Heated Hose	
Digital Inputs:	
1 x Calibration in Progress from Analyser	
1 x Zero Gas Solenoid Valve Initiate signal from Analyser	
1 x Span Gas-1 Solenoid Valve Initiate signal from Analyser	
1 x Span Gas-2 Solenoid Valve Initiate signal from Analyser	
All Digital Inputs has contact voltage of 12/24V DC hence they are to be operated from potential free contacts from Analyser.	
<b>Outputs:</b>	
1 x Triac:	Drives SSR / Contactor for Heated Hose
Relay-1:	Alarm / Fault
Relay-2:	Sample Probe Blowback Solenoid Valve
All Relay outputs are SPST (Single Pole Single Throw) and rated @ 230V AC 1A	
<b>Communication:</b>	
MODBUS RTU over RS-485	
READ:	Measured Values, Status, Setup Parameters & Maintenance History
WRITE:	Operate Calibration Solenoid Valve, Setup Parameters

<b>Material in contact with Sample:</b>	SS 316, PTFE, Viton, Silicon, Engineering Plastic.
Suitable for Sample with	SO2, NOx, CO less than 1000ppm.
<b>Not suitable for samples containing HCL, HF, H2S and other highly Corrosive, Toxic and Flammable Samples.</b>	

### 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

## Optional Hardware

### Auto - Calibration

i-Cons can come with internal Solenoid Valves for Auto-Calibration with One Zero Gas and Two / Three Span Gases. These Solenoid Valves are of 24V DC operated and can be controlled by your Analyser directly.

### Remote Calibration Check

CPCB guidelines asks for remote calibration check of the analyser. i-Cons can accept modbus command to Remotely Switch ON/OFF Zero, Span-1 and Span-2 Solenoid Valves.

### Water Separator with Peristaltic Pump

This unit separates and removes excess water from Sample Gas. The collected water is removed by an external Peristaltic Pump which is controlled by i-Cons.

### Sample Pump - High Flow Rate

When your Sample line distance is between 60 - 90m this option should be selected. The free flow rate is 8 LPM.

### Sample Probe SP-300

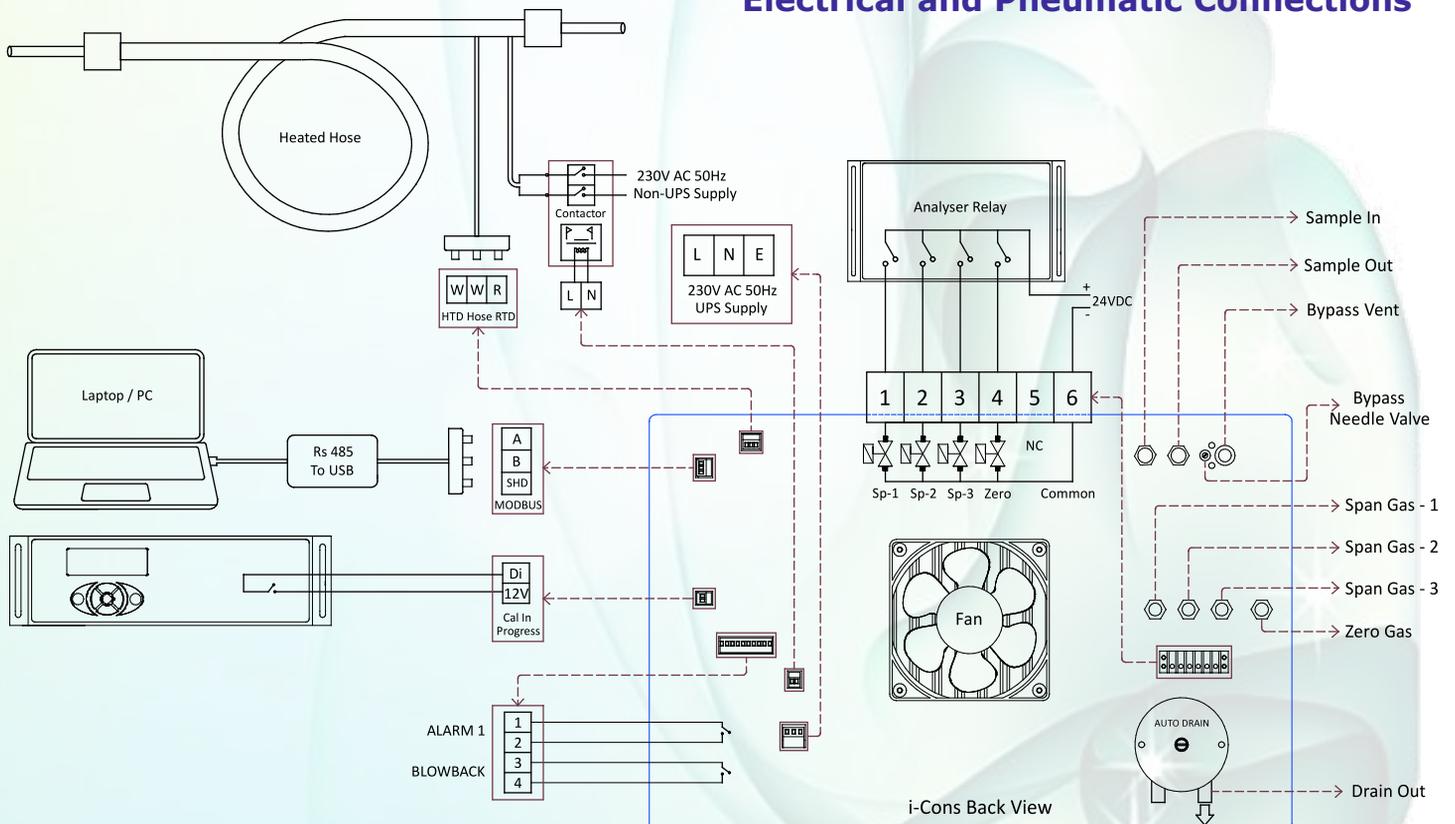
This Sample Probe is suitable for High Dew Point Sample. It has Heated Filter and Blowback Solenoid Valve. The Blowback solenoid Valve can be controlled by i-Cons. \*Refer catalogue for more details

### Heated Sample Line

Prefabricated Heated Hose with 1/4"OD PTFE Sample Tube with heating capacity of 40W/mtrs, 230V AC. The heated hose temperature is maintained by i-Cons.

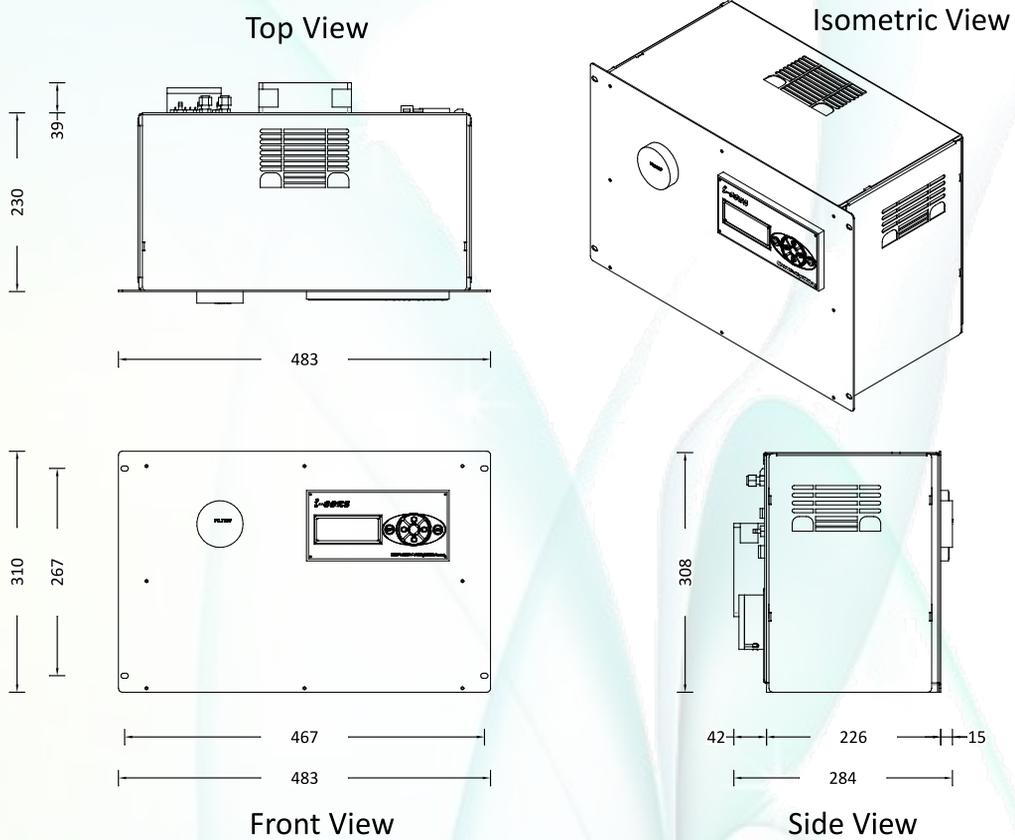
The Heated hose is available in 30 / 45 / 60 / 75 / 90 mtrs

## Electrical and Pneumatic Connections

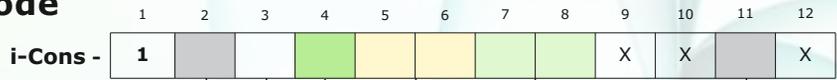




**Dimensions**



**Ordering Code**



**Auto Calibration Solenoid Valves**

None	X
Zero + Span	2
Zero + Span1 + Span2	3
Zero + Span1 + Span2 + Span3	4

**Remote Calibration**

None	X
Zero + Span1+ Span2	C

**Sample Line distance**

Between 20 to 60 Meters	M
Between 60 to 90 Meters	L

**Catchpot with Peristaltic Pump**

X	None
Y	Yes

**Heated Hose**

0	0	None
-	-	Length in meters

**Sample Probe**

X	X	None
2	0	Model SP-200
3	0	Model SP-300
3	B	Model SP-300+BB Tank

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.

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