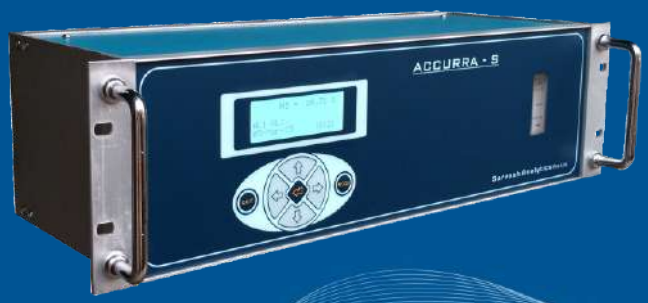
SARVESH ANALYTICS Pvt. Ltd.

Analysis Simplified



ACCURRA-S®

TCD

Thermal Conductivity Binary Analyser

H_2 He Ar N_2 N_2O Ne Kr

- Platinum based Sensor Technology
- **Reference Gas is not required**
- **No Sealed Reference**
- Excellent Long term Stability
- Long Calibration Interval
- Lowest Cost of Ownership

Applications

- **Process Monitoring**
- **O2, N2, Ar, CO2 Plants**
- **Inward Quality Check**
- **Purity Measurements**
- **Gas Certifications**
- **Funance Monitoring**
- **Gas Storage Tanks**
- **Welding Gases**

Salient Features

- In-built Fine Filter & Flow Indicator
- Calibration History with Deviation values
- Alarm and Fault History
- Backlit LCD Display 20 x 4 Character
- Isolated 4-20 mA Output; Dual Range with Range ID relay output
- Output Freeze / Follow during Calibration
- Calibration Check Facility
- Password Protected Calibration, Setup & Diagnostics Menu
- Modbus RTU over RS 485
- 4-20mA output range is USER configurable over entire measurement range
- Alarm Set Points are USER configurable & can be set as Lo - LoLo / Lo - Hi / Hi - HiHi
- Cyclic and Remote Auto-calibration (Optional)
- Internal Sample Pump for Low pressure Sample (Optional)

Tel: 91 - 94 2300 4179 **email: info@sarveshindia.com** **www.sarveshindia.com**

Measurement Technology

ACCURRA-S TCD is the new generation On-Line Thermal Conductivity based Binary Analyser which does not require any sealed reference, neither does it need any continuous flow of reference gas.

This proprietary sensor developed by Sarvesh Analytics employs the latest technology which enable a very stable reading with low noise and drift.

Thermal Conductivity Analysers are best suited for binary gas application. However with our dual sensor capability we can measure many mixture gases.

Measurement Gases	Range of Measurement			in Background of
HYDROGEN	0 - 100%	or 0 - 3%	or 97 - 100%	N2 / Air / CO2 / CH4
	0 - 100%	or 0 - 3%	or 97 - 100%	Argon
	20 - 100%	or 20 - 40%	or 85 - 100%	Helium
	0 - 100%	or 0 - 4%	or 97 - 100%	Oxygen
HELIUM	0 - 100%	or 0 - 3%	or 97 - 100%	N2 / Air
	0 - 100%	or 0 - 3%	or 97 - 100%	Argon
ARGON	0 - 100%	or 0 - 5%	or 96 - 100%	N2 / Air / O2
	40 - 100%	or	80 - 100%	Carbon Di-oxide
	0 - 100%	or 0 - 5%	or 97 - 100%	Xenon
NITROGEN	0 - 100%	or 0 - 5%	or 97 - 100%	Argon
	0 - 100%	or 0 - 5%	or 96 - 100%	Carbon Di-oxide
	0 - 100%	or 0 - 5%	or 97 - 100%	Hydrogen
NITROUS OXIDE	0 - 100%	or 0 - 5 %	or 96 - 100%	N2 / O2

Sensor Technology	Thermal Conductivity	Repeatability	< 1% of the FS
Response Time-T90	< 10 sec @ 0.6 LPM	Linearity	< 1% of the Range
Display Resolution	0.01	Errors & Drift	< 1 % of the FS/wk

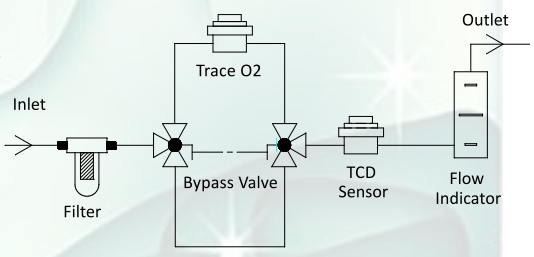
Dual Measurement

ACCURRA-S TCD can house one more sensor such as Trace Oxygen sensor. Since the sensors are in series you can measure two Gas components in your sample gas e.g.

- O2 ppm + N2 % in Ar / He
- O2 ppm + H2 % in N2

Each Sensor has it's own electronics and micro controller making the hardware completely independent. Each sensor has its separate Current output, set of Relays and Modbus ID. This unique hardware architecture of ACCURRA-S makes it the most reliable Dual Analyser in the industry.

Flow Path for Trace O2 & TCD Analyser



ACCURRA-S TCD has many in-built **Salient Features** which are unique and very useful. These features help you to quickly integrate -Tube / Wire- the analyser in your existing Process or Systems without investing in costly add-on. You can configure or reconfigure the parameters during installation or during actual operations.
The Calibration, Setup Parameters and Diagnostics mode are all password protected.

Alarm Relays

ACCURRA-S TCD has two independent Failsafe Alarm Relays. The alarm set points are user configurable. You can configure these relays as **Lo - LoLo / Lo - Hi / Hi - HiHi.**

Dual Range Current Output

In some processes the startup reading is high. As you control the process the reading stabilizes to a lower value. ACCURRA-S TCD allows you to define two ranges to the 4 - 20 mA current output e.g. 0 - 10% and 0 - 25%.
When the reading is below 10% the current output will correspond to 0 - 10%. When the reading crosses 10% the current output will correspond to 0 - 25% and vice versa.
The Range ID Relay when configured can be used as remote signal to your PLC/DCS to know the range on which ACCURRA-S TCD is working. This feature is very useful during start up.

Output Freeze or Follow Function

When you use the output signals from ACCURRA-S TCD i.e. 4-20mA and Alarm Relay outputs, as input to your PLC/DCS, you can freeze these 4-20mA and Alarm Relays to the last value during Calibration Check, Calibration and Auto Calibration.
This Output Freeze or Follow function is a user configurable feature.

Auto-Calibration

ACCURRA-S TCD can include Internal Solenoid Valves and Auto-Calibration software. You can initiate Auto-calibration through keypad or by setting the internal Cyclic Timer or initiate remotely through MODBUS command. This is an optional feature.

Sample Pump

The ACCURRA-S TCD can control an external Sample Pump. When connected this pump will remain off during Calibration Check, Calibration and Auto Calibration. When Sample Pump option is selected Range ID Relay option is unavailable. Optionally the Sample Pump can be supplied internally.

History

The ACCURRA-S TCD stores the Calibration, Alarm and Fault records. The last Calibration data in History can be used as a record for your Audit. This data also helps to know the Calibration Drift / Sensor behaviour.

Diagnostics

The ACCURRA-S TCD has inbuilt hardware diagnostic mode which enables various hardware check or simulation during failure.

MODBUS and PC connectivity

The ACCURRA-S TCD has Modbus output over RS-485 which can be connected to PLC/DCS or with a RS485 to USB converter you can connect ACCURRA-S TCD to your PC and collect data for analysis.

Hardware Specifications

Display Backlit LCD, 4 Line x 20 Character, Alphanumeric.

Analog Output 1 x 4-20 mA, isolated, Max Load = 500 Ω, Dual Range

Analog Output range is freely selectable by user over entire measurement range.

Output Relays 6 x SPST rated @ 1A 230V AC. All relays are configured as Failsafe

Relay 1 : Alarm 1
Relay 2 : Alarm 2

The Alarm set points are user configurable and can be set as Lo - LoLo / Lo - Hi / Hi - HiHi

Relay 3 : Fault Alarm The Fault is activated during Calibration or Instrument Failure.
Relay 4 : Sample Pump / Range ID
This relay controls a External(or Optionally Internal) Sample Pump OR indicate Output Range Change.
Relay 5 and 6 : For Internal Auto-calibration solenoid Valve (Optional)

Communication MODBUS protocol over RS 485

READ: Measured Value, Status, Setup Parameters & History
WRITE: Initiate Auto Calibration, Setup Parameters

Optional Hardware

Auto - Calibration

This option includes the necessary Software & Hardware associated with it. For Single Measurement the Solenoid Valves can be Internal or External. For Dual measurements the solenoid valves cannot be internal and are in customer scope.

Sample Pump

This option includes internal Sample Pump which is controlled by ACCURRA-S TCD. During Calibration Check, Calibration and Auto Calibration this pump is OFF.

When Sample Pump option is selected Range ID Relay is unavailable.
Internal Sample Pump is not available for all Dual measurements.

Other Specifications

Gas Inlet / Outlet	1/4" OD SS316
Enclosure	19" Rack / Panel mounted
Dimension	(Short Chassis) 134 (H) x 483 (W) x 180 (D) mm
	(Long Chassis) 134 (H) x 483 (W) x 280 (D) mm
Ingress Protection	IP 20, Suitable for Safe Area Only
Net Weight	Approx. 6 Kgs
Gross Weight	Approx. 8 Kgs
Packed Dimension	Approx. 53 x 43 x 22 cm
Power Supply	100 - 240 V AC 50/60 Hz, 45W

Environmental Conditions

Ambient Temperature:	+5°C to + 40°C
Storage Temperature:	+0°C to + 50°C
Relative Humidity:	< 90% RH non-condensing
Area Classification:	Safe Area

Sample Condition

The Sample Conditioner between your Process and Gas Analyser is the key to get years of accurate measurement and trouble-free performance. Your sample handling system should ensure that ACCURRA-S TCD always gets a Sample which meets the following specifications.

The Sample Gas should be Non-Corrosive, Non-Toxic, Non Flammable, Non-condensing dry, free from entrained oil.

Sample Pressure: 2 - 10 psig Max
The Sample Pressure has to be regulated externally by the user.

Sample Flow rate: 0.6 LPM (Recommended)
ACCURRA -S has in-built Sample Flow indicator however Sample Flow has to be regulated externally by user.

Sample Temperature : 5^0 C - 45^0 C Max

Sample Dust/Particulate: < 3 Micron
ACCURRA -S has in-built Fine Filter however if the dust level is high install upstream external Filter.

Sample Dew Point: 5^0 C less than the lowest Ambient Temperature

Material in Contact with Sample: SS316, Viton, PTFE, Glass, Aluminium, Acrylic.

In case your Sample does not comply to the above specifications, please contact us for a suitable Sample Conditioning System that is customised to your application needs.

Sample Handling Systems and Components

These **in-built components** in ACCURRA-S TCD simplifies the design of Sample Conditioning System

- Glass micro fibre filter as final stage fine filter
- Flow indicator
- Sensor Bypass Valve (available only for Trace Oxygen and Dewpoint sensors)

You can quickly assemble a complete ACCURRA-S TCD system with our Compact and Ready to Use Sample Conditioning solutions - i-Cons; SGI-300; SP-300 etc.

SGI-300 - Compact Sample Conditioners

It is a Peltier based Sample Gas Cooler with Peristaltic Pump, Filter & Condensate Sensor in a most compact form. It simplifies your sample condition design and assembly.

i-Cons - Complete Sampling System

It's the most Advanced & Compact extractive Sampling System based on Powerful Peltier cooler, suitable for negative pressure sample. It includes all Sampling Components, Realtime Diagnostics with early warnings, Auto Correction, History & Modbus.

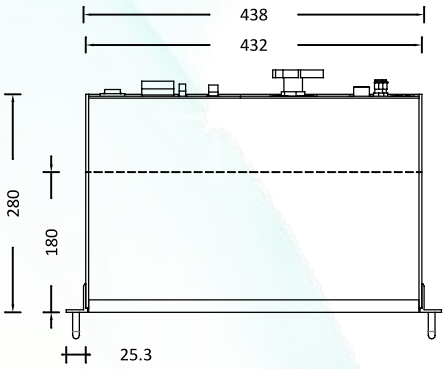
SP-300 - Heated Sample Probe

SP - 300 has a Heated Filter which is kept just outside the stack. The Blowback and Sample ports are separate which enables higher flow rate of blowback air. It eliminate the use of high temperature solenoid valve in sample line during blowback.

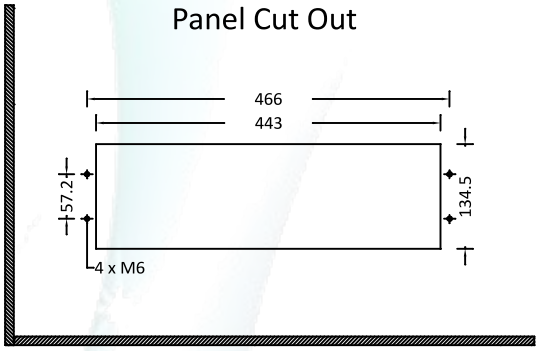
- **Primary Sampling Plate**
- **Pressure Reduction Plate**
- **Filters, Scrubbers, Catchpot**
- **Peristaltic Pumps**

Dimensions

Top View

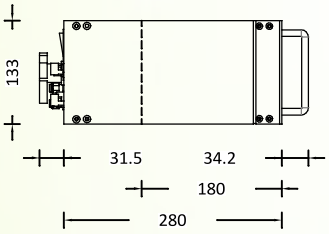


Panel Cut Out

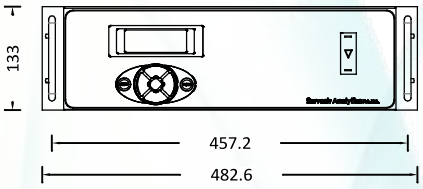


UNIT : mm

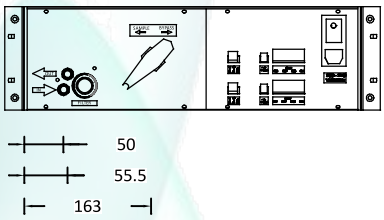
Side View



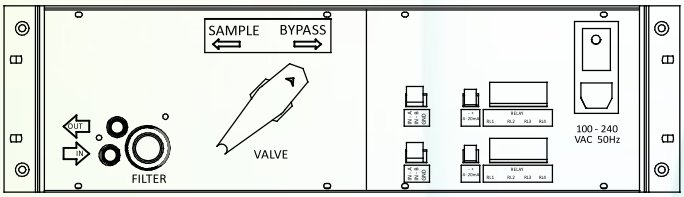
Front View

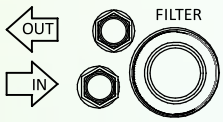


Rear View



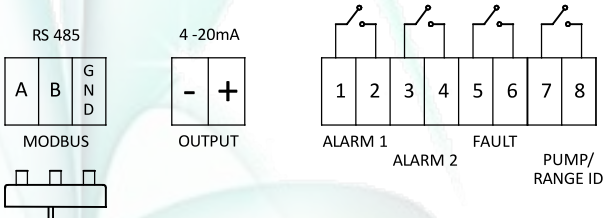
Rear View

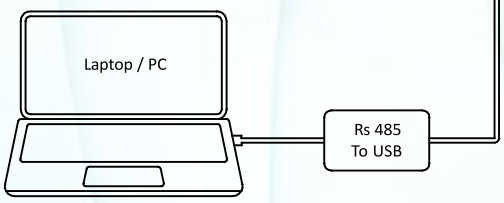


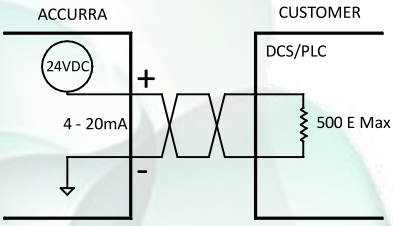


Pneumatic Connections

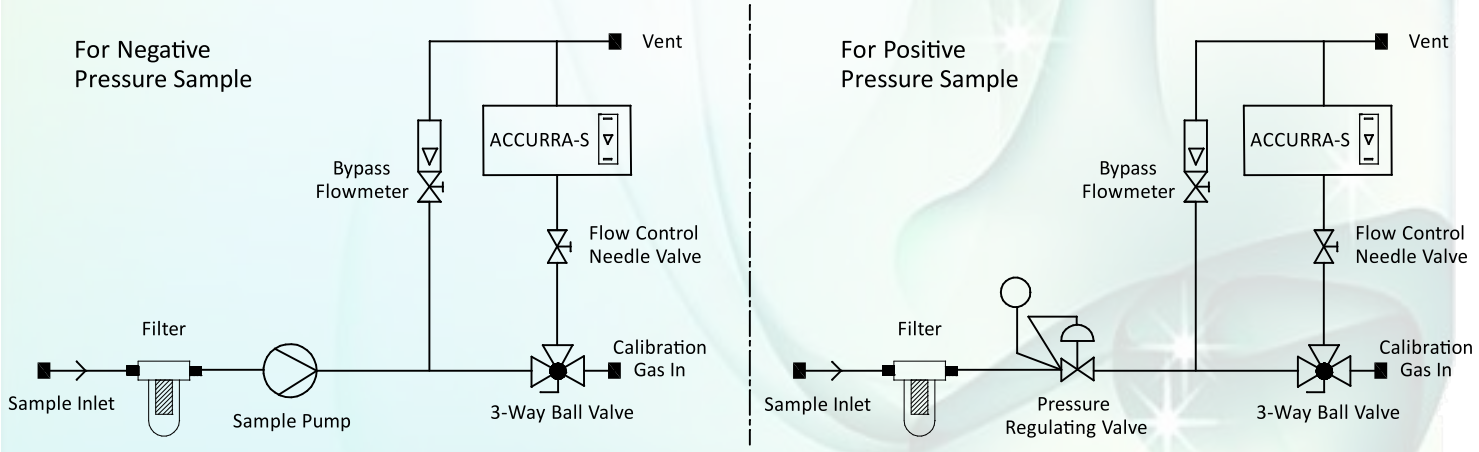
Output Electrical Connections







Typical Sample Handling Drawing



Ordering Code

	1	2	3	4	5	6	7	8	9	10	11	12
ACCURRA-S-TCD									A			X

1st Component

Hydrogen	1	0	3	0
Helium	7	1	3	0
Argon	7	2	3	0
Nitrogen	7	3	3	0
Nitrous Oxide (N2O)	7	5	3	0

2nd Component

Oxygen ppm (Ec)	3	0	1	5
Oxygen Percentage (Ec)	3	0	3	0
Carbon Di-oxide (ppm) (NDIR)	6	0	1	5
Carbon Di-oxide (%) (NDIR)	6	0	3	0
Moisture / Dew Point (CS)	M	0	1	5
None	X	X	X	X

"Ec" : Electrochemical Sensor
"Pm" : Paramagnetic Sensor
"NDIR" : Non-Dispersive InfraRed
"CS" : Ceramic Sensor

Auto Calibration[3]

X	None
E	Yes, Relay Output Only
S	Yes, Internal Solenoid Valve

Range ID / Sample Pump[4]

R	Relay Output - Range ID
P	Internal Sample Pump
O	Relay Output for Ext. Pump

Power Supply

A	AC - 100 to 260 V AC

Note:
1. Internal Fine Filter and Rotameter without needle valve is supplied for all models
2. Bypass Sensor Valve is supplied only for models 3015 & M015
3. Auto Calibration: Not available in models 3015 & M015. Dual Measurements can have only Relay Outputs for Solenoid Valves
4. Internal Sample Pump is not available for Dual measurements & in models 3015, M015, 3130 and 3190
5. Field Calibration is not possible for Dew Point analyser model M015.
6. Please contact M/s Sarvesh Analytics for available options

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.

SARVESH ANALYTICS Pvt. Ltd.

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