SARVESH ANALYTICS Pvt. Ltd.

Analysis Simplified

ACCURRA-S®

Trace / ppm / Percentage / Purity

O2, CO, CO2, CH4, Moisture / Dewpoint

- Reliable and Accurate
- Excellent Long term Stability
- Long Calibration Interval
- Latest Measurement Technology
- Advanced Features
- Lowest Cost of Ownership

Applications

Process Monitoring
O2, N2, Ar, CO2 Plants
Inward Quality Check
Purity Measurements
Gas Certifications
Trace Measurements of Impurities
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 Technologies

ACCURRA-S is an On-Line Gas Analyser. It was introduced in 2007 with a future ready Architecture, Hardware and Features. Since then it has remained as the most preferred Analyser for all critical and demanding processes in the industry.

Over the years we have upgraded the product to stay ahead on Technology and Performance. We have matched the best Sensor Technology for your measurement range and applications

Measurement Gases	Range of Measurement		Sensor Technology
Oxygen	0 - 100 / 1000	ppm	Electrochemical
	0 - 25 / 0 - 100	%	Electrochemical / Paramagnetic
	95 - 100	%	Paramagnetic
Carbon Di-Oxide	0 - 5000	ppm	NDIR
	0- 20 / 0 - 100	%	NDIR
Carbon Monoxide	0 - 1000	ppm	Electrochemical Cell
	0 - 10 / 100	%	NDIR
Methane	0 - 100	%	NDIR
Dewpoint / Moisture	-80 to +20	^{0}C	Ceramic

Purity Oxygen Measurement

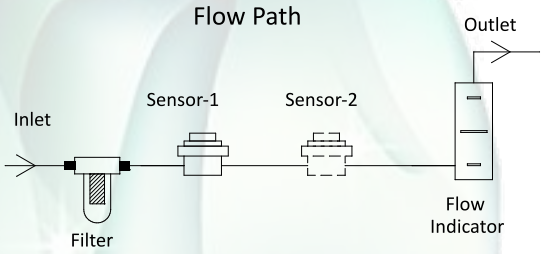
Oxygen measurement above 90 - 100% is susceptible to Ambient Pressure and Temperature variation. A day and night ambient pressure variation can give rise to 10% error in O2 reading.

To overcome this error ACCURRA-S 3090 and 3190 has Ambient Pressure and Temperature compensation. With these compensations the error is minimized to less than 0.5%. This makes it the most accurate analyser in the market for Oxygen measurement in 90 – 100% range.

Dual Measurement

ACCURRA-S can house two different measurements sensors in series. Since the pneumatic lines are common you can measure two Gas components in your sample gas.

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.



O2 ppm + Dewpoint in N2 / H2 / Ar / He	O2 % + CO ppm in various background Gases
O2 ppm + CO ppm in various background Gases	O2 % + CO % in your Processes
O2 ppm + CO2 ppm	O2 % + CO2 % in Ar / N2
O2 ppm + N2 % in Ar / He	CO ppm + CO2 ppm in N2 / Ar / He
O2 ppm + H2 % in N2	CO ppm + CO2 % in your Processes
	CO % + CO2 % in your Processes

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

Dual Range Current Output

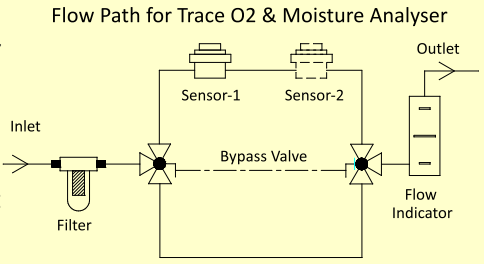
In some processes the startup reading is high. As you control the process the reading stabilizes to a lower value. ACCURRA-S allows you to define two ranges to the 4 - 20 mA current output e.g. 0 - 10% and 0 - 25%.
When the reading is below 10% the current output will correspond to 0 - 10%. When the 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 is working. This feature is very useful during start up.

Output Freeze or Follow Function

When you use the output signals from ACCURRA-S 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.

Sensor Bypass Valve

When the Trace Oxygen and Dew point sensors of ACCURRA-S is not in use or during sample line purging or when it sees sample much beyond the normal concentration, this valve is used to isolate the sensors.
Once on right sample the valve should be restored to its original position. This ensures quick response and accurate reading for Trace Oxygen and Dew point measurement.



Auto-Calibration

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

Sample Pump

The ACCURRA-S 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 for some measurements the Sample Pump can be supplied internally.

History

The ACCURRA-S stores the Calibration, Alarm and Fault records with time stamps. The last Calibration data in History can be used as a record for your Audit. This data also helps to know the Calibration Drift / Residual Sensor Life. You can accordingly plan the replacement of consumable Gas sensors .

Diagnostics

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

MODBUS and PC connectivity

The ACCURRA-S 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 to your PC and collect data for analysis.

Performance Specifications

TABLE -1	Oxygen					Moisture/ DewPoint
Model Variant	3015	3030	3090	3130	3190	M015
Measurement Range	0 - 1000 ppm	0 - 25 %	0 - 100 %	0- 100 %	95 - 100%	-80 to +20°C dp
Sensor Technology	Electro Chemical			Paramagnetic		Ceramic
Sensor Life	> 18 Months	> 2 Years		Not Applicable		N. A.
Minimum Range	0 - 100 ppm	0 - 5%		0 - 5%	N. A.	-80 to 0°C dp
Display Resolution	0.1 ppm	0.01 %		0.01 %	0.01 %	1°C dp
Intrinsic Error (Accuracy)	1% of reading ± 2ppm	± 0.01 % FS	± 0.1% of FS	± 0.1 % of FS	± 0.5% of FS	± 2°C dp
Repeatability	Zero: ± 2ppm Span: 1% of reading	± 0.04 %	± 0.5 %	± 0.1 % of FS	± 0.5% of FS	1°C dp
Response Time-T90 @ 1 LPM	< 30 Sec	< 20 Sec		< 5 Sec	< 5 Sec	2 Min @ 5LPM (dry to wet)

TABLE -2	Carbon Mono-Oxide		Carbon Di-Oxide		Methane
Model Variant	2015	2030	6015	6030	4030
Measurement Range	0 - 1000 ppm	0 - 100 %	0 - 5000 ppm	0 - 20% or 100%	0 - 100%
Sensor Technology	Electro Chemical	NDIR	NDIR		NDIR
Sensor Life	> 2 Years	> 5 Years	> 5 Years		> 5 Years
Minimum Range	0 - 100 ppm	0 - 5 %	0- 100 ppm	0 - 5 %	0 - 5 %
Display Resolution	0.1 ppm	0.01 %	0.1 PPM	0.01 %	0.01 %
Intrinsic Error (Accuracy)	1% of FS	2 % of FS	1 % of FS	± 1% of FS	2% of FS
Repeatability	Zero: ± 2ppm Span: ± 10ppm	2 % of Reading	Zero: ± 10 ppm Span: ± 50 ppm	± 0.05%	2% of Reading
Response Time-T90 @ 1 LPM	< 30 Sec	< 30 Sec	< 60 Sec	< 60 Sec	< 45 Sec

- Oxygen Purity Analyser Model 3090 and 3190 has **in-built Ambient Pressure Compensation**
- All measurements in ACCURRA-S has **in-built Temperature Compensation**

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 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. Auto-Calibration is not available for model 3015, M015.

Sample Pump

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

When Sample Pump option is selected Range ID Relay is unavailable.

This option is not available for models 3015, 3130 and 3190 and 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 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 user.
Sample Flow rate	1 LPM (Recommended). ACCURRA-S has in-built 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 of suitable rating.
Sample Dew Point	5^0 C less than the lowest Ambient Temperature
Material in Contact with Sample	SS-316, 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 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 system with our Compact and Ready to Use Sample Conditioning solutions - i-Cons; SGI-300; SP-300 etc.

SGI-300 - Compact Sample Conditioners

SGI-300 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

The most Advanced & Compact extractive Sampling System based on Powerful Peltier cooler. It includes all Sampling Components, Realtime Diagnostics with early warnings, Auto Correction, History & Modbus.

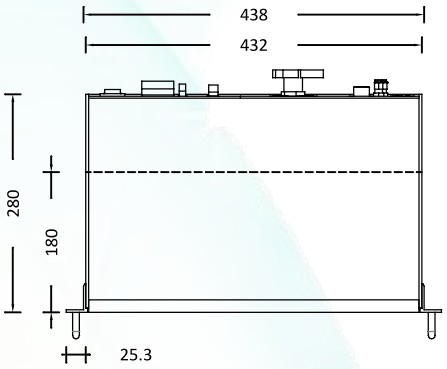
SP-300 - Heated Sample Probe

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.

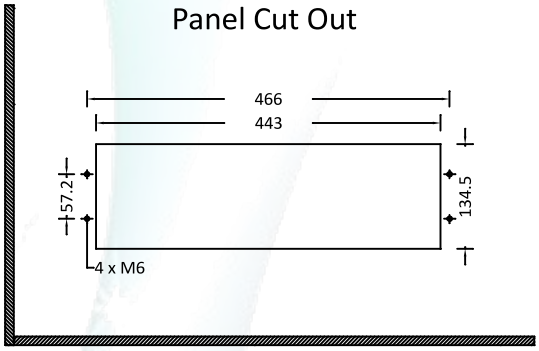
- **Primary Sampling Plate**
- **Pressure Reduction Plate**
- **Filters, Scrubbers, Catchpot**
- **Peristaltic Pumps**

Dimensions

Top View

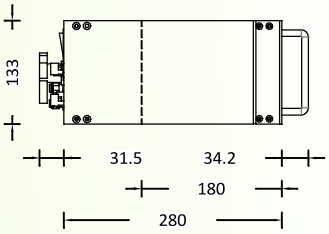


Panel Cut Out

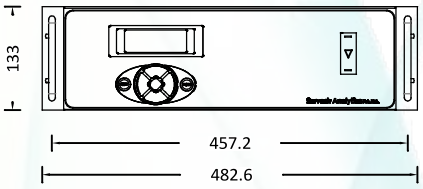


UNIT : mm

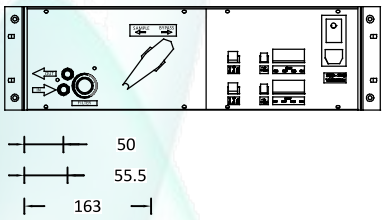
Side View



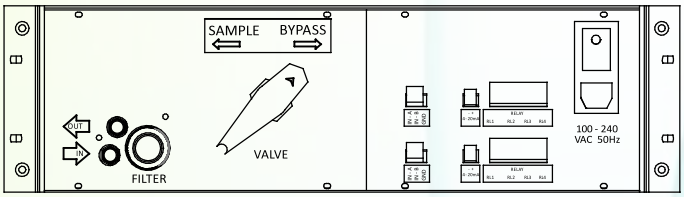
Front View

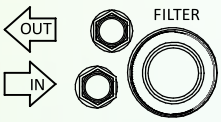


Rear View



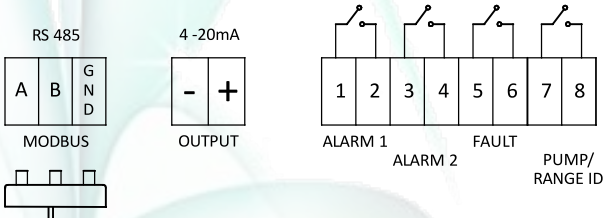
Rear View

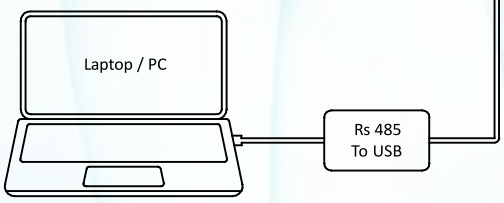


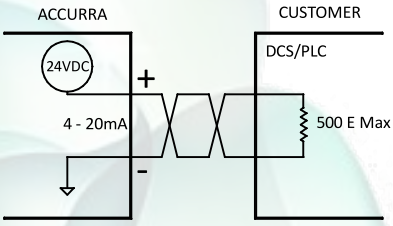


Pneumatic Connections

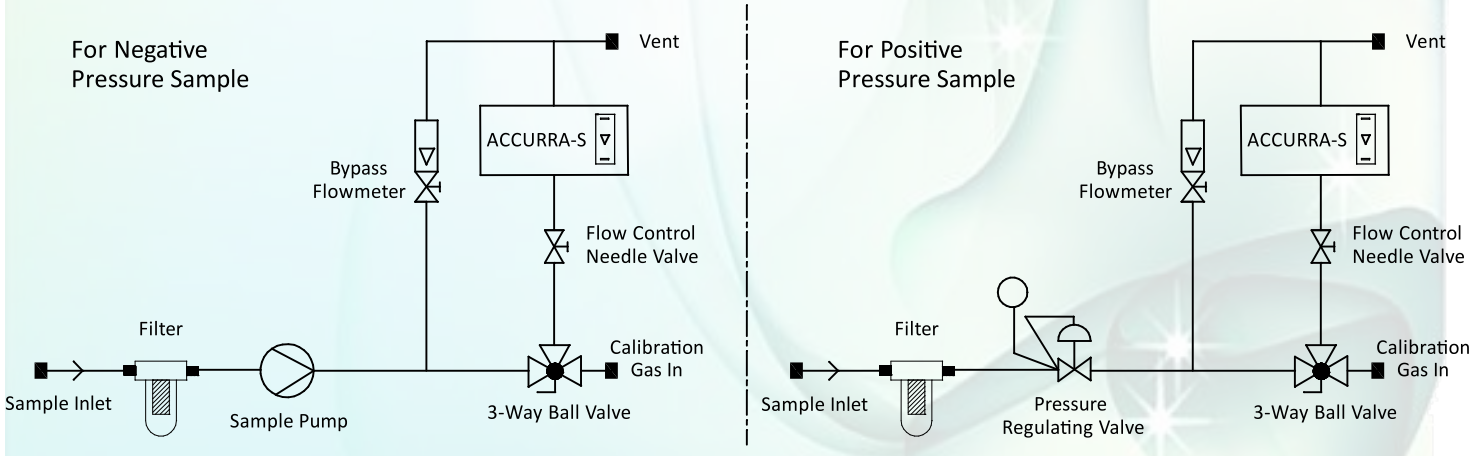
Output Electrical Connections







Typical Sample Handling Drawing



Ordering Code

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

1st Component | **2nd Component**

Carbon Monoxide ppm (Ec)	2	0	1	5
Carbon Monoxide % (NDIR)	2	0	3	0
Oxygen ppm (Ec)	3	0	1	5
Oxygen Percentage (Ec)	3	0	3	0
Oxygen Purity (Ec)	3	0	9	0
Oxygen Percentage (Pm)	3	1	3	0
Oxygen Purity (Pm)	3	1	9	0
Methane % (NDIR)	4	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

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

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

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.

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