SARVESH ANALYTICS Pvt. Ltd.

Gas Analysers

Analysis Simplified

Safe Area Analysers - **ACCURRA- S**

Purity O2 Analyser - **ACCURRA- S 3090**

Thermal Conductivity Analyser - **ACCURRA- TCD**

Hazardous Area Analysers - **ACCURRA- Hz**

Flue Gas Analyser - **ACCURRA- Zr**

Tele: 91 - 94 2300 4179

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www.sarveshindia.com

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)

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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

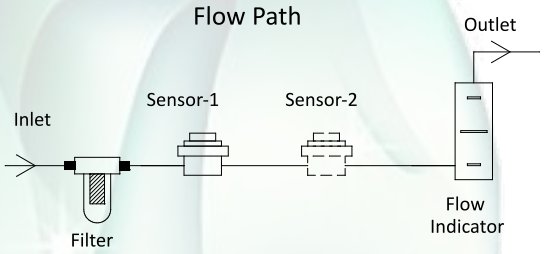
Oxygen measurement above 90 - 100% is susceptible to Ambient Pressure and Temperature variation. A day and night ambient pressure variation can give rise to 10% error in O2 reading.

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

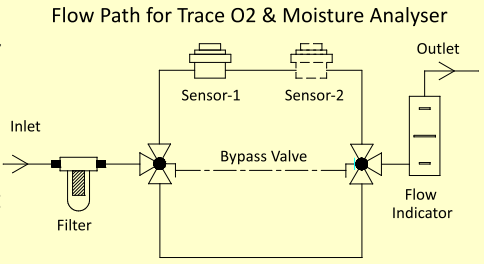
In some processes the startup reading is high. As you control the process the reading stabilizes to a lower value. ACCURRA-S allows you to define two ranges to the 4 - 20 mA current output e.g. 0 - 10% and 0 - 25%.
When the reading is below 10% the current output will correspond to 0 - 10%. When the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

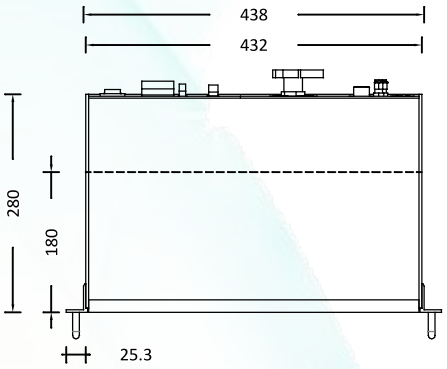


SP - 300 has a Heated Filter which is kept just outside the stack. The Blowback and Sample ports are separate which enables higher flow rate of blowback air. It eliminate the use of high temperature solenoid valve in sample line during blowback.

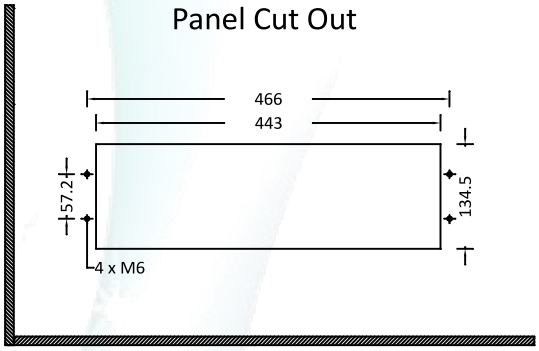
- **Primary Sampling Plate**
- **Pressure Reduction Plate**
- **Filters, Scrubbers, Catchpot**
- **Peristaltic Pumps**

Dimensions

Top View

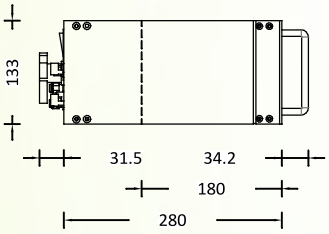


Panel Cut Out

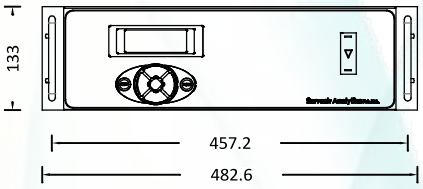


UNIT : mm

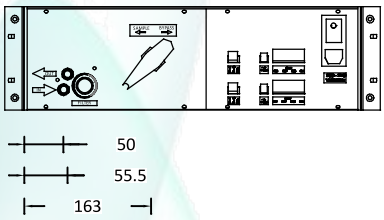
Side View



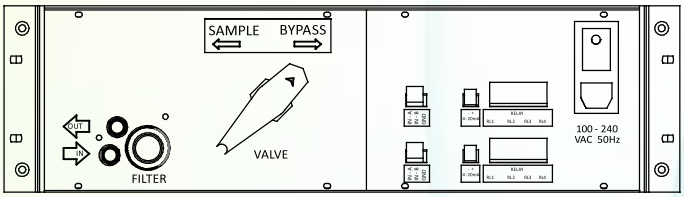
Front View

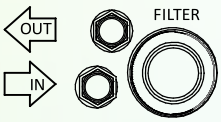


Rear View



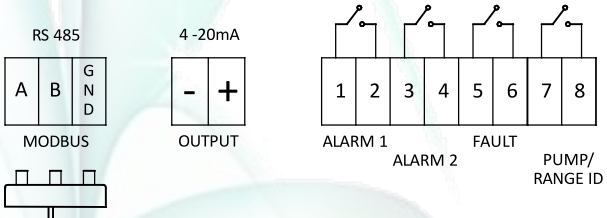
Rear View

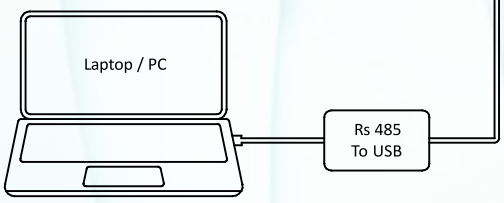


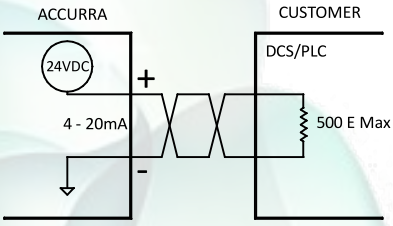


Pneumatic Connections

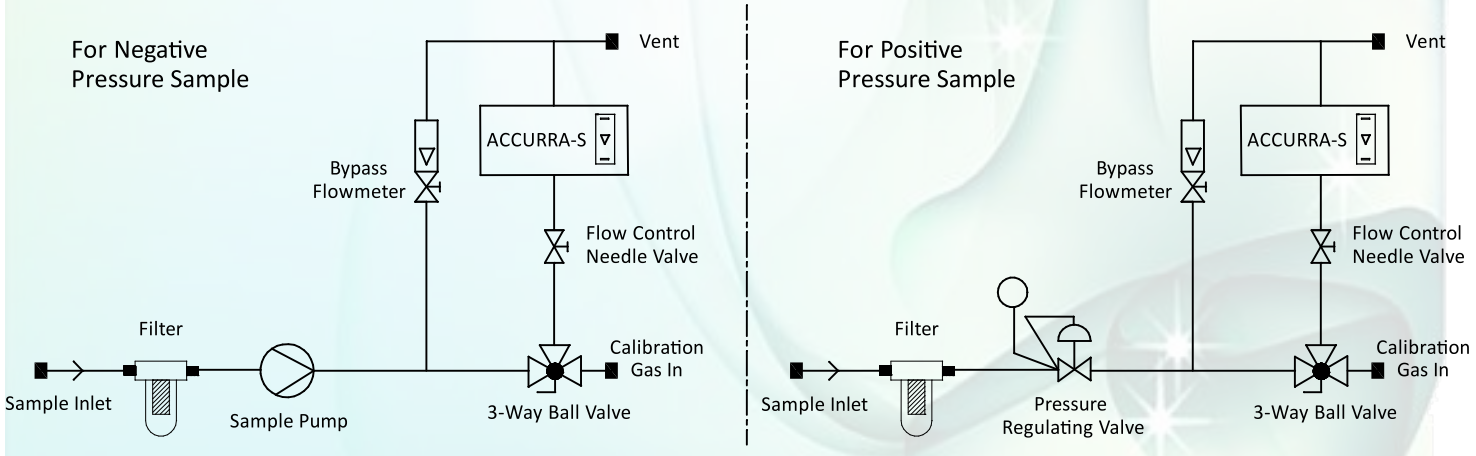
Output Electrical Connections







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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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
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- Backlit LCD Display 20 x 4 Character
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- Modbus RTU over RS 485
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- Cyclic and Remote Auto-calibration (Optional)
- Internal Sample Pump for Low pressure Sample (Optional)

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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

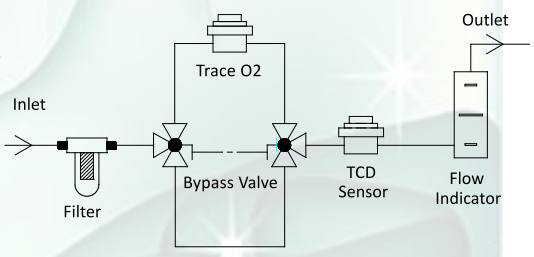
Dual Measurement

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

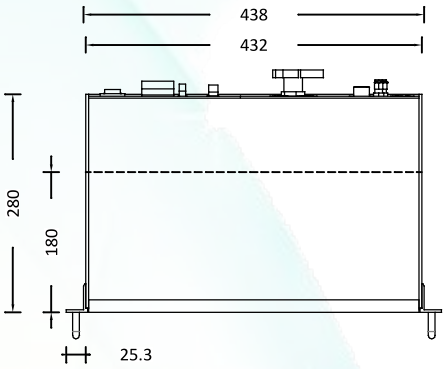


SP - 300 has a Heated Filter which is kept just outside the stack. The Blowback and Sample ports are separate which enables higher flow rate of blowback air. It eliminate the use of high temperature solenoid valve in sample line during blowback.

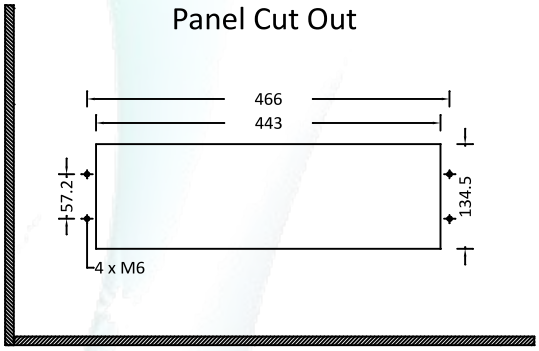
- **Primary Sampling Plate**
- **Pressure Reduction Plate**
- **Filters, Scrubbers, Catchpot**
- **Peristaltic Pumps**

Dimensions

Top View

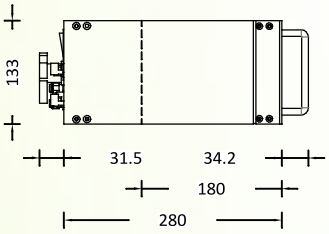


Panel Cut Out

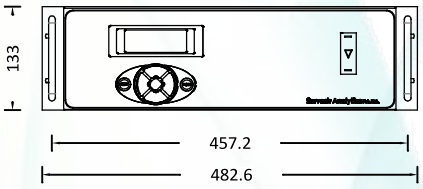


UNIT : mm

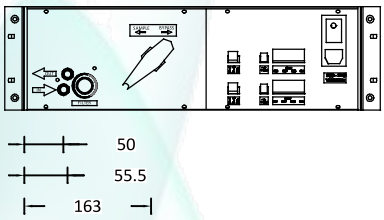
Side View



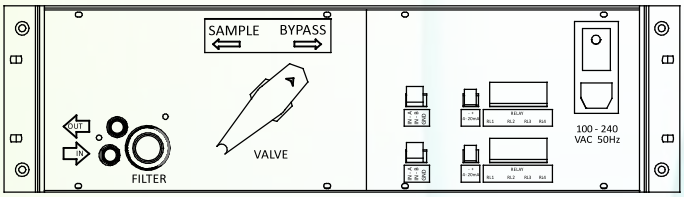
Front View

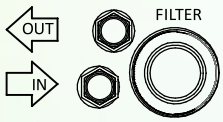


Rear View



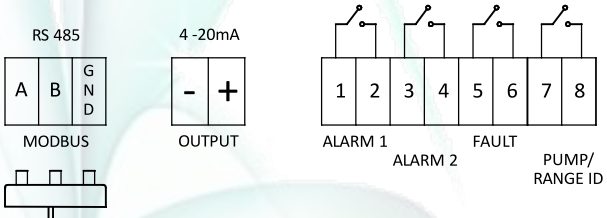
Rear View

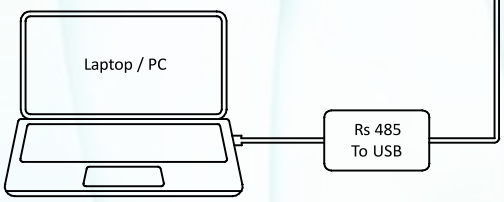


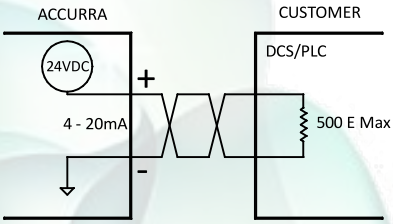


Pneumatic Connections

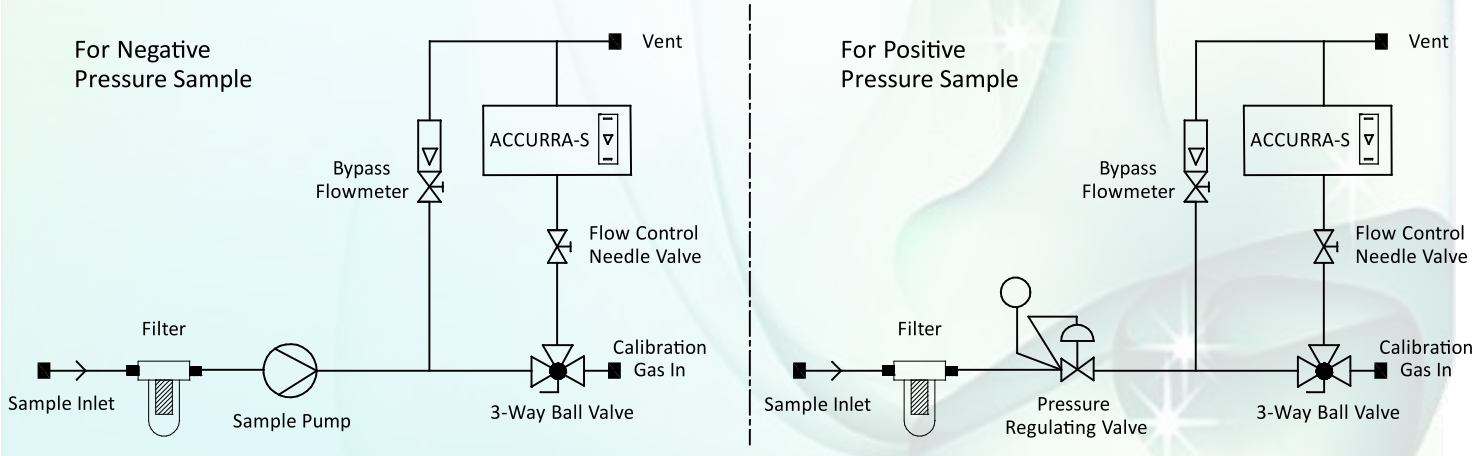
Output Electrical Connections







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.

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SARVESH ANALYTICS Pvt. Ltd.

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Factory: Gat No.188, Jyotibanagar, Talwade, Pune - 411062 INDIA

Email: info@sarveshindia.com
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SARVESH ANALYTICS Pvt. Ltd.

Analysis Simplified

ACCURRA-Hz®



Trace / ppm / Percentage / Purity

O2, CO, CH4, H2

Hazardous Area Analyser

For your Tough Applications

Tamper-proof Calibration

Latest Measurement Technology

Advanced Features

Lowest Cost of Ownership

Applications

Process Monitoring
Safety Monitoring
N2 Blanketing
Spray Dryers
Hydrogenation Process
Gas Storage Tanks
Hydrogen Electrolysers

Salient Features

- Calibration Possible w/o opening covers
- Calibration History with Deviation values
- Alarm and Fault History
- Calibration Check Facility
- Isolated 4-20 mA Output; Dual Range with Range ID relay output
- Output Freeze / Follow during Calibration
- Separate Hardware Diagnostics Menu
- 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
- Optional: PC software to remotely Monitor / Control ACCURRA-Hz
- **Enclosure Certification: Gas Group IIC Zone 1 & 2, T6 as per IS/IEC 60079-1:2014**

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

Measurement Technologies

ACCURRA-Hz is an On-Line Hazardous Area Gas Analyser. It was introduced in 2010 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.

ACCURRA-Hz has many features such as Failsafe Outputs, Tamper-proof Calibration, Remote Desktop Access, Sensor Diagnostics, separate Password for User and Manager etc. With these unique features and its Proven track records ACCURRA-Hz is ideal and trusted choice for you critical processes.

Measurement Gases	Range of Measurement		Sensor Technology
Oxygen	0 - 100 / 1000	ppm	Electrochemical
	0 - 25	%	Electrochemical
	0 - 100 / 95 - 100	%	Electrochemical / Paramagnetic
Carbon Monoxide	0 - 1000	ppm	Electrochemical Cell
	0 - 10 / 100	%	NDIR
Methane	0 - 100	%	NDIR
Hydrogen	0 - 100	%	Thermal Conductivity Detector

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-Hz 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.

Alarm Relays

ACCURRA-Hz has two independent Failsafe Alarm Relays. The alarm set points are user configurable. You can configure these relays as **Lo - LoLo or Lo - Hi or Hi - HiHi**, as per the requirement of your process.

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-Hz 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.

ACCURRA-Hz has a Range ID Relay which when configured can be used as remote signal to your PLC/DCS to know the range on which ACCURRA-Hz is working. This feature is very useful during start up.

Output Freeze or Follow Function

When you use the output signals from ACCURRA-Hz 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 and Calibration. This Output Freeze or Follow function is a user configurable feature.

Sample Pump

The ACCURRA-Hz can control an external Sample Pump. When connected this pump will remain off during Calibration Check and Calibration. When Sample Pump option is selected Range ID Relay option is unavailable.

Auto-Calibration

ACCURRA-Hz can include Auto-Calibration with 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.

History

The ACCURRA-Hz stores the Calibration, Alarm and Fault records. This is helpful in analysis of your process behaviors. 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-Hz has inbuilt hardware diagnostic mode which enables various hardware check or simulation during failure.

MODBUS and PC connectivity

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

Remote Desktop Access- ACCURRA-CONNECT

With ACCURRA-CONNECT installed on your PC you can connect to your ACCURRA-Hz remotely over Modbus and do all the operations as if you are standing in front of your Analyser. This feature is useful where human movement is restricted in hazardous area. This software is an optional supply.

Performance Specifications

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

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

TABLE -2	Carbon Mono-Oxide		Methane	Hydrogen
Model Variant	2015	2030	4030	1030 Note 1
Measurement Range	0 - 2000 ppm	0 - 100 %	0 - 100%	0 - 100 % in N2
Sensor Technology	Electro Chemical	NDIR	NDIR	Thermal Conductivity
Sensor Life	> 2 Years	N. A.	> 5 Years	N. A.
Minimum Range	0 - 100 ppm	0 - 5 %	0 - 5 %	0 - 5%
Display Resolution	0.1 ppm	0.01 %	0.01 %	0.01 %
Intrinsic Error (Accuracy)	1 % of FS	2 % of FS	2 % of FS	< 1% of FS
Repeatability	Zero: ± 2ppm Span: ± 10ppm	2% of Reading	2% of Reading	< 1% of FS
Response Time-T90 @ 1 LPM	< 30 Sec	< 30 Sec	< 45 Sec	< 10 Sec @ 0.6 LPM

Note 1: Contact Sarvesh Analytics for other background Gases, Minimum and Maximum measurement range.

Note 2: The Response Time specifications are at 1 LPM flow rate unless otherwise mentioned.

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-Hz always gets a Sample which meets the following specifications.

The Sample Gas should be Non-Corrosive, Non-Toxic, 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	1 LPM (Recommended) It is strongly advised to install a upstream Sample Flowmeter to regulate the sample Flow.
Sample Temperature	5^0 C - 45^0 C Max
Sample Dust / Particulate	< 3 Micron ; It is strongly advised to install a upstream External Filter with suitable Element .
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.

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 4 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.

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. The Solenoid Valves are External and are in customer scope.
Auto-Calibration is not available for model 3015.

Sample Pump

This option includes external Sample Pump which is controlled by ACCURRA-Hz. During Calibration Check and Calibration this pump is OFF. When Sample Pump option is selected Range ID Relay is unavailable.
Sample Pump is not available for model 3015, 3130 and 3190.

Other Specifications

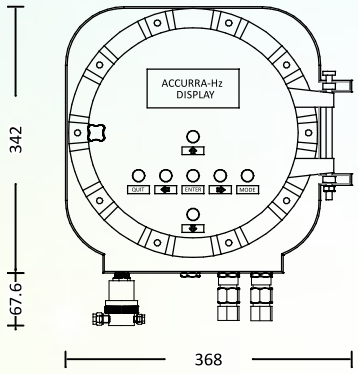
Gas Inlet / Outlet	1/4" OD SS316
Enclosure	Wall mounted
Dimension	410 (H) x 370 (W) x 245 (D) mm
Ingress Protection	IP 66
Net Weight	Approx. 12 Kgs
Gross Weight	Approx. 20 Kgs
Packed Dimension	Approx. 53 x 43 x 35 cm
Power Supply	24V DC, 30W or 100 - 240 V AC 50/60 Hz, 45W

Environmental Conditions

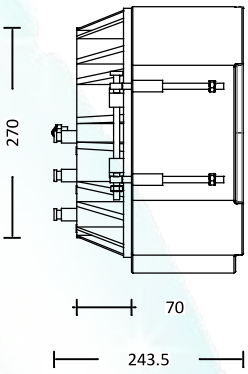
Ambient Temperature:	+5°C to + 40°C
Storage Temperature:	+0°C to + 50°C
Relative Humidity:	< 90% RH non-condensing
Area Classification:	Gas Group IIC Zone 1 & 2, T6 as per IS/IEC 60079-1:2014

Dimensions

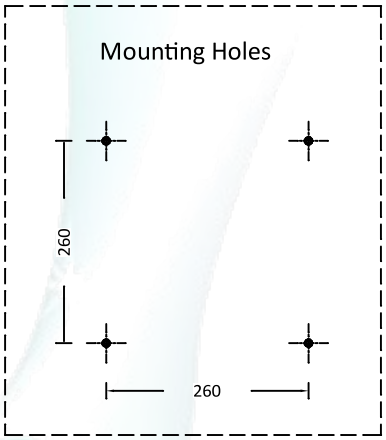
Front View

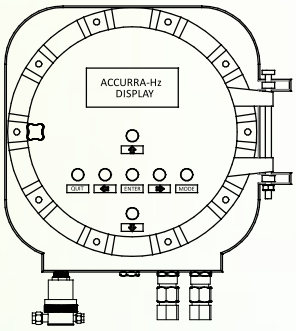


Side View

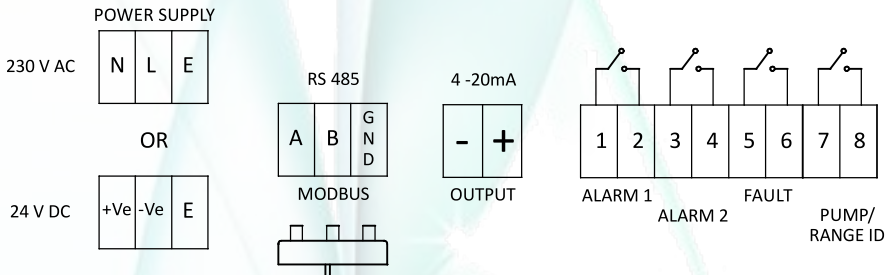


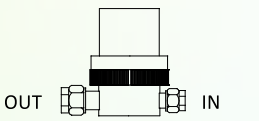
Mounting Holes



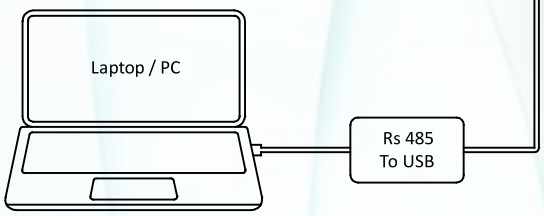


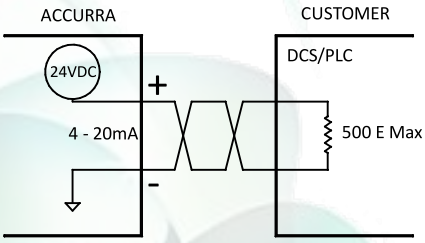
Output Electrical Connections





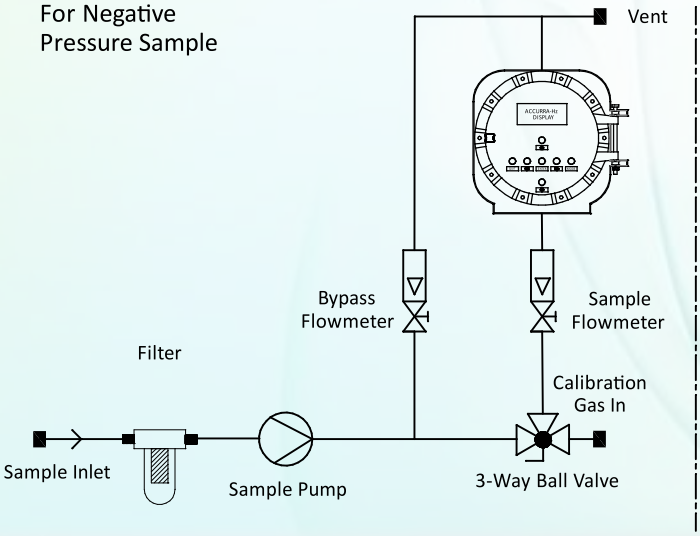
Sensor Block
Pneumatic Connections



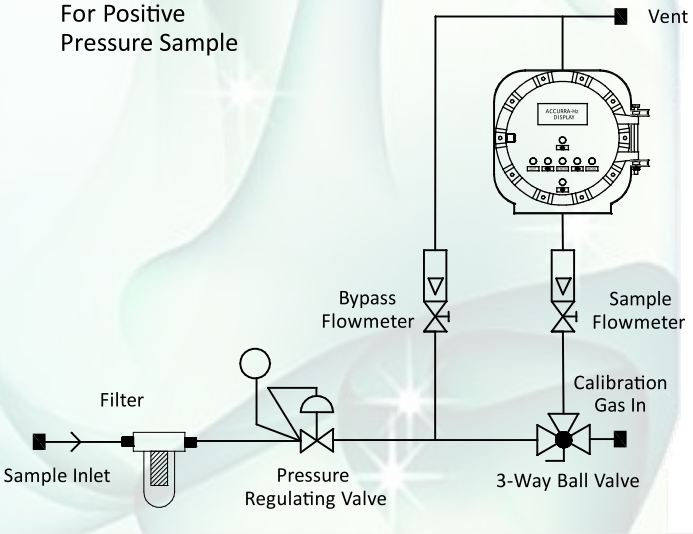


Typical Sample Handling Drawing

For Negative
Pressure Sample



For Positive
Pressure Sample



Ordering Code

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

Measured Gas

Hydrogen % (TCD)	1	0	3	0
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

Accurra-Connect software

X	None
C	Yes

Auto Calibration[1]

X	None
E	Yes, Relay Output Only

Range ID / Sample Pump[2]

R	Relay Output - Range ID
P	Relay Output for Ext. Pump

Power Supply

D	DC - 24 V DC
A	AC - 100 to 260 V AC

1. Auto Calibration: Relay Output is provided for Solenoid Valves. Auto Calibration is not available in models 3015.
2. Sample Pump: Relay output is provided for Sample Pump
2. Solenoid Valves and Sample Pump are not in scope of supply
3. Please contact M/s Sarvesh Analytics for available options

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

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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SARVESH ANALYTICS Pvt. Ltd.

Analysis Simplified



ACCURRA-Zr®

Flue Gas Oxygen Analyser

- **Rugged all SS Design**
- **Sensor protected from Flue Gas**
- **Compact, Reliable and Accurate**
- **Excellent Long term Stability**
- **Long Calibration Interval**
- **Lowest Cost of Ownership**

Applications

- **Industrial Boilers**
- **Furnace Application**
- **Stack Application**
- **Power Station Boilers**
- **Efficiency Monitoring**

Salient Features

- Suitable for In-Situ Installation
- Head Mounted Electronics with Display & Keypad
- Sensor Protected Probe design
- Single Point Calibration with Air Only
- Dual Range Programmable Current Output
- Powerful Diagnostics with Sensor Protection
- Modbus RTU over RS 485
- Output Freeze / Follow during Blowback / Calibration
- Auto Blowback Timer with Solenoid Valve
- 4-20mA output range is USER configurable
- Blowback Set Points are USER configurable
- Optional: **High Dust Load Probes available**
- Optional: **Probes available upto 1400 ^{o}C**

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Measurement Technology

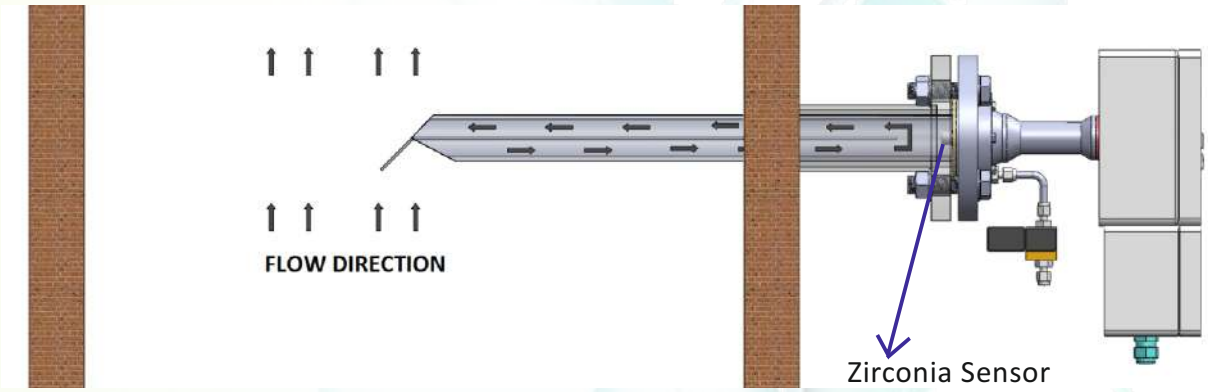
ACCURRA-Zr from Sarvesh Analytics is a Online Zirconia based Flue Gas Oxygen Analyser suitable for various Stack and Furnace applications. It is simple to use and help you to quickly achieve Combustion Efficiency. This new generation on-line analyser does not require any reference gas.

ACCURRA-Zr has many in-built **Salient Features** which help you to overcome many issues associated with traditional analyser assuring you years of trouble-free operation.

Advanced Probe Design

In conventional Flue Gas Zirconia Analyser the Zirconia Sensor, Heater and Thermocouple are at the tip of the probe. This tip of the probe is directly exposed to the Furnace Turbulence, the Furnace Temperature variation and abrasion due to the Dust / Flow. This gives rise to error in reading and frequent failure of sensors or heaters.

We M/s Sarvesh Analytics Pvt. Ltd. have developed the following probe design to overcome these traditional problems.



In ACCURRA-Zr probe design the Zirconia Sensor is located outside your Stack or Furnace and is thus **protected from the process** flow and dust and temperature variations. The flue gas flow through the guide tube as shown. This design helps to keep the sensor at constant temperature and also save the sensor from dust load. This unique design ensures a very stable reading and a long life of sensor.

Auto - Blowback

A timely Blowback ensure long life of any Flue gas analyser. Hence ACCURRA-Zr comes with inbuilt Blowback as standard with the Relay and Solenoid valve. The user can program the blowback frequency either through keypad or through Modbus. ACCURRA-Zr also has Power ON Blowback, Manual Blowback and Blowback before Calibration.

Single Point Calibration

ACCURRA-Zr has only one point calibration and uses only Air as Span point. Which means that you don't need any special calibration gas. Before every Calibration, blowback is done to clean the sensor. This ensures a error-free calibration and long calibration interval.

Dual Range Current Output

When you start your furnace the initial reading is high. As you control the furnace the reading stabilizes to a lower value. ACCURRA-Zr allows you to define two ranges to the 4 - 20 mA current output e.g. 0 - 25% and 0 - 10%. When the reading is above 25% the current output will correspond to 0-25%. When the reading goes below 10% the current output will correspond to 0-10% and vice versa.

The first Range 0-25% is fixed. The second range is user configurable. This feature is very useful during start up.

Output Freeze or Follow Function

When you use the 4-20 mA output signal from ACCURRA-Zr as input to your PLC / DCS, you can freeze the 4-20mA to the last value during Blowback and Calibration. This Output Freeze or Follow function is a user configurable feature.

MODBUS and PC connectivity

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

Sensor and Hardware Diagnostics

The ACCURRA-Zr has inbuilt hardware diagnostic mode for hardware check and simulation during failure.

Performance Specifications

Measurement Range	0.1 - 21 % Oxygen
Sensor Technology	Zirconia
Expected Sensor Life	Clean Gas > 10 Yrs Low Sulphur Natural Gas > 5 Yrs Biomass / Coal > 3 Yrs
Repeatability	Better than 1% of FS
Response Time, T90	< 15 seconds
Display	Backlit LCD, 2 Line x 16 Character, Alphanumeric
Analog Output	1 x 4-20 mA, isolated, Max Load = 500 Ω, Dual Range
Blowback Relay	1 x SPST rated @ 1A 230VAC
Communication	MODBUS protocol over RS 485 READ: Measured Value, Status, Setup Parameters WRITE: Initiate Auto Blowback

Process Specifications

Probe Lengths	300 / 500 /1000 mm
Wetted Parts	SS 316
Process Temperature	200 - 500^{O}C
Recommended Fuel Types	Oil, Gas, NG (without blowback) Coal, Bagasse (with blowback)
Maximum Dust Load	10 gm/Nm3
Flue Gas Velocity	Between 5-20 m/sec
Process Connection	2" ANSI Flange
Blowback Connection	1/4" OD SS316
Probe Head Enclosure Protection	IP 66

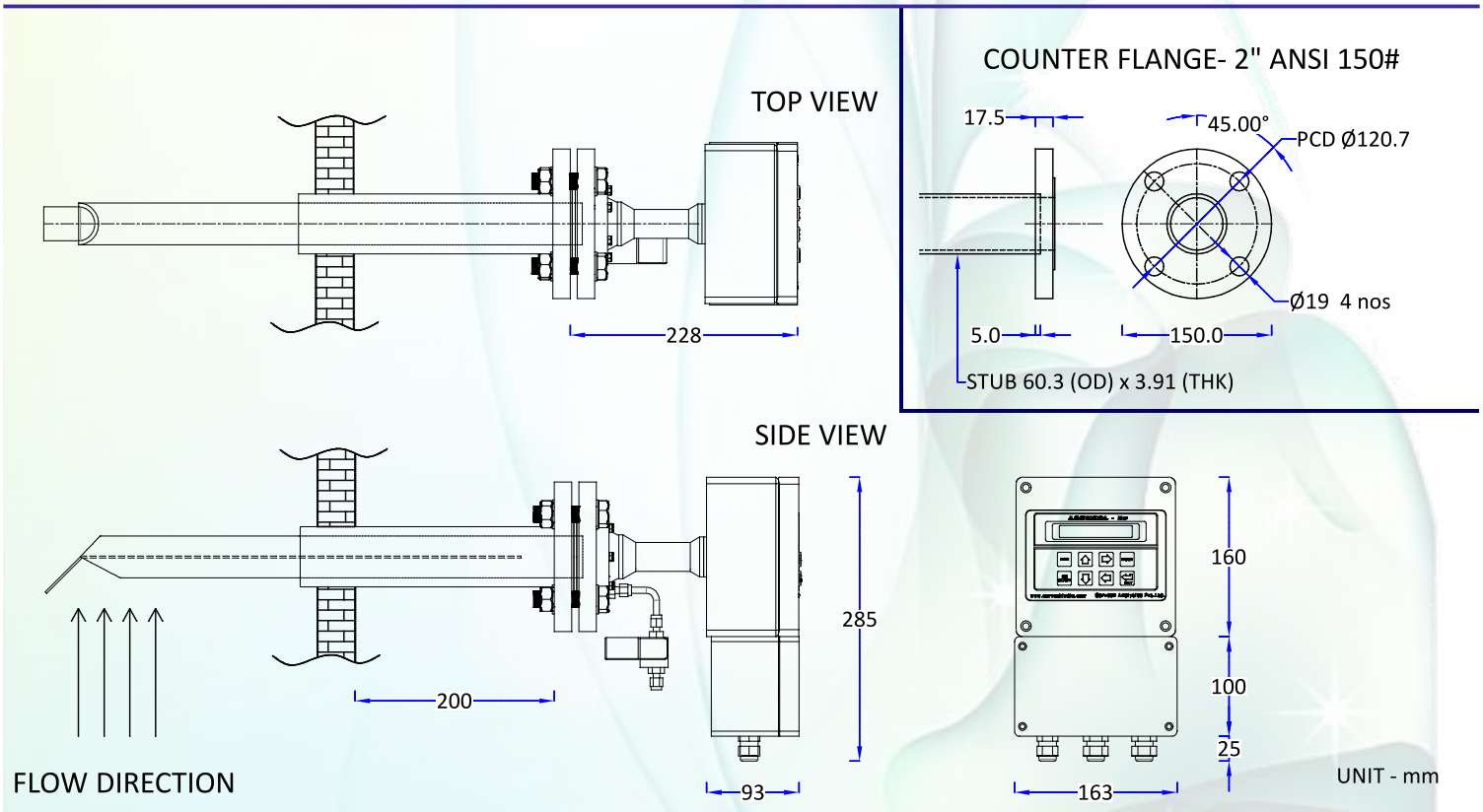
Other Specifications

Probe Head Enclosure	
MOC	Cast Aluminum
Dimension	285 (H) x 165 (W) x 230 (D) mm
Ingress Protection	IP 66
Net Weight	
Probe Head	Approx. 5 Kgs
Probe Tube - 500mmL	Approx. 5 Kgs
Probe Tube - 1000mmL	Approx. 6.5 Kgs
Gross Weight (wooden)	Approx. 40 Kgs
Packed Dimension(Max.)	140(L) x 25(W) x 25(H) cm
Power Supply	100 - 240 V AC 50/60 Hz, 45W

Environmental Conditions

Ambient Temperature:	+10°C to + 50°C
Storage Temperature:	+0°C to + 50°C
Area Classification:	Safe Area

Dimensions & Process Flange Details



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 Logo and ACCURRA-Zr is a Registered Trademark of M/s Sarvesh Analytics Private Limited

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