

# Endura AZ20 Oxygen Monitor Combustion gas analysis

Superior technology and quality from the world leader in oxygen measurement



#### Advanced design and precision manufacturing

- robust, long-life probe for process temperatures up to 800 °C (1472 °F)
- proven cell design from over 50 years experience
- fast response to process variations
- stable and accurate oxygen measurement

#### Unique integrated auto-calibration system

- easy compliance for emission monitoring regulation
- reduced installation costs; eliminates requirement for expensive external calibration panel
- reduced maintenance costs

#### Probe lengths up to 4.0 m (13.1 ft.) and industry-standard flange configurations

- suitable for a wide range of applications
- extensive installation options

#### Easy cell release

- fully site-serviceable probe
- easy access to internal components

#### Advanced transmitters

- easy configuration, monitoring and intuitive HMI
- HART communications
- cell performance logging and diagnostics

## Introduction

The Endura AZ20 is the latest in a long line of high-quality, combustion gas analyzers from ABB.

The sensor, based on a zirconium oxide cell, is mounted at the tip of the probe that is inserted in the flue duct. The resulting direct, in situ measurement provides accurate and rapid oxygen reading for combustion control optimization and emissions monitoring.

## Probe Lengths up to 4.0 m (13.1 ft.)

A wide range of probe insertion lengths from 0.5 to 4.0 m (1.7 to 13.1 ft.) enable installation to the optimum measuring point for accurate oxygen measurement within the duct; even in the largest flue gas ducts and stacks.

A comprehensive range of mounting flanges provide simple installation when plant-wide standard flanges are required or when replacing existing probes.

The transmitter can be probe- or remote-mounted at distances of up to 100 m (328 ft.), thus providing versatile system options for all applications. The probe-mounted transmitter option provides the lowest cost of installation. However, the remote-mounted transmitter provides flexibility when the operationally ideal probe location does not provide easy access for the user.



*Probe and Probe-mounted Transmitter*

## Advanced Design

Designed and manufactured to exacting standards, the Endura AZ20 ensures long periods of trouble-free operation in even the most arduous of applications.

The operating process temperature of up to 800 °C (1472 °F) extends system suitability into previously impossible applications and enables optimum probe location within the process.

The modular design, with reduced component count, improves the robustness and reliability of the system and simplifies routine maintenance and servicing.

Complete traceability ensures only the highest quality materials are used in the analyzer's construction and rigorous manufacturing, inspection and testing procedures (to international standard ISO 9001) result in a monitor of superior quality with prolonged probe life.



*Probe and Remote-mounted Transmitter*



*Modular Construction*

## Easy Cell Release

The Endura AZ20 probe has retained the easy-access cell arrangement of the previous generation ZFG2 probes. Cell replacement can be performed on-site using basic hand tools; even after long periods of high temperature operation where screw threads have 'seized' and can no longer be released.

Kits containing all the parts needed to complete maintenance are available from ABB to ensure a technician can perform services quickly, efficiently and at minimum cost.

## Proven Cell Design

ABB's metallurgically bonded, multi-layer electrode technology increases the cell's resistance to sulphurous and reducing atmospheres and high temperature operation. This extends the life-cycle of the cell in the most arduous applications such as sulphur recovery processes, crematoria and industrial/clinical waste incineration.



*Zirconia Cell*

## Flow Rate Control using Flow Restrictors

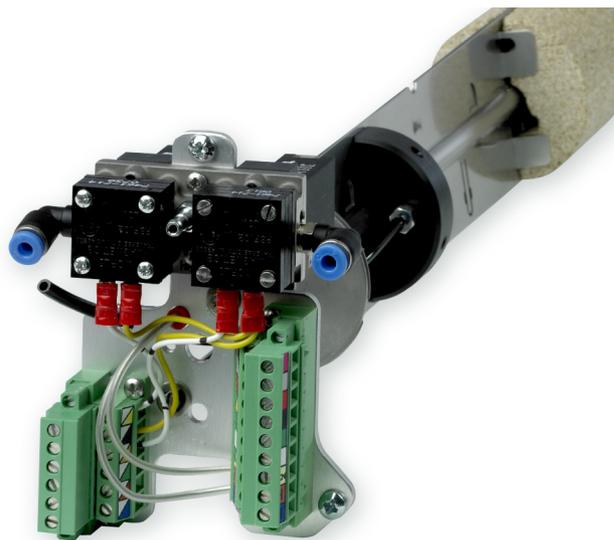
The flow rates of test gas and reference air are important to the accurate operation of Zirconia-based oxygen analyzers and, traditionally, control has been achieved using ancillary flowmeters and flow control valves.

The Endura AZ20 offers a new approach with the inclusion of optional flow restrictors. These are fitted within the probe to control the flow rate of the reference air and test gasses, removing the need for additional flowmeters fitted with flow control valves.

This innovative approach enables the gasses to be controlled by pressure only. 1 Bar (15 psi) is applied directly to the probe's gas ports and the correct flow rate is then set by the flow restrictors.

## Unique Integrated Automatic Calibration

The all new Endura AZ20 automatic calibration system eliminates the need for the expensive ancillary equipment required for automatic calibration on traditional flue gas oxygen analyzer systems. ABB's fully integrated, automatic calibration feature controls the test gas sequence and detects test gas availability, eliminating incorrect calibrations due to loss of test gas.



*Advanced Automatic Calibration Facility*

Integrated automatic calibration secures the oxygen measurement, providing complete confidence in the analyzer's performance.

Long-term operation without technician intervention minimizes operating costs, total cost-of-ownership, optimizes system accuracy and contributes to the CEMS (Continuous Emissions Monitoring Compliance). A significant proportion of service visits to an analyzer result in 'no fault found'. Endura AZ20's high-quality manufacture, advanced diagnostics and fully-integrated, automatic calibration is targeted at reducing this wasted effort and cost.

## Advanced Transmitter

The Endura AZ20 transmitter incorporates the most up-to-date design and technology available today.

ABB's universal human/machine interface (HMI) with its large, clear, backlit graphical display, 'through-the-glass' control and intuitive menu structure simplifies transmitter configuration and operation.

The user-friendly interface enables fast, easy data entry for all parameters and the 'Easy Setup' menu speeds and simplifies system commissioning.

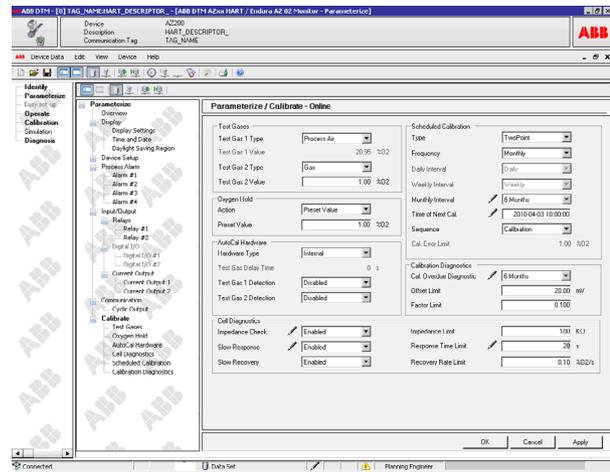
Advanced diagnostics, in accordance with NAMUR NE107, classify alarms and warnings as 'Maintenance Required', 'Check Function', 'Failure' and 'Out-of-Specification'. Cell performance is monitored by the transmitter; indicators such as cell impedance, rate-of-response to test gasses and changes in calibration offset/factor are recorded and analyzed. The current cell 'quality' is displayed by the transmitter as a visual indication of the measurement confidence; providing the operator all the information required to keep the monitor operating at peak performance.

The Performance Log holds up to 100 time-stamped events. When the log is full, the oldest data is overwritten by new entries. The log contains details of measurements and coefficients for all calibrations and accuracy checks.

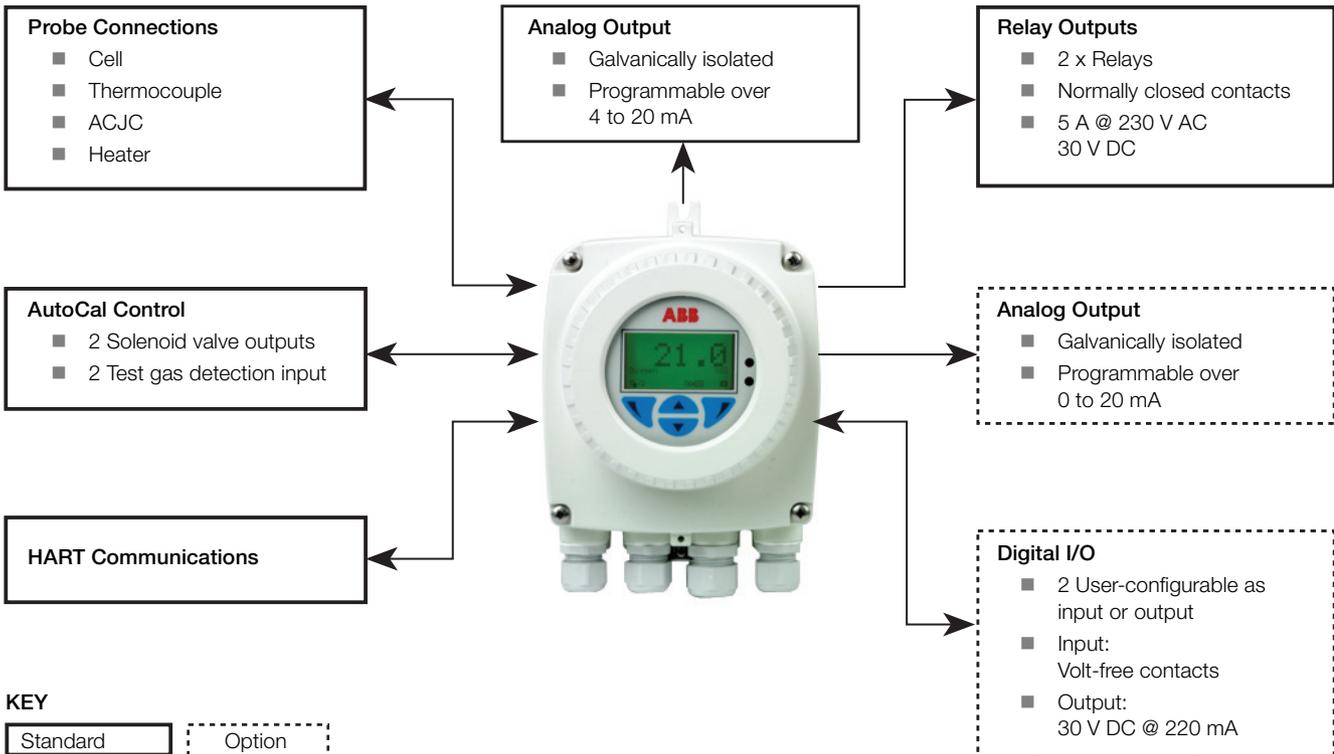
2 Relay outputs and a traditional analog output are fitted as standard, with the option of adding a second analog output or 2 digital inputs/outputs (I/O).

The Endura AZ20 transmitter is equipped with HART communication as standard, supported by a full Device Type Manager (DTM) to enable remote access to the analyzer through a user-friendly graphical interface. The DTM provides full access to the transmitter setup, logged data and diagnostics information as well as live data.

The IrDA standard infrared communication port can also be used with the DTM to upload and download device configurations. In addition, it enables data logged values and diagnostics to be viewed on a hyperterminal interface or a PC. The device's firmware can also be upgraded using this port.

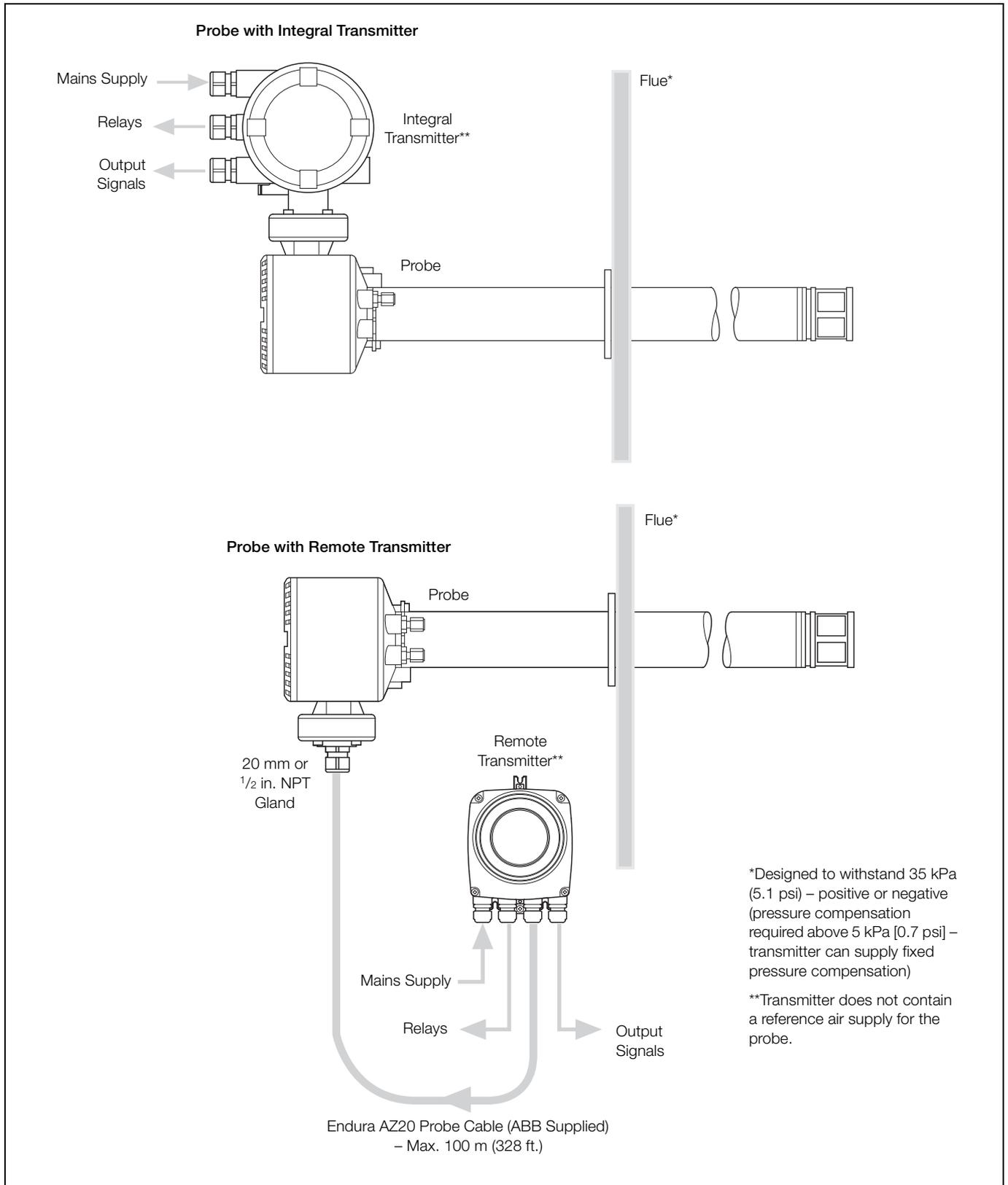


DTM Graphical Interface

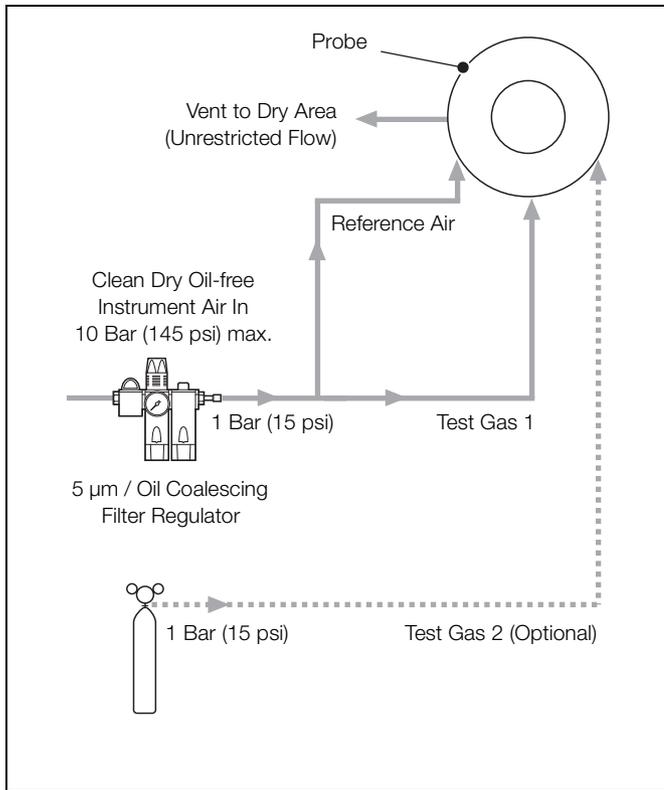


**Transmitter Options**

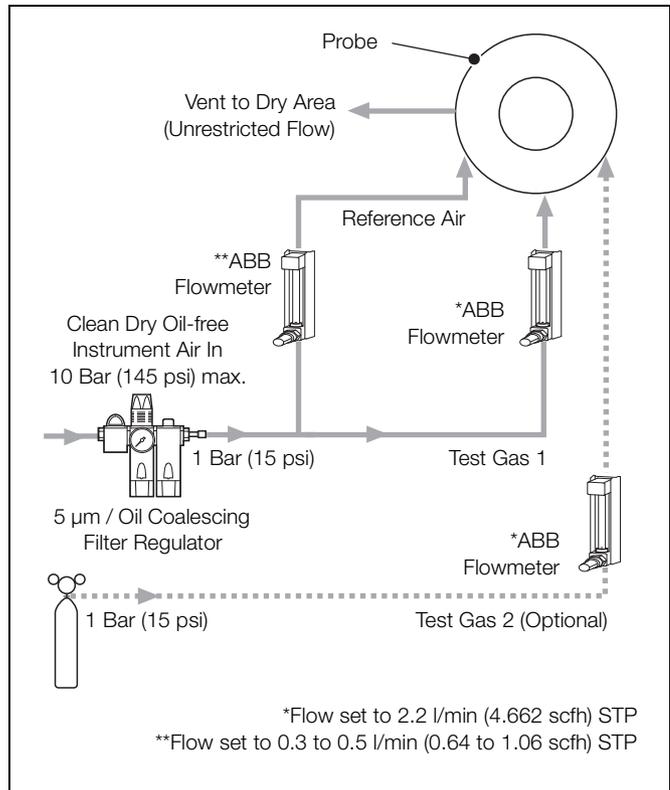
There are 2 Endura AZ20 transmitter options – probe with integral transmitter and probe with remote transmitter:



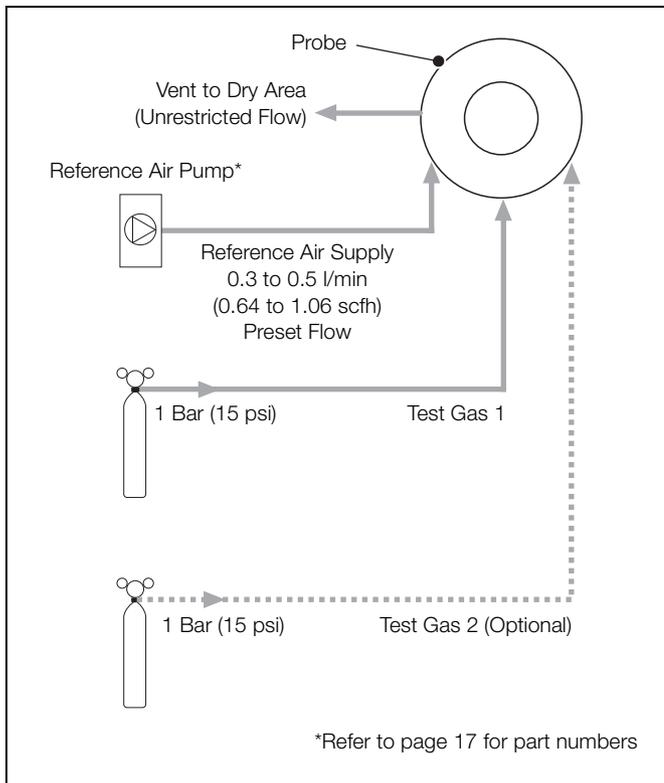
**Test Gas and Reference Air Supply Configurations – Automatic Calibration (AutoCal) Systems**



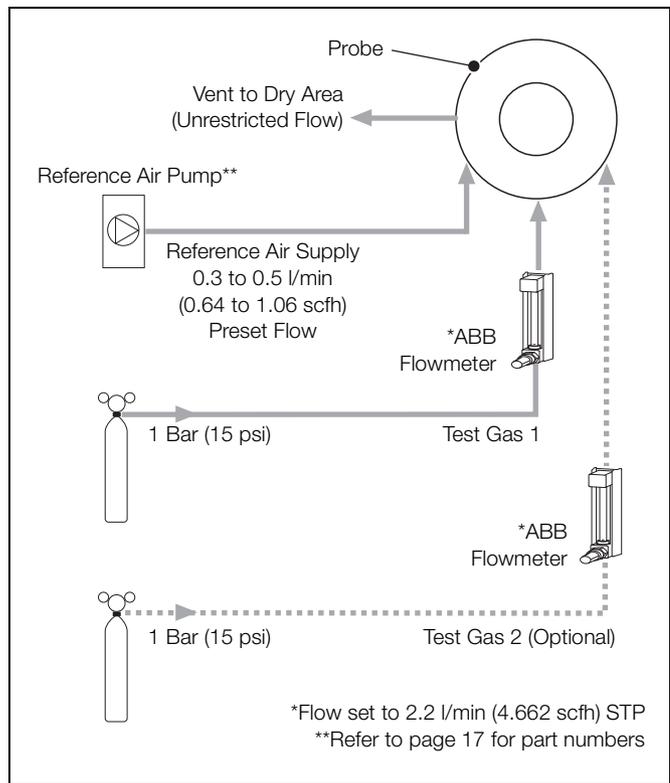
*AutoCal with Air Supply and Restrictors*



*AutoCal with Air Supply and no Restrictors*

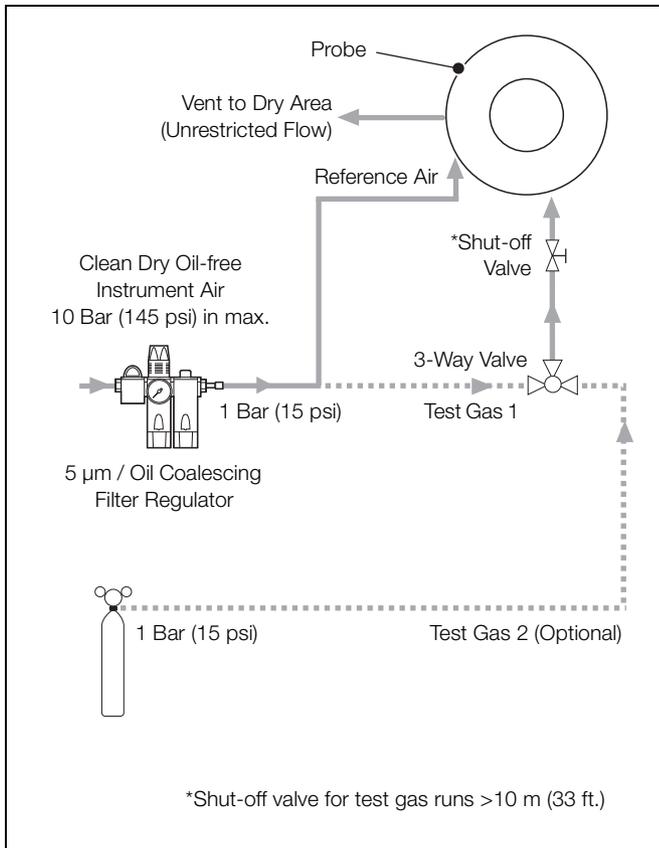


*AutoCal with Test Gas(es) and Restrictors*

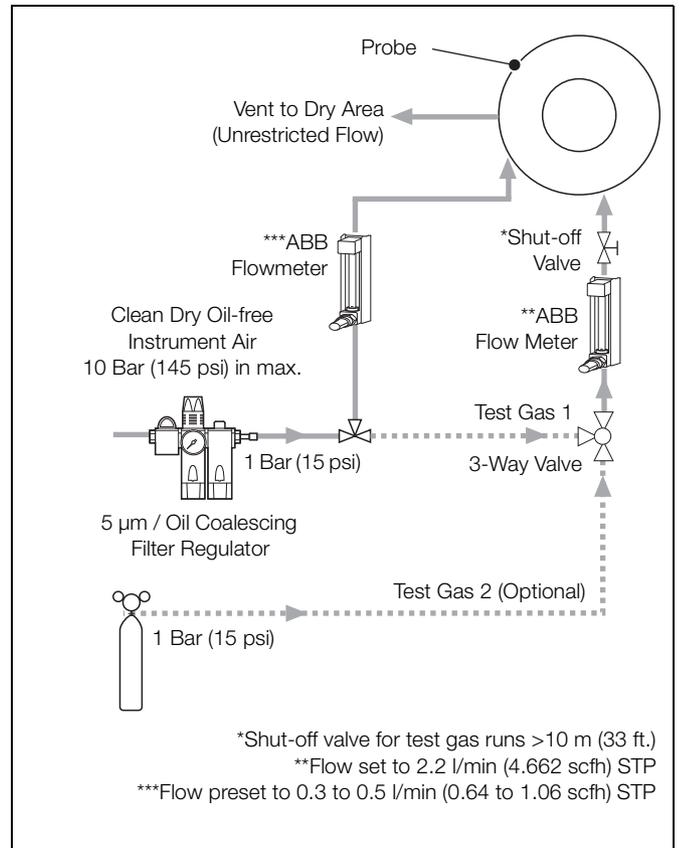


*AutoCal with Test Gas(es) and no Restrictors*

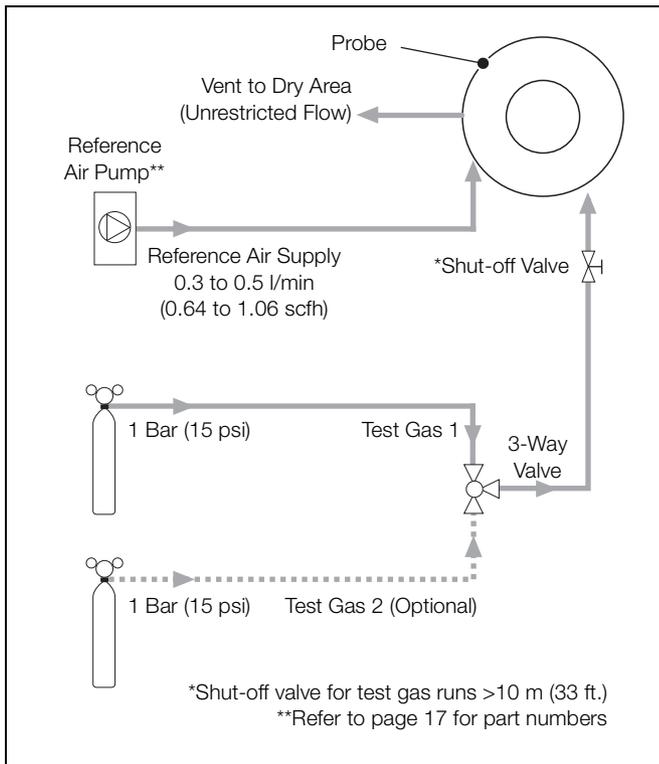
**Test Gas and Reference Air Supply Configurations – Non-automatic Calibration (Non-AutoCal) Systems**



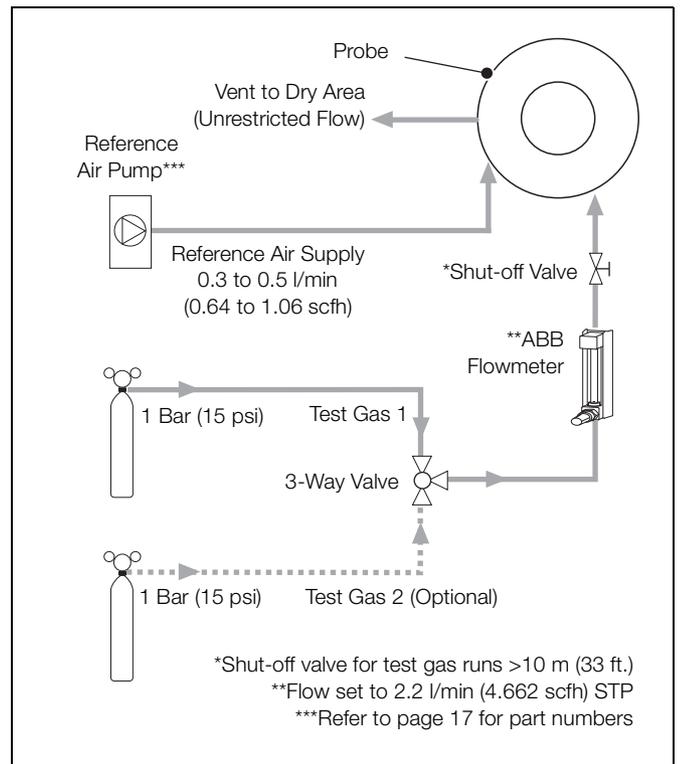
Non-AutoCal with Air Supply and Restrictors



Non-AutoCal with Air Supply and no Restrictors



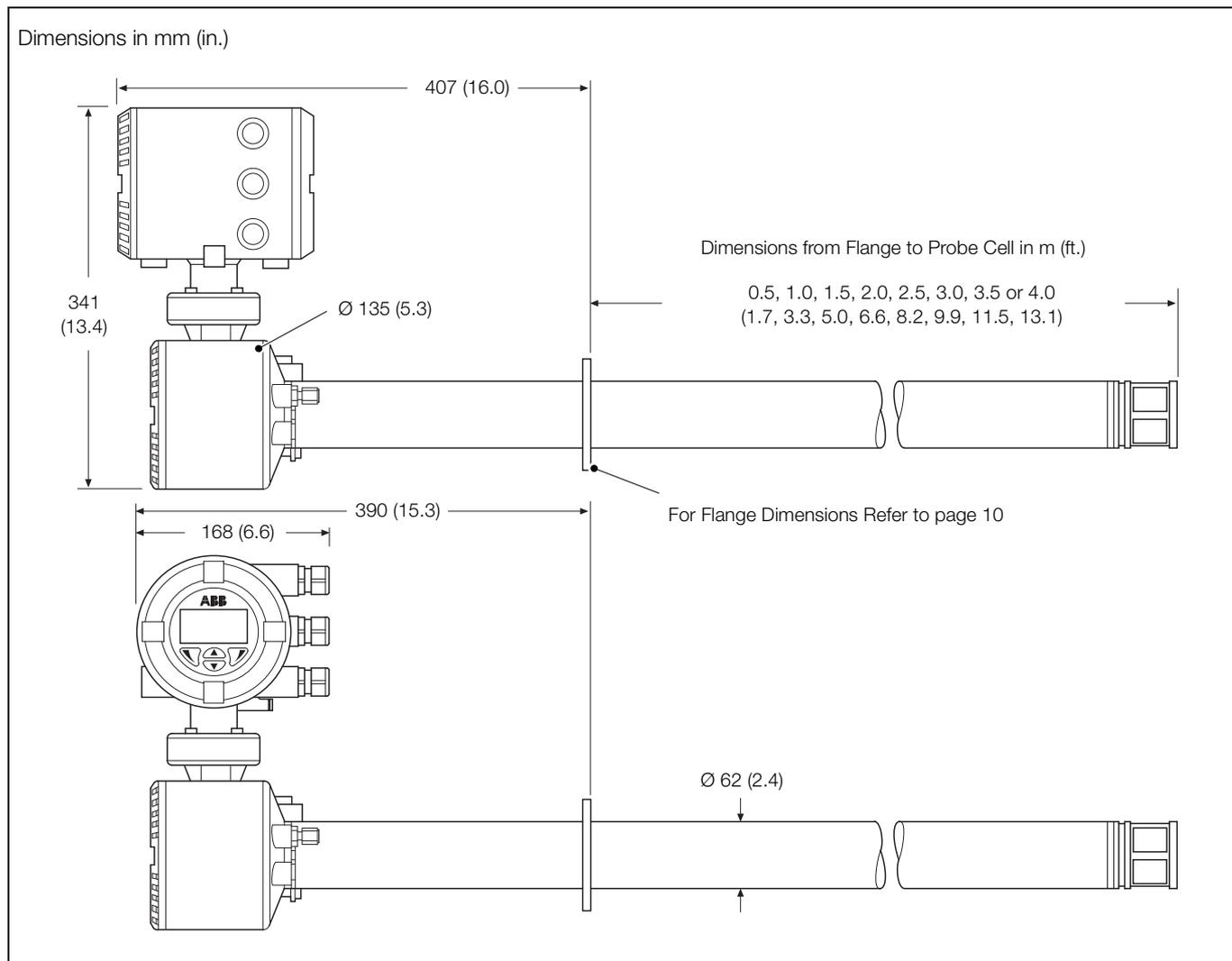
Non-AutoCal with Test Gas(es) and Restrictors



Non-AutoCal with Test Gas(es) and no Restrictors

## Overall Dimensions

### Probe and Integral Transmitter

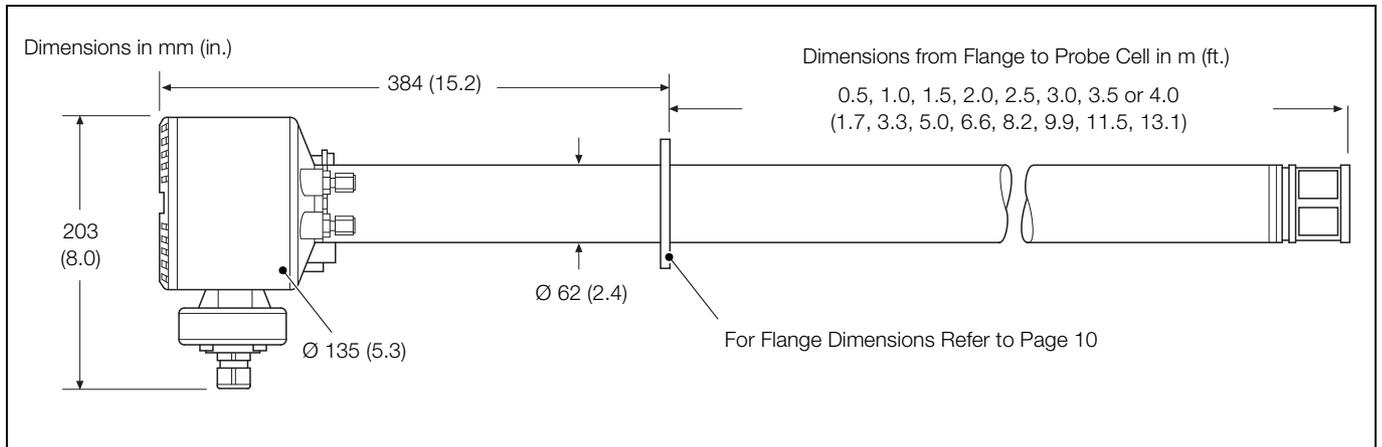


Overall Dimensions – Probe and Integral Transmitter

Length m (ft.)	Unpacked – kg (lb)	Packed – kg (lb)
0.5 (1.7)	12.5 (27.5)	17.72 (39.1)
1.0 (3.3)	14.8 (32.5)	21.43 (47.3)
1.5 (5.0)	17.0 (37.5)	25.14 (55.5)
2.0 (6.6)	19.3 (42.5)	28.35 (63.6)
2.5 (8.2)	21.5 (47.5)	34.17 (75.4)
3.0 (9.9)	23.8 (52.4)	37.38 (83.5)
3.5 (11.5)	26.0 (57.4)	41.59 (91.7)
4.0 (13.1)	28.3 (62.3)	45.30 (99.9)

Weights – Probe and Integral Transmitter

**Remote Probe**

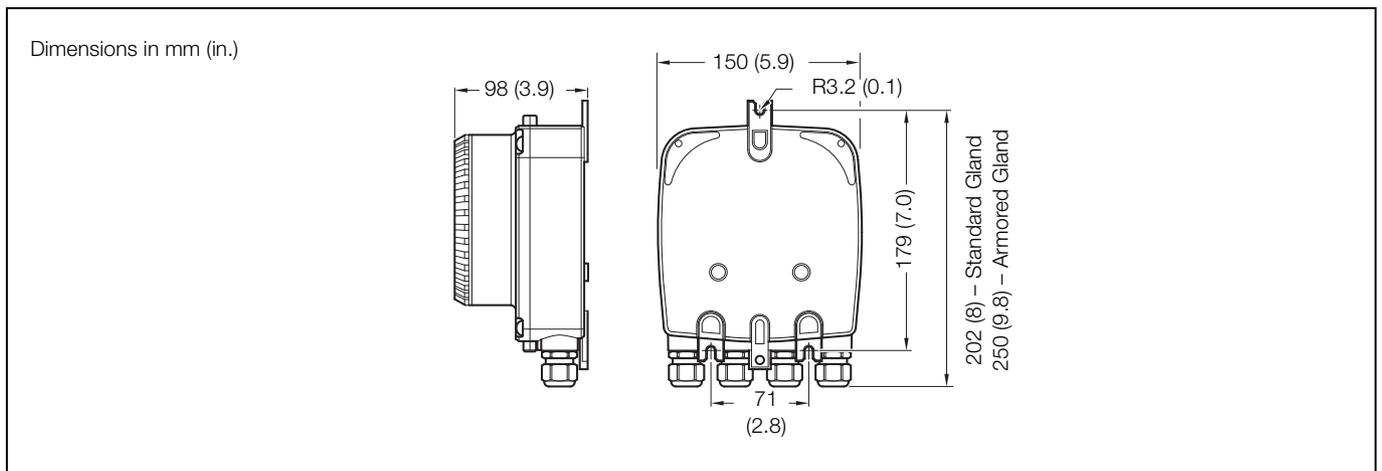


Overall Dimensions – Remote Probe

Length m (ft.)	Probe Only Unpacked – kg (lb)	Packed Only Packed – kg (lb)	Probe and Remote Transmitter Unpacked – kg (lb)	Probe and Remote Transmitter Packed – kg (lb)
0.5 (1.7)	9 (19.9)	14.2 (31.4)	11.5 (25.4)	16.7 (36.9)
1.0 (3.3)	11.3 (24.9)	17.9 (39.6)	13.6 (30.3)	20.5 (45.1)
1.5 (5.0)	13.5 (29.8)	21.7 (47.7)	16.0 (35.3)	24.2 (53.3)
2.0 (6.6)	15.8 (34.8)	25.4 (55.9)	18.3 (40.3)	27.9 (61.4)
2.5 (8.2)	18 (39.7)	30.7 (67.7)	20.5 (42.2)	33.2 (73.2)
3.0 (9.9)	20.3 (44.7)	34.4 (75.8)	22.8 (50.2)	36.9 (81.3)
3.5 (11.5)	22.5 (49.6)	38.1 (84.0)	25.0 (55.2)	40.6 (89.5)
4.0 (13.1)	24.8 (54.6)	41.8 (92.2)	27.3 (60.1)	44.3 (97.7)

Weights – Remote Probe

**Remote Transmitter**



Overall Dimensions – Remote Transmitter (Standard Gland Shown)

## Probe Flanges (All Probe Lengths) and Mounting Plates for Standard Probe Flanges

Dimensions in mm (in).

**Note.** The pressure ratings for these flanges do not apply.

Flange Type	A	B	C (Ø)	D (PCD)
ABB Standard (0.5 m [1.7 ft.] probes only)	101 (3.97)	6 (0.24)	7.3 (0.29)	80 (3.15)
ABB Standard	165 (6.50)	12 (0.47)	12.5 (0.50)	140 (5.51)

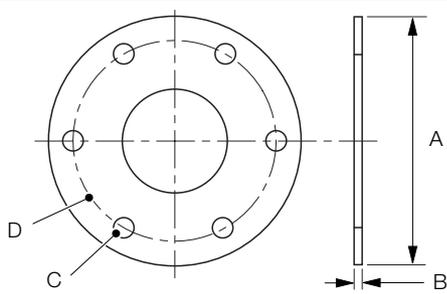
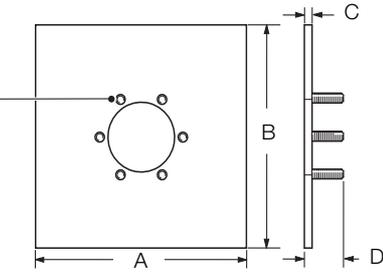


ABB Probe Flange Types, Dimensions

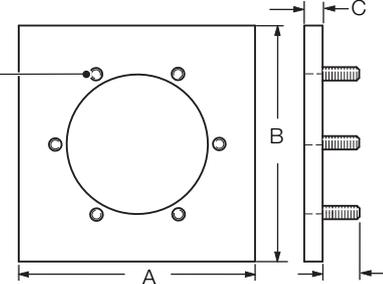
Mounting Plate	A	B	C A	D
0.5 m (1.7 ft.)	160 (6.3)	160 (6.3)	7 (0.27)	16 (0.63)
1.0 to 4.0 m (3.3 to 13.1 ft.)	203 (8.0)	203 (8.0)	20 (0.79)	32 (1.26)

Comprising: mounting plate, gasket, 6 each: M6/M10 shakeproof washers, plain washers and nuts.



6 M6 Studs  
Equispaced on  
80 (3.15) PCD

Standard mounting plate for 0.5 m (1.7 ft.) probe –  
Part No. AZ200 796

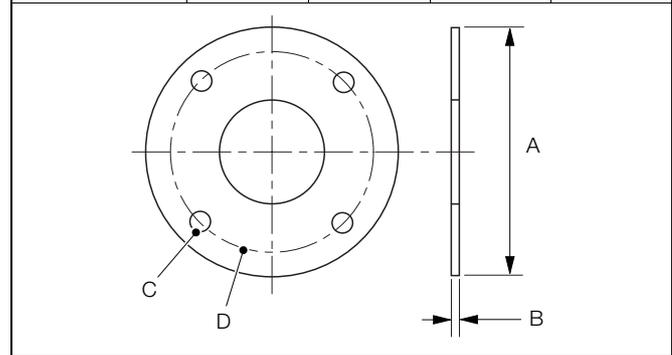


6 M10 Studs  
Equispaced on  
140 (5.5) PCD

Standard mounting plate for 1.0 to 4 m (3.3 to 13.1 ft.)  
probes – Part No. AZ200 795

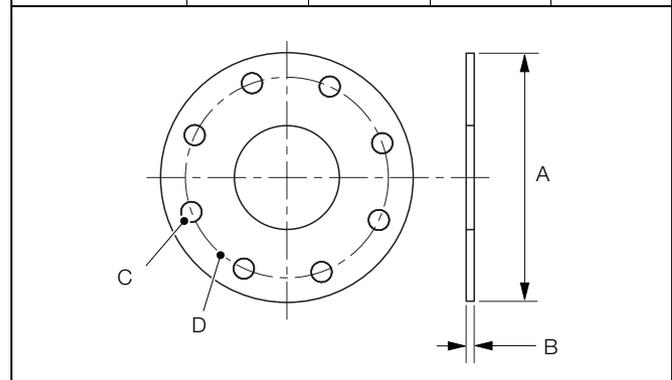
ABB Flange Mounting Plates

Flange Type	A	B	C (Ø)	D (PCD)
ANSI 2 in 150	152.4 (6.00)	12 (0.47)	19 (0.75)	120.6 (4.75)
ANSI 2.5 in 150	177.8 (7.00)	12 (0.47)	19 (0.75)	139.7 (5.50)
ANSI 3 in 150	190.5 (7.50)	12 (0.47)	19 (0.75)	152.4 (6.00)
DIN 65 PN16	185 (7.28)	12 (0.47)	18 (0.70)	145 (5.70)
JIS 65 5K	155 (6.10)	12 (0.47)	15 (0.59)	130 (5.12)
JIS 80 5K	180 (7.08)	12 (0.47)	19 (0.75)	145 (5.71)



4-Hole Probe Flange Types and Dimensions

Flange Type	A	B	C (Ø)	D (PCD)
ANSI 4 in 150	228.6 (9.0)	12 (0.47)	19 (0.75)	190.5 (7.50)
DIN 80 PN16	200 (7.87)	12 (0.47)	18 (0.70)	160 (6.30)
DIN 100 PN16	220 (8.66)	12 (0.47)	18 (0.70)	180 (7.08)
JIS 100 5K	200 (7.87)	12 (0.47)	19 (0.75)	165 (6.50)

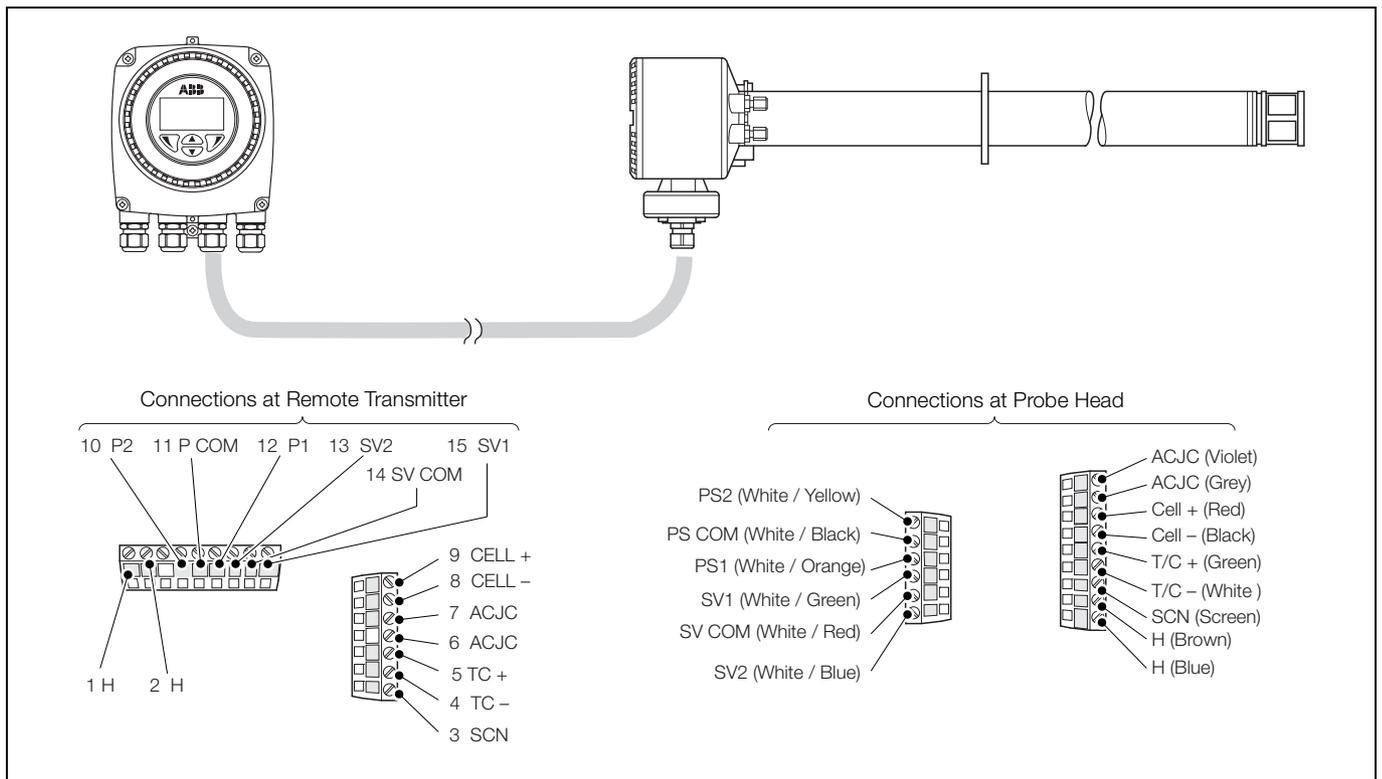


8-Hole Probe Flange Types and Dimensions

### Electrical Connections – Remote Transmitter to Probe

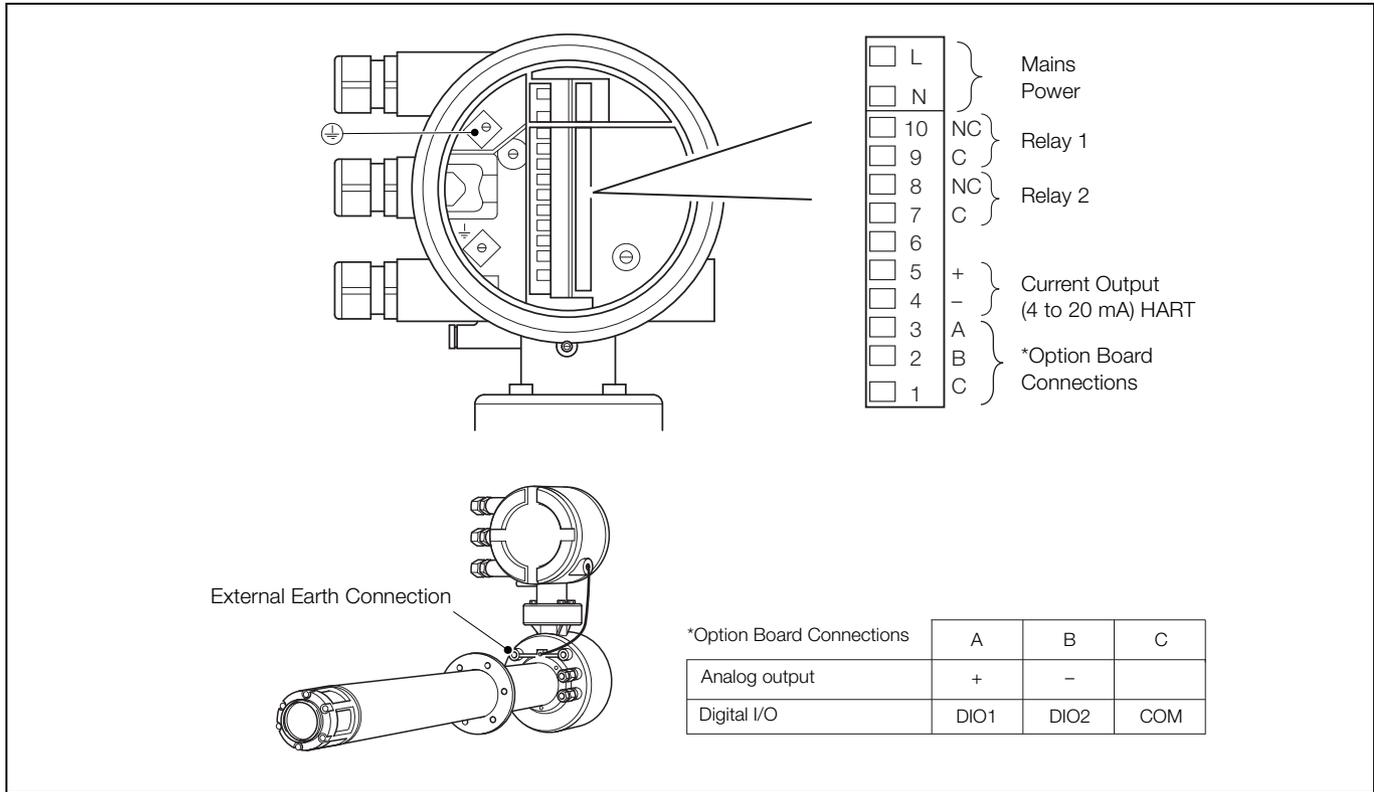
Transmitter Terminal No.	Probe Terminal Color Label	Tag ID	Connection Type	Cable Color Code
1	Brown	H	Heater	Brown
2	Blue	H	Heater	Blue
3	Light Yellow (SCN)	SCN	Screen	Screens
4	White	T/C –	Thermocouple (–ve)	White
5	Green	TC+	Thermocouple (+ve)	Green
6	Grey	ACJC	PT1000 Cold Junction Compensation	Grey
7	Violet	ACJC		Violet
8	Black	CELL –	Oxygen Input (–ve)	Black
9	Red	CELL +	Oxygen Input (+ve)	Red
10	White/Yellow	PS2	Pressure Switch – Gas 2	White/Yellow
11	White/Black	P COM	Pressure Switch – Common	White/Black
12	White/Orange	PS1	Pressure Switch – Gas 1	White/Orange
13	White/Blue	SV2	Solenoid Valve – Gas 2	White/Blue
14	White/Red	SV COM	Solenoid Valve – Common	White/Red
15	White/Green	SV1	Solenoid Valve – Gas 1	White/Green

Transmitter to Probe Connections



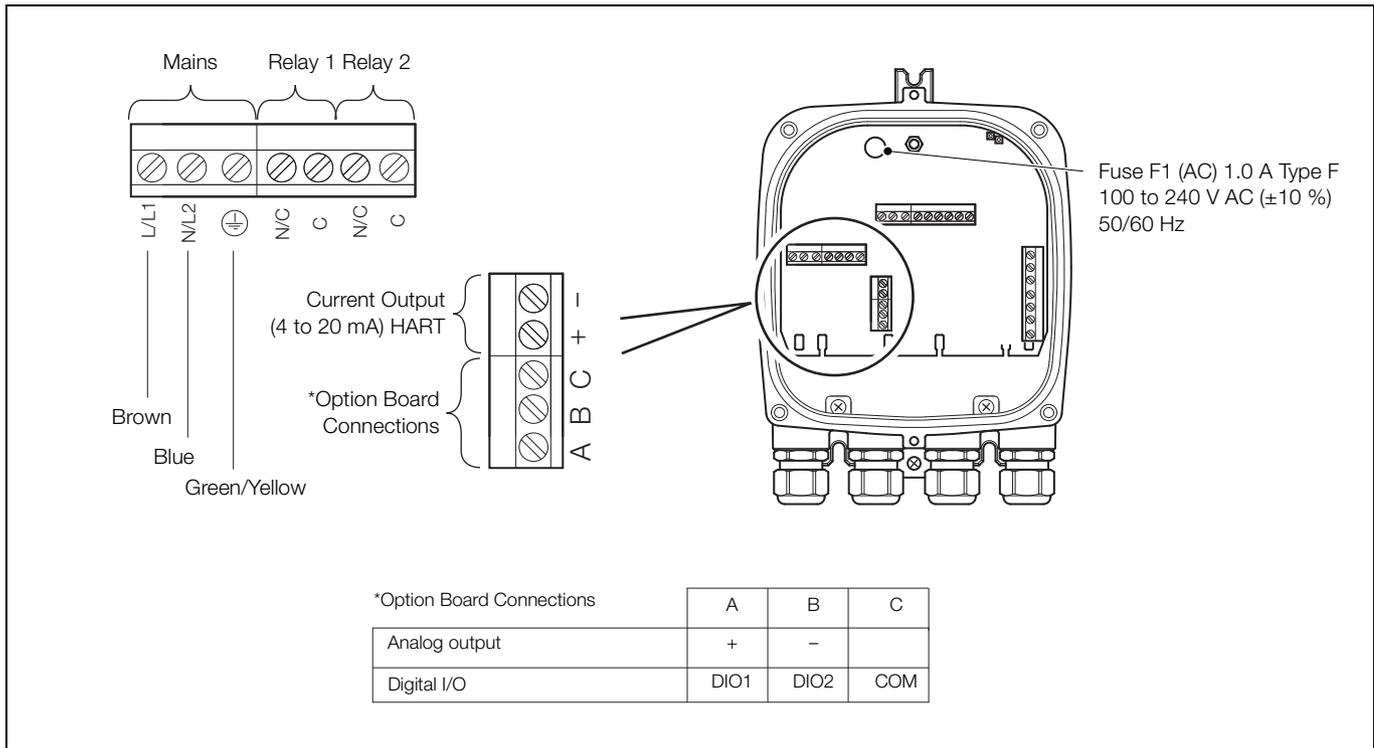
Electrical Connections – Remote Transmitter and Probe

**Integral Transmitter – Power Supply and Output Connections**



*Integral Transmitter – Power Supply and Output Connections*

**Remote Transmitter – Power Supply and Output Connections**



*Remote Transmitter – Power Supply and Output Connections*

## System Specification

### Measurement Performance

#### Range

0.01 to 100 % O<sub>2</sub>

#### Test gas response time

Initial dead time 3 seconds

T<sub>90</sub> < 10 seconds

#### System accuracy

< ±0.75 % of reading or 0.05 % O<sub>2</sub>, whichever is the greater, based on a nominal range of 0.01 to 25 % O<sub>2</sub> or 20 to 100 % O<sub>2</sub>

#### Drift

< ± 1 % maximum % O<sub>2</sub> range value per month (without calibration)

< ± 0.2 % typical

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### Environmental Data

#### Ambient operating temperature

Transmitter      -20 to 55 °C (-4 to 131 °F)

Probe              -20 to 70°C (-4 to 158 °F)

#### Storage temperature

-40 to 85 °C (-40 to 185 °F)

#### Operating humidity

Up to 95 % RH, non-condensing

#### Sunlight

Store and operate out of direct sunlight

#### Ingress protection

Probe (excludes remote/integral transmitter)      IP66 (NEMA 4X)

Electronics enclosures  
– remote and integral      IP66 (NEMA 4)

### Power Supply

#### AC power supply

100 to 240 V AC ±10 % (90 V min. to 264 V max.) 50 / 60 Hz

#### Electronics

< 10 W

#### Probe heater

< 100 W

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### EMC

#### Emissions and immunity

Conforms to EN61326-1:2006

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### Safety

#### General safety

Conforms to EN61010-1: 2001

#### Approvals and safety certification

CE mark

## Endura AZ20 Oxygen Monitor

Combustion gas analysis

### Probe Specification

#### Physical

##### Probe insertion lengths

0.5 m (1.7 ft.)	2.5 m (8.2 ft.)
1.0 m (3.3 ft.)	3.0 m (9.9 ft.)
1.5 m (5.0 ft.)	3.5 m (11.5 ft.)
2.0 m (6.6 ft.)	4.0 m (13.1 ft.)

##### Process connection

All probe lengths:

ANSI B16.5 150 lb

2, 2.5, 3, 4 in

DIN2501 Part 1

65, 80, 100 mm

JIS B2238 5K

NPT

(flange pressure ratings do not apply)

0.5 m (1.7 ft.) probes	ABB 500 mm (19.7 in) standard flange
1.0 m (3.3 ft.) and longer	ABB 1000 mm (39.4 in) standard flange

##### Probe body material

316L stainless steel

##### Mounting angle

Horizontal to vertically down

**Note.** Horizontally-mounted probes greater than 2.0 m (6.6 ft.) in length may need to be supported.

#### Process Conditions

##### Standard process temperature

All probe lengths\*      -20 to 800 °C (-4 to 1472 °F)

##### Process pressure

Designed to withstand 35 kPa (5.1 psi) – positive or negative (pressure compensation required above 5 kPa (0.7 psi) – transmitter can apply fixed pressure compensation

\* For > 2 m (6.6 ft.) probes, special conditions may apply

#### Operating requirements

##### Reference air

Regulated supply	Probes with restrictors	1 bar (15 psi), flowmeters not required
	Probes without restrictors	1 bar (15 psi) flowmeters required with flow set to 0.3 to 0.5 l/min (0.64 to 1.06 scfh)
Pumped supply	Probes with / without restrictors	Preset flow 0.3 to 0.5 l/min (0.64 to 1.06 scfh)

##### Test gas

User-selectable, 100 to 0.1 % O<sub>2</sub> balance N<sub>2</sub> and/or air (air is recommended as one of the test gases)

Probes with restrictors	1 bar (15 psi) – flowmeters not required as restrictors preset flow to 2.2 l/min (4.662 scfh)
Probes without restrictors	1 bar (15 psi) flowmeters required, set to 2.2 l/min (4.662 scfh) flow

##### Calibration

Manual, semi-automatic or automatic (controlled by Endura AZ20 transmitter)

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#### Automatic calibration

##### AutoCal hardware

Optional built-in solenoid valves for control of test gas flow  
Built-in pressure switches to detect presence of test gases

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#### Heater Operational Requirements

##### AZ20 Probe

Nominally 190 Ω, 70 W at 115 V AC – power is limited to 70 W max. by AZ20 transmitter over an 85 to 265 V AC range

##### AZ20 / ZFG2 Replacement Probe

Nominally 25 Ω, 120 W at 55 V AC – for use only with a ZDT analyzer or ZMT transmitter

## Transmitter Specification

### Transmitter enclosures

#### Remote

- Wall-, pipe- or stand-mounted
- 4 gland entries
- Optional 1/2 in NPT, M20

#### Integral

- Head-mounted
- 3 gland entries
- Optional 1/2 in NPT, M20

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### Automatic calibration

#### AutoCal hardware

- Isolated solenoid valve control as standard, 24 V @ 2 W per valve\*
- Dedicated isolated digital inputs to monitor pressure switch contacts as standard – voltage-free, normally closed with gas present

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### Display and switches

#### Display type

- Graphical 128 x 64 pixel LCD

#### Display backlight

- Green LED

#### Operator switches

- 4 capacitive switches  
(operated through the front glass)

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### Relay outputs

#### Number

- 2 standard

#### Type

- Normally closed
- 5 A @ 230 V AC or 30 V DC (non-inductive)

#### Functions

- User-configurable – can be activated by one or more of the following signals:
  - Process alarm 1, 2, 3, 4
  - Calibration in progress
  - Calibration failed
  - Out of test gas 1, 2
  - Test gas 1 valve control
  - Test gas 2 valve control
  - Failure diagnostic
  - Out-of-specification diagnostic
  - Maintenance required diagnostic
  - Function check diagnostic

\*For driving internal automatic calibration (AutoCal) probes or can be used to drive external calibration units on remote transmitters only.

### Analog outputs

#### Standard

- 1 isolated current output
- Programmable to retransmit oxygen (linear or logarithmic) or temperature
- Programmable over 4 to 20 mA
- Over-range capability to indicate system failure programmable from 4 to 22 mA

#### Optional

- 1 isolated current output
- Programmable to retransmit oxygen (linear or logarithmic) or temperature
- Programmable over 0 to 20 mA
- Over-range capability to indicate system failure programmable from 0 to 22 mA

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### Digital inputs/outputs

#### Number

- 2 (optional)

#### Type

- User-configurable as either input or output

#### Input

- Volt-free contact

#### Output

- Transistor switch capable of sinking 220 mA
- Low output, < 2 V DC
- Switch voltage 30 V DC maximum

#### Isolation

- Not isolated from each other or from other circuitry

#### Input functions

- User-configurable for:
  - Automatic calibration start
  - Automatic calibration stop
  - Automatic calibration start/stop

#### Functions

- User-configurable – can be activated by one or more of the following signals:
  - Process alarm 1, 2, 3, 4
  - Calibration in progress
  - Calibration failed
  - Out of test gas 1
  - Out of test gas 2
  - Test gas 1 valve control
  - Test gas 2 valve control
  - Failure diagnostic
  - Out-of-specification diagnostic
  - Maintenance required diagnostic
  - Function check diagnostic

## ...Transmitter Specification

### Hart communications

#### Version

5.7 as standard

#### Integration

Device Type Manager (DTM) and Electronic Device Description (EDD)  
Provide online/offline device configuration, online monitoring of measurement values and diagnostic states

#### DTM

FDT v1.2.1 compliant  
Works with FDT framework packages  
(for example, ABB Asset Vision Basic)

#### EDD

Compliant with suitable framework tools  
(for example, SDC 625 and Simatic PDM tools)

### Infrared service port

#### Accessibility

Through front face

#### Type

IrDA standard

#### Baud rate

Up to 115K baud

#### Functions

Firmware update  
Remote HMI  
Diagnostic log download  
Datalog output  
HART via IrDA

### Languages

English

### Calibration

#### Manual calibration

1 point (offset)  
1 point (factor)  
2 point (offset + factor)

#### Automatic calibration

1 point (offset)  
2 point (offset + factor)

#### Calibration control

Front panel controls  
Digital inputs  
HART commands  
User-defined schedule

#### Calibration scheduler

User-defined schedule enables automatic calibration frequency to be set from 1 day to 12 months

## Part Numbers for Endura AZ20 and AZ20/ ZFG2 Replacement Heaters, Thermocouple / Electrode Assemblies & ABB Flowmeters

Probe Length	Part Number
0.5 m (1.7 ft.)	AZ200 710
1.0 m (3.3 ft.)	AZ200 711
1.5 m (5.0 ft.)	AZ200 712
2.0 m (6.6 ft.)	AZ200 713
2.5 m (8.2 ft.)	AZ200 714
3.0 m (9.9 ft.)	AZ200 715
3.5 m (11.5 ft.)	AZ200 716
4.0 m (13.1 ft.)	AZ200 717

Endura AZ20 – Standard Heater Assembly

Probe Length	Part Number
0.5 m (1.7 ft.)	AZ200 701
1.0 m (3.3 ft.)	AZ200 702
1.5 m (5.0 ft.)	AZ200 703
2.0 m (6.6 ft.)	AZ200 704
2.5 m (8.2 ft.)	AZ200 705
3.0 m (9.9 ft.)	AZ200 706
3.5 m (11.5 ft.)	AZ200 707
4.0 m (13.1 ft.)	AZ200 708

Thermocouple / Electrode Assembly

Probe Length	Part Number
0.5 m (1.7 ft.)	AZ200 720
1.0 m (3.3 ft.)	AZ200 721
1.5 m (5.0 ft.)	AZ200 722
2.0 m (6.6 ft.)	AZ200 723

Endura AZ20 / ZFG2 Replacement Probe – Heater Assembly

Flowmeter Type	Part Number
1/4 NPT Flowmeter (Reference Air): 0.1 to 0.85 l/min (0.21 to 1.8 scfh) STP	AZ200 786
1/4 BSP Flowmeter (Reference Air): 0.1 to 0.85 l/min (0.21 to 1.8 scfh) STP	AZ200 787
1/4 NPT Flowmeter (Test Gas): 0.6 to 4.4 l/min (1.27 to 9.32 scfh) STP	AZ200 788
1/4 BSP Flowmeter (Test Gas): 0.6 to 4.4 l/min (1.27 to 9.32 scfh) STP	AZ200 789

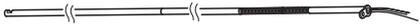
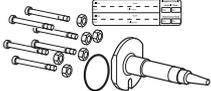
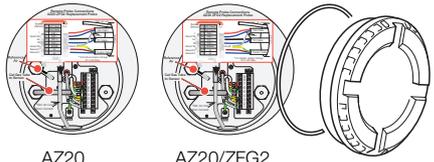
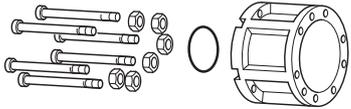
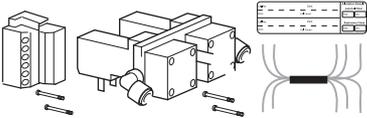
ABB Flowmeters NPT/BSP

## Spares and Accessories

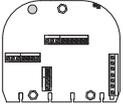
### Documentation & Software

Part No.	Description
IM/AZ20M-EN	<p>Maintenance Guide</p>  <p>Download* the guide from: <a href="http://www.ABB.com/analytical-instruments">www.ABB.com/analytical-instruments</a></p> <p>*Enter this address in your browser and then type <b>IM/AZ20M-EN</b> in the search box – the Maintenance Guide is the top link.</p>
AZ20 DTM Software	Device Type Manager – please contact ABB for details

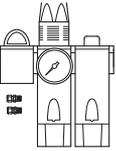
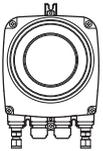
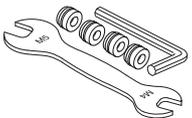
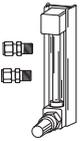
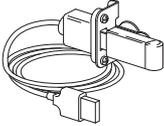
### Probe Spares

Part No.	Description
Length dependant – see page 16 for part numbers	<p>Thermocouple / Electrode Assembly</p> 
Length dependant – see page 16 for part numbers	<p>AZ20 Standard Heater Assembly AZ20/ZFG2 Replacement Heater Assembly</p> 
AZ200 700	<p>Cell Assembly – includes C-ring and Commissioning label</p> 
AZ200 727	<p>Restrictor Upgrade Kit</p> 
AZ200 728	<p>Probe End Cap – includes wiring labels</p>  <p>AZ20 Version      AZ20/ZFG2 Replacement Version</p>
AZ200 729	<p>Diffuser Flame Arrestor Assembly – includes C-ring</p> 
AZ200 730	<p>AutoCal Upgrade Assembly</p> 

### Transmitter Spares

Part No.	Description
AZ200 750	<p>AZ20 Transmitter Cartridge</p> <p>Standard</p> 
AZ200 751	<p>Standard + Analog O/P</p>
AZ200 752	<p>Standard + Digital O/P</p>
AZ200 758	<p>Remote (Type 4) Transmitter Backplane</p> 
AZ200 757	<p>Integral (Type 3) Transmitter Backplane</p> 

### Accessories

Part No.	Description
AZ200 731	<p>Coalescing Filter-Regulator</p> <p>1/4 NPT 5 µm</p> 
AZ200 732	<p>1/4 NPT 5 µm</p>
AZ200 770	<p>ABB Reference Air Pump</p> <p>1/4 BSP (Metric) 230 V AC 50 / 60 Hz</p> 
AZ200 771	<p>1/4 BSP (Metric) 115 V AC 50 / 60 Hz</p>
AZ200 772	<p>1/4 NPT (Imperial) 230 V AC 50 / 60 Hz</p>
AZ200 773	<p>1/4 NPT (Imperial) 115 V AC 50 / 60 Hz</p>
AZ200 798	<p>Probe Tool Kit* NPT (AZ20)</p> 
AZ200 799	<p>BSP (AZ20) *Included with probe as standard</p>
Application dependant – see page 16 for part numbers	<p>ABB Flowmeter</p> 
AZ200 785	<p>USB to IrDA Adaptor Kit</p> 

Ordering information – Endura AZ20 Probe/Transmitter

	AZ20/	Tx			Probe										STD
		X	X	X	X	X	X	X	X	X	X	X	X	X	
<b>Transmitter Options</b>															
None	0														
Standard	1														
Standard + 2 <sup>nd</sup> analog output	2														
Standard + 2 digital inputs/outputs	3														
<b>Transmitter Entry Type</b>															
None (no transmitter required)	0														
Metric (M20)	1														
Imperial (NPT)	2														
<b>Transmitter System Type</b>															
None (no transmitter required)	0														
Integral	1														
Remote	2														
<b>Probe Type</b>															
None (no probe required)	0														
Standard	1														
<b>Probe Entry Type</b>															
None (no probe required)	0														
Metric (M20)	1														
Imperial (NPT)	2														
<b>Probe System Type</b>															
None (no probe required)	0														
Integral	1														
Remote	2														
<b>Automatic Calibration</b>															
None (no probe required)	0														
No automatic calibration (with flow restrictors)	1														
No automatic calibration (without flow restrictors)	2														
Automatic calibration (with flow restrictors)	3														
Automatic calibration (without flow restrictors)	4														
<b>Insertion Length</b>															
None (no probe required)	0	2.5 m (8.2 ft.)		5											
0.5 m (1.7 ft.)	1	3.0 m (9.9 ft.)		6											
1.0 m (3.3 ft.)	2	3.5 m (11.5 ft.)		7											
1.5 m (5.0 ft.)	3	4.0 m (13.1 ft.)		8											
2.0 m (6.6 ft.)	4														
<b>Flange Type</b>															
None (no probe required)	0	ANSI 2.5 in flange		6											
ABB standard flange	1	ANSI 3 in flange		7											
DIN 65 mm flange	2	ANSI 4 in flange		8											
DIN 80 mm flange	3	JIS 65 mm flange		9											
DIN 100 mm flange	4	JIS 80 mm flange		A											
ANSI 2 in flange	5	JIS 100 mm flange		B											
<b>Thermocouple Type</b>															
None (no probe required)	0														
Type K	1														
<b>Cell Options</b>															
None (no probe required)	0														
Standard cell	1														
<b>Cable</b>															
None	0	50 m (164 ft.)		4											
5 m (16 ft.)	1	75 m (246 ft.)		5											
10 m (33 ft.)	2	100 m (328 ft.)		6											
25 m (82 ft.)	3														
<b>Language</b>															
English															E

### Ordering information – ZFG2 Replacement Probe

	AZ20/	0	0	0	2	X	2	2	X	X	1	1	X	X	STD
<b>Transmitter Options</b>															
None		0													
<b>Transmitter Entry Type</b>															
None (no transmitter required)			0												
<b>Transmitter System Type</b>															
None (no transmitter required)				0											
<b>Probe Type</b>															
ZFG2 replacement					2										
<b>Probe Entry Type</b>															
Metric (M20)						1									
Imperial (NPT)						2									
<b>Probe System Type</b>															
Remote							2								
<b>Automatic Calibration</b>															
No automatic calibration (without flow restrictors)								2							
<b>Insertion Length</b>															
0.5 m (1.7 ft.)														1	
1.0 m (3.3 ft.)														2	
1.5 m (5.0 ft.)														3	
2.0 m (6.6 ft.)														4	
<b>Flange Type</b>															
None (no probe required)	0	ANSI 2.5 in flange													6
ABB standard flange	1	ANSI 3 in flange													7
DIN 65 mm flange	2	ANSI 4 in flange													8
DIN 80 mm flange	3	JIS 65 mm flange													9
DIN 100 mm flange	4	JIS 80 mm flange													A
ANSI 2 in flange	5	JIS 100 mm flange													B
<b>Thermocouple Type</b>															
Type K														1	
<b>Cell Options</b>															
Standard cell															1
<b>Cable</b>															
6 m (20 ft.) ZFG2 conduit															7
10 m (33 ft.) ZFG2 conduit															8
<b>Language</b>															
English															E

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