A Higher Level of Performance

Data Sheet

Centurion

Guided Wave Radar

TDR/GWR

For more information, please visit >
www.hawkmeasure.com

Overview

Centurion Guided Wave Radar

Principle of Operation

Low power microwave pulses are transmitted along a cable or probe to the product being measured. At the point where the wave meets the product surface it is reflected by the product. The unit automatically calculates the distance to the pulse reflection using time of flight & time expansion. The intensity of the reflection depends on the dielectric constant of the product. The instrument measures the time between emission and reception of the signal which is proportional to the distance.

Contact with the measured product ensures precise accuracy.

Function

The HAWK range of TDR product are ideal for the measurement of liquids, powders and granules to a range of 35m. This technology is not affected by pressure, temperature, viscosity, vacuum, foam, dust, changes in dielectric constant or coating of the probe.

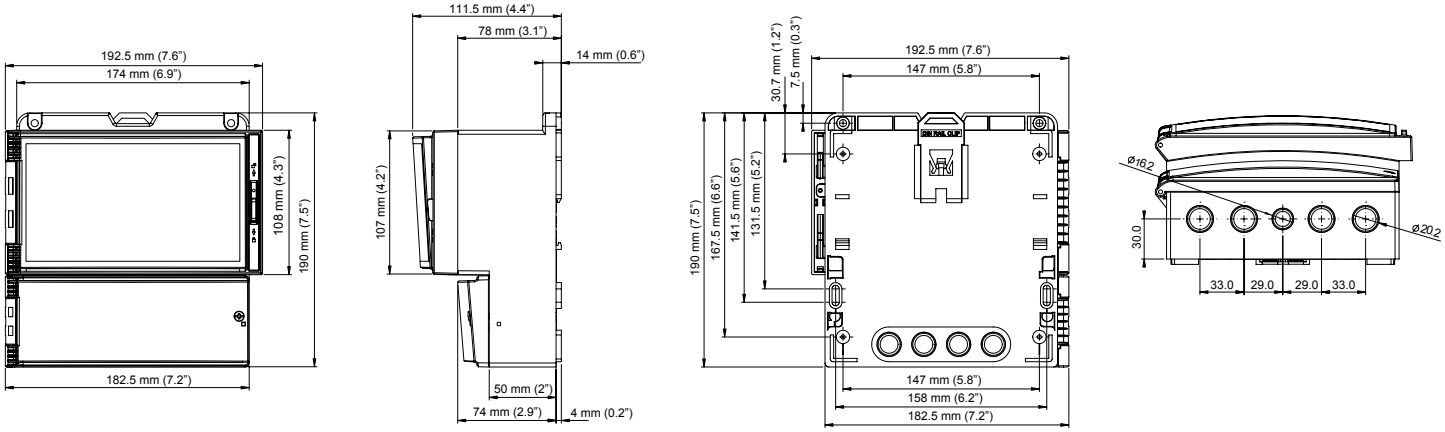
Primary Areas of Application

- Chemicals
- Petrochemicals
- Cement
- Building Aggregates
- Energy
- Food & Beverages
- Oil & Gas
- Pharmaceutical
- Pulp & Paper
- Wastewater

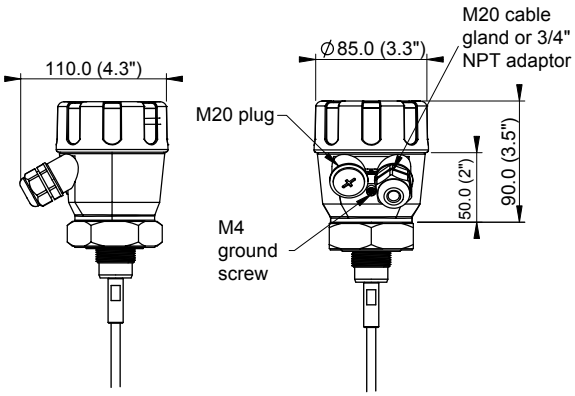
Features

- Remote, Integral & Smart versions
- Up to 35m range (316L cable)
- Simple setup
- Auto-Calibration to any dielectric
- Adjustable Sensitivity
- Adjustable signal amplification
- Precise & continuous accuracy
- 4 wire AC/DC
- 2 wire loop
- 4-20mA, HART, Foundation Fieldbus, Profibus PA, Profibus DP DeviceNet, Modbus, GosHawk
- Protection class IP67, NEMA4x
- 3G remote communication support
- Measures extremely low dielectric (1.4)
- Programmable fail safe mode.

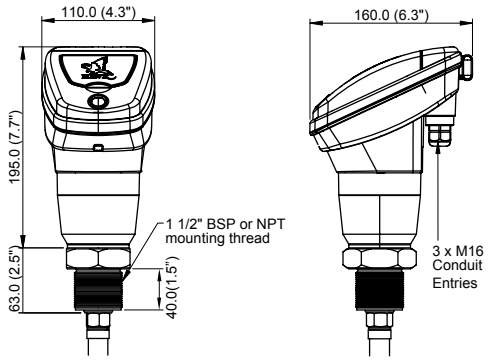
AWR Remote Housing



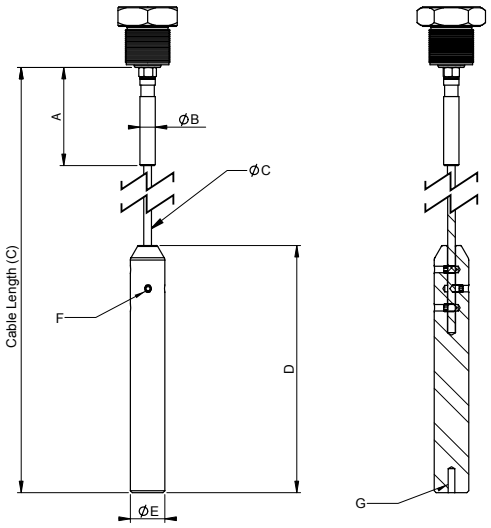
TDRR / TDRS Housing



TDRI Housing



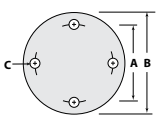
Probe Connection / Cable



Probe / Cable Dimensions									
	A		B		C		D		E	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
4mm Version	67	2.6	10	0.4	4	0.15	148	5.3	30	1.2
8mm Version	102.5	4.0	16	0.6	8	0.3	258	10.0	36	1.4

	F	G
4mm Version	M6x1 sescrew	M8x1.25, 20mm deep internal thread
8mm Version	M8x1 set screw	M8x1.25, 20mm deep internal thread

Standard Flange / Connection Dimensions						
Part Number	**Standard**	**A**		**B**		**C**	
		mm	in.	mm	in.	mm	in.
FA2	ANSI (Class 150)	120.7	4.75	152.4	6	19.1	0.75
FD2	DIN (PN40)	125	4.9	165	6.5	18	0.7

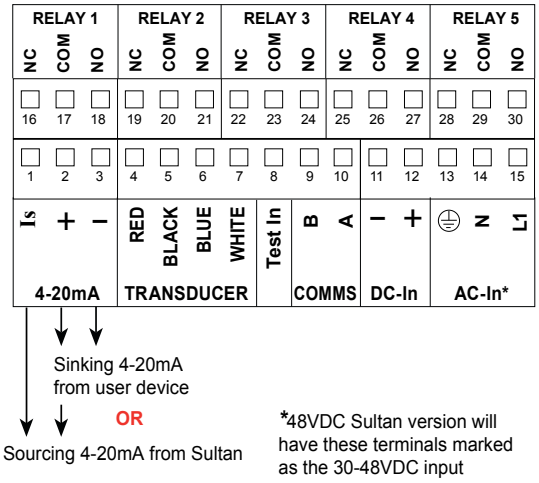


Note: All Flange internal connection threads are 1.5" BSP (fits TB15 units)

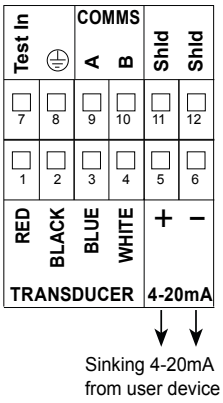
Inputs Model Dependant

Remote System Wiring

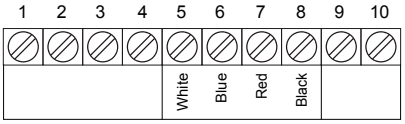
AWR234



AWR2

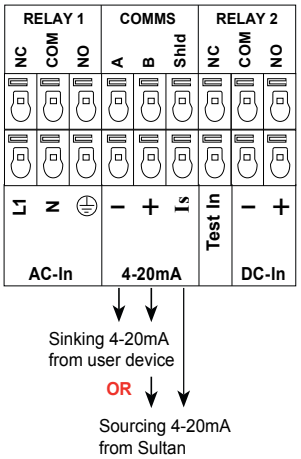


TDRR

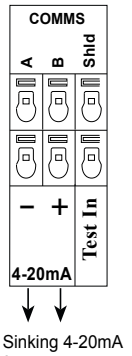


Integral System Wiring

TDRI234

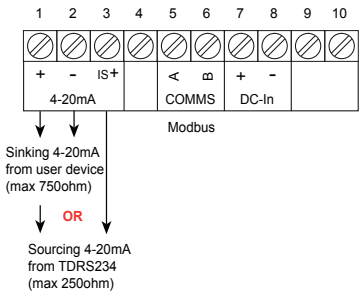


TDRI2

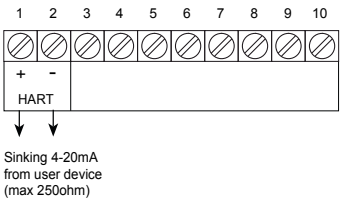


Smart System Wiring

TDRS234



TDRS2



Remote Transmitter

Model

AWR2 Remote 2 Wire, No relays, 24VDC only

AWR234 Remote 234 Wire, 5 relays

Housing

S Polycarbonate

Power Supply

B 12-30VDC

C 30-48VDC and 48-90VAC (234 units only)

U 12-30VDC and 90-260VAC (234 units only)

Additional Communications (Modbus, PC comms GosHawk standard)

S Switch only. 5 relays (AWR234 only)

X 4-20mA analogue

H 4-20mA analogue with HART 2 wire (AWR2 only)

I 4-20mA analogue with HART Isolated 4 wire (AWR234 only)

A Profibus PA

P Profibus DP (AWR234 only)

F Foundation Fieldbus

D DeviceNet (AWR234 only)

Internal Accessory

X Not Available

Approval Standard

X Not Required

A22 ATEX Grp II Cat 3 GD T85°C IP67 Tamb -40°C to 70°C

Additional Software

X Not Required

AWR234	S	U	X	X	X	X

Remote Probe

Model

TDRR Remote TDR Probe

Housing

S Mild Steel with glass viewing window
C 316L Stainless Steel with glass viewing window

Process Temperature

1 80ºC (176 ºf)

Probe Type

1 4mm 316L stainless steel cable with weight
2 8mm 316L stainless steel cable with weight

Mounting

TN15 1.5” NPT Thread
TB15 1.5” BSP Thread
FA2 2” ANSI stainless steel flange

Approval Standard

X Not Required
A22 ATEX Grp II Cat 3 GD T85°C IP67 Tamb -40°C to 70°C

Cable Length

C100 100 cm (3’3”) flexible cable
C200 200 cm (6’7”) flexible cable
C300 300 cm (9’10”) flexible cable
C500 500 cm (16’5”) flexible cable
C1000 1000 cm (12’11”) flexible cable
C2000 2000 cm (32’10”) flexible cable
C3000 3000 cm (32’10”) flexible cable
C3500 3500 cm (32’10”) flexible cable

TDRR	S	1	1	TB15	X	C300

Cable (Belden 3084A)

CA-TXCC-R-C15 15m cable
CA-TXCC-R-C30 30m cable
CA-TXCC-R-C50 50m cable
CA-TXCC-R-C100 100m cable

Integral System

Model

TDRI2 Integral 2 wire TDR Probe
TDRI234 Integral 234 wire TDR Probe, 2 relays

Housing

S Valox 374U

Power Supply

B 12-30VDC
C 30-48VDC and 48-90VAC (234 units only)
U 12-30VDC and 90-260VAC (234 units only)

Process Temperature

1 65ºC (150 ºf)

Probe Type

1 4mm stainless steel cable with weight
2 8mm stainless steel cable with weight

Mounting

TN15 1.5” NPT Thread
TB15 1.5” BSP Thread
FA2 2” ANSI stainless steel flange

Communication (Modbus & PC comms Goshawk standard)

X 4-20mA output
H 4-20mA output with HART 2 wire (TDRI2 only)
I 4-20mA output with HART 4 wire isolated (TDRI234 only)
A Profibus PA
F Foundation Fieldbus

Approval Standard

X Not Required
A22 ATEX Grp II Cat 3 GD T75°C IP67 Tamb -40°C to 65°C

Cable Length

C100 100 cm (3’3”) flexible cable
C200 200 cm (6’7”) flexible cable
C300 300 cm (9’10”) flexible cable
C500 500 cm (16’5”) flexible cable
C1000 1000 cm (32’9”) flexible cable
C2000 2000 cm (65’7”) flexible cable
C3000 3000 cm (98’5”) flexible cable
C3500 3500 cm (115’9”) flexible cable

TDRI234	S	B	2	TN15	H		X	C300

Smart System

Model

TDRS2 Smart 2 wire system (no display or keypad, requires PC with GosHawkII for calibration)
TDRS234 Smart 234 wire system (no display or keypad, requires PC with GosHawkII for calibration))

Housing

S Mild Steel with glass viewing window
C 316L Stainless Steel with glass viewing window

Power Supply

B 12-30VDC (TDRS234) and 24VDC (TDRS2)

Process Temperature

1 65ºC (150ºf)

Probe Type

1 4mm stainless steel cable with weight
2 8mm stainless steel cable with weight

Mounting

TN15 1.5” NPT Thread
TB15 1.5” BSP Thread
FA2 2” ANSI stainless steel flange

Communication

X 4-20mA output with Modbus (TDRS234 only)
H 4-20mA output with HART 2 wire (TDRS2 only)

Approval Standard

X Not Required
A22 ATEX Grp II Cat 3 GD T75°C IP67 Tamb -40°C to 65°C

Cable Length

C100 100 cm (3’3”) flexible cable
C200 200 cm (6’7”) flexible cable
C300 300 cm (9’10”) flexible cable
C500 500 cm (16’5”) flexible cable
C1000 1000 cm (32’9”) flexible cable
C2000 2000cm (65’7”) flexible cable
C3000 3000cm (98’5”) flexible cable
C3500 3500cm (115’9”) flexible cable

TDRS234	S	B	1	2	TN15	X	X	C300

Accessories

HAWKLink Data Modem

Model

HLR Remote stand alone HAWKLink system

Power Supply

B 12-30VDC

U 12-30VDC and 90-260VAC

Network Type

G3 3G Autoband

Sim Card

S3 Australian Sim Card expires after 3 month

S12 Australian Sim Card expires after 12 month

X Not Required

HLR	U	G3	S3

HAWKLink USB PC connector for GosHawkII

HAWKLink-USB

Operating Voltage - 3,4 wire

- 12 – 30VDC (residual ripple no greater than 100mV)
- 90 – 265VAC 50/60Hz (remote, integral)
- 48VDC, 48VDC-90VDC 50/60Hz (remote, integral)

Operating Voltage - 2 wire & Smart

- 14 – 30VDC (residual ripple no greater than 100mV)
- HART 24V @ 250 Ohm

Power Consumption - 3,4 wire

- <3W @ 24VDC
- <10VA @ 240VAC (remote, integral)
- <4W @ 48VDC, 7VA @VAC-90VDC (remote, integral)

Power Consumption - 2 wire & Smart

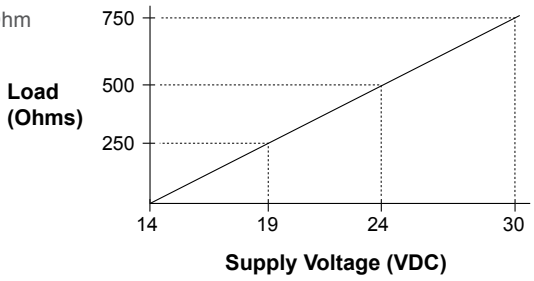
- <0.5W @ 24VDC

Analog Output 3,4 wire

- 4 – 20mA (750 Ohm@ 24VDC User Voltage supply) or Internal driven 250 Ohm

Analog Output 2 wire & Smart

- 14V @ 0 Ohm
- 19V @ 250 Ohm
- 24V @ 500 Ohm



Communications

- GosHawk, HART, Modbus, Profibus DP, DeviceNet, Foundation Fieldbus, Profibus PA.
- Multidrop mode can address 1-250 units over 4 wires

Relay Output

- (2 Relays Integral) (5 Relays Remote)
- Form 'C' SPDT contacts, rated 0.5A @ 240V AC non-inductive
- All relays have independently adjustable dead bands

Maximum Range

- 35m cable

Dielectric Range

- > = 1.4

Resolution

- Distance: 0.65mm
- Analog: 0.5uA
- Display: 1.0mm

Accuracy

- +/- 3mm

Sum of non linearity, non repeatability, hysterysis

- Analog +/- 0.02%

Repeatability

- +/- 2mm

Instrument Extension Cable

- 4 conductor shielded twisted pair instrument cable. Conductor size dependent on cable length
- BELDEN 3084A Max = 500m (1640 ft)

Memory

- Non-Volatile (No backup battery required) >10 years data retention

Measurement Range of Electronics

- Min. 350mm
- Max. 35m

Operating Temperature (Electronics)

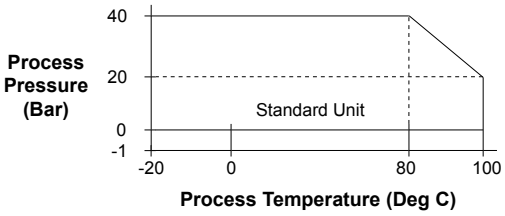
- -20C to + 80C (Smart)
- -20C to + 65C (Integral)
- -20C to + 65C (Remote Amplifier)
- -20C to + 80C (Remote Probe)

Process Pressure

- -1 to 40 BAR

Process Temperature

- -30 to 100C



Display

- Integral / Remote 3, 4 wire units: 2 line x 12 digit alphanumeric LCD with back light.
- Integral / Remote 2 wire units: 2 line x 12 digit alphanumeric LCD
- Smart unit: No displays.

Enclosure Sealing

- Remote Transmitter IP65
- Integral Transmitter IP66
- Smart Transmitter IP67
- Remote Probe IP67

Approvals

ATEX Grp II Cat 3 GD T75°C IP67 Tamb -40°C to 65°C

Weight

- Enclosure
- Smart & Remote probe: Aluminium Housing with cable gland entry.
- Sultan Integral housing with Aluminium Housing
- Remote Sultan Enclosure (remote amplifier)

Tensile Load

- 4 tonnes at 23°C, 8mm cable
- 3 tonnes at 80°C, 8mm cable

HAWK, Since 1988

Hawk Measurement Systems Pty Ltd (HAWK) was established in 1988. It's founding members saw the universal requirement of various industries requiring improved process control and efficiency in their operations.

We Can Help

HAWK understands the difficulties customers face when seeking accurate level measurement. Every application is different, involving a multitude of environmental factors. This is where HAWK excels. Our aim is to ensure that customers feel comfortable with our technology, and are provided with long term and reliable solutions. We believe that a combination of application and product expertise, as well as forward thinking and proactive support policies are the foundation of successful customer-supplier relationships.

Progressive Technical Support

HAWK believes that the future of the Level Measurement Industry revolves around the quality of pre and post sales - support. Our aim is for all sales & support staff to be product experts, and more importantly application experts making our customers applications as efficient and consistent as possible.

Knowledge Sharing

HAWK believes that knowledge sharing is key to creating long term relationships. Empowering our customers and our worldwide distribution network, whilst being available at all times to lend a helping hand, is the perfect recipe for long term solutions and relationships. HAWK openly extends an invitation to share our 25 years of level measurement experience, and ensure that your day to day processes are efficient, understood, and always working.

Hawk Measurement Systems
(Head Office)
15 - 17 Maurice Court
Nunawading VIC 3131, AUSTRALIA
Phone: +61 3 9873 4750
Fax: +61 3 9873 4538
info@hawk.com.au

Hawk Measurement
96 Glenn Street
Lawrence, MA 01843, USA
Phone: +1 888 HAWKLEVEL (1-888-429-5538)
Phone: +1 978 304 3000
Fax: +1 978 304 1462
info@hawkmeasure.com

Represented by:

For more information and global representatives: **www.hawkmeasure.com**

Additional product warranty and application guarantees upon request.
Technical data subject to change without notice.

DOC-CTDR-DAT 160914