QUICKSAND™
WIRELESS TRANSMITTER

MWT-3905-QS

The MWT-3905-QS Quicksand Wireless Transmitter (QWT) is based on RCS's Microcor® high resolution corrosion measurement technology, the industry's most widely used and only technology capable of operating in any process environment. The QWT rapidly detects erosion rates at speeds approaching real-time. The QWT uses high resolution metal loss measurement providing 18 bit resolution, and is rated for operation in hazardous locations (Class I, Zone 1). The allowable operating range of from -40°C to 70°C is proven every day by existing systems reliably working in the harsh environments of the frigid arctic and deserts of the Middle East.

The QWT power module has a typical life of 3 years and is hazardous location certified to allow change out in the hazardous area. Typical wireless range is 1000 ft (300 m) in optimal conditions and with a clear line of sight from transmitter to transmitter or transmitter to gateway/management station, with multiple "hops" permissible from any transmitter back to its gateway/ management station.
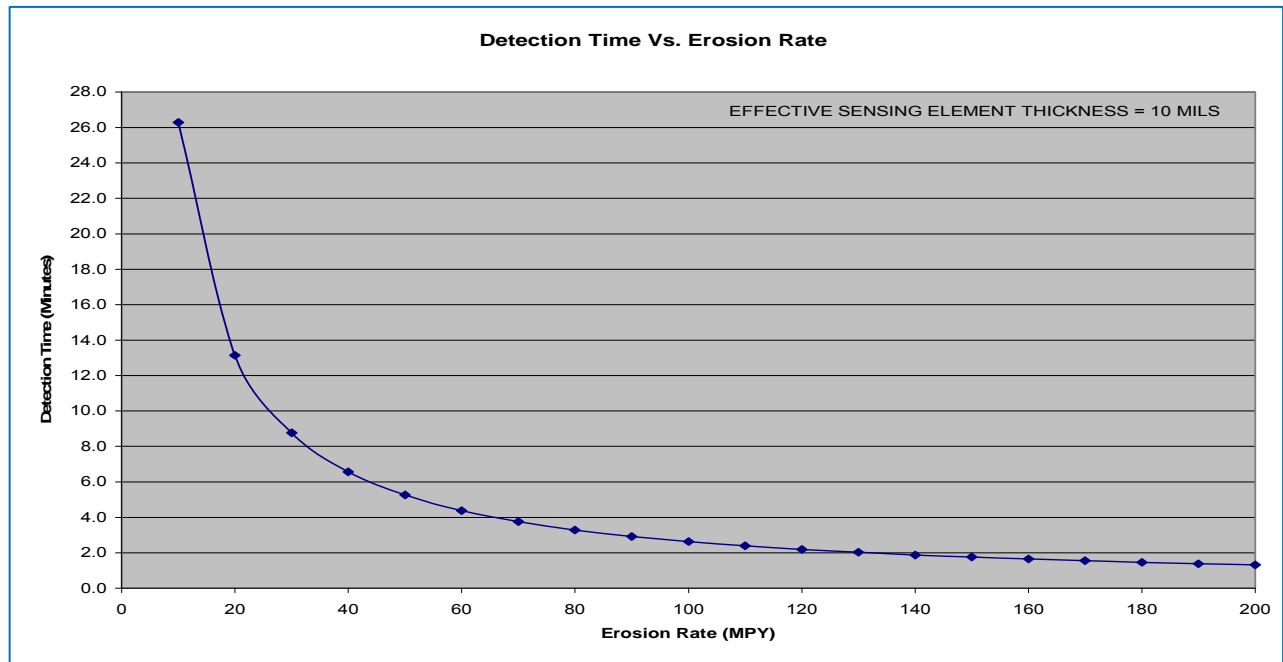
Other wireless communication options may be permissible. For details, contact RCS.

The QWT is available with the option of WirelessHART™ 7 or ISA100 Wireless communications protocol for seamless integration with Emerson, Yokogawa, and numerous other wireless process systems. For outline of a Cosasco Wireless System, and details of each product, see Cosasco Wireless System ISA100 and Cosasco Wireless System WirelessHART7 data sheets.

Specification	Communication Option	
	WirelessHART 7	ISA100 Wireless
Wireless Range (clear line of sight)	1000 ft (300 m)	1500 ft (450 m)
Transmitter Battery Life	3 Years	3 Years
Wireless Devices Supported	Up to 100	Up to 500
Network Type	Inherently Mesh	Mesh or Star Topology
System Integration	Emerson, Endress & Hauser, Siemens, and ABB Wireless Networks	Yokogawa and other ISA100 Wireless Networks
Certifications	Hazardous Area Locations (Class I, Zone 1)	Hazardous Area Locations (Class I, Zone 1)

The Quicksand Wireless transmitter is designed specifically to detect sand erosion at speeds approaching real time. Typical detection times for various sand erosion rates are shown below:

Detection Time Vs. Erosion Rate

EFFECTIVE SENSING ELEMENT THICKNESS = 10 MILS

Y-axis: Detection Time (Minutes), 0.0 to 28.0
X-axis: Erosion Rate (MPY), 0 to 200

Quicksand Probes

Two versions are available. The rugged, all welded cylindrical element model S4500 with a specially designed element support shield is suitable for severe flow or high temperature applications. The angled element S4700 probe is exposed to the flow at a 45° angle, simulating a change in direction in the pipe. The maximum temperature of this probe is 400°F, and is recommended for less severe flow rates of less than 25 ft/sec. Both these probes are mounted in the Cosasco line of high pressure access fittings; however, alternative mounting methods are available. Please contact the factory for more information.

S4700 Probe   **S4500 Probe**

Operating Specifications

Resolution
18 bit (1 part in 262,144)

Probe element resistance range
1 to 50 milliohms

Stability of Reading
Typically ± 0.01% of span on reference probe

Data Transmit Rate
10 to 60 minutes

Communication:
2.4 GHz IEEE 802.15.4.
- WirelessHART 7 Protocol (QWT-3905-0-**0**)
- ISA100 Wireless Protocol (QWT-3905-0-**2**)

Ambient Temperature Range
-40C to +70C (-40F to +158F)

Antenna
Integrated Omni-directional Antenna
Impedance: 50 Ω
Gain: 2dBi
Maximum SWR: 2:1
Maximum radio power output: 10 mW

Physical Specifications

Enclosure
Rating: IP66
Materials: Housing: 6061-T6 ALUM
316 Stainless Steel
Paint: Polyester Enamel over Epoxy Primer

Power supply
7.2 V Lithium Power Module
Power Module life: 3 years (Typical)
Hazardous Area Location Certified. (Replacement okay in hazardous locations).

Weight
Aluminum Housing: 7.5 lbs (3.4 kg) with Lithium Power Module Installed
Stainless Steel Housing: 15.3 lbs. (6.9 kg) with Lithium Power Module Installed

Dimensions
See below

Pole or Wall Mounting
Metal Bracket (supplied) for direct wall mount and adjustable U-Bolt mounting for 2" pipe size vertical or horizontal pole mounting

Probe Mounting
Directly to probe via Probe Adapter (PN 745092, 745093, 745114). For remote locations probe can be directly connected to MWT via a cable, P/N 748497. See chart below for options.

Product Certifications

Telecommunication Compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. RCS is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage. The QWT is currently certified with the governmental agencies of Angola, Azerbaijan, Australia, Canada, China, Colombia, Ecuador, European Union, Egypt, India, Indonesia, Kazakhstan, Kuwait, Malaysia, Mexico, Oman, Qatar, Russia, Saudi Arabia, Thailand, Trinidad & Tobago, UAE, United States, and Venezuela. Additional country approvals are in currently in progress and will be posted as soon as certification is verified. Please contact RCS or visit our website for the latest country certifications.

FCC and Industry Canada (IC)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions. This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

ATEX Certification
Ex d [ib] Class I, Zone 1, IIC, T4, Ta = -40C to +70C

North American Certifications
FM   AEx d [ib] Class I, Zone 1, IIC, T4, Ta = -40C to +70C
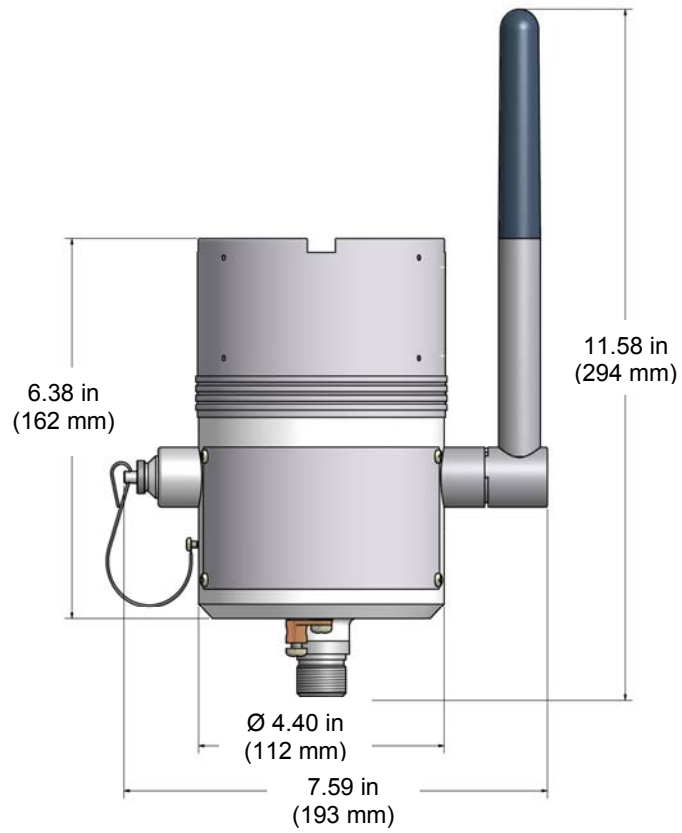FMc Ex d [ib] Class I, Zone 1, IIC, T4, Ta = -40C to +70C

IEC Ex Certification
IEC Ex d [ib], Class I, Zone 1, IIC, T4, Ta = -40C to +70C
All certifications based on IP66 Enclosure and for use only with Power Module P/N 748400

Dimensions

11.58 in
(294 mm)

6.38 in
(162 mm)

Ø 4.40 in
(112 mm)

7.59 in
(193 mm)

Transmitter Dimensions, front view

Ordering Information for ISA100 Wireless

Quicksand Wireless Transmitter-ISA100 Wireless

Model	Description				
MWT-3905-QS	Quicksand Wireless Transmitter				
	Code	**Housing**			
	0	Aluminum			
	1	Stainless Steel 316 SS			
		Code	**Radio**		
		2	2.4 GHz ISA100 - Integral Antenna		
MWT-3905-QS — 0 — 2				⟵	Typical Order Number

System Requirements

Field Wireless Management Station

See R-Y410 Field Wireless Management Station Data Sheet.

Field Wireless Access Point

See R-Y510 Field Wireless Access Point Data Sheet.

Quicksand Probes

Model	Retrievable Quicksand Probe				
S4500	Complete Probe Assembly, Cylindrical Element				
	Code	**Element Form and Thickness**			
	T10	Cylindrical, 10 mil thickness (5 mil life)			
	T20	Cylindrical, 20 mil thickness (10 mil life)			
	T50	Cylindrical, 50 mil thickness (25 mil life)			
		Code	**Element Alloy**		
		XXXXXX	Enter UNS Number		
			Code	**Order Length**	
			LL.LL	Order Length in Inches	
				3.25" min, 36.00" max for T10	
				5.00" min, 36.00" max for T20	
				11.00" min, 36.00" max for T50	
S4500 — T20 — S31803 — 6.00				⟵	**Example**

Model	Retrievable Quicksand Probe				
S4700	Complete Probe Assembly, Angled Element				
	Code	**Element Form and Thickness**			
	F10	Angled, 10 mil thickness (5 mil life)			
	F20	Angled, 20 mil thickness (10 mil life)			
	F40	Angled, 40 mil thickness (20 mil life)			
		Code	**Element Alloy**		
		XXXXXX	Enter UNS Number		
			Code	**Order Length**	
			LL.LL	Order Length in Inches	
				2.00" min, 36.00" max	
S4700 — F20 — S31803 — 6.00				⟵	**Example**

Probe Adapters

Model S4500 & S4700 series probes

P/N 745093 (For permanent connection at 2500 PSI max)

P/N 745114 (For permanent connection at 10,000 PSI max when used with pressure retaining covers P/N 740095)

Cables (Transmitter to Probe Cable with Transmitter Mounting Bracket)

Part No.	Description			
748497	MWT Remote Mounting Kit			
	Code	**Cable Type**		
	1	Retractable (unarmored)		
	2	Retractable (armored)		
	3	Retrievable (armored) 2500 PSI		
	4	Retrievable (unarmored) 2500 PSI		
	5	Retrievable (armored) 10,000 PSI		
	6	Retrievable (unarmored) 10,000 PSI		
		Code	**Cable Length**	
		L	Length in Feet (15 ft max)	
748497 — 1 — 5 ←				Typical Order Number

Accessories

Cosasco Wireless Extender

Model	Description		
MWT-3905-WE	Cosasco Wireless Extender (includes mounting bracket)		
	Code	**Radio**	
	0	Aluminum	
	1	Stainless Steel 316 SS	
		Code	**Housing**
		2	2.4 GHz ISA100 Wireless - Integral Antenna
MWT-3905-WE — 0 — 0 ←			Typical Order Number

7.2 V Lithium Power Module   P/N 748400

MWT Installation Kit -
ISA100 Wireless   P/N 702406-MWT-ISA (includes Wireless Field Tool for transmitter configuration)

Ordering Information for WirelessHART 7

Quicksand Wireless Transmitter-WirelessHART7

Model	Description		
MWT-3905-QS	Quicksand Wireless Transmitter		
	Code	**Housing**	
	0	Aluminum	
	1	Stainless Steel 316 SS	
		Code	**Radio**
		0	2.4 GHz Wireless HART7 - Integral Antenna

MWT-3905-QS	—	0	—	2	←	Typical Order Number

System Requirements

Wireless Gateways

See R-1420 or R-1410 Data Sheets.

Checkmate DL-W Wireless Configurator

P/N Checkmate DL-W

Quicksand Probes

Model	Retrievable Quicksand Probe		
S4500	Complete Probe Assembly, Cylindrical Element		
	Code	**Element Form and Thickness**	
	T10	Cylindrical, 10 mil thickness (5 mil life)	
	T20	Cylindrical, 20 mil thickness (10 mil life)	
	T50	Cylindrical, 50 mil thickness (25 mil life)	
		Code	**Element Alloy**
		XXXXXX	Enter UNS Number
			Code	**Order Length**
			LL.LL	Order Length in Inches
				3.25" min, 36.00" max for T10
				5.00" min, 36.00" max for T20
				11.00" min, 36.00" max for T50

S4500	—	T20	—	S31803	—	6.00	←	Example

Model	Retrievable Quicksand Probe		
S4700	Complete Probe Assembly, Angled Element		
	Code	**Element Form and Thickness**	
	F10	Angled, 10 mil thickness (5 mil life)	
	F20	Angled, 20 mil thickness (10 mil life)	
	F40	Angled, 40 mil thickness (20 mil life)	
		Code	**Element Alloy**
		XXXXXX	Enter UNS Number
			Code	**Order Length**
			LL.LL	Order Length in Inches
				2.00" min, 36.00" max

S4700	—	F20	—	S31803	—	6.00	←	Example

Probe Adapters

Model S4500 & S4700 series probes   P/N 745093 (For permanent connection at 2500 PSI max)

P/N 745114 (For permanent connection at 10,000 PSI max

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when used with pressure retaining covers P/N 740095)

Cables (Transmitter to Probe Cable with Transmitter Mounting Bracket)

Part No.	Description				
748497	MWT Remote Mounting Kit				
	Code	**Cable Type**			
	1	Retractable (unarmored)			
	2	Retractable (armored)			
	3	Retrievable (armored) 2500 PSI			
	4	Retrievable (unarmored) 2500 PSI			
	5	Retrievable (armored) 10,000 PSI			
	6	Retrievable (unarmored) 10,000 PSI			
		Code	**Cable Length**		
		L	Length in Feet (15 ft max)		
748497 — 1 — 5					◄──── Typical Order Number

Accessories

Cosasco Wireless Extender

Model	Description			
MWT-3905-WE	Cosasco Wireless Extender (includes mounting bracket)			
	Code	**Radio**		
	0	Aluminum		
	1	Stainless Steel 316 SS		
		Code	**Housing**	
		0	2.4 GHz Wireless HART7 - Integral Antenna	
MWT-3905-WE — 0 — 0				◄──── Typical Order Number

7.2 V Lithium Power Module	P/N 748400
MWT Installation Kit - WirelessHART7	P/N 702406-MWT

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