

# Roxar Electrical Resistance (ER) Probes

## 2" Retrievable System



### High Accuracy ER Probes

Corrosion is a serious industrial problem, and corrosion control is important in order to avoid damage and loss of integrity in a plant or production site. Efficient corrosion mitigation requires fast and reliable tools for control and verification of protection programs, such as the use of corrosion inhibitors.

Electrical Resistance (ER) Probes are probably the most commonly used technology used for internal corrosion monitoring. ER Probes provide a high resolution and sensitivity compared to other technologies available, and changes in corrosion rates can be identified within hours or days <sup>1)</sup>.

ER Probes measure corrosion and corrosion rates as an increase in electrical resistance over time for a steel element in the probe face. The increase in electrical resistance is proportional to the accumulated corrosion of the probe element over the exposure period. Since resistance is also dependent on temperature, a reference element (not exposed to corrosion) is buried inside the probe body for temperature correction.

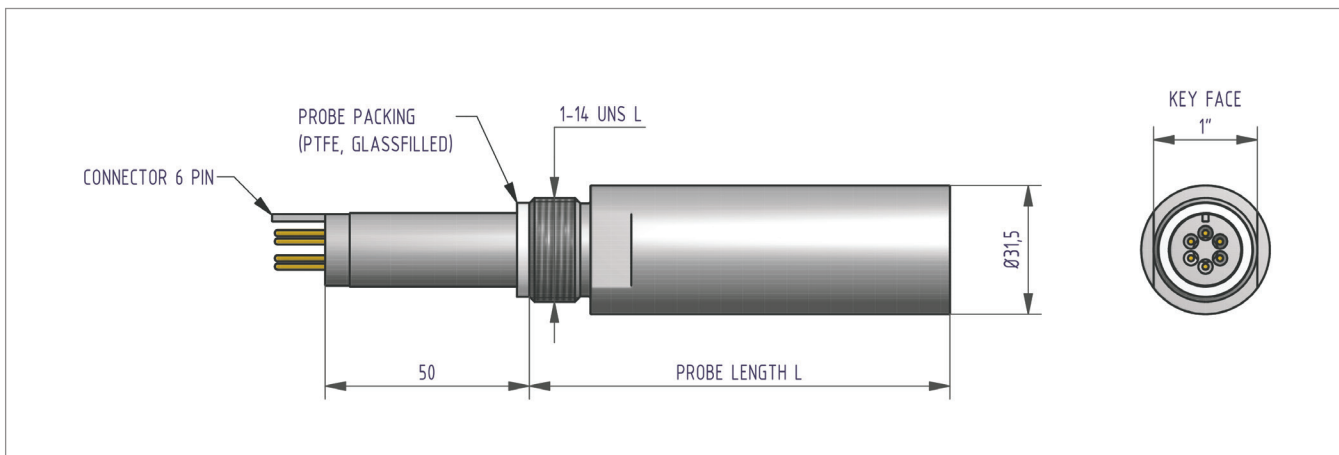
ER Probes can generally be used in most common environments, like oil, gas and water. The ER Probes described in this data sheet are of the 2" high pressure retrievable type, typically used in upstream, high pressure applications.

Quality of information and measurement accuracy depend on measurement frequency and instruments used. For best results, it is recommended that Roxar ER Probes are used with Roxar CorrLog or Roxar CorrLog Wireless high accuracy instruments, covering a wide range of configuration options.

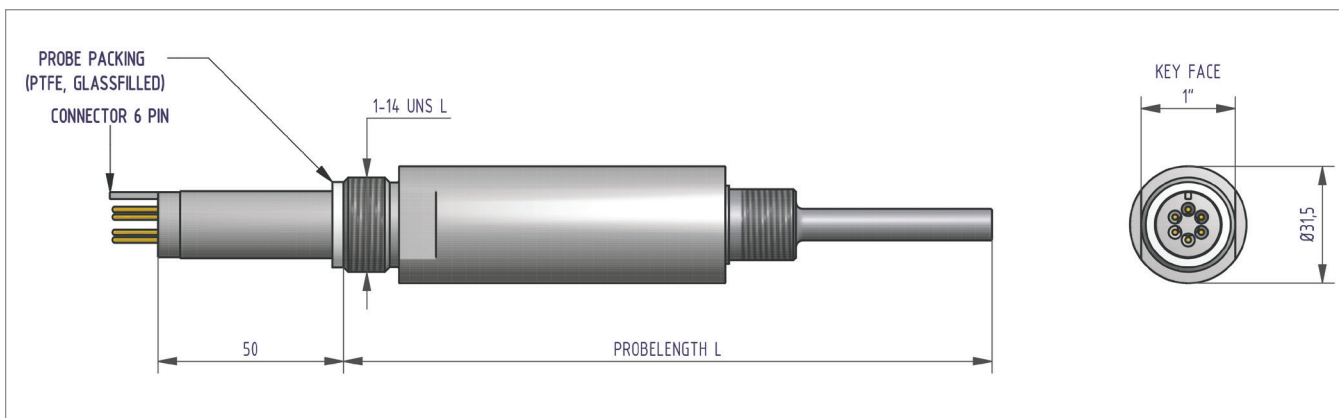
Operating conditions vary from case to case, and it is important to choose the right probe for the specific application. For this reason, a range of ER Probes is available with flush or projecting design.

The useful life of an ER Probe is normally defined as half the measurement element thickness.

<sup>1)</sup> Depending on probe type, measurement frequency and corrosion rates.



Drawing shows flush probe outline and basis for probe length calculations.



Drawing shows tubular probe outline and basis for probe length calculations.



A special reinforced probe design is available for conditions where velocities are high, sometimes in combination with a need for long probes. Need for reinforced design probes is normally evaluated based on wake frequency calculations. Picture shows reinforced probe body with reinforced hollow plug.

### Repro D Probe



Repro D Probe front

The design of the Repro D Probe ensures a high resistance, and thus, highly accurate measurements, even if probe has a thick element. This design is therefore suitable for corrosion monitoring where corrosion rates are assumed to be from moderate to high, maintaining a high measurement resolution and accuracy. Repro D Probe is available with element thicknesses 1, 2 and 4 mm (40, 80 and 160 mil).

### Repro E Probe



Repro E Probe front

The simple design of the probe makes it suitable in conditions where conductive deposits could cause short circuits between sections of the probe element for more sophisticated probe element designs (e.g. in sour production environments).

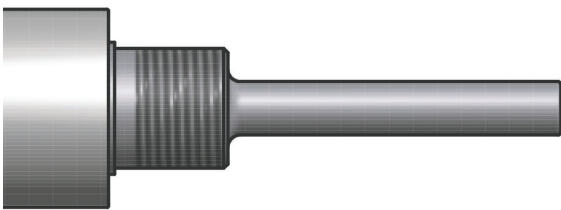
### Repro F Probe



Repro F Probe front

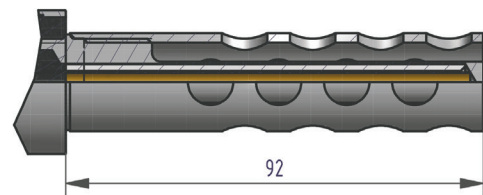
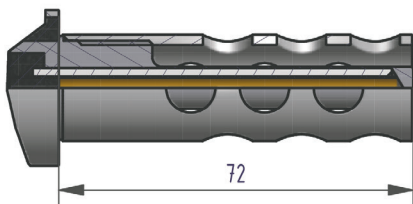
The Repro F Probe has an element with an optimized shape, and is available with a 0,1 mm (4 mil) measurement element. The design gives the probe a very high sensitivity, however, a limited life for many field applications. The probe is mostly recommended for conditions where corrosion is expected to be low, or for test/research applications where fast response is required.

### Tubular T10 and T20 Probes



Roxar Tubular Probe front

Roxar tubular element probes are designed with a tubular shaped element protruding into the flow. The probes are available with 0.25 and 0.5 mm (10 and 20 mil) elements.



Protective shields for the tubular elements are available (T10 probe left, T20 probe right)

## Specifications - Roxar Retrievable ER Probes

Item	Description
Mounting:	2" high pressure access fitting (mechanical or hydraulic system)
Probe body material:	316 SS (other materials available upon request)
Pressure rating:	Standard: 6,000 psi (420 bar) Optional: 10,000 psi (690 bar)
Connector:	6 pin Amphenol male
Temperature rating:	Operating Temperature up to 145 °C (293 °F) (Welded element tubular probes are option at higher temperature rating, please ask Roxar for details).

## Model Code Selector - Roxar Retrievable ER Probes

Model	Product Description
THCMPR	Corrosion Monitoring Probe
Code	Measuring Method
1	Electrical Resistance
Code	Probe Body Type
01	Standard Design Fixed Length
02	Reinforced Design Fixed Length for Access Fitting Flareweld
03	Reinforced Design Fixed Length for Access Fitting MECH ≤300#, HYD ≤1500#
04	Reinforced Design Fixed Length for Access Fitting MEC ≥4/600#, HYD 2500#
99 <sup>5</sup>	Other Design
Code	Probe Body Material
2C6A	Stainless Steel A 479 Gr. 316L, bar EN 10204 3.1 NACE MR0175
2D6A	Duplex A 276 / A 479 UNS S31803, bar EN 10204 3.1 NACE MR0175
2C6C	Stainless Steel A 479 Gr. 316L, bar EN 10204 3.1 NACE MR0175 NORSOK M630 MDS S01
2D6C	Duplex A 276 / A 479 UNS S31803, bar EN 10204 3.1 NACE MR0175 NORSOK M630 MDS D47
9X9X <sup>5</sup>	Project Specific Material
Code	Element Type and Material
00S <sup>1</sup>	Flush Repr D 1.0 mm St 52-3N
01S <sup>1</sup>	Flush Repr D 2.0 mm St 52-3N
02S <sup>1</sup>	Flush Repr D 4.0 mm St 52-3N
03S <sup>1</sup>	Flush Repr E 0.25 mm St 52-3N
04S <sup>1</sup>	Flush Repr E 0.50 mm St 52-3N

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05S <sup>1</sup>	Flush	Repro F (HS) 0.10 mm	St 52-3N
10S <sup>1</sup>	Tubular	T10 (0.25 mm)	St 52-3N
11S <sup>1</sup>	Tubular	T20 (0.50 mm)	St 52-3N
99X <sup>5</sup>	Other Element Material and/or Type		
<b>Code</b>	<b>Probe Length</b>		
L00 <sup>4</sup>	Flush:55-85, Tubular:130-180		
L01 <sup>4</sup>	Flush:85-115, Tubular:180-240		
L02 <sup>4</sup>	Flush:115-145, Tubular:240-300		
L03 <sup>4</sup>	Flush:145-175, Tubular:300-360		
L04 <sup>4</sup>	Flush:175-205, Tubular:360-420		
L05	Flush:205-235		
L06	Flush:235-265		
L07	Flush:265-295		
L08	Flush:295-325		
L09	Flush:325-355		
L10	Flush: 355-385		
L11	Flush: 385-415		
L12	Flush: 415-445		
L13	Flush: 445-475		
L14	Flush: 475-505		
L15	Flush: 505-++		
<b>Code</b>	<b>Factory Options</b>		
Z	Standard product		
X	ETO product		
<b>Code</b>	<b>Certificate, Tests, Calibrations and Services (Not required, all are optional)</b>		
	Dye Penetrant Examination (select any from this group)		
D1	Dye Penetrant Test		
	Positive Material Testing (select only one from this group)		
PM	Positive Material Identification		
	Pressure Testing (select any from this group)		
PT	10000 psi Test Certificate		
	Other testing		
TX <sup>5</sup>	Project specific testing		

<sup>4</sup> Available only with Probe Body Type option 01, Standard Design Fixed Length

<sup>5</sup> Not Available with Factory Option Z

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