

9704 Gen 4 R3D® Modules

Remote-Read Level Sensors for use with Rochester R3D Dials Installation Guide

The 9704 R3D Gen 4 module provides remote monitoring to your system through a low voltage sensor that reads fluid level when installed in remote ready dials.



General Information and Features

- Cable lengths up to 25 ft. max. (6 ft. standard length) with flying leads
- Temp Range Dynamic: -25°C to +80°C / -13°F to +176°F
- Temp Range Static: -30°C to +80°C / -22°F to +176°F
- Ingress Protection: IP69k Rated
- Accuracy: Module output +/- 2% of visual dial indication. (Float gauge errors not included)
- Resolution: radiometric, percent of supply voltage, 1:1 ratio Operational Range: up to 8 meters
- Operating Voltage: 2.6-5.5 VDC
- Operating Current: 3.5mA @ 5.0V with no load
- Max rated load: + 1mA
- Typical Turn-On time: 4.5mS ± 1mS
- Retrofittable on existing Rochester Remote Ready Dials to include Junior, Senior dials, and Magnetel dials
- See TDS-9704 for application notes

Gen 4 R3D® Module Installation Instructions

These instructions are made to assist tradesmen and others generally familiar with liquid storage tank equipment. Most consumers are not qualified to perform the installation described herein. If you have any questions concerning installation or operation of this product, contact Rochester Sensors LLC or one of our authorized distributors for assistance.

1. Remove shipping plug from dial. Lift right end and push left end. Discard shipping plug.
2. Remove all dirt and debris from cavity under shipping plug. NOTE: Failure to clean cavity properly may result in failure of transmitter module to seat properly and cause reduced accuracy.
3. Slide module into slot on dial from edge of dial. Do not attempt to install module vertically.
4. Apply thumb pressure and push module towards center of dial until it snaps into place.
5. **CAUTION:** Attempts to remove transmitter from dial may result in damage to transmitter, dial, or both.
6. When installed in exposed high traffic areas, cold or windy climates, or near an overflow indicator (spitter) valve, adding a loose service loop to the sensor end of the cable and securing with a cable-tie is recommended to maintain proper installation. Ensure the cable is secure and free of tension.
7. Connect power, ground, and voltage output wires to the appropriate system connection.
8. To remove module, gently lift square end and push round end towards outside edge of dial.

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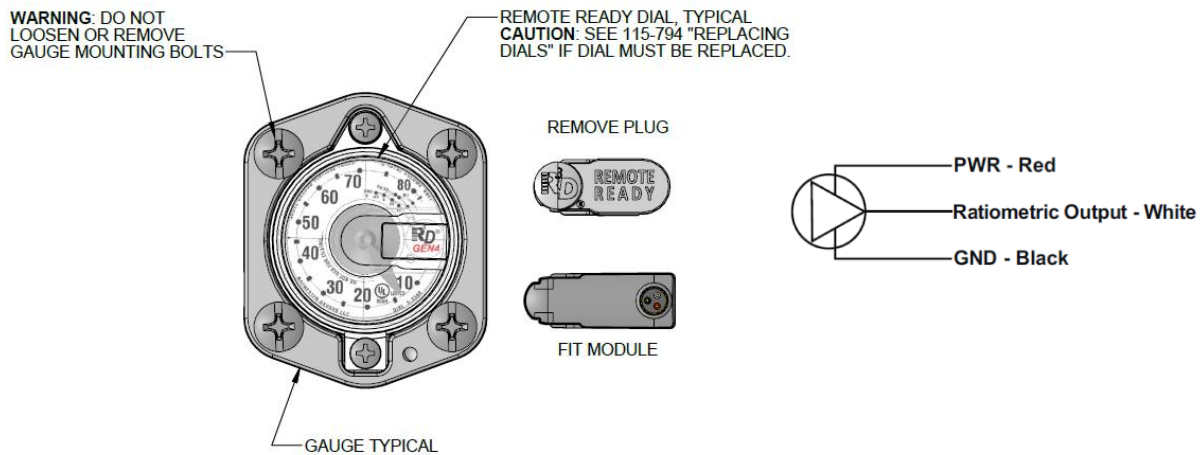
Since the suitability of these products depends upon a wide range of factors not in our control, Rochester Sensors expects and understands that you conduct the testing and evaluation necessary to determine that these products are suitable for your application. While every effort is made to ensure the above details are correct at the time of printing, Rochester Sensors reserves the right to make material changes, and or technical changes without notification.

Warnings

Do not remove gauge mounting bolts. Do not unscrew gauge heads that are screwed into tank. Tank may contain high pressure and flammable gas. A hazard of fire or explosion may exist if gauge mounting bolts or gauge heads are loosened or removed.

For LP-gas and other flammable produce service applications, connect only to circuits and power sources Classified and labeled as intrinsically Safe for Class 1, Division 1, Group C and D hazardous locations. The connection of non-intrinsically safe power could cause fire or explosion of flammable vapor that may be present

These units are not meant to be repaired or serviced. Doing so will void the intrinsically safe rating of the device. Units may be damaged or ejected if force is applied to the cable (Typ. holding force ≤ 5lb).



Safety Specifications

- **WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD**
Caution must be used when handling or cleaning products so there is no static charge buildup. Do not wipe off the 6318 Wireless BLE Dial with dry cloth. Use only water damp cloth and allow to air dry for cleaning device. Do not use or install in high charge areas. See IEC60079-32-1 for further information.
- **AVERTISSEMENT - RISQUE DE CHARGE ÉLECTROSTATIQUE POTENTIEL** Il faut être prudent lors de la manipulation ou du nettoyage des produits afin qu'il n'y ait pas d'accumulation de charge statique. N'essayez pas le capteur avec un chiffon sec. Utilisez uniquement un chiffon humide et laissez sécher à l'air pour nettoyer l'appareil. Ne pas utiliser ou installer dans des zones de charge élevée. Voir IEC 60079-32-1 pour plus d'informations.

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Product Certification

Rochester Sensors Gen 4 R3D module is an intrinsically safe apparatus intended to be powered through an intrinsically safe parent system. R3D Remote Monitoring device is certified as complete intrinsic safety system (Reference Intrinsic Safety Control Drawings SD-580). Module device is intended for use in Class I, Division 1, Groups C and D, T4 or Zone 0, Group IIB, T4 Hazardous Locations under the certification schemes and ratings noted below:

Ordinary Locations Safety Standards	
Conforms to UL STD 61010-1 Ed.3	Electrical Equipment for Measurement, Control, and Laboratory Use; Part1: General Requirements *Note: for USA ordinary locations listing certification
Certified to CSA STD C22.2 #61010-1-12 Ed.3	Electrical Equipment for Measurement, Control, and Laboratory Use; Part1: General Requirements *Note: for Canada ordinary locations listing certification
Hazardous Locations Safety Standards	
IEC 60079-0: 2017	Explosive atmospheres – Part 0: Equipment – General requirements *Note: For IECEx Certification
IEC 60079-11: 2017 + C1: 2012	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i” *Note: For IECEx Certification
EN 60079-0: 2018	Explosive atmospheres – Part 0: Equipment – General requirements *Note: For ATEX Certification
EN 60079-11: 2012	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i” *Note: For ATEX Certification
UL 60079-0, 7th Ed., Issued 03/26/2019	Explosive atmospheres – Part 0: Equipment – General requirements *Note: For USA listing Certification
UL 60079-11, 6th Ed., Revised 03/28/2014	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i” *Note: For USA listing Certification
CSA C22.2 No. 60079-0: 2011	Explosive atmospheres – Part 0: Equipment – General requirements *Note: For Canada listing Certification
CSA C22.2 No. 60079-11: 2019	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i” *Note: For Canada listing Certification

IECEx (Global Certification): All R3D Gen IV Models	ATEX (EU Certification): All R3D Gen IV Models	North America (USA & Canada): All R3D Gen IV Models	United Kingdoms (UK): All R3D Gen IV Models
All R3D Gen IV Models Ex ia IIB T4 Ga -30°C ≤ TAMB ≤ +80°C	ATEX (EU Certification): All R3D Gen IV Models CE 2575 Ex II 1G Ex ia IIB T4 Ga -30°C ≤ TAMB ≤ +80°C	Class I Zone 0 AEx ia IIB T4 Ga Class I, Division 1, Groups C & D, T4 Ex ia IIB T4 Ga -30°C ≤ TAMB ≤ +80°C	UKCA0359 Ex II 1G Ex ia IIB T4 Ga -30°C ≤ TAMB ≤ +80°C
IECEx ETL 20.0022X	ETL23ATEX0333X	ETL20CA104304875X	ITS21UKEX0064X

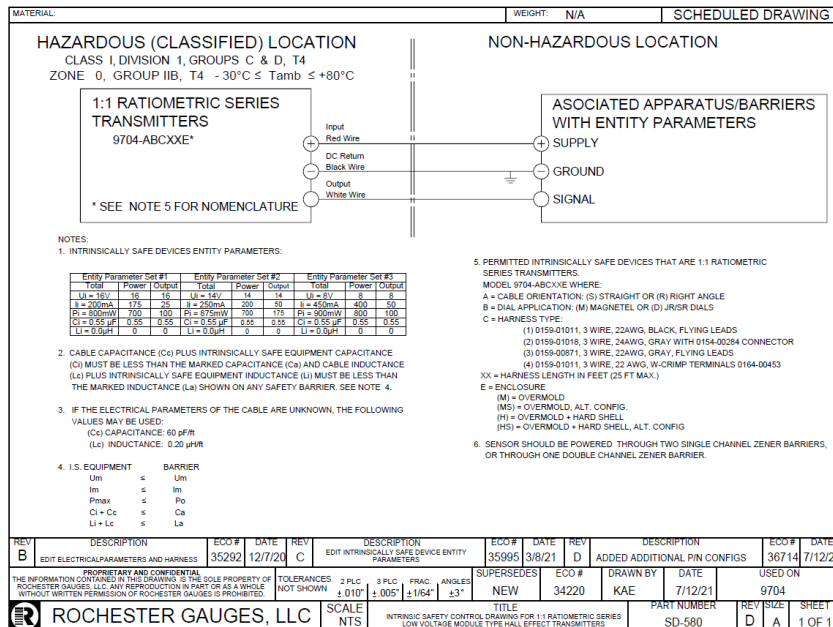
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Intrinsic Safety System Level Verification

Model	Module 9704-ABCXXE Entity Parameters								
Equipment Group	Groups C&D (Group IIB)			Groups C&D (Group IIB)			Groups C&D (Group IIB)		
Level of protection	Ex ia			Ex ia			Ex ia		
Temperature Classification	T4			T4			T4		
Ambient Temperatures	-30°C to +80°C			-30°C to +80°C			-30°C to +80°C		
	Entity Parameter Set #1			Entity Parameter Set #2			Entity Parameter Set #3		
	Total	Power	Output	Total	Power	Output	Total	Power	Output
Voltage	Ui = 16V	16	16	Ui = 14V	14	14	Ui = 8V	8	8
Current	Ii = 200mA	175	25	Ii = 250mA	200	50	Ii = 450mA	400	50
Power	Pi = 800mW	700	100	Pi = 875mW	700	175	Pi = 900mW	800	100
Capacitance	Ci = 0.55uF	0.55	0.55	Ci = 0.55uF	0.55	0.55	Ci = 0.55uF	0.55	0.55
Inductance	Li = 0.0uH	0	0	Li = 0.0uH	0	0	Li = 0.0uH	0	0
L/R Ratio	N/A			N/A			N/A		
Earthing	Grounded			Grounded			Grounded		

Control Drawing



CE Compliance Section

- A. Electromagnetic Compatibility
- EN 61000-6-2:2005 - Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments IEC 61000-6-2:2005
 - EN 61000-6-4:2007 - Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments IEC 61000-6-4:2006
- B. Restriction of Hazardous Substances in Electrical and Electron Equipment
- EN 50581:2012 - Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substance.

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