DATASHEET

RLE Leak Detection

RACK SERIES SENSORS

01

APPLICATIONS: The Parameter XD monitoring system has two different sets of sensors:

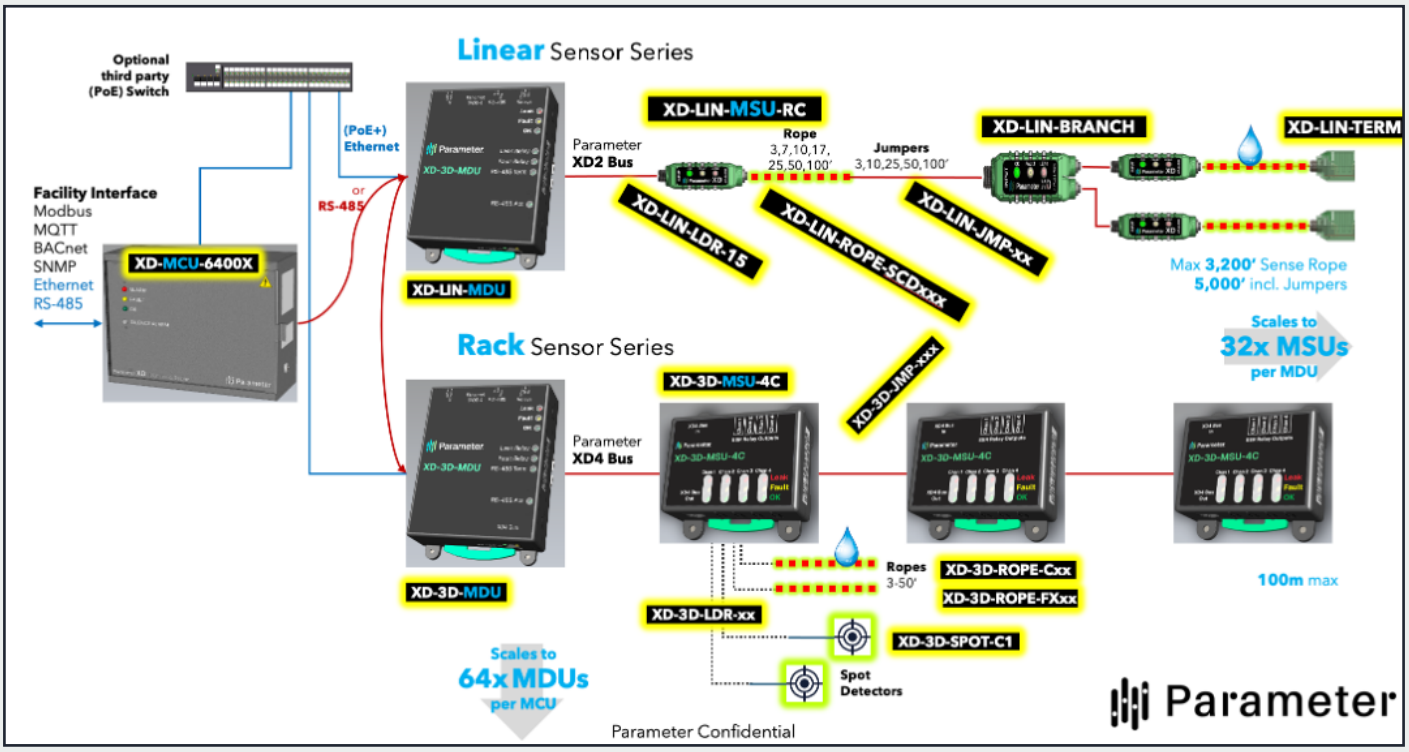
Linear Sensor Series

- For long piping runs
- Up to 3,200’ feet of digital leak sense rope per MDU
- Up to 204,800’ feet of rope per XD system
- Includes precision leak distance location on each rope segment
- Power, communication, and sensing in one cable

Rack Sensor Series

- This sensor series is for protecting all the assets in a liquid-cooled system:
  - Pods, Rows, Racks, CDUs, supply/return piping, manifolds, collection pans, etc.
- Up to 128 digital leak zones per MDU
- Each zone can be a Rope sensor or a Spot Sensors
- Each MSU (localized Monitoring Sensing Unit that takes measurements) supports 1 to 4 digital leak sensors
- Up to 8,192 digital leak zones per XD system
- All MDU (Monitoring Distribution Unit communications and control aggregation device) and MSUs can be powered by a shared POE port or an external power supply
  - Power is not required for each MSU

02 XD SOLUTION DIAGRAM:



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XD Rack Sensor Series Components		
Product	**Description**	**Usage**
XD-3D-MDU	Parameter XD 3D MDU Monitoring Distribution Unit, supports 32 MSUs.	Install one XD-3D-MDU for each Rack sensor string that is needed. Connects MCU via Ethernet, PoE Ethernet or RS-485
XD-MDU-PSD	Optional Power Supply for XD MDU, DIN rail mount	Supplies power to MDU if PoE power is not supplied. See XD Accessories data sheet for specs.
XD-MDU-PSP	Optional Power Supply for XD MDU, Plug-In, with A, C, G, I international blades	
XD-3D-MSU-4C	Parameter XD 3D MSU Monitoring Sensor Unit, Conductive Fluids, supports up to 4 Ropes or Spot detectors in any combination.	3D MSUs are daisy-chained from the 3D MDU using the XD-3D-JMP-xxx jumpers. Each MSU has 4 digital leak channels and support 1 to 4 Ropes/Spots. These jumpers carry the Parameter XD4 bus.
XD-3D-JMP-001	Parameter XD 3D XD4 bus Jumper, 1ft	Use the XD-3D-JMP-xxx jumpers to daisy-chain the 3D MSUs.
XD-3D-JMP-002	Parameter XD 3D XD4 bus Jumper, 2ft	
XD-3D-JMP-003	Parameter XD 3D XD4 bus Jumper, 2ft	

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XD Rack Sensor Series Components

Product	Description	Usage
XD-3D-JMP-006	Parameter XD 3D XD4 bus Jumper, 6ft	Use the XD-3D-JMP-xxx jumpers to daisy-chain the 3D MSUs.
XD-3D-JMP-010	Parameter XD 3D XD4 bus Jumper, 10ft	
XD-3D-JMP-025	Parameter XD 3D XD4 bus Jumper, 25ft	
XD-3D-JMP-050	Parameter XD 3D XD4 bus Jumper, 50ft	
XD-3D-JMP-100	Parameter XD 3D XD4 bus Jumper, 100ft	
XD-3D-LDR-03	Parameter XD 3D Sensor Leader Cable, 3ft	Use the XD-3D-LDR-xx leader cables between the 3D MSU and the 3D Ropes or Spots. These jumpers facilitate mounting of MSU overhead or anywhere convenient and allow placement of the sensors as needed.
XD-3D-LDR-07	Parameter XD 3D Sensor Leader Cable, 7ft	
XD-3D-LDR-15	Parameter XD 3D Sensor Leader Cable, 15ft	
XD-3D-SPOT-C1	Parameter XD 3D Spot Detector, adjustable height from 0" to 1" in 0.25" increments	This is the innovative high sensitivity, adjustable height spot detector.
XD-3D-ROPE-C03	Parameter XD 3D Liquid Sensor Rope, 3ft	XD-3D-ROPE-Cxx is the standard conductive 3D sense rope.
XD-3D-ROPE-C07	Parameter XD 3D Liquid Sensor Rope, 7ft	
XD-3D-ROPE-C10	Parameter XD 3D Liquid Sensor Rope, 10ft	
XD-3D-ROPE-C20	Parameter XD 3D Liquid Sensor Rope, 20ft	
XD-3D-ROPE-C30	Parameter XD 3D Liquid Sensor Rope, 30ft	
XD-3D-ROPE-C50	Parameter XD 3D Liquid Sensor Rope, 50ft	
XD-3D-ROPE-FX03	Parameter XD 3D Fast Reset Sensor Rope, 3ft	XD-3D-ROPE-FXxx is the fast reset, rugged conductive 3D sense rope.
XD-3D-ROPE-FX07	Parameter XD 3D Fast Reset Sensor Rope, 7ft	
XD-3D-ROPE-FX10	Parameter XD 3D Fast Reset Sensor Rope, 10ft	
XD-3D-ROPE-FX20	Parameter XD 3D Fast Reset Sensor Rope, 20ft	
XD-3D-ROPE-FX30	Parameter XD 3D Fast Reset Sensor Rope, 30ft	
XD-3D-ROPE-FX50	Parameter XD 3D Fast Reset Sensor Rope, 50ft	
XD-MDU-PSD	Optional Power Supply for XD MDU, DIN rail mount	Supplies power to MDU if PoE power is not supplied. See XD Accessories data sheet for specs.
XD-MDU-PSP	Optional Power Supply for XD MDU, Plug-In, with A, C, G, I international blades	

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WHAT SETS PARAMETERS' RACK SERIES SENSORS APART?

- **Massive Scaling of digital protection zones**
  - Up to 2,048 digital leak zones per XD system
- **Auto-discovery of installed devices**
- **Unified web interface for monitoring and bulk editing of supported device settingsAdjustable sensitivity**
- **Highly sensitive detection accuracy**
- **Adjustable sensitivity**
  - Both Alarm and Warning thresholds can be set with 1µA precision independently on each of 8,192 sensor channels.
- **PoE powered MDUs means no external power supplies are required**
- **Unique 4-channel digital leak sensor (XD-3D-MSU-4C)**
- **Compact footprint**
  - 4-leak channel MSU: 3.8" x 2.8"
  - 3D MDU: 4.9" x 6.1"
- **Small flexible leak detection rope**
- **Super flexible mounting**
  - DIN rail
  - Magnetic (included)
  - Screws
  - Zip ties
  - Adhesive
- **Relay outputs at every hierarchy level**
  - XD provides relay outputs at MCU, MDU and 3D MSU level
  - Use relay outputs to drive local PLCs for rack/row-level power/coolant isolation

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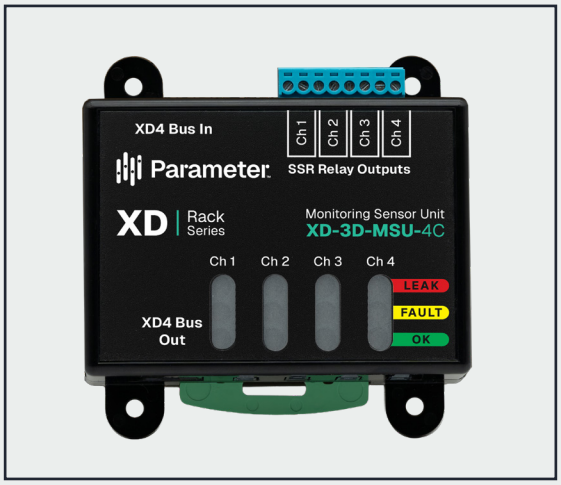
XD-3D-MDU SPECS.



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XD-3D-MDU Specifications	
Communications Interfaces	
Ethernet Port	To MCU/Switch: 1000BaseT Ethernet port, RJ45
EIA-485 port	From MCU: 1input and 1 output port, 9600/19200/38400/57600/76800 baud (selectable); No parity (selectable), 8 data bits, 1 stop bit
Console	Serial console port for administrative access
Power	
PoE+ power	Supports power from PoE+ switch port
External DC supply	Optional DC power supplies (DIN rail and wall plug) support power
XD4 Bus	
XD4 Bus out	1 RJ45 connector drives Parameter XD4 Bus with power and communications to up to (32) 3D MSUs.
XD4 Bus Jumpers & Max Length	
XD4 Bus Jumpers	Only use Parameter Product XD-3D-JMP-xx. Cable meets Cat6 specifications and additionally uses 24AWG conductors at minimum.
XD4 Bus max length	100m
Relay Outputs	
XD4 Bus max length	2 Form C Relays,1 for Alarm, 1 for Fault; 10A @ 24VDC
Front Panel LEDs	
Leak	Leak detected on downstream MSU
Fault	Fault detected in MDU or downstream MSU
OK	No Leaks or Faults detected
Leak Relay	Leak relay is activated
Fault Relay	Fault relay is activated
RS-485 Term	This MDU is connected via RS-485 and it is the last MDU on the RS-485 bus.
RS-485 Act	RS-485 activity indicator
Security	
Security Features	MDUs connected via Ethernet communicate with MCU via encrypted MQTT interface.
Operating Environment	
Temperature	41 to 140°F (5° to 60°C)
Humidity	20% to 80% RH, non-condensing
Altitude	10,000ft (3,048m) max.
Storage Temperature	-4° to 158°F (-20° to 70°C)
Enclosure, Weight, Dimensions	
Enclosure	IP40 rating
Dimensions	4.92”W x 10.1”H x 1.54”D (124.97mmW x 256.54mmH x 39.12mmD)
Weight	0.8 lbs. (0.363 kg)
Mounting	
Mounting Options	DIN rail, magnetic (magnets optional), screws, zip ties, adhesive
Certifications	
Certifications	CE; TUV: conforms to UL 61010-1, EN 61010-1; certified to CSA C22.2 NO. 61010-1; RoHS compliant

06 XD-3D-MSU-4C SPECS.



XD-3D-MSU-4C Specifications	
Power Power	 Powered by XD4 Bus
XD4 Bus XD4 Bus in XD4 Bus out	 1 RJ45 for XD4 Bus from MDU or previous 3D-MSU 1 RJ45 for XD4 Bus to next 3D-MSU
XD4 Bus Jumpers & Max Length XD4 Bus out	 1 RJ45 connector drives Parameter XD4 Bus with power and communications to up to (32) 3D MSUs.
XD4 Bus Jumpers & Max Length XD4 Bus Jumpers XD4 Bus max length	 Required Parameter Product XD-3D-JMP-xx. 100m
Relay Outputs Relays	 4 Form C Relays, solid state, 1 set of contacts for each channel; 1.2 A @ 32 VDC
Front Panel LEDs Leak Fault OK	 Red Leak LED, one per channel Orange Fault LED, one per channel Green Ok LED, one per channel
Operating Environment Temperature Humidity Altitude Storage Temperature	 41 to 140°F (5° to 60°C) 20% to 80% RH, non-condensing 10,000ft (3,048m) max. -4° to 158°F (-20° to 70°C)
Enclosure, Weight, Dimensions Enclosure Dimensions Weight	 IP40 rating 3.77”W x 3.197”H x 1.245”D (95.75mmW x 81.20mmH x 31.62mmD) 0.3 lbs. (0.136 kg)
Mounting Mounting Options	 DIN rail, magnetic (included), screws, zip ties, adhesive

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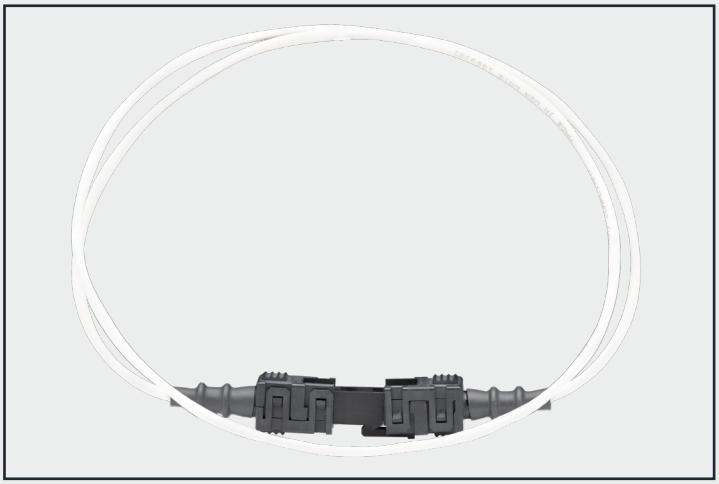
XD-3D-MSU-4C Specifications Cont.	
Certifications Certifications	 CE; TUV: conforms to UL 61010-1, EN 61010-1; certified to CSA C22.2 NO. 61010-1; RoHS compliant

07 XD-3D-JMP-XX SPECS.



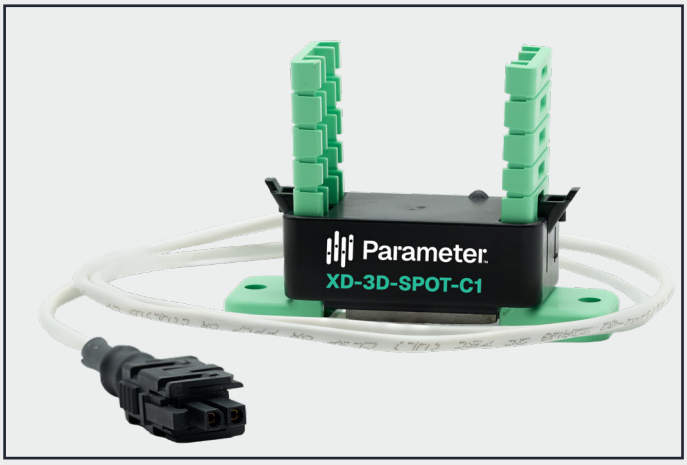
XD-3D-JMP-xx Specifications	
Mechanical Specs Bend Radius	 0.25 inches
Electrical Specs Connectors Cable	 (2) RJ45 Meets Cat6 specifications. Conductors are stranded copper, 24 AWG minimum.
Operating Environment Temperature Humidity Altitude Storage Environment	 41 to 140°F (5° to 60°C) 20% to 80% RH, non-condensing 10,000ft (3,048m) max. -4° to 158°F (-20° to 70°C)

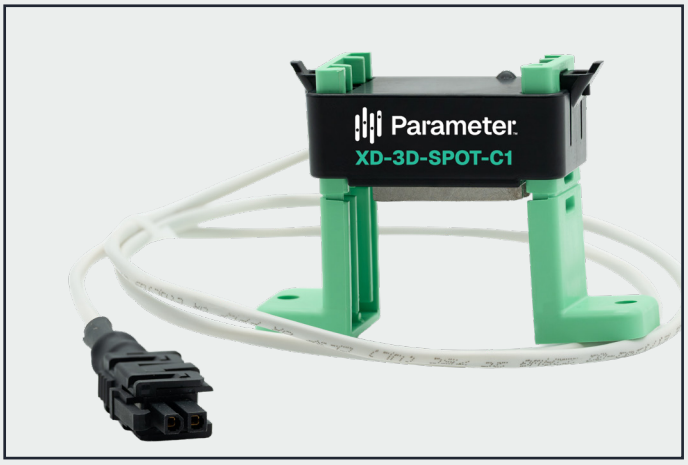
08 XD-3D-LDR-XX SPECS.



XD-3D-LDR-xx Specifications	
Electrical Specs	
Connectors	2-pin locking
Cable	(2) conductors, stranded copper, 22 AWG.
Operating Environment	
Temperature	41 to 140°F (5° to 60°C)
Humidity	20% to 80% RH, non-condensing
Altitude	10,000ft (3,048m) max.
Storage Environment	-4° to 158°F (-20° to 70°C)

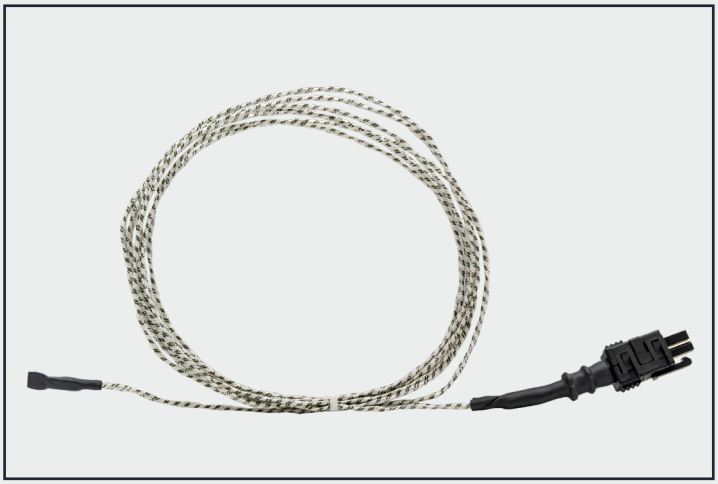
09 XD-3D-SPOT-C1 SPECS.





XD-3D-SPOT-C1 Specifications	
Leak Detection	
Fluids	Supports detection of conductive fluids
Propylene Glycol Blends	Support detection of leaks of Propylene Glycol / water mixtures. Detects blends with up to 35% Propylene Glycol (by weight).
Reset Time	Fast Reset. The XD-3D-SPOT-C resets to clear the leak condition nearly immediately after the electrodes are wiped dry.
Mechanical & Mounting	
Mounting Options	Magnetic (included), screws, zip ties, adhesive
Adjustable Height	Adjust the height of the electrodes from 0” to 1” in 0.25” increments with no tools required.
Electrodes clearance	Clearnce from electrodes to mounting surface with legs in minimum height position is 0.0625” (1.588mm).This offset is added at each height adjustment level (0, 0.25, 0.5, 0.75, 1.0”)
Snap off legs	After height is adjusted, the remaining portion of the legs (if any) can be snapped off with pliers for extremely low profile.
Operating Environment	
Temperature	41 to 140°F (5° to 60°C)
Humidity	20% to 80% RH, non-condensing
Altitude	10,000ft (3,048m) max.
Storage Temperature	-4° to 158°F (-20° to 70°C)
Enclosure, Weight, Dimensions	
Enclosure	IP40 rating
Dimensions	2.92”W x 1.06”H x 2.05”D (74.17mmW x 26.92mmH x 52.07mmD)
Weight	0.1 lbs. (0.045 kg)
Certifications	
Certifications	CE; TUV: conforms to UL 61010-1, EN 61010-1; certified to CSA C22.2 NO. 61010-1; RoHS compliant

10 XD-3D-ROPE-CXX SPECS.



XD-3D-ROPE-Cxx Specifications	
Leak Detection Fluids Propylene Glycol Blends	 Supports detection of conductive fluids Support detection of leaks of Propylene Glycol / water mixtures. Detects blends with up to 35% Propylene Glycol (by weight).
Mechanical Specs Bend radius	 0.25 inches
Electrical Specs Connectors Cable Termination Dust protection	 (1) 2-pin locking (2) conductors, stranded copper, 22 AWG. Integrated end termination. Daisy-chaining of sense ropes is not supported. Integrated dust protection. Cable is designed to significantly reduce false positives. Contact with metal will not cause leak indication.
Operating Environment Temperature Humidity Altitude Storage Temperature	 41 to 140°F (5° to 60°C) 20% to 80% RH, non-condensing 10,000ft (3,048m) max. -4° to 158°F (-20° to 70°C)

11 XD-3D-ROPE-FXXX SPECS.



XD-3D-ROPE-FXxx Specifications	
Leak Detection	
Fluids	Supports detection of conductive fluids
Propylene Glycol Blends	Support detection of leaks of Propylene Glycol / water mixtures. Detects blends with up to 35% Propylene Glycol (by weight).
Reset Time	Fast Reset. The 3D-ROPE-FX rope resets to clear the leak condition nearly immediately after the rope is wiped dry.
Mechanical Specs	
Bend radius	0.25 inches
Electrical Specs	
Connectors	(1) 2-pin locking
Cable	(2) conductors, stranded copper, 22 AWG.
Termination	Integrated end termination. Daisy-chaining of sense ropes is not supported.
Dust protection	Integrated dust protection. Cable is designed to significantly reduce false positives. Contact with metal will not cause leak indication.
Operating Environment	
Temperature	41 to 140°F (5° to 60°C)
Humidity	20% to 80% RH, non-condensing
Altitude	10,000ft (3,048m) max.
Storage Temperature	-4° to 158°F (-20° to 70°C)