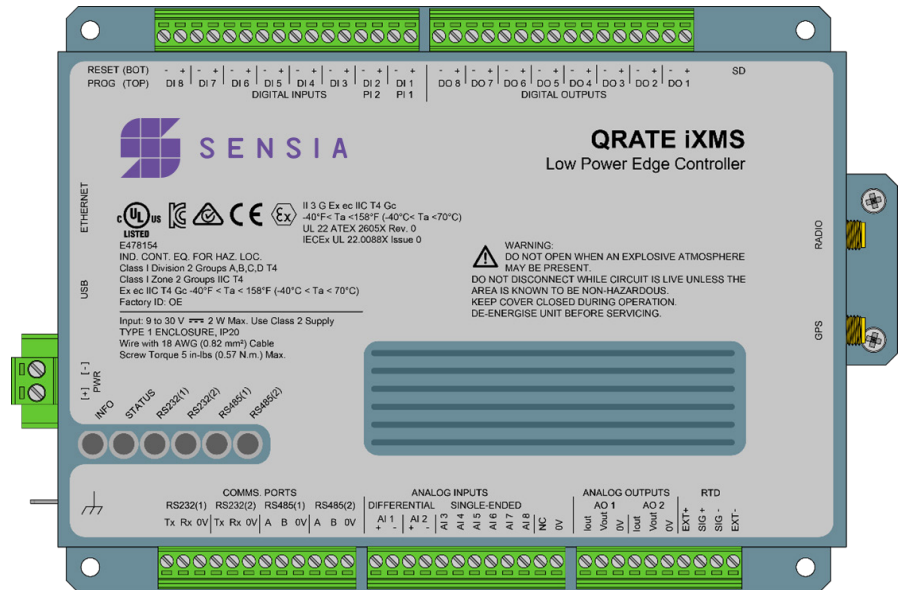


Qrate iXMS

Low power edge controller

Features and Benefits

- + Suitable for applications such as artificial lift control, pump control, and tank level monitoring
- + Low-power consumption makes it ideal for solar powered sites
- + Flexible connectivity with Ethernet and multiple serial ports
- + Easily integrate with third-party equipment and customize for a variety of applications/roles
- + Wireless WMP protocol optionally allows users to add low power long range point to point pressure and temperature devices
- + Reliable in harsh environments with extreme operating temperatures



INCREASE REAL-TIME VISIBILITY IN HARSH ENVIRONMENTS AND REMOTE LOCATIONS

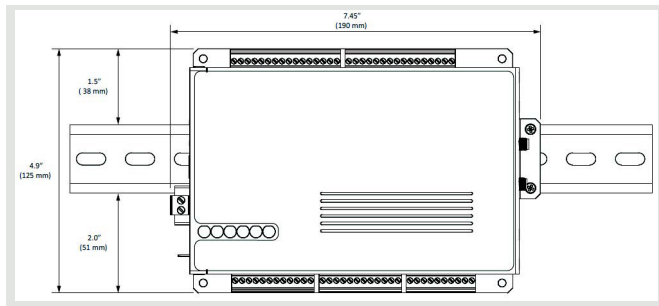
The QRATE iXMS low power edge controller has been designed to operate in environments where harsh weather and remote locations make continuous operation and visibility of data imperative. When lack of reliable power dictates that a control system most efficiently utilize power from a solar array, or single battery, then the low power and sleep operation of the QRATE iXMS controller are perfect choices.

Robust communication ports allow the QRATE iXMS low power edge controller to interface with other controllers and devices in the field. Instrumentation for monitoring and control of the production process can be wired directly to the onboard analog and digital signals.

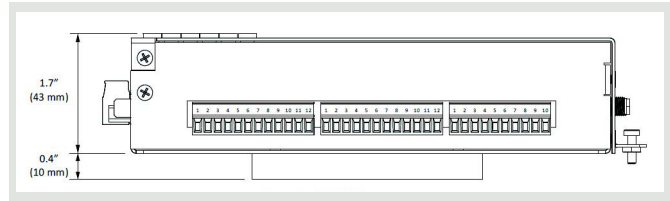
Wireless gateway functionality enables up to 5 remote iXMS or QRATE iSens wireless transmitters to be connected to a single iXMS. Low power, long range communication is possible with the correct communication infrastructure.

QRATE iXMS low power edge controller is ideal for control and remote monitoring of equipment like a wellhead, tank battery or remote stations along a pipeline. Integration with Rockwell Automation's ISaGRAF™ workbench software enables IEC 61131-3 programming to provide control, based on the aggregated data that can then be communicated through Modbus, DNP3 or MQTT connection.

Dimensions



Front Dimension



Side Dimension

Specifications

Environmental

Attribute	Value
Operating Altitude	<ul style="list-style-type: none"> 0 to 2000 m (0 to 6600 ft)
Thermal Management	<ul style="list-style-type: none"> Cooled by natural convection and thermal conduction through the enclosure.
Operating Temperature	<ul style="list-style-type: none"> -40 to +70 °C (-40 °F to +158 °F) As per IEC 60068-2-2 (Test Bd, Operating Dry Heat)
Storage Temperature	<ul style="list-style-type: none"> -40 to +85 °C (-40 °F to +185 °F)
Humidity Range	<ul style="list-style-type: none"> Up to 95% noncondensing As per IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)
EMC	<ul style="list-style-type: none"> EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions
US/Canada	<ul style="list-style-type: none"> UL 121201 C22.2 No. 213-17 UL61010-1 UL61010-2-201 CSA C22.2 No 61010-2-201 Marking: Class I, Division 2, Groups A,B,C,D T4
ATEX / IECEx	<ul style="list-style-type: none"> EN IEC 60079-0 EN IEC 60079-7 ATEX Marking: II 3 G Ex ec IIC T4 Gc, -40 °C (-40 °F) < Ta < 70 °C (158 °F) ATEX Certificate Number: UL 22 ATEX 2605X Rev. 0 IECEx Certificate Number: UL 22.0088X Issue 0

Mechanical

<ul style="list-style-type: none"> Mount Style (See IXMS Installation) 	<ul style="list-style-type: none"> DIN Rail - TS35 "Top Hat" Section (EN 50022 - 35 x 7.5) Panel mount with DIN rail clip removed
<ul style="list-style-type: none"> General Dimensions (W x H x D) (See Dimensions) 	<ul style="list-style-type: none"> DIN Rail mount 190 mm x 53 mm x 125 mm (7.45 in. x 2.1 in. x 4.9 in.) Panel mount with DIN rail clip removed: 190 mm x 43 mm x 125 mm (7.45 in. x 1.7 in. x 4.9 in.)
<ul style="list-style-type: none"> Weight 	<ul style="list-style-type: none"> Bare unit (including XBee radio): 720 grams (1.59 lb.) Unit including packaging: 840 grams (1.85 lb.)
<ul style="list-style-type: none"> Enclosure Type Rating 	<ul style="list-style-type: none"> Metal enclosure meets IP20

System I/O

Power Supply Input	<ul style="list-style-type: none"> Input range: 9 Vdc to 30 Vdc, 2 W max. from either battery or dc source.
Analog Inputs	<ul style="list-style-type: none"> Eight Analog Input channels (two differential inputs + six single-ended inputs) Measurement resolution: 24-bit Calibrated measurement accuracy: 0.1% FS Voltage Mode input range: 0...5 Vdc Current Mode input range: 0...20 mA Transient overvoltage protection: 60 Vdc Overcurrent protection: 70 to 85 mA Input Impedance in Current Mode: 290 Ω Input Impedance in Voltage Mode: 150 kΩ
Digital/Pulse Inputs	<ul style="list-style-type: none"> Eight opto-isolated Digital Input channels Input channels 1 and 2 can be configured as Pulse Inputs in the ISaGRAF application software Maximum Pulse Input Frequency: 1 kHz Each input can withstand 250 Vac OVC II fault conditions without isolation breakdown occurring Input rating: 0 to 24 Vdc Transient overvoltage protection: 36 Vdc Input impedance: 3.5 kΩ High threshold Max: 12 Vdc Low threshold Min: 2.5 Vdc
Digital Outputs	<ul style="list-style-type: none"> Eight opto-isolated Digital Output channels Each output can withstand 250 Vac OVC II fault conditions without isolation breakdown occurring Solid-state Relay type output Maximum On state resistance: 3 Ω Output rating: 24 Vdc, 270 mA Overcurrent protection: 500 mA Transient overvoltage protection: 36 Vdc
Analog Outputs	<ul style="list-style-type: none"> Two Analog Output channels Output setting resolution: 12-bit Calibrated output accuracy: 0.5% FS Voltage Mode output range: 1...5 Vdc Current Mode output range: 4...20 mA Current Mode output type: Current Sourcing Maximum load impedance in Current Mode: 680 Ω Minimum load impedance in Voltage Mode: 120 Ω (Note: Output is short-circuit protected) Transient overvoltage protection: 60 Vdc Maximum output current in Current Mode: 25 mA Output impedance in Current Mode: 110 Ω
RTD Input	<ul style="list-style-type: none"> Single RTD Input channel RTD sensor wiring compatibility: 2 Wire, 3 Wire and 4 Wire RTD sensor type compatibility: PT100 Measurement resolution: 12-bit Measurement linearity: This is bound to the constraints of the Callendar-Van Dusen equation. Calibrated temperature accuracy: $\pm 1^{\circ}\text{C}$ across the measurement range Measurement range: -200°C (-328°F) to 600°C (1112°F)

Processor and Memory

Processor Core	<ul style="list-style-type: none"> ARM Cortex™-M4
Processor Architecture	<ul style="list-style-type: none"> 32-bit RISC ARM Harvard
Processor Core Clock Frequency	<ul style="list-style-type: none"> 72 MHz
FLASH Memory (Non-Volatile)	<ul style="list-style-type: none"> 2 MB (Processor Internal) 2 MB (On-Board – NOR FLASH)
SRAM Memory (Volatile)	<ul style="list-style-type: none"> 512 KB (Processor Internal) 1 MB (On Board, arranged as 512K x 16)
EEPROM Memory (Non-Volatile)	<ul style="list-style-type: none"> 2 KB (On-Board, with MAC Address and 128-bit unique ID)
FRAM Memory (Non-Volatile)	<ul style="list-style-type: none"> 32 KB (On-Board)
SD Card	<ul style="list-style-type: none"> SD Card MicroSD form factor Capacity: 2GB to 32GB SLC or pSLC NAND memory Operating temperature: -40 °C to 85 °C Minimum write speed: 10MB/s, Class 10, UHS-1

Real Time Clock

Clock Capabilities	<ul style="list-style-type: none"> Day, Month, Year, Hour, Minute, Second
Clock Accuracy	<ul style="list-style-type: none"> ±10 ppm @ 25 °C Drift: ±1.5 min/year over -40 °C to 70 °C Optional GNSS synchronization
Time to Charge (10% to 90%)	<ul style="list-style-type: none"> 55 minutes
Backup Time (at 25 °C)	<ul style="list-style-type: none"> Approximately 12 days

Communication Ports

Ethernet	<ul style="list-style-type: none"> RJ-45 connector Auto-negotiation to automatically select the highest link-up speed (10/100Mbps) Auto half/full duplex modes Auto MDI/MDI-X to detect straight-through and crossover cable connections Link established status indicator Link activity status indicator
USB	<ul style="list-style-type: none"> USB B female connector Supports USB 2.0 Full Speed (12 MBit/s) and Low Speed (1.5 Mbit/s) Allows read-only access to the microSD card when the iXMS RTU is in normal and recovery modes. (iXMS RTU microSD card appears as a Mass Storage Device to an external USB host.) Allows command line interface (CLI) access to the iXMS RTU when it is in recovery mode USB bus power status indicator
RS232	<ul style="list-style-type: none"> 2 ports Wire terminal connections 3 wire full-duplex Baud rates: <ul style="list-style-type: none"> Normal Power Mode: 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 Low Power Mode: 1200, 2400, 4800, 9600 Parity modes: None, Even and Odd Stop bits: 1 or 2 Flow control: None

	<ul style="list-style-type: none"> ▪ Default data format: 8 data bits and 1 stop bit without flow control ▪ Supports the following protocols in Client Mode: <ul style="list-style-type: none"> i. Modbus RTU ii. Allen Bradley Display (REM-LCD-2080) ▪ Supports the following protocols in Server Mode: <ul style="list-style-type: none"> i. Modbus RTU ii. Enron iii. DNPS iv. User Defined (implemented using ISaGRAF Application logic) ▪ Supports user defined protocols (implemented using ISaGRAF application logic) ▪ Transmit and Receive link activity bi-color status indicator
RS485	<ul style="list-style-type: none"> ▪ 2 ports ▪ Wire terminal connections ▪ 3 wire half-duplex ▪ Baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 ▪ Parity modes: None, Even and Odd ▪ Stop bits: 1 or 2 ▪ Flow control: None ▪ Default data format: 8 data bits and 1 stop bit without flow control ▪ Transmit and Receive link activity bi-color status indicator ▪ Software-configurable (ISaGRAF) 120 Ω end-of-line termination resistor ▪ Supports Modbus RTU in Client Mode ▪ Supports the following protocols in Server Mode. <ul style="list-style-type: none"> v. Modbus RTU vi. Enron vii. DNP3 ▪ Transmit and Receive link activity bi-color status indicator

Software Detail

Operation Modes	<ul style="list-style-type: none"> ▪ Continuous ▪ Low Power
Timer/Clock	<ul style="list-style-type: none"> ▪ Onboard RTC with Supercapacitor backup ▪ GNSS optional time synchronization
Communication Protocols	<ul style="list-style-type: none"> ▪ Modbus RTU Client/Server ▪ Modbus TCP Client/Server ▪ DNP3 Protocol ▪ EtherNet/IP ▪ Enron Modbus
Firmware Features	<ul style="list-style-type: none"> ▪ Pulse Counter/Accumulator ▪ Engineering Units and Raw Data ▪ Conversion Scaling ▪ Message Acknowledgments Verification ▪ Message Data Encryption ▪ Power Supply Voltage Level Check