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Imagine. Build. Succeed.

ReliaGATE 10-20

Multi-Service Gateway and Edge Controller

Trademarks

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Revision history

Revision	Description	Date
1	Initial release	October 2014

Table of Contents

Safety and Regulatory

Carefully read and understand the instructions in this manual before using this device.

Whenever you have any doubt regarding the operation of this device, consult this manual or contact your local Eurotech Technical Support Team (see the last page of this manual for details).

Keep this manual for future reference.

To lower the risk of personal injury, electric shock, fire or damage to equipment, observe the following precautions, as well as using good technical judgment, whenever installing or using the device.

Eurotech has made every effort to ensure the accuracy of this document; however, Eurotech assumes no liability resulting from any error/omission in this document, or from the use of the information contained herein.

Eurotech reserves the right to revise this document or to make changes to its content at any time without any obligation to notify any person of such revision or changes.

Alerts that can be found throughout this manual

SYMBOL	MEANING
	DANGER Information highlighting potential electrical shock hazards: • Personal injury or death could occur. • Damage to the system, connected peripheral devices, or software could occur. Always use appropriate safety precautions. Also ensure that the installation meets all the requirements as set out for the environment that the equipment will be deployed in.
	WARNING Information highlighting potential hazards: • Personal injury or death could occur. • Damage to the system, connected peripheral devices, or software could occur. Always use appropriate safety precautions. Also ensure that the installation meets all the requirements as set out for the environment that the equipment will be deployed in.
	NOTE These will highlight important features or instructions.

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Safety notices and warnings

Observe the following safety precautions during all phases of operation, service, and repair of the device.

Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the device.

Eurotech assumes no liability for the customer's failure to comply with these requirements.

The safety precautions listed below represent warnings of certain dangers of which Eurotech is aware. You, as the user of the device, should follow these warnings and all other safety precautions necessary for the safe operation of the device in your operating environment.

Do not operate in an explosive atmosphere

WARNING
Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

Antistatic precautions

WARNING
To avoid ESD (Electro Static Discharge) damage, always use appropriate antistatic precautions when handing any electronic equipment.

Connection to power supply or other devices

DANGER
Before applying power to the system, thoroughly review all installation, operation, and safety instructions. Failure to install the system power supply correctly or to follow all operating instructions correctly may create an electrical shock hazard, which can result in personal injury or loss of life, and/or damage to equipment or other property

- To avoid injuries, always disconnect power and discharge circuits before touching them.

- Only start the device with a power supply that meets the requirements stated on the voltage label. In case of uncertainties about the required power supply, please contact the Eurotech Technical Support Team or the electricity authority

- Before connecting other equipment carefully read any supplied instructions

- Always disconnect the power before connecting or disconnecting cables

- Do not perform connections with wet hands

- Check any power cords for damage before use

- Use certified power cables. The power cable must meet the requirements (voltage and current) of the device.

- Position cables with care. Avoid positioning cables in places where they may be trampled on or compressed by objects placed on them. Take particular care of the plug, power-point and outlet of power cable

- Avoid overcharging any power outlets

- Only apply power to the device or connected equipment after checking that all the above conditions have been met

Installation

WARNING
- **Verify that the mounting location can withstand the added loads caused by the addition of the device, it should be firmly secured so that it will not cause any potentially hazardous situations (e.g. falling down due to vibration or shock)**
- **Do not operate the device near heat sources or flames.**

NOTE:
If the device must be moved from one place to another with different ambient temperatures, ensure sufficient time for the temperature of the device to stabilize before repowering.

Ventilation

WARNING
Ensure adequate ventilation to avoid overheating, Eurotech suggests the following steps:
- **When installing the device within a cabinet, rack or other enclosed space, be sure to leave sufficient space to allow adequate air circulation**
- **Do not block any ventilation openings**

Maintenance

DANGER
- **Never open, dismantle or repair the device.**
- **For your maintenance or repair requirement please contact a qualified Eurotech engineer.**

If the device does not function correctly and you are unable to find a solution, feel free to contact the Eurotech Technical Support Team.

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If the equipment does not work properly, especially if smells unusual, unplug it immediately and contact the Eurotech Technical Support Team (see last page of this manual for further details).

Cleaning

WARNING

When cleaning the device, remember to:

- **Ensure sufficient ESD protection during the cleaning process.**
- **Remove any power from the device.**
- **When cleaning an enclosed system or peripheral use a dry cloth on the external casing.**
- **With single boards, use only a low power air brush or soft bristled paintbrush.**
- **Do not use detergents, aerosol sprays, solvents or abrasive sponges.**

Life support policy

	WARNING
⚠	Users must not use Eurotech products as critical components of life support devices or systems without the express written approval of Eurotech Spa.

Warranty

Please contact your local Eurotech Sales Office for detailed warranty terms and conditions.

Refer to the back covers of this manual for full contact details.

CE notice

This product is CE marked.

The CE mark on the product indicates that it conforms to the essential requirements of the applicable EC directives.

Eurotech is not responsible for the use of its products together with equipment (e.g. power supplies, personal computers, etc...) that are not CE marked and compliant with technical requirements specified in this manual.

$C\epsilon$

WEEE

The information below complies with the regulations set out in the 2002/96/EC directive, subsequently superseded by 2003/108/EC. It refers electrical and electronic equipment and the waste management of such products.

When disposing of a device, including all of its components, subassemblies and materials that are an integral part of the product, you should consider the WEEE directive.

The use of the following symbol, attached to the equipment, packaging, instruction literature, or the guarantee sheet, states that the device has been marketed after August 13th 2005, and implies that you must separate all of its components when possible, and dispose of them in accordance withal waste disposal legislations:

- Because of the substances present in the equipment, improper use or disposal of the refuse can cause damage to human health and the environment.

- With reference to WEEE, it is compulsory not to dispose of the equipment with normal urban refuse; an arrangement for separate collection and disposal is essential.

- To avoid any possible legal implications contact your local waste collection body for full recycling information.

RoHS

This device, including all the components, subassemblies and the consumable materials that are an integral part of the product, have been manufactured in compliance with the European directive 2002/95/EC known as the RoHS directive (Restrictions of the use of certain Hazardous Substances). This directive targets the reduction of certain hazardous substances previously used in electrical and electronic equipment (EEE).

EMC Requirements for Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. This device complies with Industry Canada RSS Appliance radio exempt from licensing. The operation is permitted for the following two conditions:

1) The device may not cause harmful interference, and
2) The user of the device must accept any interference suffered, even if the interference is likely to jeopardize the operation.

FCC Part 15 Class B Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

<u>Warning:</u> Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Technical assistance

For any technical questions, or if you cannot isolate a problem with your device, or for any enquiry about repair and returns policies, feel free to contact your local Eurotech Technical Support Team*.*

See the back cover for full contact details.

Transportation

When transporting any module or system, for any reason, it should be packed using anti-static material and placed in a sturdy box with enough packing material to adequately cushion it.

Disclaimer:

This equipment generates and can radiate radio frequency energy and may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by such measures as reorienting the receiving antenna, increasing separation between equipment and receiver, or connecting the equipment into an outlet on a different electrical circuit.

Additional restrictions and requirements may be listed in the System Specifications.

Warning:
Any product returned to Eurotech that is damaged due to inappropriate packaging will not be covered by the warranty.

Conventions

The following table describes the conventions for signal names used in this document.

Convention	Explanation
GND	Digital ground plane
#	Active low signal
_P	Positive signal in differential pair
_N	Negative signal in differential pair

The following table describes the abbreviations for direction and electrical characteristics of a signal used in this document.

Type	Explanation
I	Signal is an input to the system
O	Signal is an output from the system
IO	Signal may be input or output
P	Power and ground
A	Analog signal
3.3	3.3 V signal level
5	5 V signal level
NC	No Connection
Reserved	Use is reserved to Eurotech

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Overview

The ReliaGATE 10-20 is a ready-to-deploy, industrial-grade, smart device that enables communications, computational power, simplified application deployment, and M2M platform integration for immediate service generation. It provides a flexible communication architecture and offers connectivity to a wide range of sensors and edge devices making it easy to deliver data to your business application. ReliaGATE 10-20 supports wireless applications including GPS, Wi-Fi, 2G/3G cellular, and IEEE 802.15.4/ZigBee® Standard and wired connectivity such as USB 2.0, Gigabit Ethernet, serial ports, CAN, analog inputs, and isolated digital I/O.

With the ReliaGATE 10-20, you can easily manage configuration and deliver out-of-the-box connectivity for your M2M and network applications. Software support includes Eurotech's Everyware™ Software Framework (ESF) that provides the MQTT plug-in enabling connection to Eurotech's Everyware™ Cloud.

The following figure shows a full-feature ReliaGATE 10-20. A ReliaCELL 10-20 cellular module is mounted. Actual units may vary in appearance depending on the selected options.
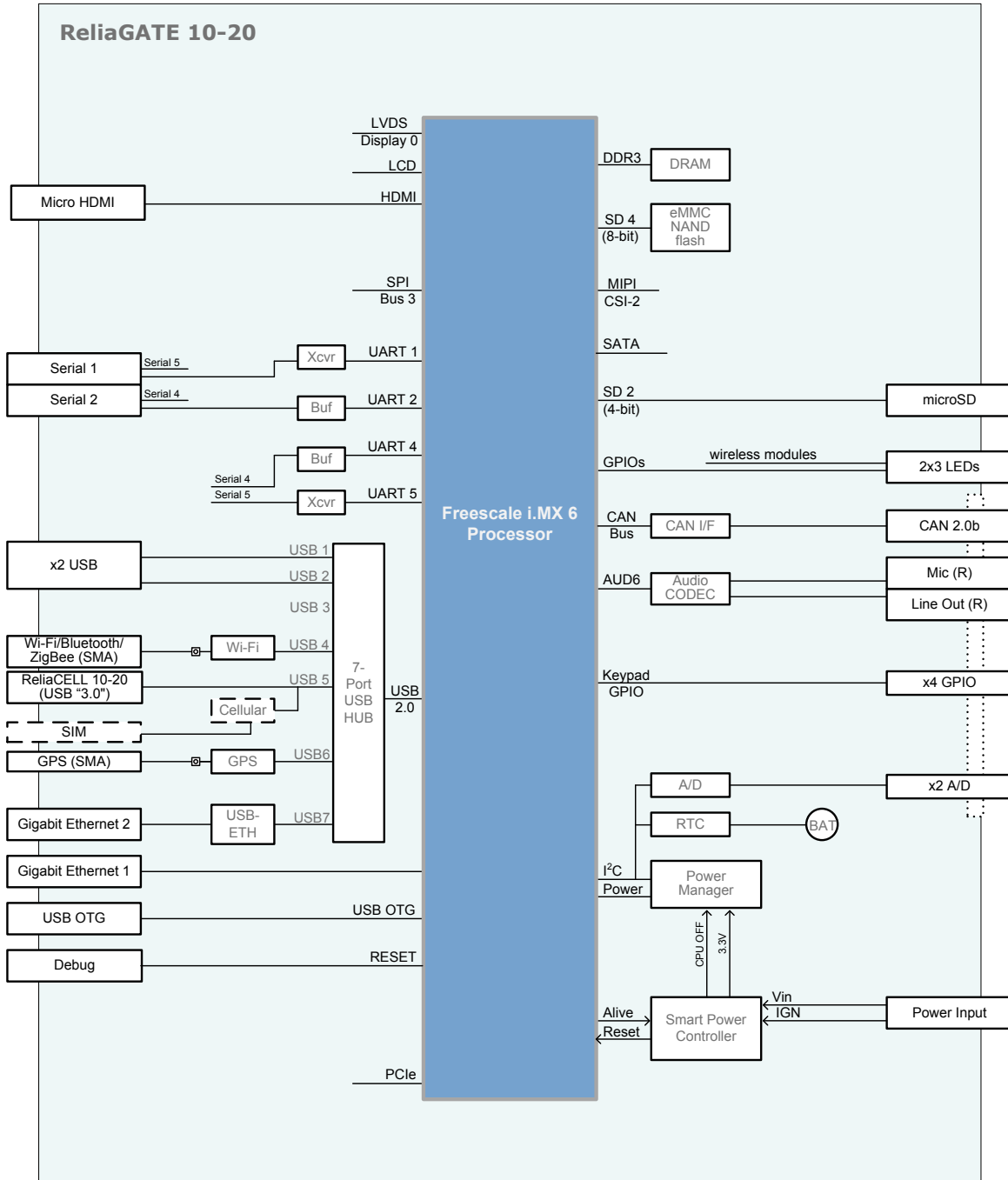

ReliaGATE 10-20, with ReliaCELL

Block Diagram

The following diagram illustrates the organization of the ReliaGATE 10-20.

Some features of the processor are accessible on the motherboard, but are not available externally. See the CPU 351-13 user manual for details.

Features

Processor

- Freescale iMX6 800MHz Solo Core processor

Memory

- 512 MB DDR3 DRAM

- Up to 64GB on-board flash with soldered down eMMC

- MicroSD expansion slot

Communications

- Two gigabit Ethernet ports

- Three USB 2.0 host ports

- One CAN2.0 bus

- Wi-Fi IEEE 802.11

- GPS receiver

- Cellular: Accepts ReliaCELL 10-20 modems

Indicators

- Ten LED status indicators

Discrete I/Os

- Two analog inputs

- Four digital inputs

Software

- Everyware™ Software Framework option

- Supports Everyware™ Device Cloud

Power Supply

- Supports 12 VDC vehicle power, transient protection, vehicle ignition input, Low Power Mode

- 4 W power consumption

- Battery-backed real-time clock

Product Options

In addition to the standard features described in the previous section, the ReliaGATE 10-20 is designed to support the following options:

- Amplified audio output

- Application-specific ZigBee stack

- Built-in cellular module

- Customization of Smart Power microcontroller

If your application requires one or more of these options, contact your local Eurotech representative for availability.

Related Documents

This manual describes the ReliaGATE 10-20 at the system level and is intended for installers, software developers, and system integrators. The following documents are also important resources for the ReliaGATE 10-20.

Document	Available at
Denali User Manual	http://support.eurotech-inc.com/forums/topic.asp?topic_id=3040
Everyware Cloud Developer's Guide	http://everywarecloud.eurotech.com/doc/ECDevGuide
Everyware Software Framework Developer's Guide	http://esf.eurotech.com/doc/ESFDevGuide

Interfaces

This section describes the communications, user interface, discrete I/Os, and power supply features of the ReliaGATE 10-20.

The following images illustrate the location of the interface connectors.

Front Panel, ReliaGATE interfaces exposed

Front Panel, ReliaGATE 10-20 installed
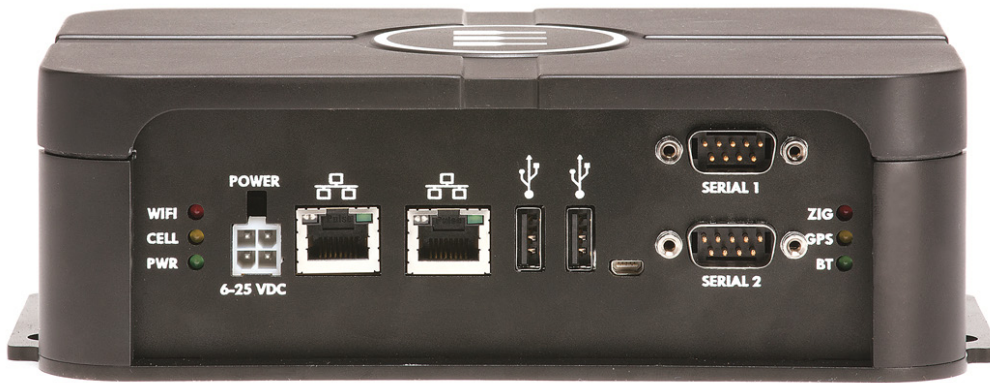
Rear Panel

Power

Power Supply

Connector	4-position, 2-row, 4.2mm shrouded pin header
	Molex Mini-Fit™ 35318-0420 or 35318-0421
Mating connector	4-position, 2-row, 4.2mm shrouded receptacle housing
	Molex Mini-Fit 5557 series, p/n 39-01-2040, etc
	Crimp receptacle for 18-24 AWG wire, tin plated (4 ea)
	Molex p/n 39-00-0039 or 39-00-0060

The ReliaGATE 10-20 power connector is a 4-pin header   he rear panel.

Pin	Name	Type	Description
1	RSVD		reserved
2	VIN	PI	Power input
3	GND	P	Ground
4	IGN	I	Ignition sense

IGN   RSVD

GND   VIN
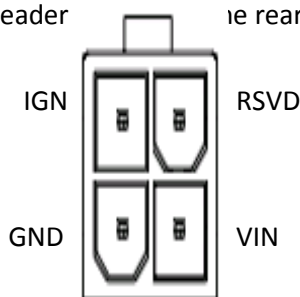
See Power **Supply**, page 26 for electrical speci

Communications

ReliaGATE 10-20 offers connectivity to a wide range of wireless protocols including GPS, Wi-Fi (IEEE 802.11), and IEEE 802.15.4/ZigBee®. The ReliaGATE 10-20 also includes interfaces for wired connectivity such as USB 2.0, Gigabit Ethernet, EIA-232/485 serial, and CAN 2.0b.

The ReliaGATE 10-20 provides cellular connectivity via pre-certified ReliaCELL modules, which secure directly to the front panel.

Wi-Fi (IEEE 802.11)

Connector	SMA connector (outside threads) with center receptacle
Mating connector	SMA cable with nut (inside threads) and center pin

The ReliaGATE 10-20 includes a Wi-Fi adapter. Connect an external antenna to the "WIFI" SMA connector for the frequency ranges your application will use (2.4 GHz and/or 5 GHz).

See the System Specifications section for additional details.

GPS

Connector	SMA connector (outside threads) with center receptacle
Mating connector	SMA cable with nut (inside threads) and center pin

The ReliaGATE 10-20 includes a multi-channel GPS receiver for accurate location information worldwide.

Connect an external GPS antenna to the GPS SMA connector to enable GPS functionality. The antenna should support a frequency of 1575.42 MHz (GPS L1). For quick signal acquisition and greatest accuracy, the antenna should be mounted with visibility to a wide area of the sky in order to receive signals from multiple positioning satellites.

See the System Specifications section for additional details.

ReliaCELL Docking Bay: USB/Cellular, SD, SIM, Debug

The docking bay is designed to accept a ReliaCELL cellular module. When installed, the ReliaCELL covers Secure Digital, SIM, OTG, and debug connectors.

ReliaCELL Port

Connector	USB Type A socket M2.5 threaded mounts (4x)
Mating connector	ReliaCELL 10-20 (USB) M2.5 x 20 screws (4x) (Eurotech mounting kit 250128-90501)

The ReliaGATE 10-20 includes a docking bay for the ReliaCELL 10-20, a family of cellular modem modules that are certified for networks, technologies, and carriers around the world.

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Secure the ReliaCELL 10-20 to the bay on ReliaGATE 10-20 as described in the Mechanical section of this manual. Follow the guidelines in the ReliaCELL user manual for antenna selection.

All Eurotech operating systems are designed to support the ReliaCELL 10-20.

USB OTG

Connector	USB OTG mini Type B socket
Mating connector	USB OTG cable, mini Type B plug

This socket supports a USB On-the-Go connection. This socket can be used to restore unit with corrupted software. Contact factory for current level of software support.

MicroSD

Connector	microSD socket, push-push type
Mating connector	microSD storage card

Use a microSD card into the "SD" socket to expand storage capacity of the ReliaCELL 10-20.

Insert the card until it clicks into place. Press on the card again to eject it.

SIM

Connector	SIM socket, push-push type
Mating connector	SIM card from a cellular service provider

If your model of the ReliaCELL 10-20 includes an on-board cellular modem, you may need to insert a SIM card from your cellular service provider into this slot. Insert the SIM until it clicks into the socket. Press on the SIM a second time to eject it.

If you are using a ReliaCELL cellular modem, any required SIM should be installed in the ReliaCELL enclosure, and not in this slot.

Debug

Connector	Three-pin, 0.1 inch pin header
Mating connector	None

The debug connector provides two signals that can be used during product development. Pin 1 located closest to the center-line of the front panel, pin 3 is toward the corner. Used for unit recovery if software becomes corrupted.

Pin	Signal	Description
1	Reset#	Short to ground to reset the system.
2	GND	Ground
3	SD2_Boot	Shunt to ground to boot from SD.

USB

Connector	USB Type A socket
Mating connector	USB Type A plug

The ReliaGATE 10-20 provides two USB 2.0 host ports on the rear panel.

A third USB 2.0 port is designed for use with ReliaCELL 10-20. The connector is located in the ReliaCELL 10-20 bay and employs a USB 3.0 Type A socket to bring out additional signals for use by the ReliaCELL. This socket will work with standard USB 2.0 devices, if an additional port is needed for an application.

Both ports support higher-current peripherals. See the System Specifications for details.

Ethernet

Connector	RJ-45 socket, with chassis-grounded shell
Mating connector	RJ-45 plug, shielded cable optional and supported

The ReliaGATE 10-20 provides two RJ-45, gigabit Ethernet ports on the rear panel.

The left Ethernet port is referenced as Ethernet 1 and is directly connected to the processor. The right Ethernet port is referenced as Ethernet 2 and is driven by a USB 2.0 port. The MAC address for each port is provided on the label that is located on the bottom of the enclosure.

See the System Specifications section for additional details.

Vehicle – CAN 2.0b

The ReliaGATE 10-20 provides a CAN 2.0b (Controller Area Network) bus on the Discrete I/O connector. CAN bus is typically found in vehicles and industrial automation equipment.

See the System Specifications section for additional details.

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Serial 1

Connector	DB-9 M header
Mating connector	DB-9 F cable

This connector provides access to two serial ports. Connect a standard EIA-232 cable to access three-wire port Serial 1. Use a customized cable or wiring pinout to access Serial 5.

The transceivers for both ports can be disabled through software.

Pin	EIA-232 Signal	Type
2	RXD1	I
3	TXD1	O
5	GND	P
7	NC	
8	NC	
1	RDX5	I
4	TXD5	O
6	NC	
9	NC	

Serial 2

Connector	DB-9 M header
Mating connector	DB-9 F cable

This connector provides access to two serial ports. Connect a standard EIA-232 cable to access four-wire port Serial 2. Use a customized cable or wiring pinout to access Serial 1 (COM4?).

Serial 2 can be software selected to use single-ended EIA-232 or differential EIA-485 signalling. The power-up default is EIA-232.

The transceivers for both ports can be disabled through software.

Pin	EIA-232 Signal	Type	EIA-485 Signal	Type
2	RXD2	I	RX2-	I
3	TXD2	O	TX2-	O
5	GND	P	GND	P
7	RTS2	O	TX2+	O
8	CTS2	I	RX2+	I
1	RDX4			
4	TXD4			
6	CTS4			
9	RTS4			

User Interface

The ReliaGATE 10-20 includes LEDs, GPIOs, audio I/O, and A/D inputs to complete the user interface.

LED Indicators

Ten light-emitting diodes (LEDs) on the rear panel indicate the status of ReliaGATE 10-20 subsystems.

LED Group 1: WIFI, CELL, PWR

Group 1 LEDs lie next to the power input and are organized as follows:

LED label	Color	Description
WIFI	red	Wi-Fi Power/Activity
CELL	yellow	On Board Cellular
PWR	green	Controllable by the operating system. Can indicate system status.

LED Group 2: ZIG, GPS, BT

Group 2 LEDs lie next to the DB9 serial connectors and are organized as follows:

LED label	Color	Description
GPS	yellow	GPS

Ethernet 1 LEDs

The two LEDs on the Ethernet 1 socket illuminate as follows. Illumination indicates connection speed; blinking indicates activity.

Speed	Left	Right
No Link	OFF	OFF
10 Mbps	ON/blink	ON/blink
100 Mbps	ON/blink	OFF
1000 Mbps	OFF	ON/blink

Ethernet 2 LEDs

The two LEDs on the Ethernet 2 socket illuminate as follows. Illumination indicates connection speed; blinking indicates activity.

Speed	Left	Right
No Link	OFF	OFF
10 Mbps	ON/blink	OFF
100 Mbps	OFF	ON/blink
1000 Mbps	ON/blink	ON/blink

HDMI Display

Connector	Micro-HDMI socket
Mating connector	Micro-HDMI cable assembly

The ReliaGATE 10-20 includes an HDMI display output. This output requires licensing for use in commercial applications and is unlabelled on the enclosure. Contact Eurotech Sales if your application requires this feature.

Discrete I/O

Connector	12-position base strip, 3.5mm, green
	Phoenix contact 1843897
Mating connector	12-position pluggable terminal block, 3.5mm, with screw connector
	Phoenix Contact 1847220 (other orientations available)

A 12-position socket ("base strip") located on the rear panel provides access to analog inputs, general-purpose digital inputs, audio I/O, and the CAN bus. The following figure shows the layout of the base strip.
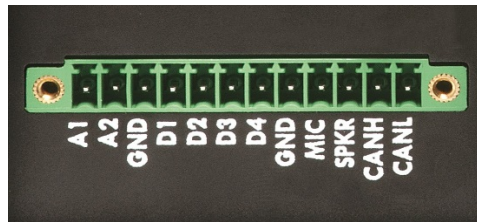
Screw the mating wires into the pluggable terminal block, plug the terminal block into the base strip, and secure the terminal block to the base strip with the captive screws.

The following table defines the signals on the base strip. See the Specifications section for further details.

Signal Name	Type	Description
A1	I	Analog input 1
A2	I	Analog input 2
GND	P	Ground
D1	I	Digital input 1
D2	I	Digital input 2
D3	I	Digital input 3
D4	I	Digital input 4
GND	P	Ground
MIC	AI	Audio: Microphone input (right channel)
SPKR	AO	Audio: Line output (right channel)
CANH	IO	CAN+
CANL	IO	CAN-

System Specifications

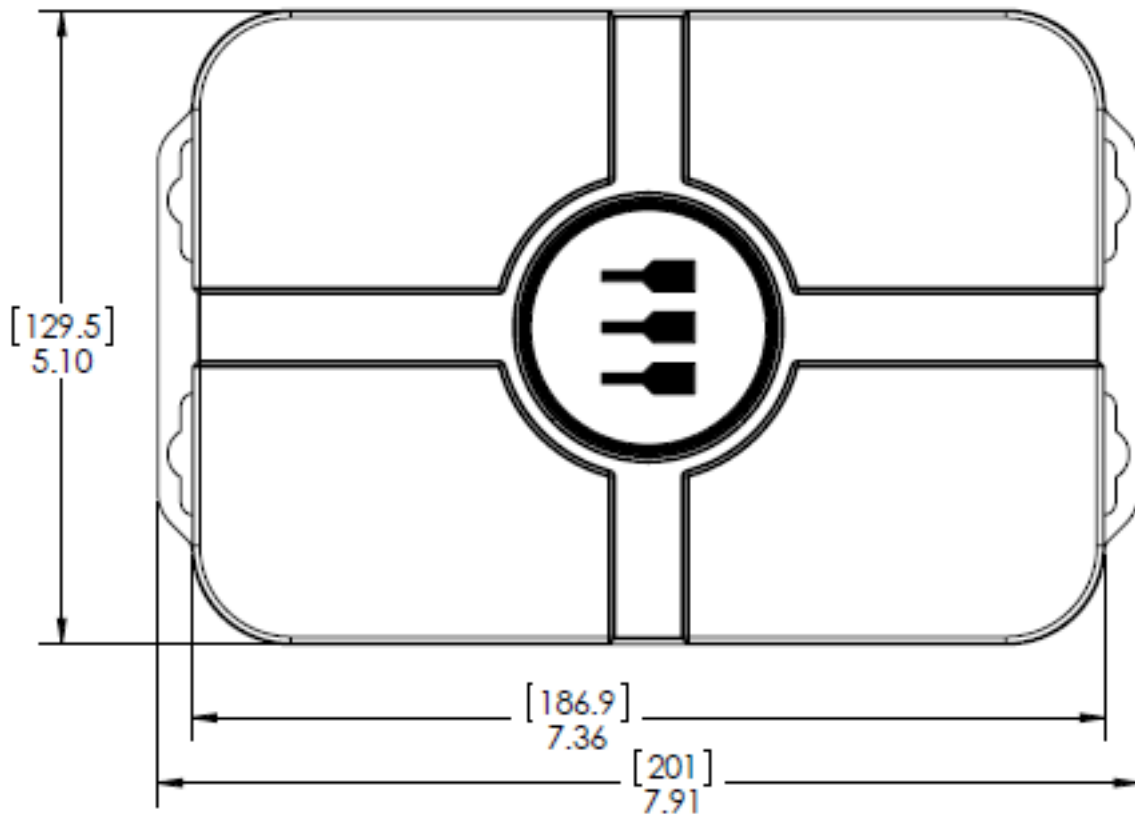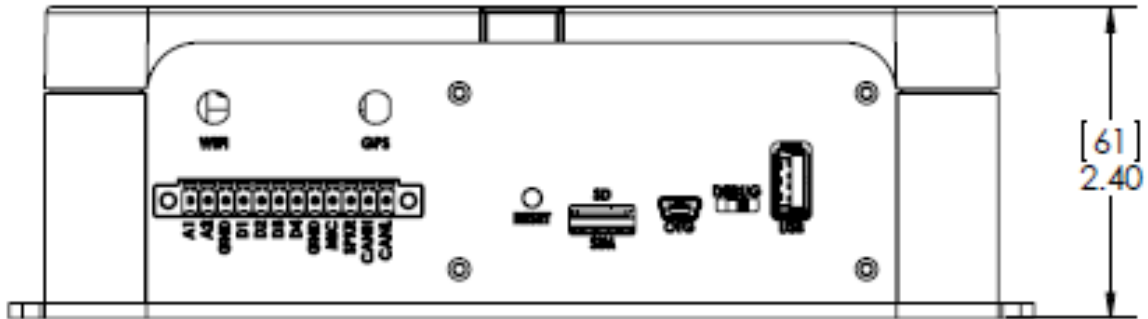## Mechanical

The ReliaGATE 10-20 electronics are housed in a sturdy aluminium enclosure consisting of a base plate with mounting tabs and lid. This section provides mechanical details about the enclosure.

Mechanical Drawings

The following mechanical drawings specify the dimensions of the ReliaGATE 10-20 enclosure. Dimensions are in inches [millimeters].

Mechanical Drawing, Top View

Mechanical Drawing, Front Panel

Mounting a ReliaCELL Modem

The ReliaGATE 10-20 includes a bay for mounting the ReliaCELL family of pre-certified cellular modules. Secure it to the front panel using M2.5 screws. Do not over tighten.

Power Supply

Supply Voltage (VIN)   40 V absolute maximum

Symbol	Parameter	Min	Typ.	Max	Units
DC Power Input (VIN)					
V_{IN}	Supply voltage, regulated power	7	12 to 24	37	V
V_{RTC}	RTC backup battery (note 2)	2.8	3		V

Notes:

1. The enclosure on early ReliaGATE 10-20 models indicates a lower limit on the input voltage. While the unit might run at that voltage, it typically will not start at that voltage.

2. When system power is disconnected, the RTC is battery is powered by a 3V lithium BR1225 coin cell inside the enclosure.

Communication

Wi-Fi

Feature	Description
IEEE WLAN Standard	IEEE 802.11 a/b/g/n Access Point and Client

Security
        Authentication:
        Authentication Protocols:
        Encryption:
	
	WPA and WPA2, 802.1X, EAP-SIM, EAP-AKA
	PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2
	64-bit and 128-bit WEP, AES-CCMP, TKIP

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USB

The ReliaGATE 10-20 includes a seven-port USB hub that controls internal peripherals and provides three ports for external use. The external ports are designed to support higher-current devices.

Loading 3 usb ports at max capacity could be an issue the extended capability is to provide transient load support, 5V regulator maxes out at 3A.

Symbol	Parameter	Min	Typ.	Max	Units
V_{CC}	Output voltage		5		V
I_{OUT}	Output current			1000	mA

Ethernet

Feature	Description
Network Standard	IEEE 802.3/802.3u/802.3ab
Speeds	10/100/1000 Mbps (note 3)
Supports	Auto-negotiation Auto MDI-X

Note:

3. Ethernet 2 is implemented by a high-speed USB 2.0 to 10/1000/1000 Ethernet Controller. Speeds may be limited by the USB 2.0 host interface.

GPS

The ReliaGATE 10-20 utilizes a u-blox NEO-6M receiver for GPS functionality.

Parameter	Description
Receiver Type	
Channels:	50
Frequency:	GPS L1, C/A Code
SBAS:	WAAS, EGNOS, MSAS
Time-To-First-Fix (all satellites at -130 dBm)	
Cold Start (without aiding):	27 s
Warm Start (without aiding):	27 s
Hot Start (without aiding):	1 s
Aided Starts:	<3 s
(dependent on aiding data connection speed and latency)	
Sensitivity (demonstrated with a good active antenna)	
Tracking & Navigation:	-161 dBm
Reacquisition: (for an outage duration ≤10 s)	-160 dBm
Cold Start (without aiding):	-147 dBm
Hot Start:	-156 dBm
Navigation	
Update rate:	Up to 5 Hz
Horizontal position accuracy	
(CEP, 50%, 24 hours static, -130dBm, SEP: <3.5m)	
GPS:	2.5 m
SBAS	2.0 m
Configurable Timepulse	
Frequency range:	f = 0.25 … 1000 Hz
Accuracy for Timepulse signal	
RMS:	30 ns
99%:	<60 ns
Granularity:	21 ns
Compensated:	15 ns
Accuracy	
(CEP, 50%, 24 hours static, -130dBm, SEP: <3.5m)	
Velocity:	0.1 m/s
Heading:	0.5 degrees

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Discrete I/Os

The discrete I/Os are designed to meet the following specifications.

Symbol	Parameter	Min	Typ.	Max	Units
Analog Inputs (A1-A2)					
V_{IN}	Analog input voltage	0		30	V
f_{CONV}	Conversion rate (note 5)	5.56		22.2	ksps
	A/D sample resolution		8		bit
t_{RC}	low-pass filter time constant (note 6)		2.5		s
IGN					
V_{IN}	Input voltage	0		13	V
Digital Inputs (D1-D4) (note 7)					
V_{IH}	High-level input voltage $V_{CC} = 5$ V	2		V_{CC}	V
V_{IL}	Low-level input voltage $V_{CC} = 5$ V	0		0.8	V

Notes:

4. Conversion rate is dependent on I^2C clock rates.

5. Contact your Eurotech sales representative if the analog input in your application requires a faster response time.

6. Digital inputs and outputs are digitally isolated. Stuffing option for 3.3 VCC, non-isolated I/O is available.

Environmental

The ReliaGATE 10-20 is designed to meet the following environmental specifications.

Parameter	Specification
Operating temperature **Industrial**	-40°C to +85°C (local ambient)
Relative humidity, non-condensing	Up to 95% @ +45°C
Compliance	CE FCC, IC, 60950-1 MIL-STD-810, version F

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WORLD SUPPORT

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