

User manual

DynaGATE 20-30-xx

Automotive Multi-service IoT Edge Gateway Intel Atom,
LTE Cat 4/6

Trademarks

All trademarks, registered trademarks, logos, trade names, products names contained in this document are the property of their respective owners.

Intended audience of this document

This document is intended for system integrators: skilled persons with a thorough knowledge in linking together, physically or functionally, different computing systems and software applications to operate as a coordinated whole in compliance with the applicable regulations.

Revision history

Revision	Description	Date
0-5	Preliminary release. Updated sections: <ul style="list-style-type: none">• 6.3.1 "Intended use"• 9.11 "Digital I/O and Analog IN"• 13.3 "How to Supply Power to the Product and Turn it ON"	11 February 2021
0-6	Preliminary release. Updated sections: <ul style="list-style-type: none">• 6.4 "Technical specifications"• 9.9 "Earth connection terminal"	12 March 2021
0-7	Preliminary release. Updated section: <ul style="list-style-type: none">• 7.2.7 "RF Radiation Exposure Statement"	29 March 2021

HOW TO GET STARTED

To get started with the DynaGATE 20-30, follow these steps:

1. Read carefully and understand the instructions and warnings contained in this manual.

To lower the risk of personal injury, electric shock, fire, or damage to equipment, observe the instructions and warnings contained in this manual.

For more information see: ["Safety instructions" on page 9](#).

Whenever in doubt regarding the correct understanding of this document, contact the Eurotech Technical Support.

For more information see: ["How to receive technical assistance" on page 17](#)

2. Know the DynaGATE 20-30 and its interfaces.

For more information see:

- ["Product overview" on page 23](#)
- ["Interfaces overview" on page 37](#)
- ["Interfaces in detail" on page 41](#)

3. Install the DynaGATE 20-30.

For more information see:

- ["Mechanical specifications and dimensions" on page 65](#)
- ["How to install the product" on page 67](#)

4. Supply power to the DynaGATE 20-30 respecting all safety instructions.

For more information see: ["Power supply. How to turn ON/OFF and reset the product" on page 69](#)

5. Start developing your IoT applications.

The DynaGATE 20-30 supports the Eurotech Everyware Software Framework (ESF). ESF is a smart application container that enables remote management of IoT gateways and provides a wide range of APIs allowing you to write and deploy your own IoT application.

For more information see:

- ["Eurotech Everyware IoT" on page 61](#)
- <http://esf.eurotech.com/docs>.

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1 SAFETY INSTRUCTIONS

IMPORTANT: Read carefully and understand the instructions and warnings contained in this document before installing / using the product. Keep this document for future reference.

To lower the risk of personal injury, electric shock, fire or damage to equipment, observe the instructions and warnings contained in this document.

Failure to comply with the instructions and warnings contained in this document, violates the standards of safety, design, manufacture, and intended use of the product.

Eurotech assume no liability for any damage caused by failure to observe the instructions and warnings contained in this document.

Whenever you have any doubt regarding the correct understanding of this document, contact the Eurotech Technical Support (for more information see ["How to receive technical assistance" on page 17](#)).


1.1 Warning messages

1.1.1 Warning messages for harm to persons


To indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury, the following message is used:

 DANGER	
Sign (if necessary)	<p>TEXT THAT EXPLAINS THE HAZARD AND THE CONSEQUENCES OF NOT AVOIDING IT.</p> <p>Text that explains how to avoid this hazard.</p>

To indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury, the following message is used:

 WARNING	
Sign (if necessary)	<p>TEXT THAT EXPLAINS THE HAZARD AND THE CONSEQUENCES OF NOT AVOIDING IT.</p> <p>Text that explains how to avoid this hazard.</p>

To indicate a potentially hazardous situation which, if not avoided, could result in minor or moderate injury, the following message is used:


 CAUTION	
Sign (if necessary)	<p>TEXT THAT EXPLAINS THE HAZARD AND THE CONSEQUENCES OF NOT AVOIDING IT.</p> <p>Text that explains how to avoid this hazard.</p>

1.1.2 **Warning messages for damage to property**

To indicate potential risks of damage to the supported product (or to other property), the following message is used:

NOTICE	
Sign (if necessary)	Text that explains how to avoid damaging the supported product (or other property)

1.2 **Warning: power supply safety**

 WARNING	
ELECTRIC SHOCK HAZARD	
Failure to supply power correctly or to follow all operating instructions correctly, may create an electric shock hazard, which could result in personal injury or loss of life, and / or damage the equipment or other property.	
To avoid injuries and safely supply power to the product, complete the following steps:	
<ol style="list-style-type: none"> 1. Observe all the instructions for safety, installation, and operation 2. Make sure your hands are dry 3. Make sure that all the cables to use: <ol style="list-style-type: none"> a. Are in good condition b. Meet the product requirements and comply with the relevant standards and regulations 4. Position cables with care. Do not position cables in places where they may be trampled or compressed 5. Make sure that the power-points and plugs are in good condition before using them 6. Do not overload the power-points and plugs 7. Make sure that the product maintains a proper grounding connection. Always use the earth protection terminal to connect the DynaGATE 20-30 to an earth point in the installation: see also "Earth connection terminal" on page 52 8. Make sure that the product maintains a proper grounding connection 9. Use a power supply that meets the product requirements and complies with the relevant standards and regulations. In case of uncertainties, contact the Eurotech Technical Support Team (for more information see "How to receive technical assistance" on page 17) 10. Connect power after the installation of the system has been completed 11. Never connect or disconnect the cables with the system or the external apparatus switched ON. 	

1.3 **Caution: product's surfaces may become hot**

Depending on the operating environment temperature, product's surfaces may become hot, creating a burn hazard. **Always allow the product's surfaces to cool before touching them.**

1.4 Caution: wireless safety



CAUTION

The antennas used with the product must be installed with care, avoiding any interference with other electronic devices and keeping a distance from persons greater than 20 cm. If these requirements cannot be satisfied, the system integrator has to assess the final product with respect to SAR regulations.

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2 CONSIGNES DE SECURITE

IMPORTANT: Lire attentivement et bien respecter les instructions et les avertissements contenus dans ce document avant d'installer / d'utiliser le produit. Conserver ce document pour s'y référer à l'avenir.

Pour éviter les risques de blessures, de choc électrique, d'incendie ou de détérioration du matériel, bien suivre les instructions et les avertissements contenus dans ce document.

Le non-respect des instructions et des avertissements contenus dans ce document constitue une violation des normes de sécurité, de conception, de fabrication et d'utilisation prévue du produit.

Eurotech rejette toute responsabilité pour les dommages causés en cas de non-respect des instructions et des avertissements contenus dans ce document.

En cas de doute sur la compréhension de ce document, contacter le Support Technique d' Eurotech (pour plus d'informations voir "[Comment obtenir une assistance technique](#)" page 19).

2.1 Messages d'avertissement

2.1.1 Messages d'avertissement relatifs au dommage aux personnes


Pour signaler une situation dangereuse imminente qui, si elle n'est pas évitée, entraînera la mort ou un préjudice grave le message suivant est utilisé:

 DANGER	
Signal (si besoin)	TEXTE EXPLIQUANT LE DANGER ET SES CONSÉQUENCES. Texte expliquant comment éviter ce danger.

Pour signaler une situation potentiellement dangereuse qui, si elle n'est pas évitée, pourrait entraîner la mort ou un préjudice grave le message suivant est utilisé:

 AVERTISSEMENT	
Signal (si besoin)	TEXTE EXPLIQUANT LE DANGER ET SES CONSÉQUENCES. Texte expliquant comment éviter ce danger.

Pour signaler une situation potentiellement dangereuse qui, si elle n'est pas évitée, pourrait entraîner un préjudice mineur ou modéré le message suivant est utilisé:


 ATTENTION	
Signal (si besoin)	TEXTE EXPLIQUANT LE DANGER ET SES CONSÉQUENCES. Texte expliquant comment éviter ce danger.

2.1.2 Messages d'avertissement relatifs aux dommages matériels

Pour signaler les risques potentiels de détérioration du produit (ou des produits annexes), le message suivant est utilisé:

AVIS	
Signal (si besoin)	Texte expliquant comment éviter d'endommager le produit (ou des produits annexes)

2.2 Avertissement: sécurité de l'alimentation électrique

 AVERTISSEMENT	
<p>RISQUE DE CHOC ÉLECTRIQUE</p> <p>Une alimentation électrique incorrecte peut créer un risque de choc électrique, pouvant entraîner des blessures corporelles ou la perte de vies humaines, et / ou endommager le produit ou d'autres biens.</p> <p>Pour éviter les blessures et brancher l'appareil en toute sécurité, procéder comme suit:</p> <ol style="list-style-type: none"> 1. Respecter toutes les consignes de sécurité, d'installation et d'utilisation 2. S'assurer que les mains sont sèches 3. S'assurer que tous les câbles utilisés: <ol style="list-style-type: none"> a. Sont en bon état b. Répondent aux exigences du produit et soient conformes aux normes et réglementations en vigueur 4. Positionner les câbles avec soin. Ne pas les placer dans des endroits où ils risquent d'être piétinés ou comprimés 5. S'assurer que les prises de courant et les connecteurs d'alimentation sont en bon état avant de les utiliser 6. Ne pas surcharger les prises de courant et les connecteurs d'alimentation 7. S'assurer que le produit est correctement relié à la terre. Utilisez toujours le point de mise à la terre pour connecter le DynaGATE 20-30 à un point de terre de l'installation: voir aussi "Earth connection terminal" page 52 8. Utiliser une alimentation électrique conforme aux exigences du produit et conforme aux normes et réglementations en vigueur. En cas d'incertitude, contacter l'équipe d'assistance technique d'Eurotech (pour plus d'informations, voir "Comment obtenir une assistance technique" page 19) 9. Ne Brancher l'alimentation électrique qu'une fois l'installation du système terminée 10. Ne jamais brancher ou débrancher les câbles lorsque le système ou un appareil périphérique sous tension. 	

2.3 Attention: les surfaces du produit peuvent devenir chaudes

Selon la température ambiante lors de l'utilisation, les surfaces du produit peuvent devenir brûlantes, engendrant un risque de brûlure. **Laisser toujours les surfaces du produit refroidir avant de les toucher.**

2.4 Attention: sécurité sur la connectivité sans fil



ATTENTION

Les antennes utilisées avec le produit doivent être installées avec soin, en évitant toute interférence avec d'autres appareils électroniques et à au moins 20 cm des personnes. Si ces exigences ne peuvent être satisfaites, l'intégrateur du système doit évaluer le produit final par rapport à la réglementation SAR.

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3 HOW TO RECEIVE TECHNICAL ASSISTANCE

3.1 How to ask for technical support

To ask for technical support, complete the following steps

1. Go to the Eurotech Global Support Centre: <https://support.eurotech.com/>
2. Submit a support request
3. Wait for the reply from the Eurotech Technical Support with the information you required

3.2 How to send a product for repair

Any product returned to Eurotech, that is found to be damaged due to inadequate packaging, will not be covered by the warranty.

To send a product for repair, complete the following steps:

1. Go to the Eurotech Global Support Centre: <https://support.eurotech.com/>
2. Submit an RMA request
3. Wait for the reply from the RMA Department. It will contain:
 - The RMA number
 - The shipping information
4. Pack the product adequately using anti-static material and place it in a sturdy box with enough packing material to protect it from shocks and vibrations
5. Ship the product to Eurotech following the information received from the RMA Department.

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4 COMMENT OBTENIR UNE ASSISTANCE TECHNIQUE

4.1 Comment contacter le support technique

Pour demander un support technique, procéder comme suit:

1. Se connecter au Support Eurotech sur: <https://support.eurotech.com/>
2. Envoyer une demande d'assistance
3. Attendre la réponse de l'équipe de support avec les informations requises

4.2 Comment retourner un produit en service après vente

Tout produit renvoyé à Eurotech, qui se trouve endommagé en raison d'un emballage inadéquat, ne sera pas couvert par la garantie.

Pour retourner un produit en Service Après Vente, procéder comme suit:

1. Se connecter au Support Eurotech sur: <https://support.eurotech.com/>
2. Faire une demande de RMA
3. Attendre la réponse du service RMA qui indiquera:
 - Le numéro de RMA
 - Les informations pour l'expédition
4. Emballer le produit de manière adéquate en utilisant des protections antistatiques et le placer dans un conditionnement solide contenant suffisamment de matériau d'emballage pour le protéger des chocs et des vibrations
5. Expédier le produit chez Eurotech selon les informations reçues par mail.

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5 CONVENTIONS USED

5.1 Conventions for signal names

Convention	Description
GND	Ground
#	Active low signal
+	Positive signal; Positive signal in differential pair
-	Negative signal; Negative signal in differential pair
3.3	3.3 V signal level
5	5 V signal level
NC	No Connection
Reserved	Use is reserved to Eurotech

5.2 Conventions for signal types

Convention	Description
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
NC	No Connection
Reserved	Use is reserved to Eurotech

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6 PRODUCT OVERVIEW

6.1 Product description

The DynaGATE 20-30 is an IoT Edge Gateway, E-Mark certified, that addresses the challenges of the next-generation applications for smart transportation and fleet management. It combines hardware, software and connectivity to bridge the vehicle with leading Cloud services.

Based on the Intel® Atom™ x5 and x7 (E39xx) processor, with up to 8GB of ECC RAM and 32GB of eMMC, the DynaGATE 20-30 is a fanless, compact unit designed to exceed the requirements of automotive applications: it features extended operating temperature range, IP54 ingress protection, a wide range automotive power supply and a 6-axis sensor (accelerometer + gyroscope). It provides protected USB 2.0 and 3.0, one configurable RS-232/422/485, DI/DOs, and dual CAN bus interfaces - plus, a wide range of connectivity capabilities including two Gigabit Ethernet on M12, up to two LTE Cat 4/6 cellular modem, Wi-Fi, Bluetooth Low Energy, and a GPS with Untethered Dead Reckoning; two mPCIe and one M.2 slots can be reconfigured to host custom expansions and peripherals (Factory Option). Sophisticated power saving and management capabilities include: power monitoring, Wake-On-Ring/SMS and Wake-On-RTC.

The DynaGATE 20-30 adds integrated hardware and software security through a dedicated TPM 2.0 chip and is Secure Boot ready.

Powered by Everyware Software Framework (ESF), the Eurotech framework for IoT Edge devices, the DynaGATE 20-30 is a gateway that is easy to use, program and manage. The friendly web-based user interface allows to visually compose powerful data flows, such as the ones to acquire data from the vehicle through the built-in support for the J1939 and J1708 standards. Vehicle data can then be analyzed on the Edge and published to the Cloud through the popular MQTT protocol. Everyware Cloud, Eurotech IoT Integration Platform, completes this solution by providing data integration to the applications and by offering complete management of the devices deployed on the field.

For more information visit www.eurotech.com.

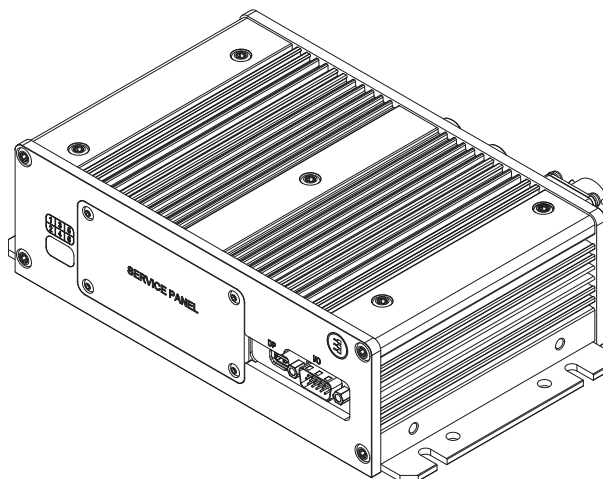
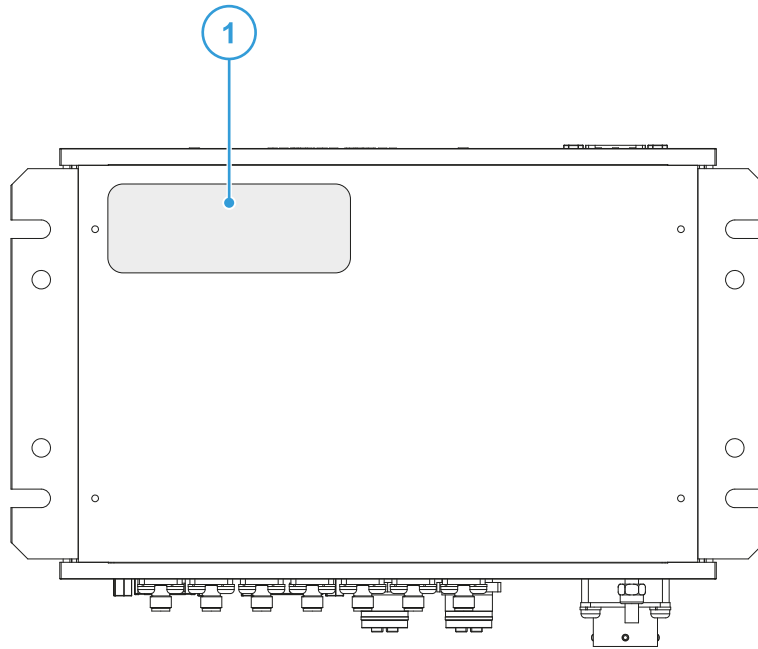


Figure 6.1 - The DynaGATE 20-30, front side

6.2 Product label

The product label is placed on the bottom side of the product:



Ref#	Label example	Label content
1	<p>Product: DynaGATE 20-30 Model : DYGATE-20-30-00 S/N : P1YYMDL0000 MAC ID : 00E0C7A0XXXX POWER: 12 - 24V \equiv 17W IP54</p> <p>EUROTECH Via F.lli Solari 3/a 33020 Amaro, UD -Italy Contains FCCID: XMR201903EG25G Contains IC: 10224A-201903EG25G Contains FCCID: UKMDG2030 Contains IC: 21442-DG2030 E24 10R-063324</p>	<ul style="list-style-type: none"> • Product Number • Model Number • Serial Number • MAC ID Number • Eurotech logo • Manufacturer address • FCC ID and IC codes • Power supply requirements(*) • IP Code • CE Mark, FCC Mark, E-Mark • WEEE symbol

(*) The symbol \equiv stands for direct current

6.3 Intended use and not allowed uses of the product

The product is intended for professional use and must be installed by qualified personnel only.

The product must be installed in a secured location, accessible to authorized personnel only (for example in a cabinet / technical compartment).

6.3.1 *Intended use*

The DynaGATE 20-30 is an IoT Edge Gateway, E-Mark certified, that addresses the challenges of the next-generation applications for smart transportation and fleet management.

The DynaGATE 20-30 must:

- Be installed in a secured location, only accessible to authorized personnel (for example in a cabinet / technical compartment), and not exposed to atmospheric agents
- Be used indoors or in automotive applications*
- Be used with appropriate interconnecting and power cables
- Be used with an external DC power supply source that:
 - Meets the requirements stated on the identification label of the product
 - Can deliver at least Nominal: 17 W
- Be used including an external fuse on the line coming from the negative terminal of the DC power source (a 4 A fuse is appropriate for 12 VDC operation)

***Note:** Before using the product in automotive applications in any EU Member State, switch OFF the 5 GHz Wi-Fi band.

6.3.2 *Not allowed uses*

Do not use the DynaGATE 20-30:

- In defence applications
- Outdoors
- In safety-critical applications
- In environments with potentially explosive atmospheres
- If not installed according to the instructions and warnings contained in this document.

Note: In any EU Member State, do not operate the product in automotive applications within the 5 GHz Wi-Fi band.

6.4 Technical specifications

According to the respective product versions, the specifications are as follows:

Specifications		Description according to product versions				
		-00	-10/-30(*)	-11/-31(*)	-20/-40(*)	-21/-41(*)
PROCESSOR	CPU	Intel Atom x5-E3930, 1.30GHz (1.80GHz), Dual Core	Intel Atom x5 - E3940, 1.60GHz (1.80GHz), Quad Core		Intel Atom x7 - E3950, 1.60GHz (2.00GHz), Quad Core	
MEMORY	RAM	4GB (DDR3L 1600MHz - non ECC)		8GB (DDR3L 1600MHz - with ECC)		
STORAGE	Embedded	16GB eMMC		64GB eMMC		
	Other	Factory Option: M.2 SATA III 128 GB 1x microSD Slot (User Accessible)				
WIRED INTERFACES	Ethernet	2x 10/100/1000Mbps, M12 X-coded Connector				
	USB	1x USB 3.0 Noise and Surge Protected 1x USB 2.0 Noise and Surge Protected 1x USB 2.0 (Service Panel)				
	Serial	1x RS-485/RS-422 Isolated 1x RS-232/RS-485/RS-422 Isolated 1x TTL Console (Service Panel)				
	CAN 2.0B	2x CANBus with 5V/100mA Power Out, Isolated				
	I/Os	3x Isolated Digital Inputs 3x Isolated Digital Outputs 2x Not Isolated Analog Inputs (Factory Option: Odometer input)				
	Video	1x mini DisplayPort				
	Audio	1x Stereo Mic, 1x Stereo Line Out (Service Panel)				
EXPANSION SLOTS		1x M.2 Key B+M Type 2242/3042/ 2280	1x M.2 Key B+M Type 2242/ 3042/ 2280 1x MiniPCle Full-Size (USB2.0/ PCle/ mSATA)	1x M.2 Key B+M Type 2242/ 3042/ 2280	1x M.2 Key B+M Type 2242 / 3042 / 2280 1x MiniPCle Full-Size (USB2.0/ PCle/ mSATA)	1x M.2 Key B+M Type 2242/ 3042/ 2280
CELLULAR	LTE Category	1x Cat4 Global	No	1x Cat4 Global	No	1x Cat4 Global
	Fallback	2G/3G		2G/3G		2G/3G
	Country	Global (**)		Global (**)		Global (**)
GNSS		GPS/ QZSS/ GLONASS/ BeiDou/ Galileo with Untethered Dead Reckoning				GPS/ QZSS/ GLONASS/ BeiDou/ Galileo with Real Time Kinematics
Wi-Fi/BT		802.11ac/abgn + Bluetooth 5.0				

Specifications		Description according to product versions					
		-00	-10/-30(*)	-11/-31(*)	-20/-40(*)	-21/-41(*)	-22/-42(*)
ANTENNA CONNECTORS		2x SMA (Cellular with Antenna Diversity); Vers: -10, -20, -22 2x RP-SMA (Wi-Fi/BT) 1x SMA (GNSS)					
SPECIAL FEATURES	Ultra-low Power Management	Wake-On-Ring/SMS Wake-On-RTC Alarm					
	Power Monitoring	Input Voltage and Current Monitor					
OTHER	RTC	Yes, with SuperCAP (up up 2 Months Retain), Fast Reboot Support					
	System Watchdog	Yes, Discrete Chip					
	EEPROM	32KB					
	TPM	TPM 2.0					
	Sensors	6-Axis (Accelerometer, Gyroscope), Temperature					
	LEDs	1x Power 2x MiniPCIe Slot 1x M.2 Slot 2x Programmable (Dual Color Green/Amber)					
MISC	Buttons	1x Reset 1x Programmable (Service Panel)					
	SIM slot	2x nano-SIM Push Push (Service Panel) User Configurable as Dual SIM/Single modem or Single SIM/Dual Modem					
POWER	Input	Nominal: 12 - 24 VDC; Range: 6 to 35 VDC, Load Dump Protection and Ignition Key Sense					
	Consumption	Nominal: 17 W					
ENVIRONMENT	Operating Temperature	-40 to +70 °C					
	Storage Temperature	-40 to +70 °C					
CERTIFICATIONS	Regulatory	CE/ FCC/ ISED					
	Safety	EN 62368, UL 60950 (§)					
	Vertical	E-Mark					
	Environmental	RoHS3 REACH					
	Wi-Fi/BT Radio	CE/ FCC/ ISED					
	Cellular Radio	RED/ FCC/ ISED, PTCRB, AT&T, T-Mobile, Verizon	Not applicable	RED/ FCC/ ISED, PTCRB, AT&T, T-Mobile, Verizon	Not applicable	RED/ FCC/ ISED, PTCRB, AT&T, T-Mobile, Verizon	
	Ingress	IP54					
	MTBF	> 195.000 h (prediction method: IEC 62380 @ 25°C GF)					
MECHANICAL	Enclosure	Material: Aluminium Color: Black Anodized					
	Dimensions	224 (W) x 128 (D) x 62 (H), mm (connectors excluded)					

Specifications		Description according to product versions					
		-00	-10/-30(*)	-11/-31(*)	-20/-40(*)	-21/-41(*)	-22/-42(*)
SOFTWARE	OS	Eurotech Everyware Linux(*)					
	SDK	No	Yocto-based Eclipse Tooling, Azul Java				
	IoT Framework	No	Everyware Software Framework (ESF)(*)				

(*) Product versions: -00, -10, -11, -20, -21, -22 include Eurotech Everyware Linux

Product versions: -30, -31, -40, -41, -42 include Everyware Software Framework

(**) Cellular modem is certified in several countries, DYGATE-20-30 country specific certification upon request

(§) UL, NRTL listing Factory Option

7 REGULATORY INFORMATION

This section provides regulatory information for the DynaGATE 20-30 (hereafter referred to as "this product").

Upon request, Eurotech can provide the product Declaration of Conformity.

For details and more information contact the Eurotech Technical Support (see ["How to receive technical assistance" on page 17](#)).

7.1 CE compliance

7.1.1 CE marking

This product is CE marked and complies with the regulatory information reported in the following sections.

Eurotech is not responsible for the use of this product together with equipment (for example: power supplies, personal computers, etc.) that are not CE marked and not compliant with the requirements specified in this document.



7.1.2 Safety

This product is compliant with the standard EN 62368-1:2014 on the safety requirements in information and communication technology equipment.

7.1.3 Packaging and packaging waste

This product is manufactured in compliance with the European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste.

7.1.4 Product disposal and recycling

This product, at the end of its life cycle, must be collected separately and managed in accordance with the provisions of the Directive 2012/19/EU on waste of electrical and electronic equipment.

For details and more information:

- See: ["WEEE compliance" below](#)
- Contact the Eurotech Technical Support (see ["How to receive technical assistance" on page 17](#)).

7.1.5 WEEE compliance

In compliance with the Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), the symbol on the right, shown on the product or within its literature, indicates separate collection for electrical and electronic equipment (EEE) that has been placed on the market after 2005.

This product, at the end of its life cycle, must be collected separately and managed in accordance with the provisions of the current Directive on waste of electrical and electronic equipment.

Because of the substances present in the product, improper disposal can cause damage to human health and to the environment.

For collecting and recycling information contact the Eurotech Technical Support (see ["How to receive technical assistance" on page 17](#)).



7.1.6 RED 2014/53/EU compliance

Some versions of this product meet the requirements of the Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonization of the laws of the Member States relating to the making available on the market of radio equipment.

For more information see ["Technical specifications" on page 26](#).

Modification statement

Eurotech does not approve any changes or modifications to this product by the user. Any changes or modifications could void the user's authority to operate this product.

7.1.6.1 Class II product

According to Commission Decision 2000/299/EC of 6 April 2000, establishing the initial classification of radio equipment and telecommunications terminal equipment and associated identifiers, the product falls within the scope of Class II.

Due to EU restrictions on 5 GHz Wi-Fi bands the product is limited to indoor operation and should only be operated in the frequency band 5150 MHz – 5250 MHz (U-NII-1) covering 20 MHz channels (36,40,44,48), 40 MHz channels (38,46), and 80 MHz channel (42).

Dynamic Frequency selection (DFS) as master or slave is not supported by the product.

	AT	BE	BG	CH	CY	CZ	DE
	DK	EE	EL	ES	FI	FR	HR
	HU	IE	IT	IS	LI	LT	LU
	LV	MT	NL	NO	PL	PT	RO
	SE	SI	SK	TR	UK		

7.1.6.2 EU restrictions on 5 GHz Wi-Fi usage

Channel Number	Frequency (MHz)	Europe (ETSI)
36	5180	Indoor Usage Only
40	5200	Indoor Usage Only
44	5220	Indoor Usage Only
48	5240	Indoor Usage Only
52	5260	Not Supported
56	5280	Not Supported
60	5300	Not Supported
64	5320	Not Supported
100	5500	Not Supported
104	5520	Not Supported
108	5540	Not Supported
112	5560	Not Supported
116	5580	Not Supported
120	5600	Not Supported
124	5620	Not Supported
128	5640	Not Supported
132	5660	Not Supported
136	5680	Not Supported
140	5700	Not Supported
149	5745	Not Supported
153	5765	Not Supported
157	5785	Not Supported
161	5805	Not Supported
165	5825	Not Supported

7.2 FCC/ISED compliance

7.2.1 FCC marking

Some versions of this product are FCC marked (for more information see "[Technical specifications](#)" on page 26). They comply with the regulatory information reported in the following sections.

Eurotech is not responsible for the use of the product together with equipment (for example: power supplies, personal computers, etc.) that are not FCC marked and not compliant with the requirements specified in this document.



Certaines versions de ce produit sont certifiées FCC (pour plus d'informations, voir "[Technical specifications](#)" on page 26). Elles sont conformes à la réglementation présentée dans les sections suivantes.

Eurotech n'est pas responsable de l'utilisation du produit avec des équipements (par exemple : alimentations, ordinateurs personnels, etc.) non certifiés FCC et qui ne sont pas conformes aux exigences spécifiées dans ce document.

Modification statement

Eurotech does not approve any changes or modifications to the product by the user. Any changes or modifications could void the user's authority to operate the product.

Eurotech n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.

7.2.2 FCC compliance: Class B Digital Device

This product complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this product may not cause harmful interference, and (2) this product must accept any interference received, including interference that may cause undesired operation.

Note: This product has been tested and found to comply with the limits for a Class B digital product, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product 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. However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be determined by turning the product OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the product and the receiver
- Connect the product into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Cet appareil est conforme à la partie 15 des règlements de la FCC. L'utilisation est soumise aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Remarque: Cet équipement a été testé et déclaré conforme aux limites d'un appareil numérique de classe B, conformément à la partie 15 des règlements de la FCC. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles dans une installation résidentielle. Ce produit génère, utilise et peut émettre des ondes radio qui peuvent causer des interférences nuisibles s'il n'est pas installé et utilisé conformément aux instructions. Si néanmoins ce produit cause des interférences nuisibles à la réception de la radio ou de la télévision, ce qui peut être déterminé en éteignant et en rallumant l'appareil, l'utilisateur est encouragé à essayer de corriger l'interférence par une ou plusieurs des mesures suivantes:

- Réorienter ou déplacer l'antenne de réception
- Augmenter la distance entre le produit et le récepteur
- Brancher l'appareil sur une prise de courant différente de celle à laquelle le récepteur est raccordé
- Consulter le revendeur ou un technicien radio/TV expérimenté pour obtenir de l'aide.

7.2.3 FCC restrictions on 5 GHz Wi-Fi usage

Channel Number	Frequency (MHz)	North America (FCC)
36	5180	Indoor Usage Only
40	5200	Indoor Usage Only
44	5220	Indoor Usage Only
48	5240	Indoor Usage Only
52	5260	Not Supported
56	5280	Not Supported
60	5300	Not Supported
64	5320	Not Supported
100	5500	Not Supported
104	5520	Not Supported
108	5540	Not Supported
112	5560	Not Supported
116	5580	Not Supported
120	5600	Not Supported
124	5620	Not Supported
128	5640	Not Supported
132	5660	Not Supported
136	5680	Not Supported
140	5700	Not Supported
149	5745	Supported
153	5765	Supported
157	5785	Supported
161	5805	Supported
165	5825	Supported

7.2.4 **ISED Canada compliance**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This radio transmitter has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Le présent émetteur radio a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

7.2.5 **ISED Class B Digital Device Notice**

ICES-003 Class B Notice - Avis NMB-003, Classe B.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

7.2.6 **Responsible parties: Canadian Representative contact information**

The Canadian Representative has the following contact information:

Le Représentant Canadien dispose des coordonnées suivantes:

Company Name	Canadian Certification Consulting, Inc.
Company Number¹	10842A
Company Address	2210 Horizon Drive, Suite 17
City	West Kelowna
Province/State	BC
Postal Code	V1Z 3L4
Country	Canada
Contact Name	Jon Hughes
Title	President
Phone Number	1-250-575-1719
Email	info@can-cert.com

¹Company Number is issued by Innovation, Science and Economic Development Canada (formerly Industry Canada)

Le numéro d'entreprise est délivré par Innovation, Science et Développement économique Canada (anciennement Industrie Canada)

7.2.7 RF Radiation Exposure Statement

This product complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. The antenna should be installed and operated with minimum distance of 20 cm between the radiator and your body.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of the Health Canada's requirement.

Cet appareil est conforme aux limites d'exposition aux rayonnements de l'ISED pour un environnement non contrôlé. L'antenne doit être installée de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps.

Cet appareil et son (ses) antenne(s) ne doivent pas être co-localisés ou utilisés en conjonction avec une autre antenne ou un autre émetteur, sauf en conformité avec les procédures du produit multi-émetteur de la FCC.

Cet appareil est conforme avec Santé Canada Code de sécurité 6. Le programme d'installation de cet appareil doit s'assurer que les rayonnements RF n'est pas émis au-delà de l'exigence de Santé Canada.

7.2.8 Labeling information

The following information is stated on the product label(s):

Les informations suivantes sont indiquées sur l'étiquette (les étiquettes) du produit:

- Contains FCC ID: XMR201903EG25G
- Contains IC: 10224A-201903EG25G
- Contains FCC ID: UKMDG2030
- Contains IC: 21442-DG2030

7.3 Antennas List

The DynaGATE 20-30 has been certified with the following antennas:

Le DynaGATE 20-30 a été certifié avec les antennes suivantes:

Types Types	Manufacturer and Model Fabricant et Modèle	Peak Gain (dBi) Max. Gain (dBi)
Wi-Fi/BT antenna	2J Antennas 2J6302MP	1.7 @ 2.4 GHz 2.3 @ 5 GHz
GNSS antenna	Taoglas AA.107.301111	-
Cellular antenna	Taoglas GSA.8827.A.101111	2.83 @ 700 MHz 1.71 @ 850 MHz 2.93 @ 900 MHz 2.67 @ 1800 MHz 3.32 @ 1900 MHz 3.43 @ 1900 MHz 1.67 @ 2500 MHz

NOTICE

**Within the EU, antennas have to be used in compliance with the RED requirements.
Within the US/Canada, antennas have to be used in compliance with the FCC/ISED requirements.**

***Au sein de l'UE, les antennes doivent être utilisées conformément aux exigences RED.
Aux États-Unis et au Canada, les antennes doivent être utilisées conformément aux exigences de la FCC/ISED.***

7.4 RoHS 3 compliance

This product is manufactured in compliance with the following Directives:

- Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
- Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

7.5 REACH compliance

This product is assessed to be compliant with the regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), with the exceptions allowed by the EU Technical Committee.

Eurotech has set in place a monitoring process to assess compliance to REACH regulation.

For details and more information contact the Eurotech Technical Support (see "[How to receive technical assistance](#)" on page 17).

8 INTERFACES OVERVIEW

8.1 Rear Side Interfaces overview

The Rear Side Interfaces are as follows:

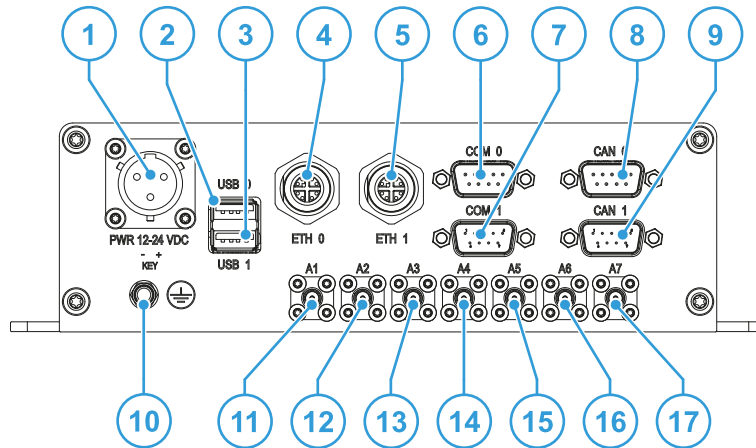


Figure 8.1 - Rear Side Interfaces layout

Ref#	Label	Description
1	PWR	Power IN Connector (Size 12, 3-pin MIL-26482 Male)
2	USB 0	1x USB 3.0 port Noise and Surge Protected
3	USB 1	1x USB 2.0 port Noise and Surge Protected
4	ETH 0	1x 10/100/1000 Mbps Ethernet Connector (8-pin X-coded M12 Female)
5	ETH 1	1x 10/100/1000 Mbps Ethernet Connector (8-pin X-coded M12 Female)
6	COM 0	1x RS-485/RS-422 (Default: RS-485 Full Duplex) Isolated Connector (DB9 Male)
7	COM 1	1x RS-232/RS-485/RS-422 (Default: RS-232 Isolated Connector) (DB9 Male)
8	CAN 0	CAN 0 (CAN Specification 2.0, Parts A and B) Connector (DB9 Male)
9	CAN 1	CAN 1 (CAN Specification 2.0, Parts A and B) Connector (DB9 Male)
10		Earth Connection Terminal
11	A1	Ch0 Wi-Fi 2.4/5 GHz and Bluetooth 4.0 BLE Co-existence Antenna Connector (RP-SMA Female)
12	A2	Ch1 Wi-Fi 2.4/5 GHz and Bluetooth 4.0 BLE Co-existence Antenna Connector (RP-SMA Female)
13	A3	Cellular Main Antenna Connector (SMA Female): <ul style="list-style-type: none"> Not Available for versions: -11, -21, -31, -41 LTE CAT 4 Global for versions: -10, -20, -22, -30, -40, -42
14	A4	Cellular Diversity Antenna Connector (SMA Female): <ul style="list-style-type: none"> Not Available for versions: -11, -21, -31, -41 LTE CAT 4 Global for versions: -10, -20, -22, -30, -40, -42
15	A5	Reserved
16	A6	Reserved
17	A7	GNSS Antenna Connector (SMA Female)

Table 8.1 - Rear Side Interfaces description

8.2 Front Side Interfaces overview

The Front Side Interfaces are as follows:

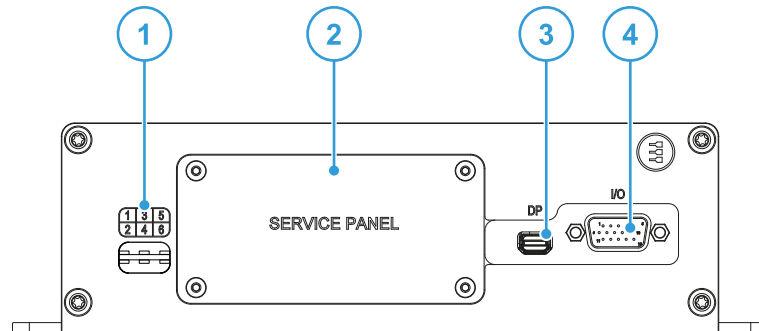


Figure 8.2 - Front Side Interfaces layout

Ref#	Description
1	LED indicators
2	Service Panel
3	Display Port
4	3x Isolated Digital Inputs 3x Isolated Digital Outputs 2x Not Isolated Analog Inputs

Table 8.2 - Front Side Interfaces description

8.2.1 Service Panel Interfaces

The Interfaces available in the Service Panel are as follows:

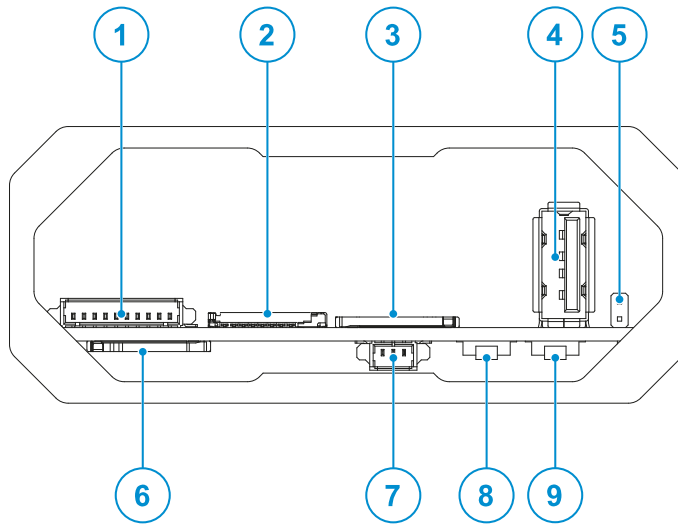


Figure 8.3 - Service Interfaces layout

Ref#	Description
1	Audio Connector
2	MicroSD card receptacle (push-push) (up to 32 GB MicroSD cards)
3	MicroSIM care receptacle (push-push)
4	USB 2.0 port (USB2)
5	Reserved
6	MicroSIM care receptacle (push-push)
7	TTL Serial Console (3-pin, 1.25mm Pitch, Shrouded Header, Male)
8	Programmable pushbutton
9	Reset pushbutton

Table 8.3 - Service Interfaces description

8.3 LED Indicators overview

The LED Indicators are as follows:

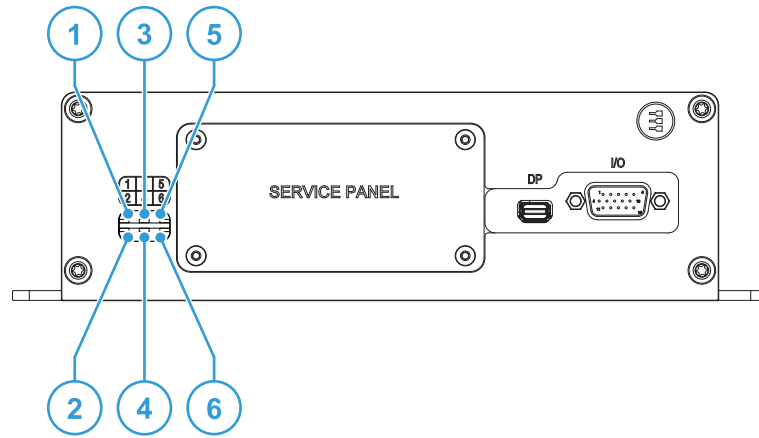


Figure 8.4 - LED Indicators layout

Ref#	Description	Color
1	User 1	Dual Color (Green / Amber)
2	MiniPCIe Slot #3	Green
3	User 2	Dual Color (Green / Amber)
4	MiniPCIe Slot #2	Green
5	Power status	Blue
6	MiniPCIe Slot #1	Green

Table 8.4 - LED Indicators description

9 INTERFACES IN DETAIL

9.1 Wi-Fi and Bluetooth

The DynaGATE 20-30 provides wireless local area network (WLAN) connectivity, in conformity with the IEEE 802.11ac/abgn Wi-Fi standard and in coexistence with BT 5.0.

The antennas connectors are placed on the rear side.

9.1.1 Wi-Fi specifications

Feature	Description
Standard	IEEE 802.11 a/b/g/n/ac Wi-Fi Bluetooth 5.0 with BLE and ANT+, backwards compatible with BT4.x, BT3.x+HS, BT2.x+EDR
Frequency bands	<p>WLAN:</p> <ul style="list-style-type: none"> • 2.4 GHz ISM Bands 2.412-2.472 GHz, 2.484 GHz • 5.15-5.25 GHz (FCC UNII-low band) for US/Canada, Japan and Europe • 5.25-5.35 GHz (FCC UNII-middle band) for US/Canada and Europe • 5.47-5.725 GHz for Europe • 5.725-5.825 GHz (FCC UNII-high band) for US/Canada <p>Bluetooth (BT 4.0 , BLE coexistence):</p> <ul style="list-style-type: none"> • 2402-2480MHz
Data Transfer Rates	<p>WLAN 2.4 GHz:</p> <ul style="list-style-type: none"> • 11n: Up to 150Mbps (PHY dynamic) • 11g: Up to 54Mbps (PHY dynamic) • 11b: Up to 11Mbps (PHY dynamic) <p>WLAN 5 GHz:</p> <ul style="list-style-type: none"> • 11ac: Up to 867Mbps (PHY dynamic) (UDP 362, TCP 304) • 11n: Up to 150Mbps (PHY dynamic) • 11a: Up to 54Mbps (PHY dynamic) <p>Bluetooth (BT 4.0 , BLE coexistence):</p> <ul style="list-style-type: none"> • 1 Mbps, 2Mbps and Up to 3Mbps EDR)
Media Access Control	CSMA/CA with ACK
Channel	2.4GHz: 1-13 (14 only for Japan) 5GHz: 36-48 149-165 Ultra-Fast Channel Switch (FTS): 100µs within and 150µs across bands Optimized Multi-channel concurrency
Bandwidth Support	5Mhz, 10Mhz, 20Mhz 40Mhz, 80Mhz
Channel Spacing	5MHz
Spreading / Modulation	<p>WLAN:</p> <ul style="list-style-type: none"> • 802.11ac/g/n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) • 802.11b: CCK (11, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps) <p>Bluetooth:</p> <ul style="list-style-type: none"> • Header GFSK • Payload 2M: 4-DQPSK • Payload 3M: 8DPSK

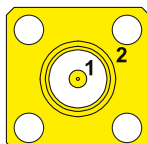
Feature	Description		
RF Output Power (Typical - Conductive)	802.11a:	15.5 dBm at 54M	±2 dBm
	802.11b:	18 dBm at 11M	±2 dBm
	802.11g:	15.5 dBm at 54M	±2 dBm
	802.11n 5G HT20:	17 dBm at MCS0	15 dBm at MCS7 ±2 dBm
	802.11n 5G HT40:	16 dBm at MCS0	14 dBm at MCS7 ±2 dBm
	802.11n 2.4G HT20:	18 dBm at MCS0	16 dBm at MCS7 ±2 dBm
	802.11n 2.4G HT40:	17 dBm at MCS0	15 dBm at MCS7 ±2 dBm
	802.11ac 5G VHT20:	15 dBm at MCS0	12 dBm at MCS8 ±2 dBm
	802.11ac 5G VHT40:	14 dBm at MCS0	11 dBm at MCS8 ±2 dBm
	802.11ac 5G VHT80:	14 dBm at MCS0	11 dBm at MCS8 ±2 dBm
BT: (Class 2 Device) +2 dBm ≤ Output Power ≤ +6 dBm			
RF receive Sensitivity (Typical)	802.11a:	54M less than 74 dBm	
	802.11b:	11M less than 89 dBm	
	802.11g:	54M less than 75 dBm	
	802.11n 2.4G:	HT20 MCS7 less than 75 dBm	92 dBm at MCS0
		HT40 MCS7 less than 72 dBm	89 dBm at MCS0
	802.11n 5G:	HT20 MCS7 less than 74 dBm	91 dBm at MCS0
		HT40 MCS7 less than 71 dBm	88 dBm at MCS0
802.11ac 5G:	HT80 MCS9 less than 68 dBm 85 dBm at MCS0		
BT: BER < 0.1% (Anritsu 8852B Tx -83Bm)			

9.1.2 Antennas connectors specifications

Specifications are the same for both the following antennas connectors:

- 2.4 GHz Wi-Fi / Bluetooth
- 5 GHz Wi-Fi

Connector Layout:



Connector Pinout:

Pin #	Description
1	Male inner pin contact
2	Female connector body (outer thread)

Connector Specifications:

- RP-SMA connector
- Gender: Female

Mating Connector Specifications:

- RP-SMA connector
- Gender: Male

9.2 Internal Cellular Modem

Versions -10, -20, -22 of the DynaGATE 20-30 supports a Global LTE Cat 4 Cellular Modem. The antennas connectors are placed on the rear side.

9.2.1 Internal Cellular Modem specifications

Feature	Description		
Key Features	LTE Cat 4 module optimized for M2M and IoT applications Maximum data rates up to 150Mbps downlink and 50Mbps uplink Worldwide LTE, UMTS/HSPA(+) and GSM/GPRS/EDGE coverage Downlink MIMO (Supports Rx-diversity Antenna)		
Supported Bands	LTE-FDD	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28	
	LTE-TDD	B38/ B39/ B40/ B41	
	WCDMA	B1/ B2/ B4/ B5/ B6/ B8/ B19	
	GSM	B2/ B3/ B5/ B8	
Data	LTE	LTE-FDD	Max 150 Mbps (DL)/ Max 50 Mbps (UL)
		LTE-TDD	Max 130 Mbps (DL)/ Max 30 Mbps (UL)
	UMTS	DC-HSDPA	Max 42 Mbps (DL)
		HSUPA	Max 5.76 Mbps (UL)
		WCDMA	Max 384 Kbps (DL)/ Max 384 Kbps (UL)
	GSM	EDGE	Max 296 Kbps (DL)/ Max 236.8 Kbps (UL)
		GPRS	Max 107 Kbps (DL)/ Max 85.6 Kbps (UL)
TX Output Power	Class 4	33dBm±2dB	for GSM850
		33dBm±2dB	for EGSM900
	Class 1	30dBm±2dB	for DCS1800
		30dBm±2dB	for PCS1900
	Class E2	27dBm±3dB	for GSM850 8-PSK
		27dBm±3dB	for EGSM900 8-PS
		26dBm±3dB	for DCS1800 8-PSK
		26dBm±3dB	for PCS1900 8-PSK
	Class 3	24dBm+1/-3dB	for WCDMA bands
		23dBm±2dB	for LTE-FDD bands
		23dBm±2dB	for LTE-TDD bands
Main and RX-diversity Antenna Requirements	VSWR	≤ 2	
	Efficiency	> 30%	
	Max Input Power	50W	
	Input Impedance	50Ω	
	Cable Insertion Loss	< 1dB	for GSM850, EGSM900, WCDMA B5/B6/B8/B19, LTE-FDD B5/ B8/ B12/ B13/ B18/ B19/ B20/ B26/ B28
		< 1.5dB	for DCS1800, PCS1900, WCDMA B1/B2/B4, LTE-FDD B1/ B2/ B3/ B4/ B25/ B39
		< 2dB	for LTE-FDD B7, LTE-TDD B38/ B40/ B41

9.2.2 LTE - single antenna operation notes

Single LTE antenna operation can be supported; however, typically, wireless carriers (Mobile Network Operators) impose restrictions. Please consult with your carrier before considering single LTE antenna usage.

For optimum performance of the cellular interface, Eurotech recommends the use of both CELL MAIN and CELL DIV antenna connectors.

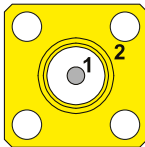
If CELL DIV antenna is not used/connected, Eurotech recommends to disable the diversity function: [see...](#)

9.2.3 Antennas connectors specifications

Specifications are the same for both the following connectors:

- Main Antenna Connector
- Diversity Antenna Connector

Connector Layout:



Connector Pinout:

Pin #	Description
1	Female inner pin contact
2	Female connector body (outer thread)

Connector Specifications:

- SMA connector
- Gender: Female

Mating Connector Specifications:

- SMA connector
- Gender: Male

9.3 MicroSIM card receptacles

The DynaGATE 20-30 includes the following push-push MicroSIM card receptacles in the Service Panel:

- 1st MicroSIM card receptacle, placed **on the top side** of the circuit board
- 2nd MicroSIM card receptacle, placed **on the bottom side** of the circuit board

If you have only one SIM card, use the 1st MicroSIM card receptacle.

**Turn OFF the SIM PIN before inserting the SIM card in the receptacle.
The cellular connection will not work if the SIM PIN is ON.**

9.3.1 How to insert / remove the MicroSIM card

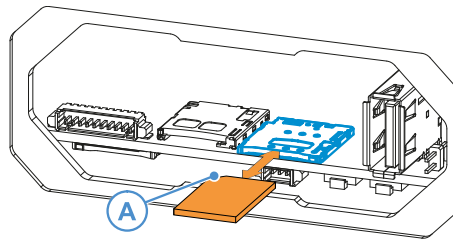
If you are using the receptacle on the top side of the circuit board

To insert the MicroSIM card, complete the following steps:

1. Orient the MicroSIM card with the contacts facing the circuit board and the cut corner - highlighted with the letter **A** in the figure below - facing the receptacle
2. Push the MicroSIM card and lock it in the receptacle

To remove the MicroSIM card, complete the following steps:

1. Push the MicroSIM card and release it from the receptacle
2. Pull out the MicroSIM card from the receptacle



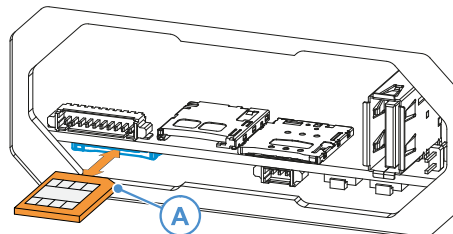
If you are using the receptacle on the bottom side of the circuit board

To insert the MicroSIM card, complete the following steps:

1. Orient the MicroSIM card with the contacts facing the circuit board and the cut corner - highlighted with the letter **A** in the figure below - facing the receptacle
2. Push the MicroSIM card and lock it in the receptacle

To remove the MicroSIM card, complete the following steps:

1. Push the MicroSIM card and release it from the receptacle
2. Pull out the MicroSIM card from the receptacle



9.4 GNSS

The DynaGATE 20-30 provides the following GNSS features according to the product version. Active or passive antenna supported. The antenna connector is placed on the rear side.

9.4.1 GNSS features for versions -10, -11, -20, -21

Feature	Description
Receiver type	72-channel GNSS receiver with untethered dead reckoning GPS/QZSS L1 C/A, GLONASS L10F BeiDou B1I, Galileo E1B/CSBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Navigation update rate	Up to 30 Hz
Position accuracy	2.5 m CEP
Acquisition	Cold starts: 26 s Aided starts: 3 s Reacquisition: 1 s
Sensitivity	Tracking & Nav.: -160 dBm Cold starts: -148 dBm Hot starts: -157 dBm
Assistance	AssistNow GNSS Online AssistNow GNSS Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant
Oscillator	Crystal
Sensor	Onboard accelerometer and gyroscope

9.4.2 GNSS features for version -22

Feature	Description
Receiver type	72-channel GNSS receiver with Integrated Real Time Kinematics (RTK) GPS L1 C/A, GLONASS L10F, BeiDou B1I
Navigation update rate	RTK: Up to 8Hz ¹ Carrier phase data: up to 10 Hz
Position accuracy²	Standalone: 2.5 m CEP RTK: 0.025 m + 1 ppm CEP ³
Convergence time²	RTK: < 60 s
Acquisition	Cold starts: 26 s Aided starts: 2 s Reacquisition: 1 s
Sensitivity	Tracking & Nav.: -160 dBm Cold starts: -148 dBm Hot starts: -156 dBm Reacquisition: -158 dBm
Assistance	AssistNow GNSS Online OMA SUPL & 3GPP compliant
Oscillator	TCXO

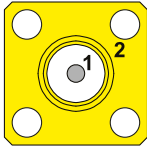
1 Limited to 5 Hz for multi-GNSS RTK and to 4 Hz in moving baseline configuration

2 Depends on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry

3 ppm limited to baselines up to 10 km

9.4.3 Antenna connector specifications

Connector Layout:



Connector Specifications:

- SMA connector
- Gender: Female

Mating Connector Specifications:

- SMA connector
- Gender: Male

Connector Pinout:

Pin #	Description
1	Female inner pin contact
2	Female connector body (outer thread)

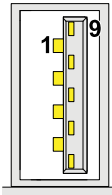
9.5 USB 0, USB 1, USB 2

The DynaGATE 20-30 provides the following Host USB ports:

- USB 0: USB 3.0, on the Rear Side, top port(Noise and Surge Protected)
- USB 1: USB 2.0, on the Rear Side, bottom port (Noise and Surge Protected)
- USB 2: USB 2.0, in the Service Panel (ready for optional accessories, e.g.: ReliaCELL 10-20)

9.5.1 USB 0 connector specifications

Connector Layout:



Connector Specifications:

- USB 3.0 Type-A socket
- Gender: Female

Mating Connector Specifications:

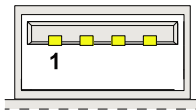
- USB 3.0 Type-A plug
- Gender: Male

Connector Pinout:

Pin #	Signal	Type	Description
1	VBUS	5	+5V
2	D-	IO	Data-
3	D+	IO	Data+
4	GND	P	Ground
5	SSRX-	IO	Full-duplex Receive Data-
6	SSRX+	IO	Full-duplex Receive Data+
7	GND	P	Ground
8	SSTX-	IO	Full-duplex Transmit Data-
9	SSTX+	IO	Full-duplex Transmit Data+

9.5.2 USB 1 connector specifications

Connector Layout:



Connector Specifications:

- USB Type-A socket
- Gender: Female

Mating Connector Specifications:

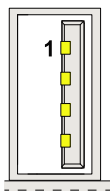
- USB Type-A plug
- Gender: Male

Connector Pinout:

Pin #	Signal	Type	Description
1	V+	P	+5V
2	D-	IO	Data-
3	D+	IO	Data+
4	GND	P	Ground

9.5.3 USB 2 connector specifications

Connector Layout:



Connector Specifications:

- USB Type-A socket
- Gender: Female

Mating Connector Specifications:

- USB Type-A plug
- Gender: Male

Connector Pinout:

Pin #	Signal	Type	Description
1	V+	P	+5V
2	D-	IO	Data-
3	D+	IO	Data+
4	GND	P	Ground

9.6 ETH 0, ETH 1

The DynaGATE 20-30 provides 2x 10/100/1000 Mbps Ethernet ports:

- ETH 0
- ETH 1

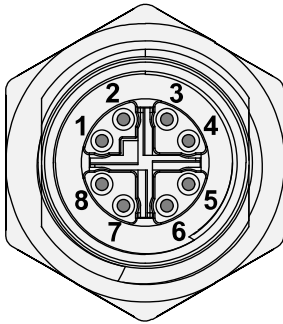
The Ethernet connectors are available on the Rear Side.

9.6.1 Ethernet specifications

Feature	Description
Network Standard	10BASE-T _e /100BASE-T _x /1000 BASE-T IEEE 802.3 compliant Supports 1000 BASE-T PCS and auto negotiation with next page support
Speeds	10/100/1000 Mbps Tri-speed
Notes	The interfaces are noise and surge protected.

9.6.2 ETH 0 and ETH 1 connectors specifications

Connector Layout:



Connector Specifications:

- Panel-mount; M12 series
- Gender: Female
- Type: X-Coded; 8-pin

Mating Connector Specifications:

- Cable-Mount; M12 series
- Gender: Male
- Type: X-Coded; 8-pin
- Example of cable:
Manufacturer: Metz Connect
Part Number: 142M2X10005
(or equivalent)

Connector Pinout:

Pin #	Signal	Type	Description	Male RJ45 Pin #
1	TX+_D1	O	Transmit Data +	1
2	TX-_D1	O	Transmit Data -	2
3	RX+_D2	I	Receive Data +	3
4	RX-_D2	I	Receive Data -	6
5	BI+_D4	I/O	Bidirectional Data +	7
6	BI-_D4	I/O	Bidirectional Data -	8
7	BI-_D3	I/O	Bidirectional Data -	5
8	BI+_D3	I/O	Bidirectional Data +	4

9.7 COM 0, COM 1

The DynaGATE 20-30 provides the following COM ports:

- COM 0: RS-485/RS-422 Isolated on the Rear Side (Default: RS-485 Full Duplex)
- COM 1: 1x RS-232/RS-485/RS-422 Isolated on the Rear Side(Default: RS-232)

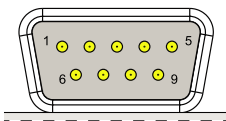
The COM connectors are available on the Rear Side.

9.7.1 Note for fail-safe and termination resistors

The fail-safe and termination resistors can be driven via software.

9.7.2 COM 0 connector specifications

Connector Layout:



Connector Specifications:

- Standard 9-Pin D-Sub (plug)
- Gender: Male

Mating Connector Specifications:

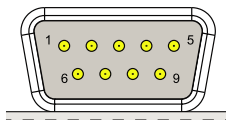
- Standard 9-Pin D-Sub (socket)
- Gender: Female

Connector Pinout (pins not listed are not connected):

Pin #	RS-422/485 mode full duplex	RS-485 mode half duplex
1	TX-	TX- / RX-
2	TX+	TX+ / RX+
3	RX+	NC
4	RX-	NC
5	GND	GND

9.7.3 COM 1 connector specifications

Connector Layout:



Connector Specifications:

- Standard 9-Pin D-Sub (plug)
- Gender: Male

Mating Connector Specifications:

- Standard 9-Pin D-Sub (socket)
- Gender: Female

Connector Pinout:

Pin #	RS-232 mode	RS-422/485 mode full duplex	RS-485 mode half duplex
1	DCD	TX-	TX- / RX-
2	RX	TX+	TX+ / RX+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

9.8 CAN 0, CAN 1

The DynaGATE 20-30 provides 2x CAN (Controller Area Network) ports compliant with the CAN Specification 2.0, Parts A and B:

- CAN 0
- CAN 1

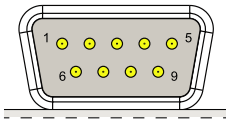
The CAN connectors are available on the rear side.

Notes about CAN power supply:

- The DynaGATE 20-30 can supply power to the 2 CAN ports: 100mA @ 5V (each port)
- CAN power can be enabled / disabled by software
- The interfaces are isolated.

9.8.1 CAN 0 and CAN 1 connector specifications

Connector Layout:



Connector Specifications:

- Standard 9-Pin D-Sub (plug)
- Gender: Male

Mating Connector Specifications:

- Standard 9-Pin D-Sub (socket)
- Gender: Female

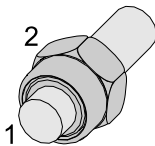
Connector Pinout (pins not listed are not connected):

Pin #	Signal	Type	Description
2	CAN L	IO	CAN Negative Data
3	CAN GND	P	CAN Ground
7	CAN H	IO	CAN Positive Data
9	CAN VDD	P	CAN +5V

9.9 Earth connection terminal

Always use this terminal to connect the product to an earth point in the installation.

Terminal Layout:



Terminal Label:



Terminal Parts:

Part #	Description
1	M4 stud bolt (length = 13 mm)
2	M4 lock nut

NOTICE

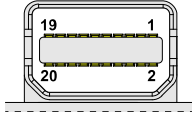
The earthing conductor to be connected to this terminal must have a maximum size of 4 mm².

9.10 Display Port

The DynaGATE 20-30 provides a mini DisplayPort connector on the Front Side.

9.10.1 Display Port connector specifications

Connector Layout:



Connector Specifications:

- Mini DisplayPort socket
- Gender: Female

Mating Connector Specifications:

- Cable-Mount Mini DisplayPort plug
- Gender: Male

Connector Pinout:

Pin #	Signal	Type	Description
1	GND1	P	Ground
2	HP	O	Hot Plug Detect
3	L0+	O	Lane 0 (positive)
4	CF1	O	CONFIG1
5	L0-	O	Lane 0 (negative)
6	CF2	O	CONFIG2
7	GND2	P	Ground
8	GND3	P	Ground
9	L1+	O	Lane 1 (positive)
10	L3+	O	Lane 3 (positive)
11	L1-	O	Lane 1 (negative)
12	L3-	O	Lane 3 (negative)
13	GND4	P	Ground
14	GND5	P	Ground
15	L2+	O	Lane 2 (positive)
16	AUX+	O	Auxiliary Channel (positive)
17	L2-	O	Lane 2 (negative)
18	AUX-	O	Auxiliary Channel (negative)
19	GND6	P	Ground
20	PWR	3.3	Power for connector

9.11 Digital I/O and Analog IN

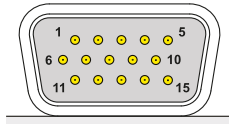
The DynaGATE 20-30 provides the following I/Os:

- 3x Isolated Digital Inputs
- 3x Isolated Digital Outputs
- 2x Not Isolated Analog Inputs (Factory Option: Odometer input)

The I/O connector is available on the Front Side.

9.11.1 I/O connector specifications

Connector Layout:



Connector Specifications:

- Standard HD 15-Pin D-Sub (plug)
- Gender: Male

Mating Connector Specifications:

- Standard HD 15-Pin D-Sub (socket)
- Gender: Female

Connector Pinout:

Pin #	Signal	Type	Description
1	DOUT 1 P	O	Isolated Digital Output 1 +
2	DOUT 1 N	O	Isolated Digital Output 1 -
3	DOUT 2 P	O	Isolated Digital Output 2 +
4	DOUT 2 N	O	Isolated Digital Output 2-
5	DOUT 3 P	O	Isolated Digital Output 3 +
6	DOUT 3 N	O	Isolated Digital Output 3 -
7	DIN 1 P	I	Isolated Digital Input 1 +
8	DIN 1 N	I	Isolated Digital Input 1 -
9	DIN 2 P	I	Isolated Digital Input 2 +
10	DIN 2 N	I	Isolated Digital Input 2-
11	DIN 3 P	I	Isolated Digital Input 3 +
12	DIN 3 N	I	Isolated Digital Input 3 -
13	AIN 2	I	Not Isolated Analog Input 2
14	AIN 1	I	Not Isolated Analog Input 1
15	GND	P	Analog Inputs Ground

9.11.2 Insulated Digital Inputs

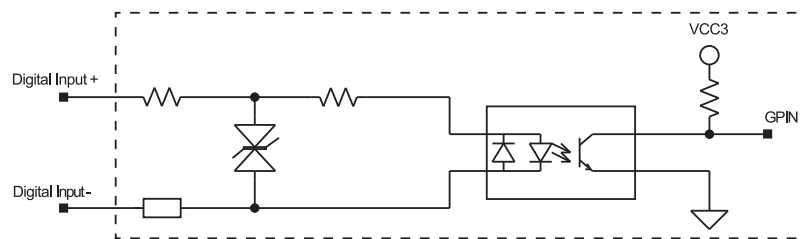
9.11.2.1 Electrical specifications

The table below shows the electrical specifications of the digital inputs at 24VDC of nominal supply voltage:

Characteristic	Value @ 24 VDC
Logic Zero	$0\text{ V} \leq \text{VIN_low} \leq 1.5\text{ V}$
Logic One	$9\text{ V} \leq \text{VIN_high} \leq 36\text{ V}$
Minimum duration of the pulse	10 ms
Response Time	5 ms
Input Current	6 mA

9.11.2.2 Electrical schematics

The figure below shows the electrical schematics of one digital input:



9.11.3 Insulated Digital Outputs

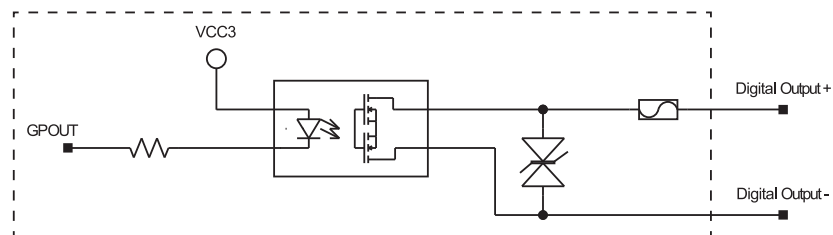
9.11.3.1 Electrical specifications

The table below shows the electrical specifications of the digital outputs at 24VDC of nominal supply voltage:

Characteristic	Value @ 24 VDC
Maximum Current	250 mA
Output ON Resistance	Typical: 0.85 Ohm Maximum: 2.5 Ohm

9.11.3.2 Electrical schematics

The figure below shows the electrical schematics of one digital input:



9.12 Audio connector

The DynaGATE 20-30 provides an audio connector in the Service Panel.

9.12.1 Audio connector specifications

Connector Layout:



Connector Specifications:

- Shrouded header
- Gender: Male
- Type: Pitch 1.25 mm; 10-pin

Mating Connector Specifications:

- Connector Housing
- Gender: Female
- Type: Pitch 1.25 mm; 10-pin
- Example:
 Manufacturer: Molex
 Part Number: 51021-1000
 (or equivalent)

Connector Pinout:

Pin #	Signal	Type	Description
1	OUT_L+	O	Left Line PositiveOut
2	OUT_L-	O	Left Line Negative Out
3	GND	P	Ground
4	OUT_R+	O	Right Line Positive Out
5	OUT_R-	O	Right Line Negative Out
6	MIC_IN_L+	I	Left Microphone Positive In
7	MIC_IN_L-	I	Left Microphone Negative In
8	GND	P	Ground
9	MIC_IN_R+	I	Right Microphone Positive In
10	MIC_IN_R-	I	Right Microphone Negative In

9.13 TTL Serial Console

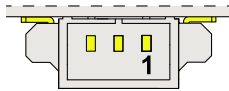
The DynaGATE 20-30 provides a 3.3 V TTL compatible Serial Console in the Service Panel.

The voltage levels are as follows:

- Log 1 (Hi): 2.0 to 3.3 V
- Log 0 (Low): 0 to 0.8 V

9.13.1 TTL Serial Console connector specifications

Connector Layout:



Connector Specifications:

- Shrouded header
- Gender: Male
- Type: Pitch 1.25 mm; 3-pin

Mating Connector Specifications:

- Connector Housing
- Gender: Female
- Type: Pitch 1.25 mm; 3-pin
- Example:
Manufacturer: Molex
Part Number: 51021-0300
(or equivalent)

Connector Pinout:

Pin #	Signal	Type	Description
1	GND	P	Ground
2	TX	O	Transmit Data
3	RX	I	Receive Data

9.14 MicroSD card receptacle

The MicroSD card receptacle is placed **on the top side** of the circuit board in the Service Panel. The receptacle allows you to insert a MicroSD card (up to 32 GB) for additional data storage.

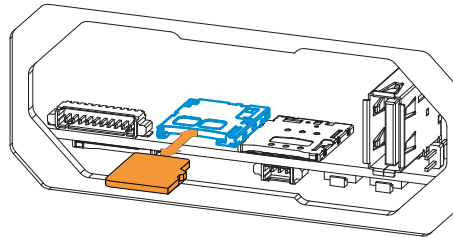
9.14.1 *How to insert / remove the MicroSD card in the receptacle*

To insert the MicroSD card, complete the following steps:

1. Orient the MicroSD card with the contacts facing the circuit board
2. Push the MicroSD card and lock it in the receptacle

To remove the MicroSD card, complete the following steps:

1. Push the MicroSD card and release it from the receptacle
2. Pull out the MicroSD card from the receptacle



9.15 RTC (Real Time Clock)

The DynaGATE 20-30 includes an RTC (Real Time Clocks) device with Fast Reboot Support. A SuperCAP allows for up to 2 Months Retain.

9.16 TPM

The DynaGATE 20-30 includes a TPM 2.0 hardware module: Infineon SLB9670. This is connected to the CPU via an SPI interface.

The TPM 2.0 device is fully supported by Linux via the `tpm2-tools` package that is pre-installed in the image. This package includes many commands to setup and manage the TPM.

In the DynaGATE 20-30, the TPM device is used for verified boot. This process utilizes the TPM PCR registers to setup policies to grant access to the TPM NVRAM.

When the system boots, the bootloader measures the boot components and system specific metrics to produce a set up digital signatures (hashes) that are extended into the PCR registers. When a valid condition is matched, a policy grants access to the NVRAM so that the bootloader can read the kernel public key. The key read is used to verify the kernel FIT image. If the kernel is verified OK, the system loads the kernel and boots it.

A similar scheme is used to retrieve the key that is used to encrypt the user data partition. This is bound to a different TPM policy.

For more information on the TPM hardware, see: <https://www.infineon.com/cms/en/product/security-smart-card-solutions/optiga-embedded-security-solutions/optiga-tpm/slb-9670vq2.0/>

9.17 Watchdog

The DynaGATE 20-30 includes a watchdog / supervisor IC, external to the CPU.

9.18 Accelerometer and Gyroscope

The DynaGATE 20-30 includes a 6-Axis Accelerometer and Gyroscope.

9.19 Programmable pushbutton

The DynaGATE 20-30 provides a programmable pushbutton in the Service Panel.

This pushbutton can be programmed to execute a shell script every time you push it.

10 EUROTECH EVERYWARE IoT

Everyware IoT is an IoT platform providing hardware and software building blocks with an open, integrated and managed core to allow flexibility and interoperability across different vendors, to reduce time to market and for seamless integration between OT (operational technology) domain and IT (information technology) domain.

10.1 Everyware Software Framework (ESF)

The enterprise-ready IoT Edge Framework Everyware Software Framework (ESF) is a high-level, multi-platform, and flexible application development environment for Edge Computers and IoT Gateways. ESF connects and interfaces with field devices thanks to its ready-to-use field protocol libraries. Field data can be processed at the edge through rich Java APIs or a web-based visual programming environment.

10.2 The ESF Web UI

ESF provides a web-based user interface that provides several functions such as:

- Monitor the gateway status
- Manage the network configuration
- Oversee the installed application(s) and services.

The ESF Web UI is available on port 80 of the gateway IP.

The default user is: *admin*

The default password is: *admin*

The following picture shows an example of the ESF Web UI:

The screenshot displays the ESF web interface. On the left is a navigation sidebar with sections for 'System' and 'Services'. The 'System' section includes links for Status, Device, Network, Firewall, Cloud Services, Drivers and Assets, Wires, Packages, and Settings. The 'Services' section has a search bar and lists services like Simple Artemis MQTT Broker, ActiveMQ Artemis Broker, ClockService, DeploymentService, CommandService, WebConsole, and DiagnosticsService. The main content area is titled 'Status' and features a 'Refresh' button. Below this, there are sections for 'Cloud Services' and 'Wireless Settings'. The 'Cloud Services' section shows a table with details for 'org.eclipse.kura.cloud.CloudService', including its status (CONNECTED), auto-connect settings, broker URL, and account information. The 'Wireless Settings' section is divided into 'wlan0' and 'Ethernet Settings'. 'wlan0' lists parameters like Subnet Mask, Mode, IP Acquisition, Router Mode, Wireless Mode, and SSID. 'Ethernet Settings' shows configurations for 'eth1' and 'eth0' interfaces, including their IP addresses, subnet masks, modes (WAN/LAN), and IP acquisition methods (DHCP/Manual).

Cloud Services	
Connection Name	org.eclipse.kura.cloud.CloudService
Service Status	CONNECTED
Auto-connect	ON (Retry Interval is 60s)
Broker URL	ssl://broker-sandbox.everyware-cloud.com:8883
Account	[REDACTED]
Username	[REDACTED]
Client ID	[REDACTED]

Wireless Settings	
wlan0	Subnet Mask: Mode: LAN IP Acquisition: DHCP Router Mode: Wireless Mode: Station Mode SSID: ET-CMD-WIFI01

Ethernet Settings	
eth1	192.168.3.136 Subnet Mask: 255.255.255.0 Mode: WAN IP Acquisition: DHCP Router Mode:
eth0	172.16.0.1 Subnet Mask: 255.255.255.0 Mode: LAN IP Acquisition: Manual

10.3 The ESF Wires application

ESF provides also a dataflow programming model: **Wires**.

Wires simplifies the development of Edge Computing Applications leveraging reusable configurable components.

In the dataflow programming model, the application logic is expressed as a directed graph (flow) where each node can have inputs, outputs and independent processing units.

The processing unit of a node executes independently and does not affect the execution of other nodes. Thus, the nodes are highly reusable and portable.

The following picture shows an example of the Wires application:

The screenshot displays the ESF Wires application interface. On the left is a navigation sidebar with sections for System, Services, and Wire Components. The main area shows a 'Wire Graph' with three nodes: 'TIMER', 'MODBUSASSET', 'LOGGER', and 'PUBLISHER'. The flow is: TIMER → MODBUSASSET → (split) → (LOGGER, PUBLISHER). Below the graph is a 'Channels (modbusDriver)' table.

name	type	value type	unit.id	primary.table	memory.address	data.ori
Temperature	READ	INTEGER	1	INPUT_REGISTERS	1000	MSW
Humidity	READ	INTEGER	1	INPUT_REGISTERS	1500	MSW
Pressure	READ	INTEGER	1	INPUT_REGISTERS	2000	MSW

10.4 Everyware Cloud (EC)

Everyware Cloud (EC) is the IoT Integration Platform distributed and supported by Eurotech. It provides all the services required for the management of IoT gateways and devices in the field, including configuration management, application life-cycle management and remote access.

It also connects the data collected by field-deployed devices to enterprise applications and analytics leveraging reliable and open protocols.

10.5 For more information

For more information and tutorials about ESF and EC, refer to the following links:

Resource	Available at
ESF Website	esf.eurotech.com
ESF Download	www.eurotech.com/download/en/pb.aspx?pg=ESF (click the <i>Developer Environment</i> tab)
EC Integration Platform	everyware+cloud+m2m+platform
EC Developer's Guide	everywarecloud.eurotech.com/doc/ECDevGuide/
Kura Website	eclipse.org/kura/

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11 MECHANICAL SPECIFICATIONS AND DIMENSIONS

11.1 Product mechanical specifications

The product enclosure has the following specifications:

- Material: Aluminium
- Color: Black Anodized

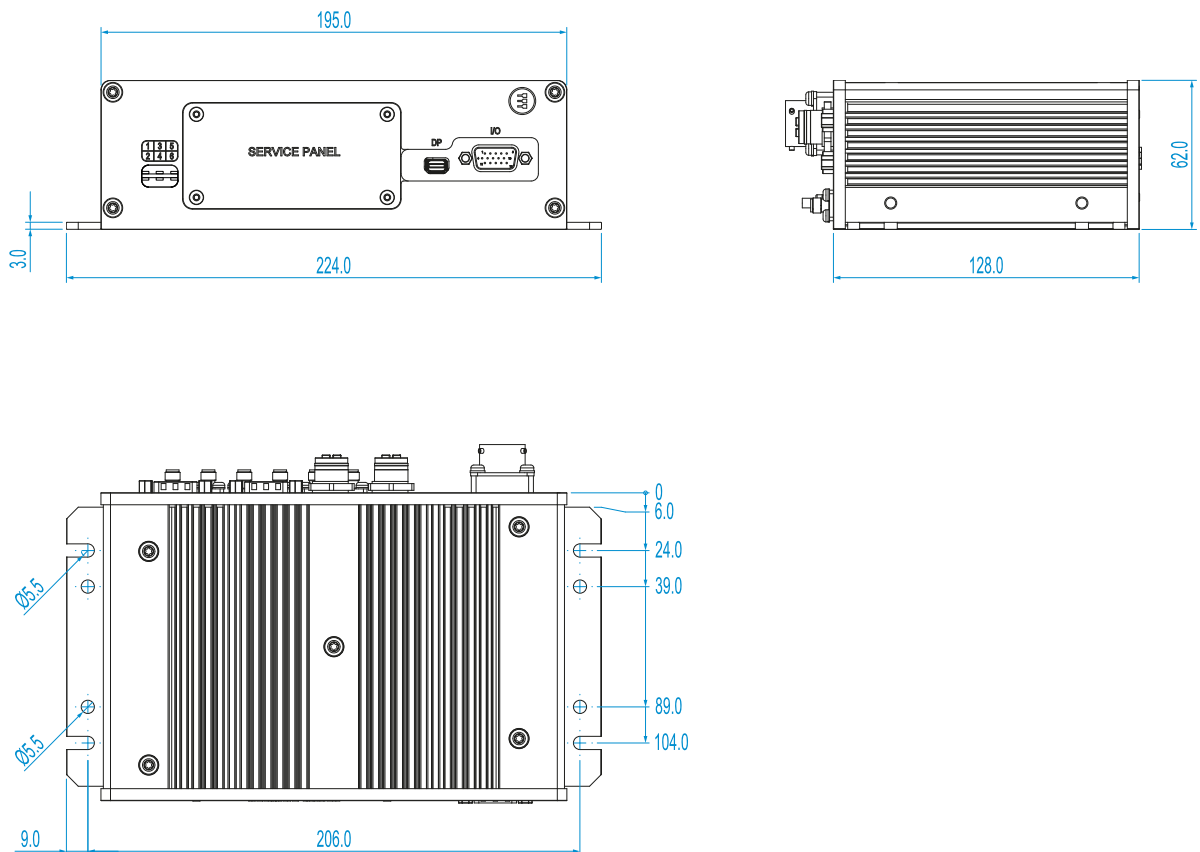
11.2 Product mechanical dimensions

The product enclosure has the following dimensions: 224 (W) x 128 (D) x 62 (H), mm (connectors excluded).

All dimensions are in millimeters.

They have “class m (medium)” tolerances according to DIN ISO 2768, for example:

- For lengths over 6 up to 30 mm, tolerance is ± 0.2 mm
- For lengths over 30 up to 120 mm, tolerance is ± 0.3 mm



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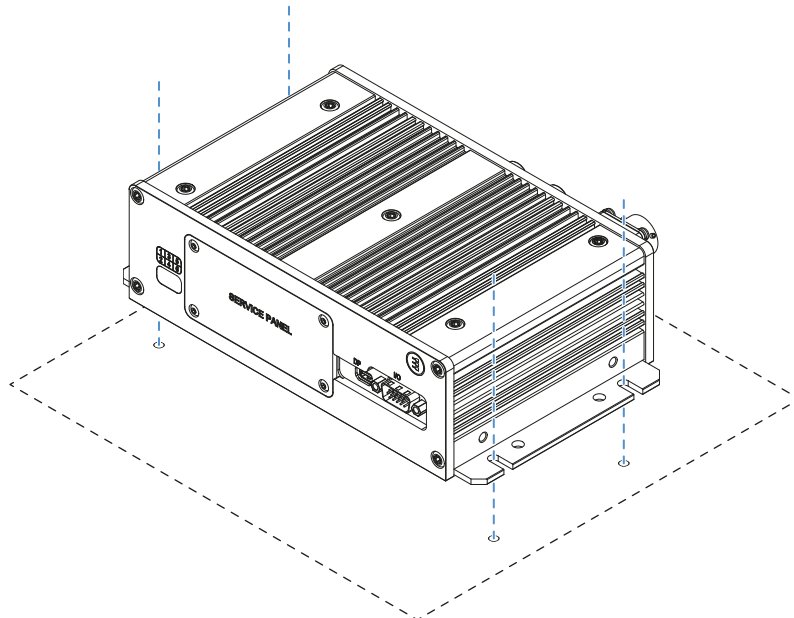
12 HOW TO INSTALL THE PRODUCT

The product is intended for professional use and must be installed by qualified personnel only. The product must be installed in a secured location, accessible to authorized personnel only (for example in a cabinet / technical compartment).

To install the product in place, complete the following steps:

1. See "[Mechanical specifications and dimensions](#)" on page 65
2. Use the 4 slots available on the enclosure
3. Add all the necessary mounting hardware to safely fasten the DynaGATE 20-30 in place according to your installation requirements (for example use 4x M5 screws, with a minimum length of 15 mm). **Material, type, and length of the screws, and the maximum torque applicable, depend on your installation requirements.**

In case of uncertainties contact the Eurotech Technical Support Team (see "[How to receive technical assistance](#)" on page 17).



12.1 Respect the clearance space

To ensure:

- proper air circulation around the product, and
- adequate space to install the product,

respect the clearance space indicated in orange in the following figure (dimensions are in mm):

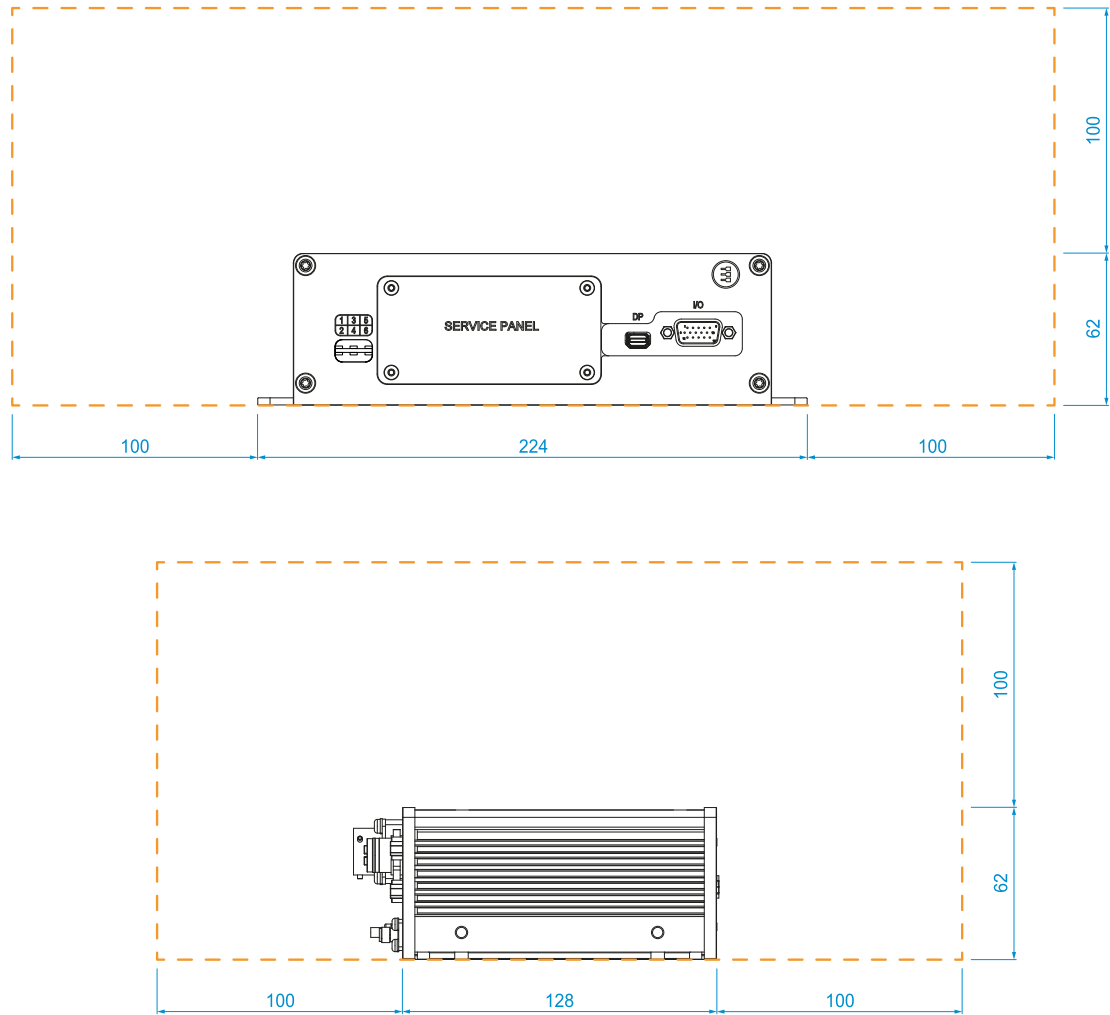


Figure 12.1 - Clearance space

13 POWER SUPPLY. HOW TO TURN ON/OFF AND RESET THE PRODUCT

This product is not provided with any ON/OFF switch.
 The Power IN connector is the disconnecting means from the power supply network.

13.1 Power supply specifications

Power supply	Nominal: 12 - 24 VDC; Range: 6 to 35 VDC, Load Dump Protection and Ignition Key Sense
Power consumption	Nominal: 17 W
Transient voltage	1500 Vpeak

13.2 Power IN connector specifications

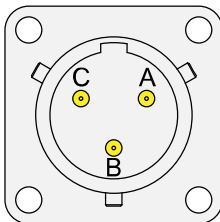
The power input is protected against: surge, noise, reverse polarity, over-voltage.

NOTICE

The Power IN connector is NOT protected against short circuit.
Always include an external fuse to protect the product!

The DynaGATE 20-30 provides the Power IN connector on the rear side:

Connector Layout:



Connector Pinout:

Pin #	Signal	Type	Description
A	VIN+	P	Power Supply Input +
B	KEY	P	Key Signal
C	VIN-	P	Power Supply Input -

Connector Specifications:

- Panel-mount; MIL-26482 series
- Gender: Male
- Type: Size 12; 3-pin

Mating Connector Specifications:

- Cable-Mount; MIL-26482 series
- Gender: Female
- Type: Size 12; 3-pin
- Example:
 Manufacturer: Souriau
 Part Number: 851-06RC12-03S5044
 (or equivalent)

13.3 How to Supply Power to the Product and Turn it ON



WARNING

ELECTRIC SHOCK HAZARD

Failure to supply power correctly or to follow all operating instructions correctly, may create an electric shock hazard, which could result in personal injury or loss of life, and / or damage the equipment or other property.

To avoid injuries and safely supply power to the product, complete the following steps:

1. Observe all the instructions for safety, installation, and operation
2. Make sure your hands are dry
3. Make sure that all the cables to use:
 - a. Are in good condition
 - b. Meet the product requirements and comply with the relevant standards and regulations
4. Position cables with care. Do not position cables in places where they may be trampled or compressed
5. Make sure that the power-points and plugs are in good condition before using them
6. Do not overload the power-points and plugs
7. Make sure that the product maintains a proper grounding connection.
Always use the earth protection terminal to connect the DynaGATE 20-30 to an earth point in the installation: see also "[Earth connection terminal](#)" on page 52
8. Make sure that the product maintains a proper grounding connection
9. Use a power supply that meets the product requirements and complies with the relevant standards and regulations. In case of uncertainties, contact the Eurotech Technical Support Team (for more information see "[How to receive technical assistance](#)" on page 17)
10. Connect power after the installation of the system has been completed
11. Never connect or disconnect the cables with the system or the external apparatus switched ON.

Before supplying power to the product, complete the following steps:

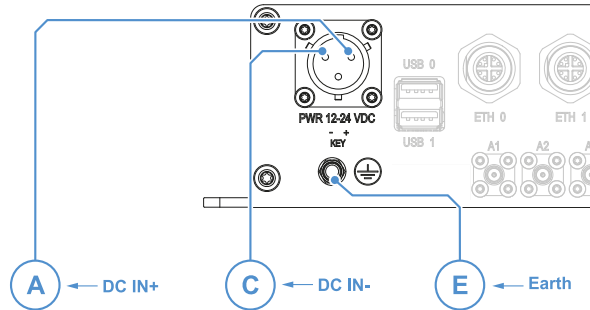
1. Make sure that you have thoroughly reviewed all installation, operation, and safety instructions
2. Make sure that the electrical installation is made correctly in compliance with the relevant standards and regulations.

To supply power and turn ON the DynaGATE 20-30, complete the following steps:

1. Setup a DC power source that:
 - Meets the requirements stated on the identification label of the product
 - Delivers at least Nominal: 17 W
2. Setup an external fuse on the line coming from the negative terminal of the DC power source (a 4 A fuse is appropriate for 12 VDC operation)
3. Check the input voltage as close as possible to the Power IN connector. This is to compensate for any cable losses, caused by cable length and other cable characteristics
4. **Make sure that the DC power source is turned OFF**

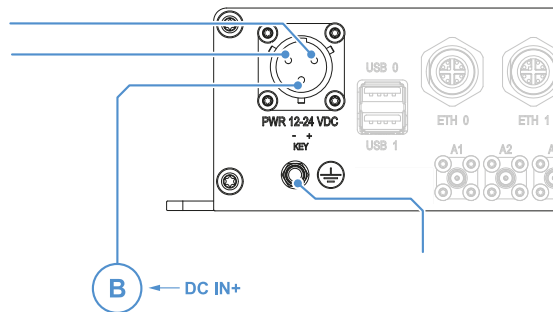
(continued on next page...)

- Connect the Earth connection terminal (Ref# E below) to an earth point in the installation
- Connect the Power IN connector (Ref# A and C below) to the DC power source terminals (DC IN+ and DC IN-)



Ref#	Description
A	Power IN connector: pin A; Positive power supply input (VIN+)
C	Power IN connector: pin C; Negative power supply input (VIN-)
E	Earth connection terminal

- Turn ON the DC power source. The DynaGATE 20-30 remains OFF
- Connect the KEY pin (Ref# B below) to the positive DC power source terminal (DC IN+). The DynaGATE 20-30 automatically turns ON and the LED 5 turns ON



Ref#	Description
B	Power IN connector: pin B; Key Input (KEY)

NOTICE

When connecting Pin B to DC IN+, keep it connected for at least 10 seconds. If you disconnect DC IN+ from Pin B before 10 seconds have passed, the start-up procedure will not be completed correctly and an immediate and unsafe power down will occur.

- To keep the DynaGATE 20-30 turned ON, make sure the KEY Pin remains connected to DC IN+.

13.3.1 **Note about the Vehicle Ignition Sense**

The Vehicle Ignition Sense is a digital input that can be used to read the status of the KEY Pin.

13.4 **How to turn OFF the product**

There are two ways to turn OFF the DynaGATE 20-30:

- By entering the power OFF command
- By turning OFF the Ignition Key

To turn OFF the DynaGATE 20-30 by entering the power OFF command, complete the following steps:

1. Login the Administration Console
2. Enter the command `poweroff`. The system turns OFF
3. Remove the power from the Power IN connector.

To turn OFF the DynaGATE 20-30 by turning OFF the Ignition Key, complete the following steps:

1. Turn OFF the Ignition Key. The system turns OFF after 120 seconds (default condition)
2. Remove the power from the Power IN connector.

13.5 **How to reduce the power consumption of the product**

To reduce the power consumption of the DynaGATE 20-30, turn OFF the radio interfaces and disable unnecessary services that contribute to overall system power consumption.

13.6 **How to hardware reset the product**

To trigger a hardware reset of the DynaGATE 20-30, push the hardware reset pushbutton available in the Service Panel.

14 HOW TO MAINTAIN THE PRODUCT

Periodically inspect the product to verify its integrity and to ensure proper operation.

To maintain the product, complete the following steps:

1. Carefully read and understand the instructions contained in the section "[Safety instructions](#)" on [page 9](#)
2. Safely remove the power supply
3. Verify the installation of the product
4. Clean the product

14.1 How to safely remove the power supply



WARNING

ELECTRIC SHOCK HAZARD

Failure to remove power correctly may create an electric shock hazard, which could result in personal injury or loss of life, and / or damage the equipment or other property.

To avoid injuries and safely remove power supply from the product, complete the following steps:

1. Make sure your hands are dry
2. Turn OFF all the power supply sources
3. Disconnect all the cables
4. Make sure that all the circuits are discharged.

14.2 How to verify the installation of the product

To verify the installation of the product, complete the following steps:

1. Verify that the product is clean and not damaged
2. Verify that the LED indicators are visible and not damaged
3. Verify that all the locking parts (for example: screws, bolts, nuts) are correctly fastened
4. Verify that the product is installed correctly.

14.3 How to clean the product

To clean the product, complete the following steps:

1. Never use detergents, aerosol sprays, solvents or abrasive sponges
2. To remove dust from the case of the product, use a dry, lint-free, cloth
3. To remove the dirt, use water-based, non-flammable, cleaner products.

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NOTES



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