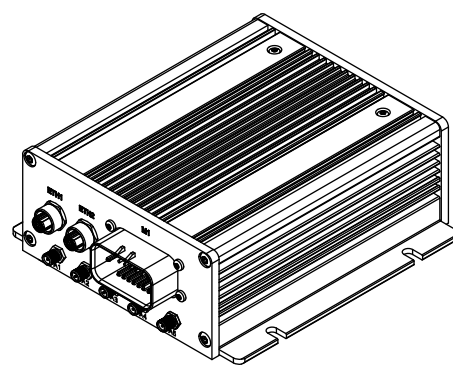




User manual

DynaGATE 10-06

Automotive Multi-service IoT Edge Gateway - LTE Cat 1
and IP67

Rev. 0-8 — 16 September 2020 — DYGATE-10-06_Man_ENG_0-8 — ENGLISH

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
0-8	Updated FCC and IC information	16 September 2020

CONTENTS

Trademarks	2
Intended audience of this document	2
Revision history	2
Contents	3
1 Safety instructions	7
1.1 Warning messages	7
1.1.1 <i>Warning messages for harm to persons</i>	7
1.1.2 <i>Warning messages for damage to property</i>	8
1.2 Warning: power supply safety	8
1.3 Caution: wireless safety	8
1.4 Caution: product's surfaces may become hot	8
2 Consignes de securite	9
2.1 Messages d'avertissement	9
2.1.1 <i>Messages d'avertissement relatifs au dommage aux personnes</i>	9
2.1.2 <i>Messages d'avertissement relatifs aux dommages matériels</i>	10
2.2 Avertissement: sécurité de l'alimentation électrique	10
2.3 Attention: sécurité sur la connectivité sans fil	10
2.4 Attention: les surfaces du produit peuvent devenir chaudes	11
3 How to receive technical assistance	13
3.1 How to ask for technical support	13
3.2 How to send a product for repair	13
4 Comment obtenir une assistance technique	15
4.1 Comment contacter le support technique	15
4.2 Comment retourner un produit en service après vente	15
5 Conventions used	17
5.1 Conventions for signal names	17
5.2 Conventions for signal types	17
6 Product overview	19
6.1 Product description	19
6.2 Intended use and not allowed uses of the product	20
6.2.1 <i>Intended use</i>	20
6.2.2 <i>Not allowed uses</i>	20
6.3 Technical specifications	21
6.4 Product labels	23
7 Regulatory information	25
7.1 CE marking	25
7.1.1 <i>Safety</i>	25
7.1.2 <i>Packaging and packaging waste</i>	25
7.1.3 <i>Product disposal and recycling</i>	25
7.1.4 <i>WEEE compliance</i>	25
7.1.5 <i>RoHS 3 compliance</i>	26
7.1.6 <i>Directive RED 2014/53/EU</i>	26
7.2 FCC/ISED Regulatory Notices	28
7.2.1 <i>FCC marking</i>	28
7.2.2 <i>FCC Class B Digital Device Notice</i>	28
7.2.3 <i>FCC restrictions on 5 GHz Wi-Fi usage</i>	29
7.2.4 <i>ISED Canada Regulatory Notices</i>	29

7.2.5 ISED Class B Digital Device Notice	30
7.2.6 Canadian Representative contact information	30
7.2.7 RF Radiation Exposure Statement	30
7.2.8 Labeling Information	31
7.3 Antennas List	31
7.4 REACH compliance	32
8 Interfaces overview	33
8.1 Front Side Interfaces overview	33
8.2 LED Indicators overview	34
8.3 Service Panel and Service Interfaces	35
8.3.1 Service Panel Overview	35
8.3.2 Service Interfaces Overview	36
8 Rear Side Overview	39
8.3.1 Connectors ETH1 and ETH2	40
8.3.2 Connector M1	41
8.3.3 Connectors A1, A4, A5	42
8.3.4 Connectors A2 and A3	42
9 Features in detail	43
9.1 Wi-Fi and Bluetooth (only for versions: -33 to -37)	43
9.1.1 Wi-Fi specifications	43
9.1.2 Bluetooth specifications	44
9.1.3 BLE specifications	44
9.2 Internal mobile connectivity (only for versions: -34 to -37)	45
9.2.1 Internal modem specifications (according to product versions)	45
9.2.2 1st and 2nd MicroSIM Card holders	48
9.3 Internal GNSS (only for versions: -32 to -37)	49
9.3.1 Internal GNSS specifications	49
9.4 Digital I/Os	50
9.4.1 Insulated Digital Inputs	50
9.4.2 Insulated Digital Outputs	51
9.5 COM ports	52
9.5.1 COM specifications	52
9.5.2 Note for termination and fail safe resistors (RS-485 COM port only)	52
9.6 CAN ports	53
9.6.1 CAN specifications	53
9.6.2 Note for termination and fail safe resistors	53
9.7 Ethernet ports	54
9.7.1 Ethernet specifications	54
9.8 MicroSD card holder	55
9.9 Hardware Reset Pushbutton	55
9.10 Programmable Pushbutton	55
10 Eurotech Everyware IoT	57
10.1 Everyware Software Framework (ESF)	57
10.2 The ESF Web UI	58
10.3 The ESF Wires application	59
10.4 Everyware Cloud (EC)	60
10.5 For more information	60
11 Mechanical specifications	61
11.1 Product mechanical dimensions	61
12 How to install the product	63
12.1 Comply with safety instructions, norms and certifications	63

12.2 How to install the product 63

13 How to manage the product power supply 65

13.1 Power supply specifications 65

13.2 How to supply power and turn ON the product 66

13.3 How to turn OFF the product 67

13.4 How to reduce the power consumption of the product 67

13.5 How to trigger a hardware reset of the product 67

14 How to maintain the product 69

14.1 How to safely remove the power supply 69

14.2 How to verify the installation of the product 69

14.3 How to clean the product 69

Notes 71

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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 13](#)).

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)	TEXT THAT EXPLAINS THE HAZARD AND THE CONSEQUENCES OF NOT AVOIDING IT.
	Text that explains how to avoid this hazard.

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)	TEXT THAT EXPLAINS THE HAZARD AND THE CONSEQUENCES OF NOT AVOIDING IT.
	Text that explains how to avoid this hazard.

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)	TEXT THAT EXPLAINS THE HAZARD AND THE CONSEQUENCES OF NOT AVOIDING IT.
	Text that explains how to avoid this hazard.

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: 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 8. 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 13) 9. Connect power after the installation of the system has been completed 10. Never connect or disconnect the cables with the system or the external apparatus switched ON.

1.3 **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.

1.4 **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.**

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 15).

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**

RISQUE DE CHOC ÉLECTRIQUE

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.

Pour éviter les blessures et brancher l'appareil en toute sécurité, procéder comme suit:

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:
 - 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
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 15)
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: 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.

2.4 **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.**

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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 Support Team 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 10-06 is a Multi-service IoT Edge Gateway, designed to deliver LTE connectivity with 2G/3G fallback to automotive and lightly rugged applications.

It is based on the NXP i.MX 6UltraLite Cortex-A7 processor family, with 512MB of RAM, 4GB of eMMC, and a user-accessible MicroSD and dual Micro-SIM slots.

The DynaGATE 10-06 offers the following wired connectivity capabilities: 2x Fast Ethernet, 2x CAN bus, 2x USB 2.0 for maintenance, 1x Ignition Key Input (surge protected), 1x Isolated Digital Input, 1x Isolated Digital Output, 1x Isolated Odometer Input, 1x Isolated Forward Input; it also includes the following serial ports (not isolated, surge protected): 1x RS-485, 1x RS-232.

It also offers a wide range of wireless connectivity capabilities¹: it can integrate an internal LTE Cat 1 modem (2G/3G fallback) with dual Micro-SIM support, 802.11 b/g/n Wi-Fi, and Bluetooth 4.2 BLE; an internal 72-channel GNSS provides precise geolocation capabilities.

A rechargeable internal 2000 mA/h battery provides uninterrupted operation for up to 5 minutes in case of power failure and permits a safe shutdown.

The DynaGATE 10-06 comes with a genuine Oracle Java SE Embedded 8 Virtual Machine and Everyware Software Framework (ESF), a commercial, enterprise ready edition of Eclipse Kura, the open source Java/OSGi middleware for IoT Edge Gateways.

Distributed and supported by Eurotech, ESF adds advanced security, diagnostics, provisioning, remote access and full integration with Everyware Cloud (EC), Eurotech IoT Integration Platform (separately available).

For further details visit www.eurotech.com.

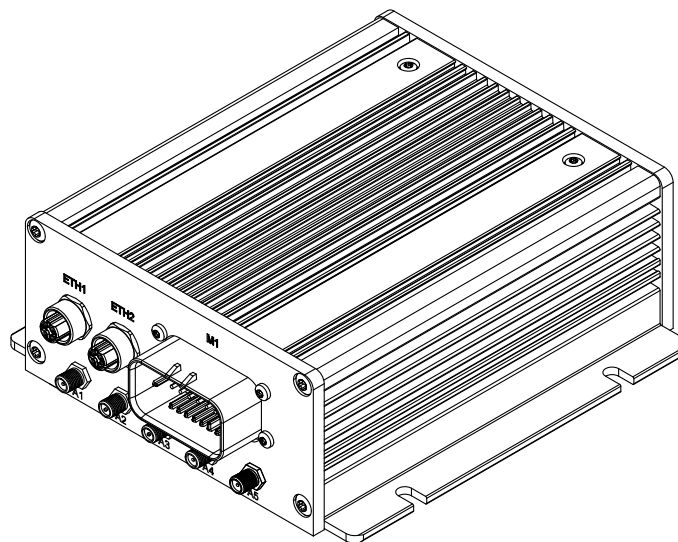


Figure 6.1 - The DynaGATE 10-06 rear view

¹The features availability depends on the product versions

6.2 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).

6.2.1 *Intended use*

The DynaGATE 10-06 is a Multi-service IoT Edge Gateway, designed to deliver LTE connectivity with 2G/3G fallback to automotive and lightly rugged applications.

The DynaGATE 10-06 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, in industrial or automotive* applications
- Be used with appropriate interconnecting and power cables
- Be used with an external DC power supply source that:
 - Must meet the requirements stated on the identification label of the product
 - Must deliver a maximum current of 2 A
- Include an external 2 A fuse on the line coming from the negative terminal of the DC power source.

* For DynaGATE 10-06 versions -33 to -37: before using the DynaGATE 10-06 in automotive applications in any EU Member State, switch-off the Wi-Fi band: 5150 - 5350 MHz.

6.2.2 *Not allowed uses*

Do not use the DynaGATE 10-06:

- In railway applications
- In defence applications
- Outdoors
- In safety-critical applications
- In environments with potentially explosive atmospheres
- Exposed to water, chemical agents, and UV
- If not installed according to the instructions and warnings contained in this document.

When used in automotive applications in any EU Member State, do not use the DynaGATE 10-06, versions -33 to -37, with the Wi-Fi band: 5150 - 5350 MHz enabled.

6.3 Technical specifications

The DynaGATE 10-06 is available in several -XY versions, for example: DynaGATE 10-06-36, where X=3 and Y=6.

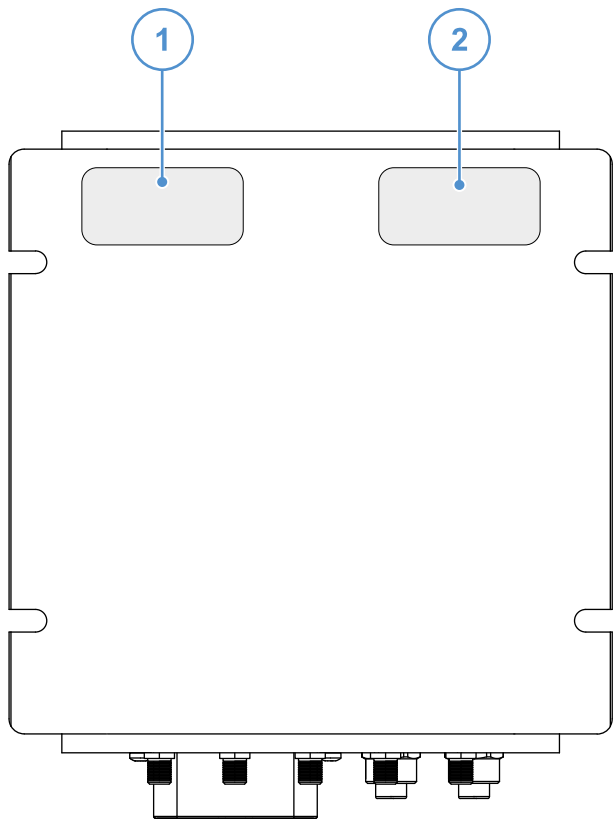
The following table lists the technical specifications of the DynaGATE 10-06 versions:

Specifications		Description according to DynaGATE 10-06-XY Version						
		-31	-32	-33	-34	-35	-36	-37
Processor	CPU	i.MX6 UltraLite, Arm Cortex-A7, 700 MHz, Single Core						
Memory	RAM	512 MB, DDR3L						
Storage	Embedded	4 GB eMMC						
	Other	1x MicroSD slot (user accessible in the service panel)						
I/O interfaces	Ethernet	2x Fast Ethernet						
	USB	1x Maintenance Host USB 2.0 OTG Port (user accessible in the service panel) 1x Maintenance Host USB 2.0 Port (user accessible in the service panel). Ready to interface optional USB accessories (example: ReliaCELL 10-20)						
	Serial	1 x RS-485, Not Isolated, Surge Protected 1 x RS-232, Not Isolated, Surge Protected 1x TTL Serial Console (user accessible in the service panel)						
	CAN 2.0B	2x CAN bus, Not-Isolated						
	Digital I/O	1x Ignition Key Input, Surge Protected 1x Isolated Digital Input 1x Isolated Digital Output 1x Isolated Odometer Input 1x Isolated Forward Input						
Radio interfaces	Cellular Modem	No			LTE Cat 1 (NA)	LTE Cat 1 (NA) 3G Fallback	LTE Cat 1 (EU) 2G Fallback	LTE Cat 1 (JP)
	GNSS	No	72 channels (GPS, Galileo, GLONASS, BeiDou) with Dead Reckoning					
	Wi-Fi/BT	No		802.11a,b,g,n / BLE 4.2				
	Antenna connectors	No	1x SMA GNSS	1x SMA GNSS 2x RP-SMA Wi-Fi/BT	1x SMA GNSS 2x SMA Cellular Modem 2x RP-SMA Wi-Fi/BT			
Other	RTC	Yes (backup supercap)						
	Watchdog	Yes (system level)						
	EEPROM	256 kbit						
	TPM	TPM 2.0						
	Sensors	Temperature (inside the product), Accelerometer						
	LEDs	1x Power, 1x Cellular Modem Connectivity, 2x Programmable						
	Buttons	1x Reset, 1x Programmable (user accessible in the service panel)						
	SIM slot	No			2x Micro-SIM (user accessible in the service panel)			
Power	Input	Nominal: 12 or 24 VDC; Range: 6 to 36 VDC						
	Consumption	TBD W typical; TBD W maximum						

Specifications		Description according to DynaGATE 10-06-XY Version						
		-31	-32	-33	-34	-35	-36	-37
Environment	Operating Temperature	-40 to +85 °C						
	Storage Temperature	-40 to +85 °C						
	Relative Humidity	5 to 95% (non condensing) at +40°C						
Certifications	Regulatory	FCC, ISED, CE, JATE/TELEC			FCC, ISED		CE	JATE/TELEC
	Safety	EN 62368-1:2014+A11:2017						
	Vertical	E-Mark,SAE/J1455						
	Environmental	RoHS3; REACH						
	Wi-Fi/BT Radio	No		FCC, ISED, CE (RED)	FCC, ISED		CE (RED)	JATE/TELEC
	Cellular Radio	No			FCC, ISED, PTCRB (Verizon)	FCC, ISED, PTCRB (AT&T)	CE (RED)	JATE/TELEC
	IoT Platform	Microsoft Azure Certified						
	Ingress	IP67						
Mechanical	Dimensions	165 (L) x 160 (W) x 62 (H); mm - Mounting Brackets included, Connectors not included						
	Weight	TBD g						
	Enclosure	Material: Aluminium - Color: Aluminium						
Software	OS	Eurotech Everyware Linux						
	IoT Framework	Everyware Software Framework (Java/OSGi)						

6.4 Product labels

The following labels are placed on the underside of the product:



Ref #	Label example	Label type and content
1	EUROTECH Via Fratelli Solari 3/a 33020 Amaro, UD, Italy P.N.: DYGATE-10-06-xx  S.N.: YYYYYYYYYY Regulatory information and marks Regulatory information and marks POWER: 12-24V  15W	Part Number and Serial Number Label This label contains the following: • Eurotech logo • Manufacturer address • Product number (xx = product version) • Serial number • Regulatory information and marks (according to product version. For more information see: "Technical specifications" on page 21) • Power supply specifications*
2	This device complies with Part 15 of the FCC rules subject to the following two conditions: 1) This device may not cause harmful interference 2) This device must accept all interference received, including interference that may cause undesired operation.	FCC interference statements Label This label contains the FCC Part 15 compliance statements. NOTE: This label is placed on FCC compliant products only

* the symbol  stands for direct current

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7 REGULATORY INFORMATION

This section provides regulatory information for the DynaGATE 10-06 (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 13](#)).

7.1 CE marking

Some versions of this product are CE marked (for more information see ["Technical specifications" on page 21](#)). They comply 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.



7.1.1 Safety

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

7.1.2 Packaging and packaging waste

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

7.1.3 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 13](#)).

7.1.4 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 collect and recycling information contact the Eurotech Technical Support (see ["How to receive technical assistance" on page 13](#)).



7.1.5 RoHS 3 compliance

This product has been 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

7.1.6 Directive RED 2014/53/EU

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 21](#).

Modification statement

Eurotech has not approved 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 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

7.1.6.2 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		

7.2 FCC/ISED Regulatory Notices

7.2.1 FCC marking

Some versions of this product are FCC marked (for more information see ["Technical specifications" on page 21](#)). 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 21](#)). 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 has not approved 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 Class B Digital Device Notice

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 Regulatory Notices

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.

Antenna Types Types d'antenne	Frequency Band Bande de fréquences	Antenna Gain Gain de l'antenne
Wi-Fi / Bluetooth 50Ω Dipole	2.4 GHz Wi-Fi 802.11a,b,g,n / BLE 4.2 BLE Bluetooth	5.47 dBi
	5 GHz Wi-Fi 802.11a,b,g,n	7.07 dBi
Cellular 50Ω Dipole	700 MHz	6.63 dBi
	850 MHz	6.63 dBi
	1700 MHz	6.00 dBi
	1900 MHz	8.51 dBi

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 **Canadian Representative contact information**

The Canadian Representative has the following contact information:

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

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.

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.

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

DynaGATE 10-06 Version	Contains FCC ID / IC
DynaGATE 10-06-33	FCC ID: UKMMRG1012 IC: 21442-MRG1012
DynaGATE 10-06-34	FCC ID: UKMMRG1012 FCC ID: XPY1EIQN2NN IC: 21442-MRG1012 IC: 8595A-1EIQN2NN
DynaGATE 10-06-35	FCC ID: UKMMRG1012 FCC ID: XPY1EIQ24NN IC: 21442-MRG1012 IC: 8595A-1EIQ24NN

7.3 Antennas List

The DynaGATE 10-06 has been certified with the following antennas:

Le DynaGATE 10-06 a été certifié avec les antennes suivantes:

Types Types	Manufacturer and Model Fabricant et Modèle	Bands Bandes	Peak Gain (dBi) Max. Gain (dBi)	VSWR
Wi-Fi/BT	2J Antennas 2J6302MP	2410-2490 MHz 4920-5925 MHz	1.7/ 2.3 (2m cable)	1.6/ 1.5
Cellular	Taoglas GSA.8827.A.101111	698-960 MHz 1710-2170 MHz 2500-2700 MHz	1.8/ 3/ 4.7	-
GNSS	Taoglas AA.107.301111	1574-1602 MHz	-	N.A.

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 REACH compliance

This product has been assessed to be compliant with the regulation (EC) No. 1907/2006 (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 13](#)).

8 INTERFACES OVERVIEW

8.1 Front Side Interfaces overview

The Front Side Interfaces are as follows:

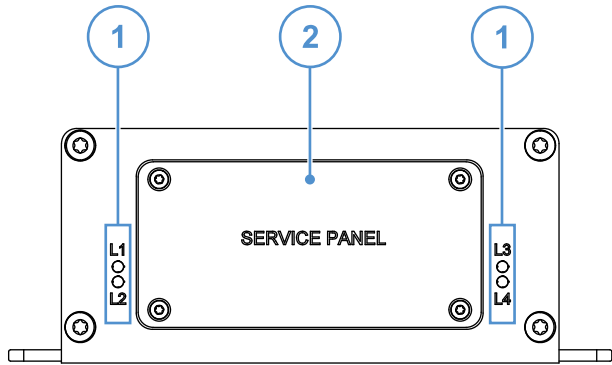


Figure 8.1 - Front Side Interfaces layout

Ref#	Description
1	LED Indicators
2	Service Panel: includes the Service Interfaces

Table 8.1 - Front Side Interfaces description

8.2 LED Indicators overview

The LED Indicators are as follows:

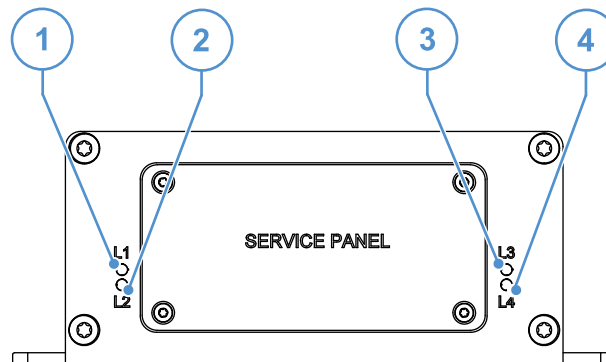


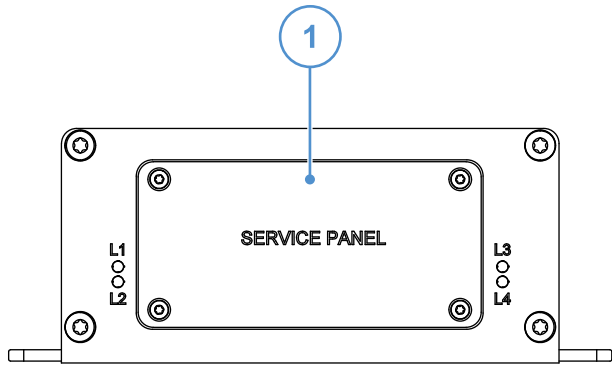
Figure 8.2 - LED Indicators layout

Ref#	Label	Use	Color
1	L1	General purpose. Controllable by user software	Bi-color Green/Amber
2	L2	General purpose. Controllable by user software	Bi-color Green/Amber
3	L3	Power status: • LED ON: Product powered by the external source • LED OFF: Product not powered by the external source	Blue
4	L4	Modem status: • LED ON: ? • LED OFF: ? • LED blinking: ?	Green

Table 8.2 - LED Indicators description

8.3 Service Panel and Service Interfaces

8.3.1 Service Panel Overview



Ref#	Description
1	Service Panel: includes the Service Interfaces

8.3.1.1 How to Remove the Service Panel Cover

NOTICE

The IP grade is not maintained when the Service Panel cover is removed.
Do not use the product for extended periods of time with the Service Panel cover removed, otherwise dust and other particulates may enter the system. If it is necessary to have extended access to the Service Panel, take appropriate precautions to stop any particulates from entering.

- To remove the Service Panel cover, complete the following steps:
1. Unscrew the screws that keep the Service Panel cover in place
 2. Remove the Service Panel cover. You can now have access to the Service Interfaces

8.3.1.2 How to Install the Service Panel Cover

- To install the Service Panel cover, complete the following steps:
1. Place the Service Panel cover in place
 2. Tighten the screws applying a torque of 1.00 Nm $\pm$ 0.05 Nm.

8.3.2 Service Interfaces Overview

The DynaGATE 10-06 has the following Service Interfaces:

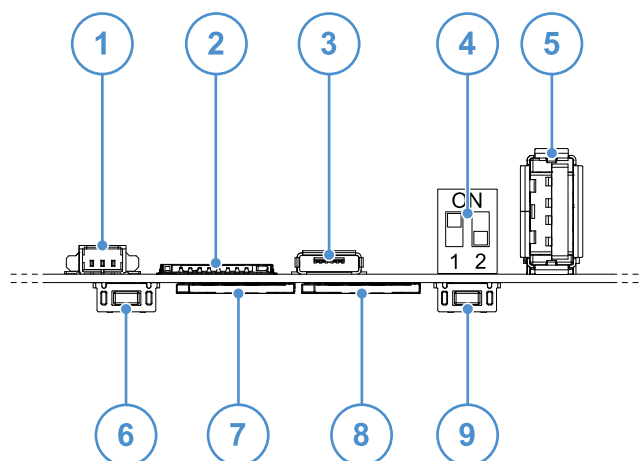


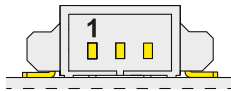
Figure 8.3 - Service Interfaces layout

Ref#	Description
1	3.3 V TTL Serial Console - Logic 1 (Hi): 2.0 to 3.3 V - Logic 0 (Low): 0 to 0.8 V
2	MicroSD Card Holder (push-push)
3	Host USB 2.0 OTG Port (for maintenance only)
4	Boot Modes Selection DIP-switch
5	Host USB 2.0 Port (for maintenance only. Ready to interface optional USB accessories, e.g.: ReliaCELL 10-20)
6	Hardware Reset Pushbutton
7	1st MicroSIM Card Holder (push-push) (MicroSIM card Holder is only available for versions: -34 to -37)
8	2nd MicroSIM Card Holder (push-push) (MicroSIM card Holder is only available for versions: -34 to -37)
9	Programmable Pushbutton

Table 8.3 - Service Interfaces description

8.3.2.1 TTL Serial console connector specifications

Connector Layout:



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

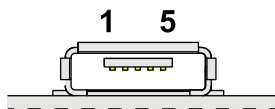
- Mating Connector Specifications:**
- Connector Housing
 - Gender: Female
 - Type: Pitch 1.25 mm; 3-pin
 - Example:
Manufacturer: Molex
Part Number: 51021-0300
(or equivalent)

Connector Pinout:

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

8.3.2.2 Host USB 2.0 OTG connector specifications

Connector Layout:



- Connector Specifications:**
- USB Micro-AB socket
 - Gender: Female

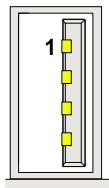
- Mating Connector Specifications:**
- USB Micro-A/Micro-B plug
 - Gender: Male

Connector Pinout:

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

8.3.2.3 Host USB 2.0 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

8.3.2.4 Boot Modes Selection DIP-switch

The DynaGATE 10-06 has the following Boot Modes:

- Main
- Programmed

To select the Boot Modes, set up the Boot Modes Selection DIP-switch according to the following table:

Boot Mode	DIP-switch set up	Effect
Main	Switch #1: ON Switch #2: OFF 	Enables the boot sequence. By default it is as follows: 1. First boot device: USB⁽¹⁾ 2. Second boot device: eMMC⁽¹⁾. ⁽¹⁾ A valid OS must be present in the device. The default boot sequence can be changed. For more information, see: "How to change the default boot sequence" below.
Programmed	Switch #1: OFF Switch #2: ON 	Reserved.

8.3.2.5 How to change the default boot sequence

The default boot sequence depends on the value of the variable `usb_boot_enable` according to the following set up:

Value of <code>usb_boot_enable</code>	Boot sequence
1	The boot sequence is as follows: 1. First boot device: USB⁽¹⁾ 2. Second boot device: eMMC⁽¹⁾.
2	The boot device is eMMC ⁽¹⁾ only.

⁽¹⁾ A valid OS must be present in the device.

To change the value of `usb_boot_enable`, complete the following steps:

1. Turn ON the DynaGATE 10-06
2. Type the sequence "12"; this will enter the console u-boot
3. Set the `usb_boot_enable` value to 0 (or 1) by running the command:

```
setenv usb_boot_enable 0
```

 (or

```
setenv usb_boot_enable 1
```

)
4. Save permanently the set up by running the command:

```
saveenv
```

8 REAR SIDE OVERVIEW

The Rear Side is as follows:

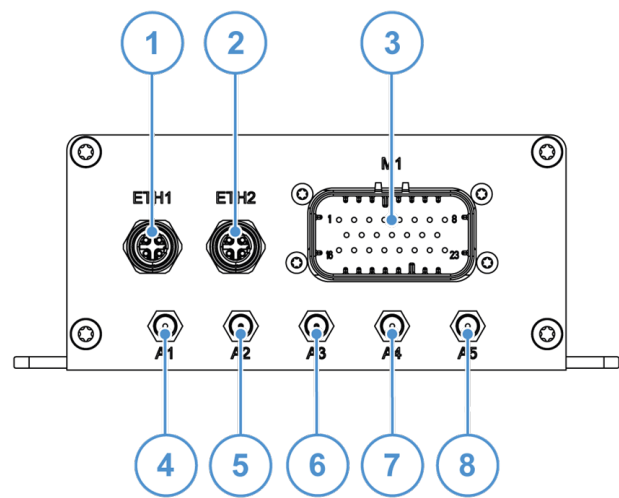


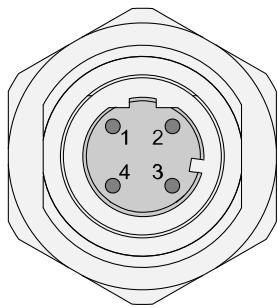
Figure 8.4 - Rear Side layout

Ref#	Label	Connector for
1	ETH1	1x Fast Ethernet
2	ETH2	1x Fast Ethernet
3	M1	2x CAN bus, Not-Isolated 1 x RS-485, Not Isolated, Surge Protected 1 x RS-232, Not Isolated, Surge Protected 1x Ignition Key Input, Surge Protected 1x Isolated Digital Input 1x Isolated Digital Output 1x Isolated Odometer Input 1x Isolated Forward Input Power Supply Input
4	A1	Global Navigation Satellite System (GNSS) antenna (only for versions: -32 to -37)
5	A2	2.4 GHz Wi-Fi/ Bluetooth antenna (only for versions: -33 to -37)
6	A3	5 GHz Wi-Fi antenna (only for versions: -33 to -37)
7	A4	Main Cellular Modem antenna (only for versions: -34 to -37)
8	A5	Diversity Cellular Modem antenna (only for versions: -34 to -37)

Table 8.4 - Rear Side description

8.3.1 Connectors ETH1 and ETH2

Connector Layout:



Connector Specifications:

- Panel-mount; M12 series
- Gender: Female
- Type: D-Coded; 4-pin

Mating Connector Specifications:

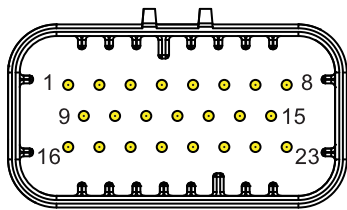
- Cable-Mount; M12 series
- Gender: Male
- Type: D-Coded; 4-pin
- Example of cable:
Manufacturer: Conec
Part Number: 43-00161
(or equivalent)

Connector Pinout:

Pin #	Signal	Type	Description	Male RJ45 Pin #
1	TX+_D1	O	Transmit Data +	1
2	RX+_D2	I	Receive Data +	3
3	TX-_D1	O	Transmit Data -	2
4	RX-_D2	I	Receive Data -	6

8.3.2 Connector M1

Connector Layout:



Connector Specifications:

- Header: 23-pin; 3-row
- Gender: Male

Mating Connector Specifications:

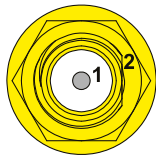
- Connector Housing, plug: 23-pin; 3-row
- Example:
AMPSEAL Plug assembly 770680 (which uses reeled terminal AMPSEAL 770520 and loose piece terminal AMPSEAL 770854)
(or equivalent)

Connector Pinout:

Pin #	Signal	Type	Description
1	CAN0 H	IO	CAN port 0 Positive Data
2	CAN0 L	IO	CAN port 0 Negative Data
3	GND	P	Ground
4	CAN1 H	IO	CAN port 1 Positive Data
5	CAN1 L	IO	CAN port 1 Negative Data
6	GND	P	Ground
7	SER 1 TX	O	RS-232 Port Transmit Data
8	SER 1 RX	I	RS-232 Port Receive Data
9	GND	P	Ground
10	RS485 A+	IO	RS-485 Port A+
11	RS485 B-	IO	RS-485 Port B-
12	GND	P	Ground
13	ODO IN1	I	Isolated Odometer Input 1
14	ODO IN2	I	Isolated Odometer Input 2
15	FRWD_IN1	I	Isolated Forward Input 1
16	FRWD_IN2	I	Isolated Forward Input 2
17	D IN1 P	I	Isolated Digital Input +
18	D IN1 N	I	Isolated Digital Input -
19	D OUT1 P	O	Isolated Digital Output +
20	D OUT1 N	O	Isolated Digital Output -
21	VKEY A	I	Ignition Key Input
22	VIN+	P	Power IN +
23	VIN-	P	Power IN -

8.3.3 **Connectors A1, A4, A5**

Connector Layout:



Connector Specifications:

- SMA connector
- Gender: Female

Mating Connector Specifications:

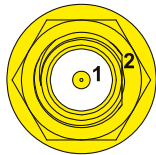
- SMA connector
- Gender: Male

Connector Pinout:

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

8.3.4 **Connectors A2 and A3**

Connector Layout:



Connector Specifications:

- RP-SMA connector
- Gender: Female

Mating Connector Specifications:

- RP-SMA connector
- Gender: Male

Connector Pinout:

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

9 FEATURES IN DETAIL

9.1 Wi-Fi and Bluetooth (only for versions: -33 to -37)

The DynaGATE 10-06 provides the following Wi-Fi / Bluetooth functionality:

- 2.5 GHz Wi-Fi 802.11a,b,g,n / BLE 4.2 BLE Bluetooth
- 5 GHz Wi-Fi 802.11a,b,g,n

The internal circuitry allows for 2.5 GHz Wi-Fi and Bluetooth coexistence.

The antennas connectors are (see also "[Connectors A2 and A3](#)" on page 42):

- A2: 2.4 GHz Wi-Fi / Bluetooth
- A3: 5 GHz Wi-Fi

9.1.1 Wi-Fi specifications

- Integrated 2.4 & 5G GHz Power Amplifier (PA) for WLAN solution
- WLAN Baseband Processor and RF transceiver Supporting IEEE Std 802.11a/b/g/n
- WLAN 2.4/5 GHz SISO (20/40 MHz channels)
- Baseband Processor
 - IEEE Std 802.11a/b/g/n data rates and IEEE Std 802.11n data rates with 20 or 40 MHz SISO
- Fully calibrated system. Production calibration not required
- Medium Access Controller (MAC)
 - Embedded ARM™ Central Processing Unit (CPU)
 - Hardware Based Encryption/Decryption using 64 , 128 , and 256 Bit WEP, TKIP or AES Keys
 - Supports requirements for Wi Fi Protected Access (WPA and WPA2.0) and IEEE Std 802.11i (includes hardware accelerated Advanced Encryption Standard (AES))
 - Designed to work with IEEE Std 802.1x
- IEEE Std 802.11d,e,h,i,k,r PICS compliant
- New advanced co existence scheme with BT/BLE
- 2.4/5 GHz Radio
 - Internal LNA and PA
 - Supports: IEEE Std 802.11a, 802.11b, 802.11g and 802.11n
- Supports 4 bit SDIO host interface, including high speed (HS) and V3 modes.

9.1.1.1 2.4 GHZ TX output power

Maximum RMS output power measured at 1dB from IEEE spectral mask or EVM.

Parameter	Value
Operation frequency range	2412 to 2484 MHz
Output Power	17 dBm @ condition: 1 Mbps DSSS

9.1.1.2 5 GHZ TX output power

Maximum RMS output power measured at 1dB from IEEE spectral mask or EVM.

Parameter	Value
Operation frequency range	4910 to 5825 MHz
Output Power	16.8 dBm @ condition: 6 Mbps OFDM

9.1.2 **Bluetooth specifications**

- Supports Bluetooth 4.2 as well as CSA2
- Includes concurrent operation and built -in coexisting and prioritization handling of Bluetooth, BLE, audio processing and WLAN
- Dedicated Audio processor supporting on chip SBC encoding + A2DP:
 - Assisted A2DP (A3DP) support - SBC encoding implemented internally
 - Assisted WB-Speech (AWBS) support - modified SBC codec implemented internally

9.1.3 **BLE specifications**

- Fully compliant with BT and BLE dual mode standard
- Support for all roles and role-combinations, mandatory as well as optional
- Supports up to 10 BLE connections
- Independent buffering for LE allows having large number of multiple connections without affecting BR/EDR performance

9.2 Internal mobile connectivity (only for versions: -34 to -37)

The DynaGATE 10-06 supports the following u-blox LARA-R2 modem variants, according to product versions based on the geographic area of usage:

DynaGATE 10-06-XY Version	Modem Variant	Technology
-34	u-blox LARA-R204	LTE Cat 1 (North America)
-35	u-blox LARA-R202	LTE Cat 1 (North America) 3G Fallback
-36	u-blox LARA-R211	LTE Cat 1 (Europe) 2G Fallback
-37	u-blox LARA-R220	LTE Cat 1 (Japan)

The antennas connectors are (see also "[Connectors A1, A4, A5](#)" on page 42):

- A4: Main Cellular Modem
- A5: Diversity Cellular Modem

9.2.1 Internal modem specifications (according to product versions)

9.2.1.1 Product features

4G LTE	3G UMTS/HSDPA/HSUPA	2G GSM/GPRS/EDGE
• 3GPP Release 9 • Long Term Evolution (LTE) • Evolved Univ. Terrestrial Radio Access (E-UTRA) • Frequency Division Duplex (FDD) • DL Rx diversity • SMS: ◦ MT/MO PDU/Text mode ◦ SMS over IMS and via SMS-C • Protocols: ◦ Embedded TCP/IP, UDP/IP ◦ HTTP/HTTPS, FTP/FTPS	• 3GPP Release 9 • High Speed Packet Access (HSPA) • UMTS Terrestrial Radio Access (UTRA) • Frequency Division Duplex (FDD) • DL Rx Diversity • SMS: ◦ MT/MO PDU/Text mode ◦ SMS over IMS and via SMS-C • Protocols: ◦ Embedded TCP/IP, UDP/IP ◦ HTTP/HTTPS, FTP/FTPS	• 3GPP Release 9 • Enhanced Data rate GSM Evolution (EDGE) • GSM EGPRS Radio Access (GERA) • Time Division Multiple Access (TDMA) • DL Advanced Rx Performance Phase 1 • SMS: ◦ MT/MO PDU/Text mode ◦ SMS over IMS and via SMS-C • Protocols: ◦ Embedded TCP/IP, UDP/IP ◦ HTTP/HTTPS, FTP/FTPS

9.2.1.2 Bands support¹

Modem Variant	Bands		
	4G LTE	3G UMTS/HSDPA/HSUPA	2G GSM/GPRS/EDGE
u-blox LARA-R204	• B13 (700 MHz) • B4 (1700 MHz)	-	-
u-blox LARA-R202	• B12 (700 MHz)² • B5 (850 MHz) • B4 (1700 MHz) • B2 (1900 MHz)	• B5 (850 MHz) • B2 (1900 MHz)	-
u-blox LARA-R211	• B20 (800 MHz) • B3 (1800 MHz) • B7 (2600 MHz)	-	• E-GSM (900 MHz) • DCS (1800 MHz)
u-blox LARA-R220	• B19 (850 MHz) • B1 (2100 MHz)	-	-

¹ LARA-R2 series modules support all the E-UTRA channel bandwidths for each operating band.

² LTE band 12 is a superset that includes band 17: the LTE band 12 is supported along with Multi-Frequency Band Indicator (MFBI) feature.

9.2.1.3 Power Class

4G LTE	3G UMTS/HSDPA/HSUPA	2G GSM/GPRS/EDGE
LTE Power Class Power Class 3 (23 dBm)	UMTS/HSDPA/HSUPA Power Class Power Class 3 (24 dBm)	GSM/GPRS (GMSK) Power Class - E-GSM band: Power Class 4 (33 dBm) - DCS band: Power Class 1 (30 dBm) EDGE (8-PSK) Power Class - E-GSM band: Power Class E2 (27 dBm) - DCS band: Power Class E2 (26 dBm)

9.2.1.4 Data Rate

4G LTE	3G UMTS/HSDPA/HSUPA	2G GSM/GPRS/EDGE
LTE category 1 - Download: up to 10.3 Mb/s - Upload: up to 5.2 Mb/s	HSDPA category 8 - Download: up to 7.2 Mb/s HSUPA category 6 - Upload: up to 5.76 Mb/s	GPRS multi-slot class¹ 33², CS-1 to CS-4 - Download: up to 107 kb/s - Upload: up to 85.6 kb/s EDGE multi-slot class¹ 33², MCS-1 to MCS-9 - Download: up to 296 kb/s - Upload: up to 236.8 kb/s

9.2.1.5 LTE - Single Antenna Operation

For optimum performance of the cellular interface Eurotech recommends the use of both Main and Diversity antenna connectors. Single antenna operation can be supported, however typically cellular carriers impose restrictions on single antenna operation.

Please consult with your carrier before considering single LTE antenna usage.

9.2.1.6 Main antenna requirements

Feature	Description
Impedance	50 Ohm
Frequency range	The required frequency range of the antenna connected depends on the operating bands of the used cellular module and the used mobile network.
Bands	See "Bands support" on the previous page
Return Loss	VSWR < 2:1 recommended VSWR < 3:1 acceptable
Efficiency	> -1.5 dB (> 70%) recommended > -3.0 dB (> 50%) acceptable
Maximum Gain	According to radiation exposure limits
Input power	> 33 dBm (> 2 W) for LARA-R211 > 24 dBm (> 250 mW) for other LARA-R2

¹ GPRS/EDGE multi-slot class determines the number of timeslots available for upload and download and thus the speed at which data can be transmitted and received, with higher classes typically allowing faster data transfer rates.

² GPRS/EDGE multi-slot class 33 implies a maximum of 5 slots in DL (reception) and 4 slots in UL (transmission) with 6 slots in total.

9.2.1.7 Second antenna requirements (for antenna diversity)

Feature	Description
Impedance	50 Ohm
Frequency range	The required frequency range of the antenna connected depends on the operating bands of the used cellular module and the used mobile network.
Bands	See "Bands support" on page 45
Return Loss	VSWR < 2:1 recommended VSWR < 3:1 acceptable
Efficiency	> -1.5 dB (> 70%) recommended > -3.0 dB (> 50%) acceptable

9.2.2 1st and 2nd MicroSIM Card holders

The DynaGATE 10-06 has two push-push MicroSIM card holders in the Service Panel, placed on the bottom side of the circuit board.

If you use only one MicroSIM card: insert it in the 1st holder.

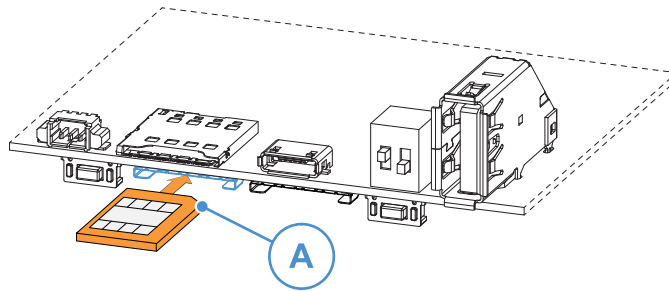
NOTICE

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

9.2.2.1 How to insert/ remove the MicroSIM card in/ from the 1st holder

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 holder
2. Push the MicroSIM in the holder; it is now locked.



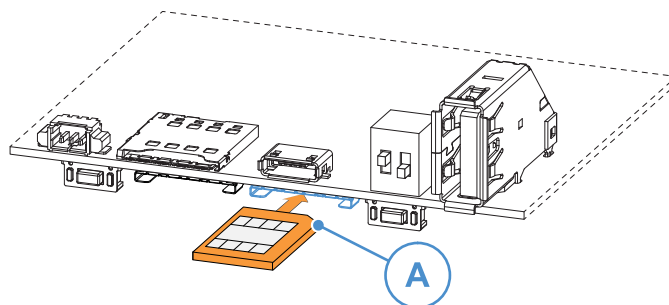
To remove the MicroSIM card, complete the following steps:

1. Push the MicroSIM in the holder; it is now released
2. Pull out the MicroSIM card from the holder.

9.2.2.2 How to insert / remove the MicroSIM card in/ from the 2nd holder

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 holder
2. Push the MicroSIM in the holder; it is now locked.



To remove the MicroSIM card, complete the following steps:

1. Push the MicroSIM in the holder; it is now released
2. Pull out the MicroSIM card from the holder.

9.3 Internal GNSS (only for versions: -32 to -37)

The DynaGATE 10-06 provides the following GNSS functionality: Dead Reckoning; 72 channels GPS/QZSS, GLONASS, BeiDou, Galileo.

The antenna connector is A1 (see also ["Connectors A1, A4, A5" on page 42](#)).

9.3.1 Internal GNSS specifications

Receiver type:

- 72-channel engine
- GPS/QZSS L1 C/A, GLONASS L10F
- BeiDou B1I, Galileo E1B/C
- SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN

Nav. update rate:

- Up to 30 Hz

Position accuracy:

- Autonomous: 2.5 m CEP
- With SBAS: 1.5 m CEP

ADR position error

- 2 % of distance travelled without GNSS

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

RTC

- Built-in

Sensor

- Onboard 3D accelerometer and 3D gyroscope

Raw Data

- Code phase output

Navigation outputs

- Position, speed, acceleration, heading, heading rate, attitude, time

Data-logger

- For position, velocity, time, and odometer data

9.4 Digital I/Os

The DynaGATE 10-06 has the following Digital I/Os:

- 1x Insulated Digital Input
- 1x Insulated Digital Output

The Digital I/Os are available on the connector M1 (see also "[Connector M1](#)" on page 41).

9.4.1 Insulated Digital Inputs

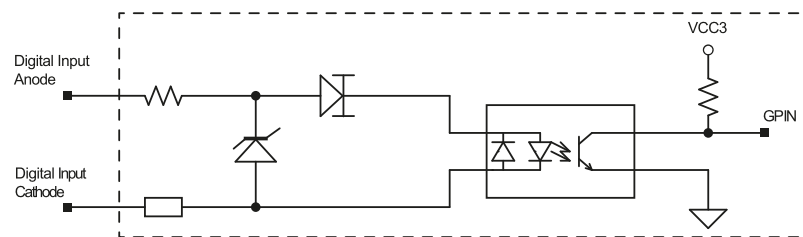
9.4.1.1 Electrical specifications

The table below shows the electrical specifications of the digital inputs:

Characteristic	Value
Logic Zero	$0\text{ V} \leq V_{IN_low} \leq 1\text{ V}$
Logic One	$2\text{ V} \leq V_{IN_high} \leq 36\text{ V}$
Input Current	$< 3.5\text{ mA}$

9.4.1.2 Electrical schematics

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



9.4.2 *Insulated Digital Outputs*

9.4.2.1 **Electrical specifications**

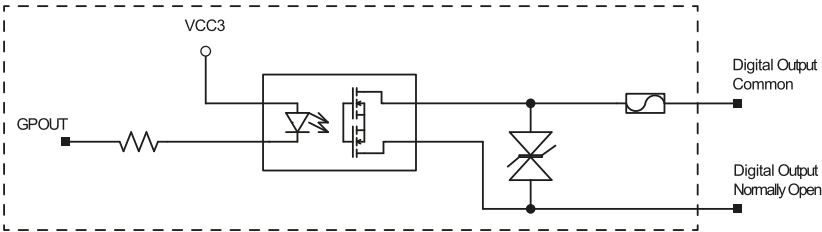
The table below shows the electrical specifications of the digital outputs:

Characteristic	Value
Maximum Voltage	60 V
Maximum Current	500 mA
Output ON Resistance	Typical: 0.85 Ohm Maximum: 2.50 Ohm
Maximum Turn On time*	3 ms
Maximum Turn Off time*	2 ms

* Turn On/Turn Off time

9.4.2.2 **Electrical schematics**

The illustration below shows the electrical schematics of one digital output:



9.5 COM ports

The DynaGATE 10-06 has two COM ports:

- 1 x RS-485
- 1 x RS-232

The COM ports are available on the connector M1 (see also "[Connector M1](#)" on page 41).

9.5.1 COM specifications

Feature	Description
Maximum baud rate	• For RS-232 mode: up to ??? kbps • For RS-485 mode: up to ??? Mbps
Notes	The interfaces are: • Surge protected • Not isolated

9.5.2 Note for termination and fail safe resistors (RS-485 COM port only)

The termination and fail safe resistor are set by software.

For more information see:...

9.6 CAN ports

The DynaGATE 10-06 has two CAN ports:

- CAN0
- CAN1

The CAN ports are available on the connector M1 (see also "[Connector M1](#)" on page 41).

9.6.1 CAN specifications

Feature	Description
Compliance	Compliant with the CAN Specification 2.0, Parts A and B
Notes	The interfaces are: • Surge protected • Not isolated

9.6.2 Note for termination and fail safe resistors

The terminator resistors are placed between the 2 communication channels, and can be enabled / disabled by software.

For more information see:...

9.7 Ethernet ports

The DynaGATE 10-06 provides two 10/100 Mbps Ethernet ports:

- ETH1
- ETH2.

The Ethernet connectors are ETH1 and ETH2 (see also ["Connectors ETH1 and ETH2" on page 40](#)).

9.7.1 Ethernet specifications

Feature	Description
Network Standard	IEEE 802.3u 10/100-BaseTX. IEEE 802.3x full-duplex flow control.
Speeds	10/100-BaseTX interfaces with MAC
Notes	The interfaces are noise and surge protected.

9.8 MicroSD card holder

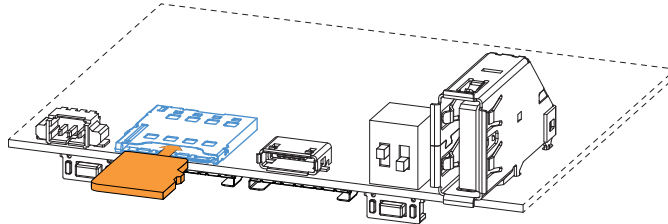
The DynaGATE 10-06 has one push-push MicroSD card holder in the Service Panel, placed on the top side of the circuit board.

The MicroSD card holder allows you to insert a MicroSD card for additional data storage (up to 32 GB)

9.8.0.1 How to insert/ remove the MicroSD card

To insert the MicroSD card, complete the following steps:

1. Orient the MicroSD card with the contacts facing the circuit board, as indicated in the figure below
2. Push the MicroSD in the holder; it is now locked.



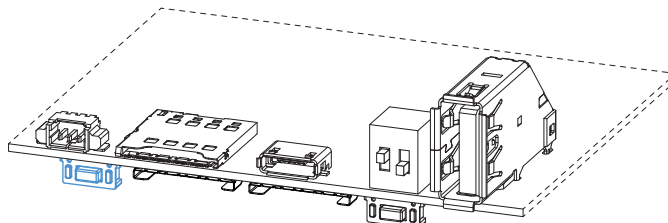
To remove the MicroSD card:

1. Push the MicroSD in the holder; it is now released
2. Pull out the MicroSD card from the holder.

9.9 Hardware Reset Pushbutton

The DynaGATE 10-06 has a Reset Pushbutton in the Service Panel.

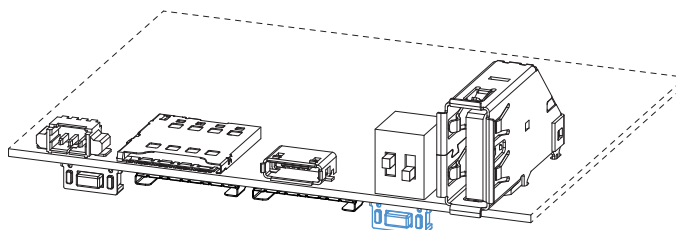
Push and release this pushbutton to trigger a hardware reset of the DynaGATE 10-06.



9.10 Programmable Pushbutton

The DynaGATE 10-06 has a Programmable Pushbutton in the Service Panel.

You can program this pushbutton to execute a shell script every time you push it.



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10 EUROTECH EVERYWARE IoT

Eurotech Everyware IoT is a combination of hardware, firmware, operating systems, programming frameworks, and cloud platforms. It enables you to layer you added-value components on a reliable ready-to-use infrastructure, dramatically accelerating the time to market of your IoT projects.

10.1 Everyware Software Framework (ESF)

Everyware Software Framework (ESF) Edge Computing Platform is a high-level, multi-platform and flexible application development environment.

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.

ESF allows the connection and communication with field devices (close to data sources), thanks to already tested libraries for field protocol communication, the visual IoT Edge Computing applications development and the connection with leading IoT Cloud Services such as Everyware Cloud (Eurotech IoT Integration Platform), Eclipse Kapua, AWS IoT and Microsoft Azure IoT.

ESF runs on top of the Java Virtual Machine (JVM) and leverages OSGi (a dynamic component system for Java) to simplify the process of writing reusable software building blocks.

ESF APIs offer:

- Easy access to the underlying hardware including: serial ports, positioning, watchdog, USB, GPIOs, I2C, etc.
- OSGi bundles to simplify the management of network configurations, the communication with IoT servers, and the remote management of the gateway.

ESF is based on Kura, the popular Eclipse open source project that was originally contributed to the Eclipse community by Eurotech.

10.2 The ESF Web UI

ESF provides a web-based user interface: **ESF Web UI**.

The ESF Web UI 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 UI interface. On the left is a sidebar with a menu under 'System' (Status, Device, Network, Firewall, Cloud Services, Drivers and Assets, Wires, Packages, Settings) and 'Services' (Simple Artemis MQTT Broker, ActiveMQ Artemis Broker, ClockService, DeploymentService, CommandService, WebConsole, DiagnosticsService). The main content area is titled 'Status' and includes a 'Refresh' button. It is divided into two sections: 'Cloud Services' and 'Wireless Settings'.

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
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

Ethernet Settings

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.



System

- Status
- Device
- Network
- Firewall
- Cloud Services
- Drivers and Assets
- Wires**
- Packages
- Settings

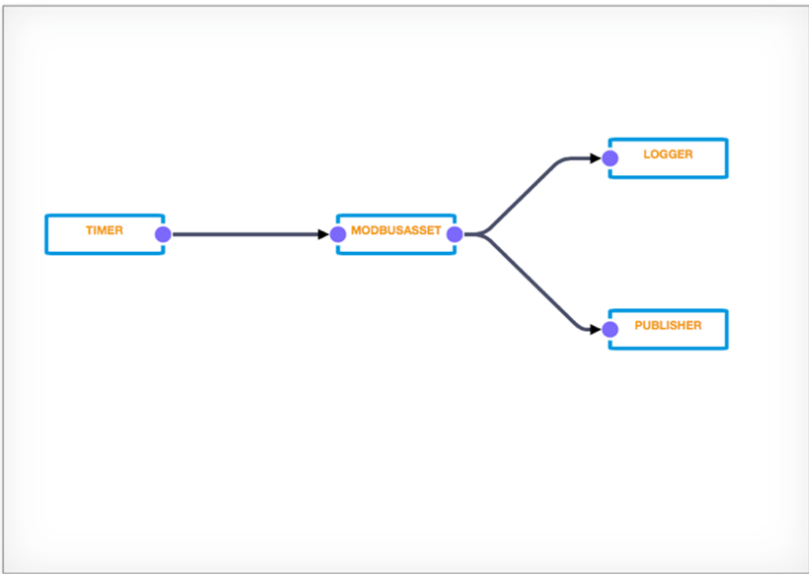
Services

Search

- Simple Artemis MQTT Broker
- ActiveMQ Artemis Broker
- ClockService
- DeploymentService
- CommandService
- WebConsole
- DiagnosticsService
- H2DbService
- PositionService
- ProvisioningService
- RebootService
- RestService
- TerminalClientService

Wire Graph

Apply * Zoom In Zoom Out Delete Component Delete Graph



```
graph LR;
    TIMER[TIMER] --> MODBUSASSET[MODBUSASSET];
    MODBUSASSET --> LOGGER[LOGGER];
    MODBUSASSET --> PUBLISHER[PUBLISHER];
```

Asset - modbusAsset Driver - modbusDriver

Channels (modbusDriver) New Channel Delete Channel

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)

Eurotech's Everyware™ Cloud (EC) is an IoT Integration Platform that simplifies system and data management by connecting distributed devices over secure and reliable cloud services.

Everyware Cloud allows you to connect, configure and manage devices through all the lifecycle, from deployment through maintenance to retirement.

With EC you can:

- Connect any sensor, device or asset to the platform to quickly create new IoT scenarios
- Dynamically and remotely create and add new services and functions to your field devices
- Configure the platform to analyze data in real-time and trigger immediate alerts
- Leverage a device-specific message-oriented infrastructure for fast and easy creation of reliable, device-independent IoT applications
- Integrate MVNO Connectivity Platforms to have a single point of management of Connected Devices and associated SIM cards
- Enable IoT Analytics through built-in connectors to on-line Dashboards and Analytical Reports
- Enable IoT Business Application Integrations through native REST APIs

10.5 For more information

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

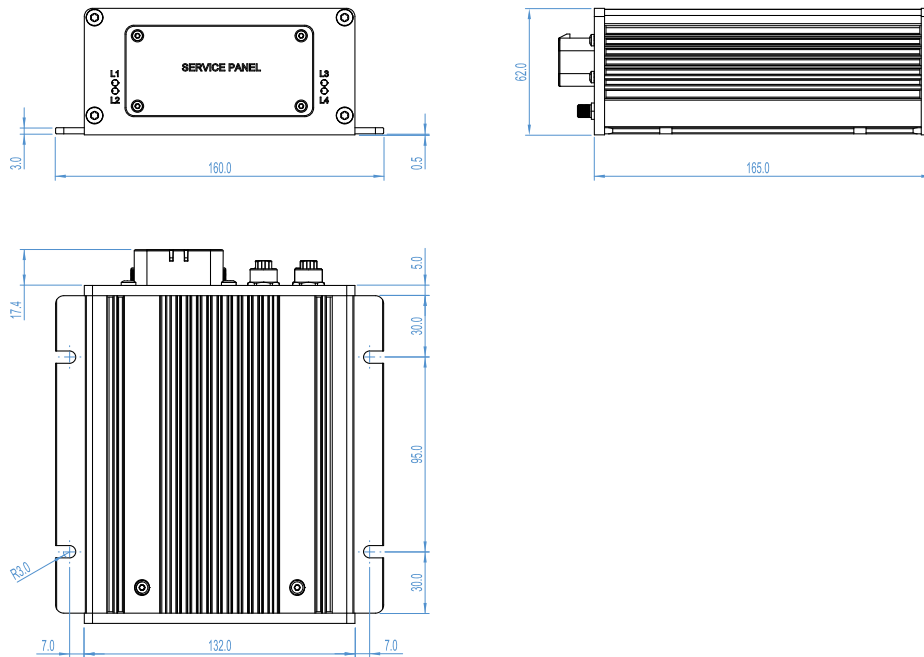
Information	Available at
ESF Website	esf.eurotech.com
ESF Download	www.eurotech.com/download/en/pb.aspx?pg=ESF (click the <i>Developer Environment</i> tab)
EC Integration Platform	everyware+cloud+m2m+platform
EC Developer's Guide	everywarecloud.eurotech.com/doc/ECDevGuide/
Kura Website	eclipse.org/kura/

11 MECHANICAL SPECIFICATIONS

11.1 Product mechanical dimensions

The product electronics are housed in an aluminium alloy enclosure having the following dimensions: 165 (L) x 160 (W) x 62 (H); mm - Mounting Brackets included, Connectors not included.

All dimensions are in millimetres.



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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).

12.1 Comply with safety instructions, norms and certifications

Always comply with the information and instructions contained in the following sections:

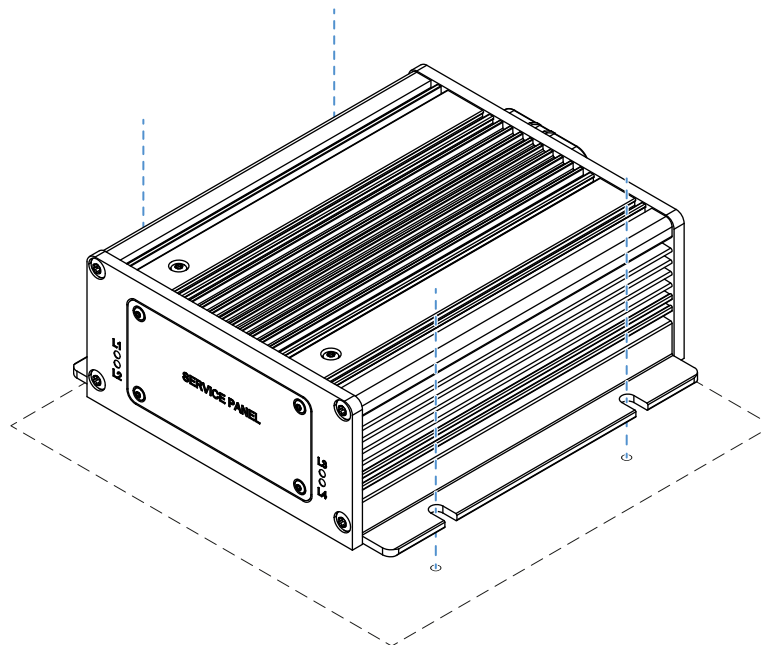
- ["Safety instructions" on page 7](#)

12.2 How to install the product

To install the DynaGATE 10-06, complete the following steps:

1. See ["Mechanical specifications" on page 61](#)
2. Add all the necessary mounting hardware to safely secure the product in place according to your installation requirements (for example use 4x M6 screws, with a minimum length of 15 mm).
Material 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. For more information see ["How to receive technical assistance" on page 13](#).



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13 HOW TO MANAGE THE PRODUCT POWER SUPPLY

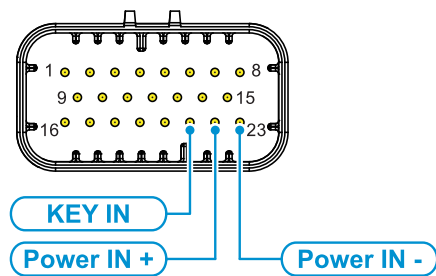
NOTICE

This product is not provided with any ON/OFF switch.

The M1 connector is the disconnecting means from the power supply network.

13.1 Power supply specifications

- The DynaGATE 10-06 provides the Power IN interface within the M1 connector:
- Pin 21 is the Ignition Key Input (KEY IN), a digital input that can be used to turn ON/OFF the DynaGATE 10-06. For more information see: [Insert Link...](#)
 - Pin 22 is the Power IN + line
 - Pin 23 is the Power IN - line



Power supply	Nominal: 12 or 24 VDC; Range: 6 to 36 VDC
Power consumption	TBD W typical; TBD W maximum
Peak demand	< 15 W

NOTICE

The Power IN interface is protected against surge, noise, reverse polarity, over-voltage and short-circuit.

Always include an external fuse to protect the product.

13.2 How to supply power and turn ON the product



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:

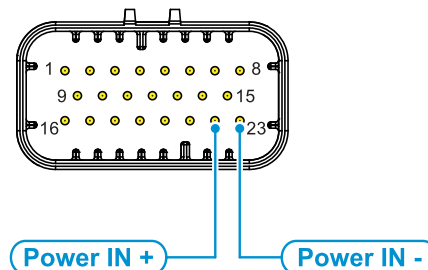
1. Observe all the instructions for safety, installation, and operation
2. Make sure your hands are dry
3. Make sure that all the cables to use:
 - a. Are in good condition
 - b. Meet the product requirements and comply with the relevant standards and regulations
4. Position cables with care. Do not 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
8. 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 13](#))
9. Connect power after the installation of the system has been completed
10. Never connect or disconnect the cables with the system or the external apparatus switched ON.

To supply power to the DynaGATE 10-06, complete the following steps:

1. Set up a DC power source that:
 - Meets the DynaGATE 10-06 power requirements (see ["Technical specifications" on page 21](#))
 - Deliver a maximum current of 2 A

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

2. **Make sure that the DC power source is turned OFF**
3. Include an external 2 A fuse on the line coming from the negative terminal of the DC power source to protect the DynaGATE 10-06
4. Connect the DC power source terminals ("Power IN +" and "Power IN -") to Pins 22 and 23 of the M1 connector:



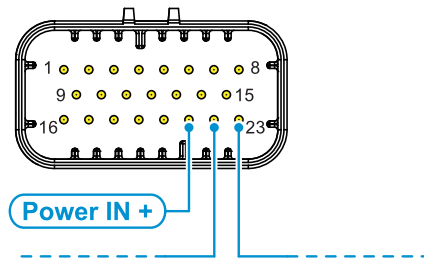
5. Turn ON the DC power source. The DynaGATE 10-06 remains OFF

6. Connect Pin 21 (KEY IN) to a voltage level between 6 and 36 VDC ("Power IN +")

NOTICE

When you connect Pin 21 (KEY IN) to a voltage level between 6 to 36 VDC, keep it connected for at least 10 seconds; this allows for the booting procedure to be completed correctly.

Otherwise, an immediate and unsafe power down will occur.



7. The DynaGATE 10-06 automatically turns ON and the LED L3 (Power status) turns ON.

13.3 How to turn OFF the product

To turn OFF the DynaGATE 10-06, follow these steps:

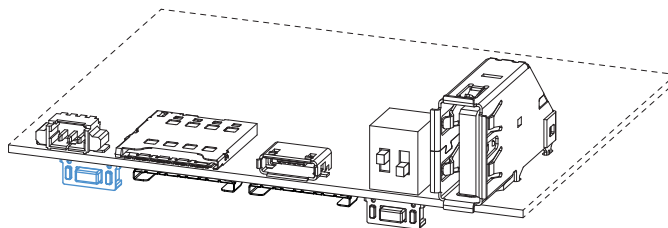
1. Disconnect the KEY IN from Power IN +. The DynaGATE 10-06 performs a safe shut down
2. Disconnect the DC power source terminals from the Power IN interface.

13.4 How to reduce the power consumption of the product

To reduce the power consumption of the DynaGATE 10-06, turn OFF the radio interfaces and disable unnecessary services that contribute to overall system power consumption.

13.5 How to trigger a hardware reset of the product

To trigger a hardware reset of the DynaGATE 10-06, push the reset pushbutton available in the Service Panel.



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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 7](#)
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

This image shows a blank sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.



EUROTECH.COM

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