



digicom EDGE 3000 DIN Rail Mounting Computer User Guide

[Home](#) » [digicom](#) » digicom EDGE 3000 DIN Rail Mounting Computer User Guide 

Contents

- 1 digicom EDGE 3000 DIN Rail Mounting Computer
- 2 PREFACE
 - 2.1 SIMPLIFIED UE DECLARATION OF CONFORMITY
 - 2.2 ASSISTANCE AND CONTACTS
- 3 SAFETY WARNINGS
- 4 INTRODUCTION
 - 4.1 TECHNICAL FEATURES
 - 4.2 FEATURES
 - 4.3 PACKAGE CONTENT
- 5 HARDWARE DESCRIPTION
 - 5.1 FRONT VIEW
 - 5.2 BOTTOM VIEW
 - 5.3 TOP VIEW
- 6 INSTALLATION
 - 6.1 NETWORK SETUP
 - 6.2 Direct access to resources of EDGE 3000 by means of OS "Linux"
 - 6.3 ACCESS TO MODEM LTE 4G/3G/2G (ONLY 4G MODEL)
- 7 Documents / Resources
 - 7.1 References
- 8 Related Posts



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PREFACE

In order to guarantee your safety and a correct functioning, be sure to follow these safety warnings. The whole set (with cables included) must be installed in a place lacking of or distant from:

- Dust, humidity, high temperatures and direct exposure to sunlight.
- Heat irradiating objects, which may damage your device or cause any other problem.
- Objects producing a high electromagnetic field (Hi-Fi speakers, etc.).
- Corrosive liquids or chemical substances.

ENVIRONMENTAL CONDITIONS

- Environment temperature: from -5°C to +50°C
- Relative humidity: from 5 to 95 % (not condensing)

CLEANING INFORMATION

Use a soft dry cloth and avoid any solvents or abrasive materials. SHOCKS OR VIBRATIONS Caution against shocks or vibrations.

SIMPLIFIED UE DECLARATION OF CONFORMITY

The manufacturer, B810 S.p.A., declares that this radio equipment EDGE 3000 is compliant with Directive 2014/53/UE. The complete text of UE Declaration of Conformity is available at following internet address: www.b810group.it

ASSISTANCE AND CONTACTS

If, after carefully reading the procedures described, you are unable to resolve a possible problem, please contact Digicom assistance. E-mail: support@b810group.it

SAFETY WARNINGS

Read these instructions and norms carefully before powering the device. Violation of such norms may be illegal and cause hazard situations. For any of the described situations please refer to the specific instructions and norms.

The device is a low power radio transmitter and receiver. When it is ON, it sends and receives radio frequency (RF) signals. The device produces magnetic fields. Do not place it next to magnetic supports such as floppy disks, tapes, etc.

Operating your device close to other electrical and electronic equipment – such as a television, phone, radio or a personal computer – may cause interferences.

INTERFERENCES

The device, like all other wireless devices, is subject to interferences that may reduce its performances.

ROAD SAFETY

Do not use your device while driving. In case of use on cars, you must check that the electronic equipment is shielded against RF signals. Do not place the device in the air bag deployment area.

AIRCRAFT SAFETY

Switch off your device when on board aircrafts by disconnecting the power supply and deactivating the internal backup battery. Using GSM devices on aircrafts is illegal.

HOSPITAL SAFETY

Do not use the device near health equipment, especially pacemakers and hearing aids, in order to avoid potential interferences. Take care when utilizing the device inside hospitals and medical centres, which make use of equipment that could be sensitive to external RF signals. Switch it off when use is expressly forbidden.

EXPLOSIVE MATERIALS

Do not use the device in refuelling points, near fuel or chemicals. Do not use the device where blasting is in progress. Observe restrictions and follow any specific regulation or instruction.

INSTRUCTIONS FOR USE

Do not use this device in direct contact with the human body and keep a minimum distance of 20 cm from it and from the antenna. Use approved accessories only. Consult the user's manual of eventual other equipment connected to this device. Do not connect incompatible products.

INFORMATION TO USERS

Legislative Decree 14/04/2014 n.49 "Implementation of Directive 2012/19/EU on waste electrical and electronic equipment (RAEE)".

The symbol of a crossed waste container marked on the apparatus or on its package indicates that at the end of its useful life the product must be collected separately from other waste materials.

The symbol of a crossed waste container marked on the battery indicates that batteries are considered municipal hazardous waste and must be disposed of according to current regulations.

It is forbidden to dispose of waste electrical and electronic equipment as municipal waste. Such waste is subject to separate collection organised by the municipalities or may be returned to the retailer in the event of the purchase of new equipment of an equivalent type on a one-for-one basis.

Illegal disposal or misuse of such equipment or parts thereof can damage the environment and health due to the presence of dangerous substances. Appropriate separate collection for subsequent recycling, treatment and environmentally sound disposal of the discarded equipment helps to avoid possible negative effects on the environment and human health due to the possible presence of dangerous substances, and promotes the reuse and/or recycling of the materials from which the equipment is made. Illegal disposal of the product entails the application of the administrative sanctions provided for by the regulations in force.

INTRODUCTION

Dear Customer,

thank you for your confidence in purchasing a Digicom branded product.

EDGE 3000 is an EDGE computer designed for IoT ecosystems.

Based on a LINUX Embedded platform, it allows the implementation of software solutions that can run in standalone mode or connected to remote web services. Using standard protocols with communication interfaces makes this device unit a multi-protocol gateway allowing full configurability, modularity, and scalability.

EDGE 3000, can be upgradable remotely (FOTA). This feature is essential for the maintenance and keeping updated the EDGE 3000, in particular, to ensure that the number of devices and protocols supported are compatible and aligned with the market evolutions.



EDGE 3000 can be used in combination with third party software systems, for the implementation of integrated management and control systems, in applications like Smart Building (BMS, BEMS, Security, Comfort, Automation), Smart Energy, Industry 4.0.

EDGE 3000 communicates bidirectionally with field's devices usually located in buildings, as sensors (e.g., temperature, humidity, voc, thermal and electrical consumption, etc.) and actuators (e.g., relays, valves, servomotors). It can be customized for different applications, several options are available, from top of the range up to ad-hoc versions (outfittings).

TECHNICAL FEATURES

- Multiprotocol (wireless and wired)
- Integrated Linux Operating System (JVM)
- ARM Cortex A7 Dual core processor @1Ghz
- 8GB Flash (soldered on board)
- 2 GB RAM
- Internal memory up to 128 GB microSDHC
- 4 USB 2.0 hosts
- 1 LAN Giga + 1 LAN 10/100 Mbps
- Wi-Fi 2.4 GHz – 5GHz (on board antenna):
 - 2.4GHz RF specification IEEE 802.11b/g/n, Wi-Fi compliant
 - 2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band) 802.11b /11M : 16 dBm ± 1.5 dB @ EVM ≤ -9dB
 - 802.11g /54M : 16 dBm ± 1.5 dB @ EVM ≤ -26dB
 - 802.11n /MCS7 : 15 dBm ± 1.5 dB @ EVM≤ -30dB

- 5GHz RF specification IEEE 802.11a/n/ac, Wi-Fi compliant
4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band)
802.11a/n : 64-QAM, 16-QAM, QPSK, BPSK
802.11ac : 256-QAM, 64-QAM, 16-QAM, QPSK, BPSK
802.11a /54M : 12 dBm \pm 1.5 dB @ EVM \leq -25dB
802.11n /MCS7 : 11 dBm \pm 1.5 dB @ EVM \leq -28dB
802.11ac/MCS7 : 10 dBm \pm 1.5 dB @ EVM \leq -28dB
802.11ac/MCS9 : 10 dBm \pm 1.5 dB @ EVM \leq -32dB
- 2 RS485 serial interfaces
- 2 Digital Inputs (Dry Input pull-up)
- 2 Digital Outputs (Opto Isolated)
- Integrated 4G module available (only model 4G, external antenna)
- Digicom Framework J2 support
- Third Party Framework Support (FIN Framework, openHAB, Node-RED)
- Power: 12-24Vcc-2A min

FEATURES

It is based on ARM Cortex A7 1 GHz clock processor, with up to 2 GB RAM, 8 GB on board (soldered) Flash memories and one microSD card slot for storage and several embedded IoT wireless modules (Wi-Fi, 4G, etc.). Provides wired connectivity like RS485 (e.g. Modbus) master or slave and Ethernet.

Finally, the available digital I/Os make it possible also to get data from sensors, directly or to drive external load (through relay modules). EDGE 3000 allows full IoT interoperable, modular and scalable solutions thanks to the following features:

- Multiprotocol software
- FOTA upgradable
- Interoperable with off-the-shelf devices based on ModBus RTU
- Linux based applications

PACKAGE CONTENT

EDGE 3000's package contains the following elements:

- 8D5918 EDGE 3000 control unit
- Quick Guide

HARDWARE DESCRIPTION

FRONT VIEW



	BUTTON	DESCRIPTION		
1	PWR	On/off key		
2	FKY	Programmable key		
	PORT	DESCRIPTION		
3	USB4	USB 2.0 host port		
	LED	DESCRIPTION	STATUS	MEANING
4	M2M	M2M Led	OFF	Device is turned OFF
			ON	No SIMor no network [only 4G Model]
			BLINK	Registered to network [only 4G Model]

5	PWR	Power Led	OFF	Device is turned OFF
			ON	Device is turned ON
			BLINK	N.A.
6	LAN	LAN Led	OFF	No access to internet
			ON	Access to internet
			BLINK	Establishing connection
7	DEV	DEV Led (programmable)	OFF	Programmable
			ON	Programmable
			BLINK	Programmable

On the EDGE 3000's front side there are: two buttons/keys which functions are described below:

1. on/off key (On/off)

by pressing it for more of 5 seconds, EDGE 3000 will switch on and off

2. Programmable Key (FKY)

by pressing it for more of 5 seconds, the 3 leds start blinking,

the networks Interfaces will be restored to default settings and EDGE 3000 will reboot

BOTTOM VIEW

On the EDGE 3000's bottom side there are:



DESCRIPTION	
1	3 x USB Host 2.0 port
2	10/100 Mbps Ethernet
3	1 Gbps Ethernet

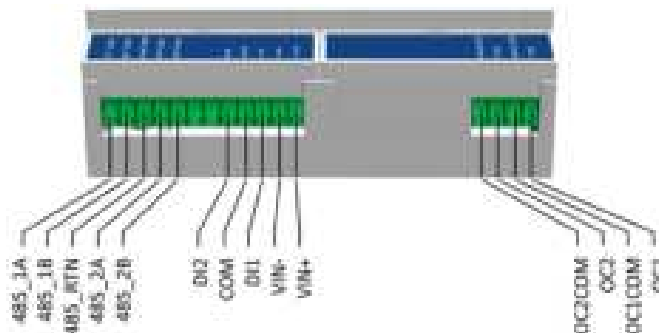
TOP VIEW

On the EDGE 3000's top side there are:



DESCRIPTION	
1	microSD Slot
2	RS485 (x 2)
3	Digital Input (x 2)
4	Power supply
5	Digital Output (x 2)

On the EDGE 3000's top side there are two connectors.



One 12-pin connector with:

- 485_1A RS 485 (data +)
- 485_1B RS 485 (data -)
- 485_RTN RS 485 Return
- 485_2A RS 485 (data +)
- 485_2B RS 485 (data -)

* Not used

* Not used

- DI2 Dry input 2 (pull-up)
- COM Common
- DI1 Dry Input 1 (pull-up)
- VIN- Power Supply Input (Vcc -)
- VIN+ Power Supply Input (V

One 4-pin connector with:

- **OC2 COM**
 - OC2 Opto Isolated output 2
- **OC1 COM**
 - OC1 Opto Isolated output 1

INSTALLATION

This section describes the installation procedure for starting the EDGE 3000.

System's installation: Warnings

Before putting the system into operation, it is necessary pay due attention to the following indications to ensure the operator safety. Attentions should be given whenever you need to interact with the device (for example, during its maintenance and decommissioning).

It is necessary, as first step, to verify not only the devices integrity but also to be sure that the personnel in charge for the installation of the device is duly trained.

It is also necessary to place the device indoor for not compromising its functionality and for safety reasons (to avoid the contact with atmospheric agents or wet or dusty places); please note that EDGE 3000 is a IP30 class device.

Before connecting the EDGE 3000 to a device / equipment through the RS485 port, it is necessary that the latter is non-powered (refer to the manual of the device/equipment before proceeding with the connection to the EDGE 3000).

NETWORK SETUP

Below the steps needed to start using and configuring EDGE 3000.

- Connect EDGE 3000 to your home network. For more information, see section "EDGE 3000 connection to the home network"
- Turn on EDGE 3000, waiting that systems goes up and running.

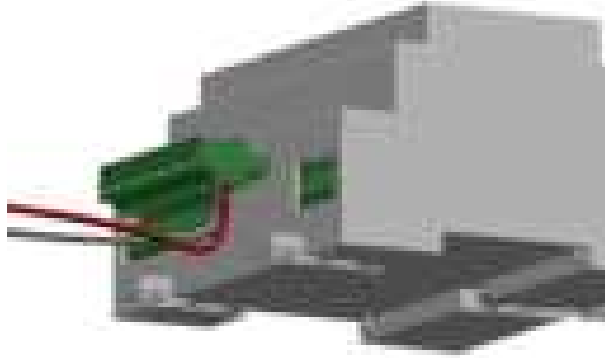
EDGE 3000 connection to network

In order to connect EDGE 3000 to the network, proceed as follows:

1. Connect the Ethernet to the EDGE 3000 ETH1 connector;
2. Connect the other end of the Ethernet cable to your router/switch (make sure it is turned on with a dhcp server enabled);
3. EDGE 3000 is now connected to the LAN and will be accessible from the address assigned by the router.

To turn on EDGE 3000, proceed as follows:

1. Connect the power supply into the respective inputs on the EDGE 3000 connector. If EDGE 3000 was already connected to the power supply press the PWR button for 3 seconds until the Power State LED turns on (Green).



2. After 30 seconds the LAN and DEV LEDs will start blinking synchronously.
3. At this point the DEV LED will continue blinking whereas the LAN LED will turn to green if connected to the network (solid). This means that the EDGE 3000 boot process has successfully completed and the OS is ready.

Power Off

The powering-off the Edge Computers needs to press the PWR button for one time (no need for continuous pushing, try to avoid pushing more than 5 second), initiating a safety mechanism of power-off applications/events. After 60-90 additional seconds all the LEDs will turn off. EDGE 3000 is switched off (shut down time).

The emergency power off of the Edge Computers is a safety mechanism used to shut off machinery avoiding the disconnection of power supply, in case of blocking the execution of processes, when it cannot be shut down in the usual way.

The process needs to press the PWR button for 10 sec.

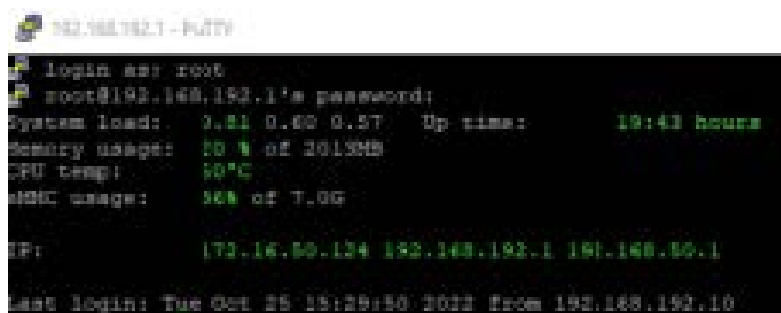
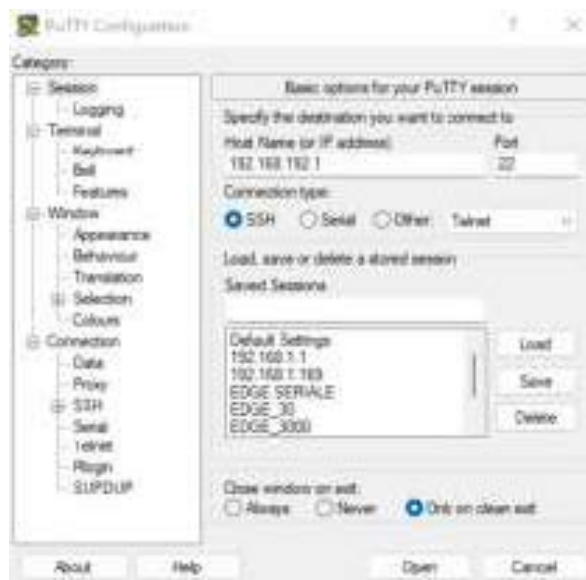
Direct access to resources of EDGE 3000 by means of OS “Linux”

General and Networking

After having powered the device, configured as DHCP Server on auxiliary ethernet Interface ETH2, you can connect directly via Ethernet, inserting Ethernet (ETH2) plug into RJ45 socket and connecting the other end of the Ethernet cable to a PC.

You can access to the EDGE 3000 using an SSH client, i.e. Putty using the following network settings:
192.168.192.1 port 22

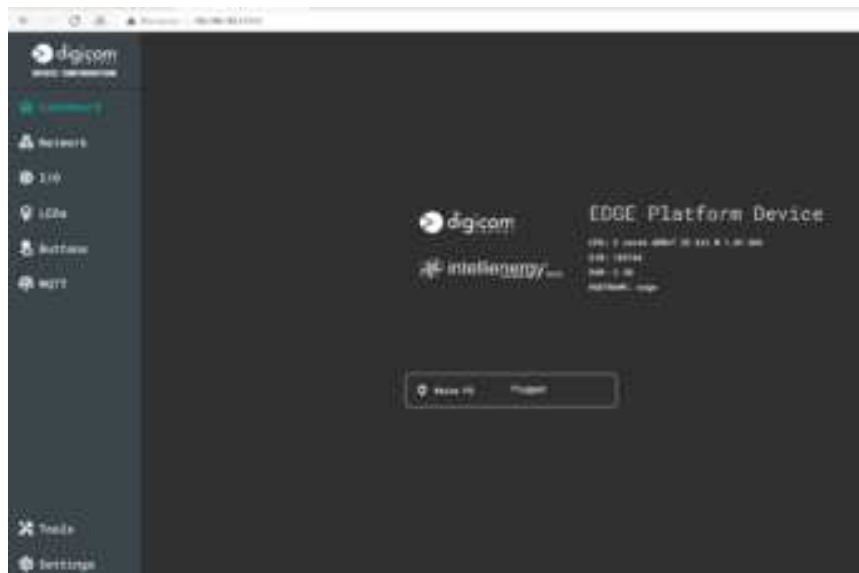
- Address 192.168.192.1
- Port 22



You can also access to the EDGE 3000 using a web browser, i.e. Firefox, Chrome, IE EDGE etc., using the following network settings: <http://192.168.192.1:8880>

- Address 192.168.192.1
- Port 8880





Credentials for SSH connection

- User id root
- Password b810dgc!
- Port 22

Credentials for WEB connection

- User id (root) —
- Password b810dgc!
- User id (guest) —
- Password edge3000!
- Port 8880

The networking Interfaces of our edge computers are managed by systemd – networkd.

The configured interfaces are available at: /etc./system/network

For EDGE 3000, logical connections mapping to external connectors is shown in table below:

Interface Linux device file

ETH1	eth0	DHCP Client	(main interface connected to a main router with DHCP Server)
ETH2	eth1	IP 192.168.192.1	(auxiliary Interface with DHCP Server enabled)
WIRELESS	wlan0	IP 192.168.50.1	(auxiliary Interface Access Point Mode with DHCP Server enabled)
		SSID = EDGE3000-XXXXXX	(XXXXXX are the last ciphers of Wireless Mac Address)
		WPA-PSK	DgcE3000!

Below, other links between the physical interfaces and the Linux device files (where available) for EDGE 3000:

Interface Linux device file

- RS485_1 /dev/tty485A
- RS485_2 /dev/tty485B
- 4G/3G/2G /dev/ttyM2M

(only 4G model)

ACCESS TO MODEM LTE 4G/3G/2G (ONLY 4G MODEL)

4G module can be accessed through one of the following ways:

- PPPD service to create dial-up connection in linux environment
- WWAN0 network interface configurable via modem-manager or wvdial
- AT commands ask to: support@b810group.it

The modem (depends on model) can be used by pppd or serial communication (AT commands) on /dev/ttyM2M.

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Documents / Resources

	<p>digicom EDGE 3000 DIN Rail Mounting Computer [pdf] User Guide EDGE 3000 DIN Rail Mounting Computer, EDGE 3000, EDGE 3000 Rail Mounting Computer, DIN Rail Mounting Computer, Rail Mounting Computer, DIN Mounting Computer, Mounting Computer</p>
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References

-  [B810 Group - Tecnologie e Soluzioni Innovative](#)