NOVACCESS SA
RUE GALILÉE 6 – 1400 YVERDON-LES-BAINS – SWITZERLAND

NOVACITY OUTDOOR GATEWAY 3G/2G

NC-OG-023NCE

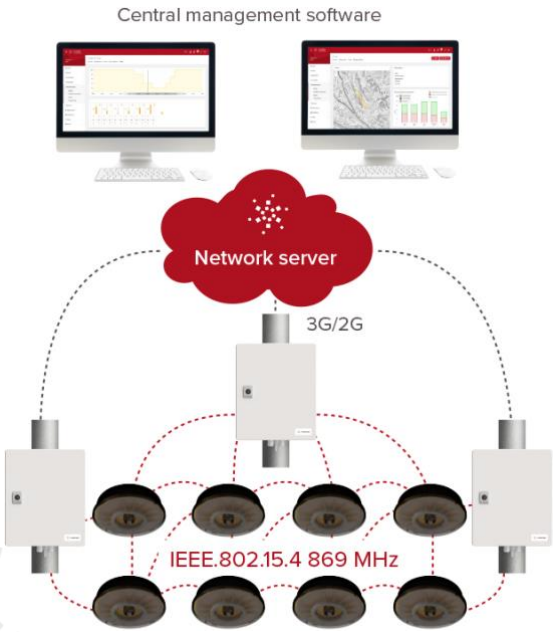
OUTDOOR SMART CITY GATEWAY WITH EXTENSION FUNCTIONS

NovaCity Outdoor Gateway is a Smart City gateway that enables the connection of NovaCom mesh smart devices to a centralized management software. In addition, it offers extension possibilities to connect sensors, meters, or switches, as required, to meet the needs of various Smart City applications.

IN A NUTSHELL

The NovaCity Outdoor Gateway links devices (e.g. lighting controllers) connected via the NovaCom wireless mesh network to the remote management software. The NovaCity Outdoor Gateway connects via a cellular network (3G or 2G).

The NovaCom network is based on the open protocols and standards of the Industrial Internet of Things. It is very robust, with excellent radio coverage and can support high densities. Starting with the street lighting application, for example, this network can be reused for other smart city applications.



In order to guarantee the product's long-term durability and security, the NovaCity Outdoor Gateway can be updated directly from the software in the cloud or locally via a configuration software installed on a computer. The NovaCity Outdoor Gateway can also, thanks to its extensions, trigger lighting scenes by activating its digital inputs, or capture traffic flows.

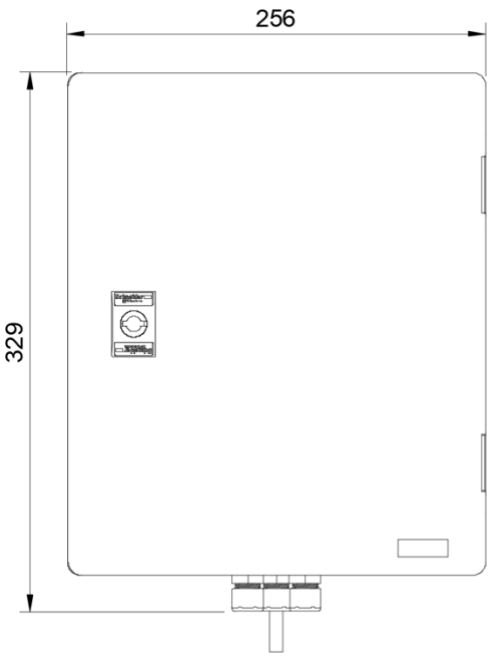
KEY ELEMENTS

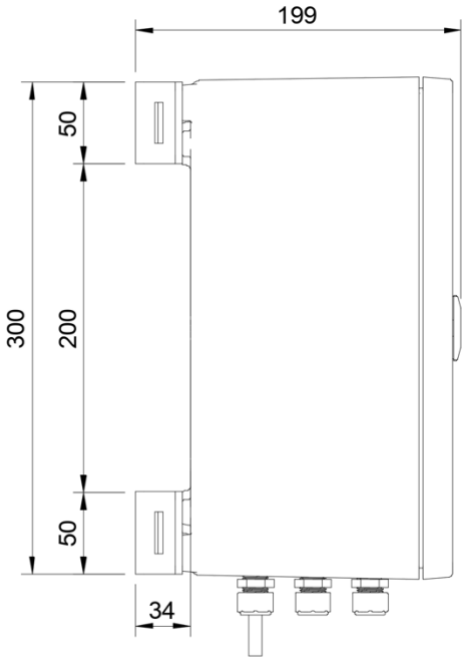
- Compact design
- Enclosure secured by a 220 key lock
- IPv6 wireless mesh Smart City network router on IEEE 802.15.4 (NovaCom) 869 MHz
- Supports up to 256 NovaCom devices, with a recommendation of 128 for optimal performance
- 3G/2G connectivity
- Local configuration with secure RS-232 (DB9) serial interface
- AES-128 encryption for the mesh network and AES-256 for data and server communication
- 230VAC power supply with circuit breaker
- Remote reprogramming
- Input/output interfaces
- Power supplies for common external devices

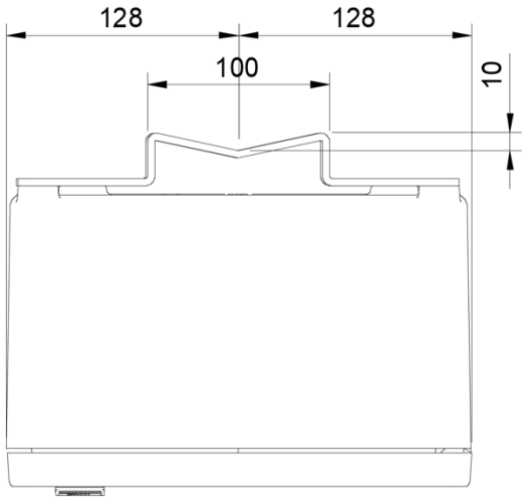
TECHNICAL CHARACTERISTICS

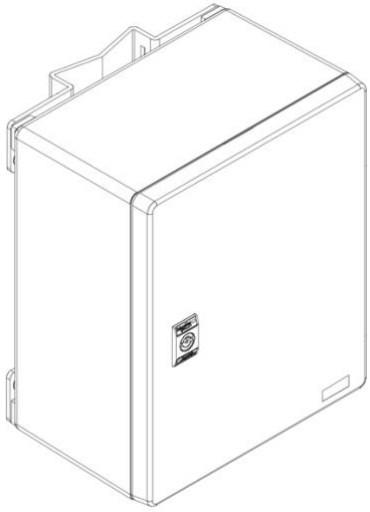
MECHANICS

PHYSICAL PARAMETERS	VALUE	*UNIT*
Height	329	*[mm]*
Width	256	*[mm]*
Depth	199	*[mm]*
Weight	5.25	*[kg]*
Protection	IP66 , IK10	-
Color	RAL7035	-









The box is installed on masts of at least 100mm diameter at installation height. The support works with hose clamps or metal straps (fastening not supplied). The box is equipped with 5 pre-mounted cable glands for the connection of external equipment and the power supply input.

ENVIRONMENTAL PARAMETERS	MIN	TYPE	MAX	*UNIT*
Operating temperature	-25		+60	*[°C]*
Operating humidity	20		90	*[%RH]*
Maximum operating altitude			2000	*[m]*
General protection		IP65		

ELECTRICALS

The main unit is connected to the 230VAC power supply. The power supply has short circuit, overload and overvoltage protection. The power consumption depends on the equipment installed in the extension.

ELECTRICAL PARAMETERS	MIN	TYPE	MAX	*UNIT*
Input voltage (AC)	85	230	264	*[VAC]*
Frequency	48	50	63	*[Hz]*
Input current	20	30	50	*[mA]*
Power (equipment without extension hardware)	2	3	5	*[W]*
Overvoltage category	-	III	-	-

COMMUNICATIONS

SMART-CITY WIRELESS NETWORK NOVACOM

PARAMETERS	MIN	TYP.	MAX	*UNIT*
Frequency	-	869	-	*[MHz]*
Flow rate	-	38.4	-	*[kbps]*
Power	-	100	-	*[mW]*
Sensitivity	-	-104	-	*[dBm]*
Range	-	150	600	*[m]*

This product generates a wireless communication network with a mesh topology, low data rate and low power consumption. This network can be used for various Smart City applications. A mesh topology means that the communication network initially generated by a NovaCity Outdoor Gateway can be extended by all devices connected to it (relayed signals).

CONNECTION PROCESS

At startup, the NovaCity Outdoor Gateway connects to the remote management server, which tells it which NovaCom wireless mesh network to generate. Devices within radio range will discover the available networks. They will try to connect until they find the right network. When a connection request is received, the NovaCity Outdoor Gateway will check with the remote management server to see if the device in question is authorized to connect.

On subsequent start-ups, the connected devices will remember their respective networks and will not restart the connection procedure.

CELLULAR NETWORK

The NovaCity Outdoor Gateway has a 3G/2G cellular interface that requires a SIM card to operate. The SIM card holder is located inside the box. The configuration of the SIM card is done using the Novaccess Device Center software available from our technical support. The interface automatically chooses the best available technology for the connection, 3G if possible and 2G if not. Different parameters are required: an APN with an optional username and password and a PIN code. The platform automatically recognizes the name of the network operator, the quality of the cellular signal, the technology used, the IMEI and IMSI number.

Cellular
3G/2G

The cellular antenna must be connected to the port between the Ethernet socket and the DB9 serial connector before powering the unit to avoid damage.

SERIAL INTERFACES

PORT 1 RS-232

This port is connected to the DB9 connector of the NovaCity Outdoor Gateway box and allows the device to be configured via a computer and the Novaccess Device Center software. The interface operates asynchronously in 115200/8N1 mode.

PARAMETERS	**VALUES**	***UNIT***
Interface	RS-232	
Baudrate	115’200	*[Bauds]*
Data width	8	*[bits]*
Parity	No	
Stop bit	1	*[bit]*
Signaling	No	

COMMISSIONING

The commissioning of this product requires access to the remote management software or to the NovaLight mobile application, available for iOS and Android. In order for this product to connect to the remote management platform, it must first be registered. Once connected to the software, the NovaCity Outdoor Gateway will generate the Smart City NovaCom wireless mesh network.

Télécharger dans l'App Store — Application « novalightapp »

Google Play — Application « novalight »

ACCESSORIES

The NovaCity Outdoor Gateway can be fitted with various accessories to provide additional functionality. The portfolio of accessories will evolve over time.

COUNTING RADAR (NT-MR2-010)

This product is described in detail in a separate documentation.

Up to four NovaTraffic Monitoring Radars - or counting radars - can be connected to one NovaCity Outdoor Gateway - or gateway. Each counting radar closes a contact every time a vehicle is detected, causing a pulse to be sent to the gateway's digital input. The gateway then counts the number of pulses/detections over a certain period of time before transmitting the information to the remote management software.

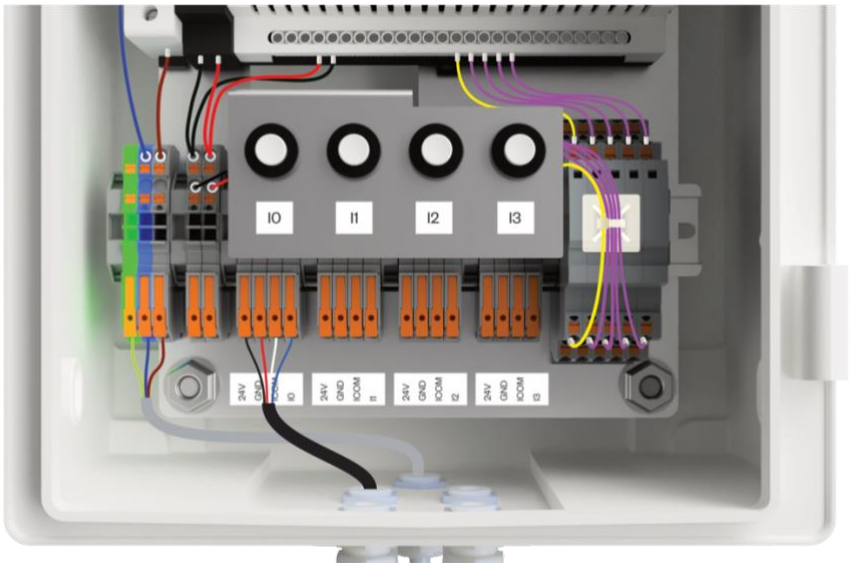
WIRING

This metering radar is delivered with a 5 meter long cable. The cable has been prepared by Novaccess to facilitate field installation and connection. The cables are either 10 wires or 6 wires depending on the available stocks.

For the strict counting of traffic, only 4 signals are used, namely:

NT-MR2-010	Function	NC-OG-023NCE	Function
Red	12/24VDC	24VDC	24VDC Power supply
Black	0VDC	GND	Power supply ground
White	Common Opto	ICOM	Common signal
Blue	Opto	I0 to I3	Digital input

N/C = Normally Closed meaning that the dry contact is closed by default (the electrical signal passes through). N/O = Normally Open meaning that the contact is open (the signal does not pass). All other contacts are not used. They should be kept to a minimum and isolated from proper operation.



MANUAL CONTROL

Switches can be connected to the digital inputs of the NovaCity Outdoor Gateway. These switches can control the light intensity of a group of luminaires for a certain period of time, for example: 100% light intensity in the public square for 4 hours. Up to 4 switches can be connected to the NovaCity Outdoor Gateway, provided that no other accessory is already connected to the digital inputs of the gateway.

WIRING

To connect a switch, simply connect the ICOM signal to the input of the switch, then connect the output of the switch to the corresponding digital input, from I0 to I3.

For strict traffic counting, only 4 signals are used, namely:

Switch	Function	NC-OG-023NCE	Function
-	Input	ICOM	Common signal
-	Output	I0 to I3	Digital input

CONFORMITY

Mark	CE (RED)[i]
EMC	EN 301 489-3[1]
SRD	EN 300 220-1/2
Security	EN 62368-1[1]
Cellular	EN 301 511, EN 301 908-1/2[1]

[1] In progress

GENERAL INFORMATION

PRODUCT REFERENCES

PRODUCTS	REFERENCE
NovaCity Outdoor Gateway 3G/2G	NC-OG-023NCE
Counting radar	NT-MR2-010

CONTENTS OF THE DELIVERY

The NovaCity Outdoor Gateway product comes with:

- A main box with a 5 meter power cable
    - Circuit breaker as per technical details above
    - Power supply 230VAC/24VDC according to technical details above
    - NovaCity Gateway 3G/2G/Eth
    - Antennas integrated in the box
    - Pushbuttons for testing the digital inputs of the NovaCity Gateway
- Pre-mounted pole mounts
- Wall mounts (dismantle the mast mounts and reuse the screws)

CHANGE LOG

RÉVISION	DATE	DESCRITION
R01	November 4, 2021	Original version

CONDITIONS