

Operation manual

NEO x4A6

NB-IoT Data Logger
for Smart Gas Metering



Document version:
2025/10/17

NEO x4A6

OPERATION MANUAL

CONTENTS

PRECAUTIONS

We encourage you to read the user manual and familiarize yourself with the benefits of our device. Failure to follow the instructions provided in this document may result in the loss of warranty. If the manual describes different types of NEO data loggers, any differences will be indicated in the relevant sections of the text.

Before first use, check the device for any visible damage. Do not use the device if it is damaged. In case of any issues, contact customer support. Familiarize yourself with and follow this manual as well as any other documents provided with the device. Keep this documentation for future reference or for the use of a future owner.

SAFETY INSTRUCTIONS

The following safety information and warnings are intended to minimize the risk of injuries and material damage in your environment. Nevertheless, it is important to take preventive measures and exercise appropriate caution during the installation, maintenance, cleaning, and use of the device.

- Keep the device away from fire, extreme temperatures, and chemicals.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Never rub the enclosure surface of NEO x4A6 using a dry cloth because of the danger of electrostatic discharge.
- The product must be used in accordance with the manufacturer's instructions and with the tools recommended by the manufacturer.
- When replacement parts are required, make sure that only replacement parts specified by the manufacturer are used.
- Every item removed from the multipack must be properly secured (e.g. with bubble wrap) for further transport.
- Scraping, rubbing, or dropping the device may result in its damage.
- Any abnormal functioning of the device should be reported to the manufacturer.

ENVIRONMENT

- Do not throw away the device with the normal household waste at the end of its life, but hand it in at an official collection point for recycling. By doing this you help to preserve the environment (Fig. 1)
- Always remove the battery before you discard or hand in the device at an official collection point. Dispose of the battery at an official collection point for batteries (Fig.2).



Fig. 1



Fig. 2



CERTIFICATES

The product meets the essential requirements of the following EU directives:

- ATEX (directive 2014/34/EU)
- RED (directive 2014/53/UE)
- RoHS (directive 2011/65/EU and delegated directive (EU) 2015/863)

The product was designed and is manufactured by a company holding the following certifications:

- ISO 9001:2015
- ISO/IEC 27001:2022
- ISO 45001:2018
- ISO 14001:2015
- PN EN ISO/IEC 80079-34:2011

GENERAL INFORMATION

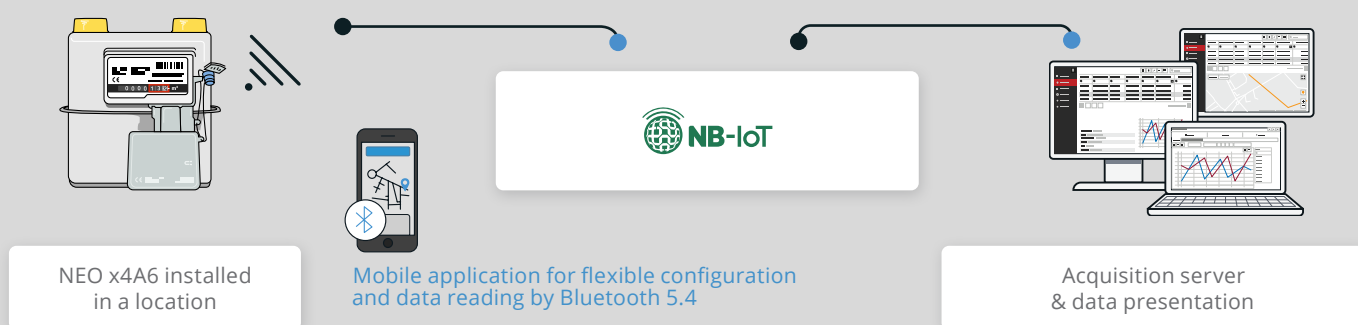
NEO x4A6 is a battery-powered IoT data logger designed for use with diaphragm gas meters from different manufacturers. The device records site parameters such as meter readings, gas consumption, and alarm states. Data is transmitted at regular intervals via the NB-IoT network, reducing the need for manual readings.

NB-IoT (Narrowband Internet of Things) technology ensures stable data transmission even in hard-to-reach locations, such as basements or underground facilities. The use of this technology eliminates the need for costly network infrastructure investments, offering nationwide coverage through the selected operator.

The NEO x4A6 is characterized by low energy consumption, which supports extended battery life. Bidirectional communication allows not only data transmission but also device configuration and diagnostics through a mobile application.

The device is ATEX-certified for operation in hazardous areas. It is equipped with Bluetooth 5.4, which enables local configuration and diagnostics using the SITA mobile application.

The NEO x4A6 can be integrated within the AIUT IoT ecosystem. This provides consistent device management, facilitates system scalability, and supports efficient data collection in metering applications.



MANUFACTURER

Designed and manufactured in Poland by:

AIUNEO

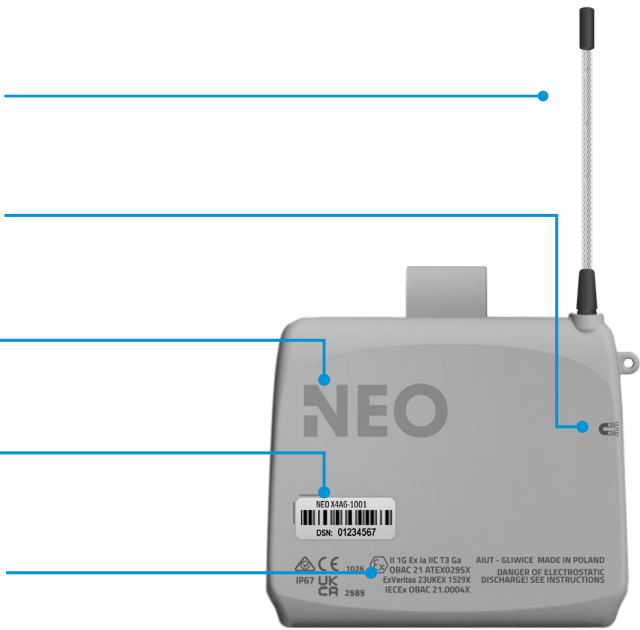
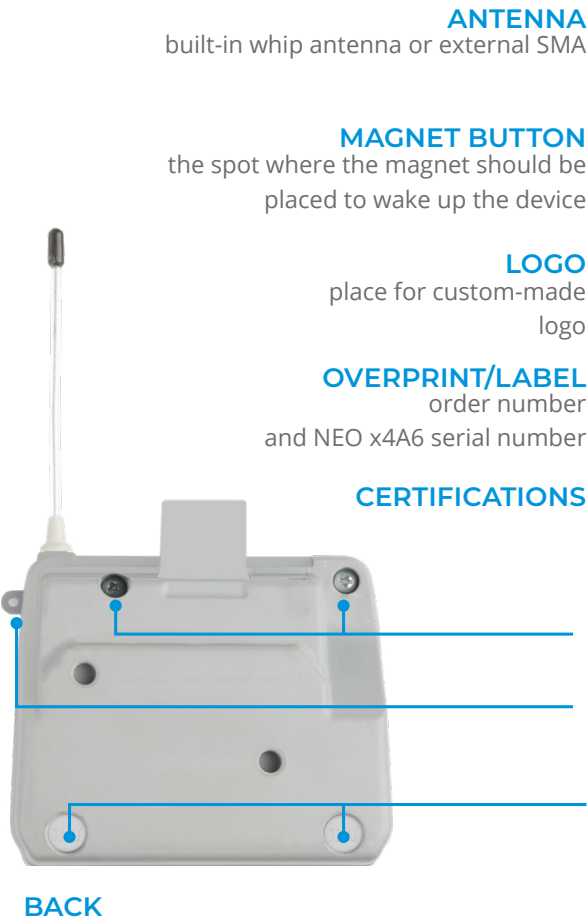
AIUT Sp. z o.o.

Poland, 44-109 Gliwice, ul. Wyczółkowskiego 113

www.aiut.com • www.aiuneo.com

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DEVICE STRUCTURE



PHILIPS HEAD SCREWS
fasten the housing of the device

SEALING HANDLE
for threading a plastic twist seal

IMR SEAL(S)
protection against unauthorized use

ORDER NUMBER

NEO **v**4A6-**xy****

v	interface for local communication
X	version with connector (Fig.2)
Y	version with magnetic field sensor (Fig.1)
x	battery type
1	dedicated for ATEX Zone 0
3	dedicated for ATEX Zone 2
y	antenna type
0	built-in whip
1	SMA



Fig.1 NEO Y4A6-1001
Compatible with passive adapters.

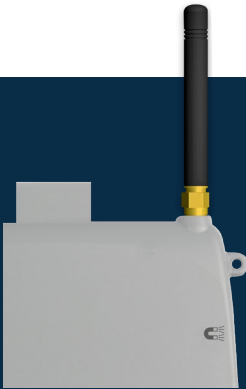


Fig.2 NEO X4A6-1101
Compatible with active adapters.

****NOTE** Details about the available versions of the device can be found in the chapter [Device variants & versions](#)

VARIANTS AND VERSIONS

The NEO X4A6 and Y4A6 devices are available in multiple hardware variants, differing mainly in antenna type, SIM configuration, and ATEX certification zone. This flexibility ensures that each version can be matched to specific operational and safety requirements.

The detailed specifications of available versions are presented in the table below.

DEVICE VERSIONS

Order number		Interface	Antenna type	SIM type	ATEX
NEO X4A6-1001		adapter connector	whip	embedded SIM	zone 0
NEO X4A6-1101		adapter connector	SMA	embedded SIM	zone 0
NEO X4A6-3101		adapter connector	SMA	micro SIM	zone 2
NEO Y4A6-1001		built-in sensor	whip	embedded SIM	zone 0

TECHNICAL PARAMETERS

NB-IoT COMMUNICATION

Power +23 dBm

Operating band B8 (900 MHz)/B20 (800 MHz)/B28 (700MHz)

SIM card embedded SIM (MFF2) or micro SIM (3FF)

BLUETOOTH LOW ENERGY COMMUNICATION

Standard Bluetooth LE 5.4

Power up to +6 dBm

Frequency 2,4 GHz

ENVIRONMENTAL PARAMETERS

Operating temperature -25°C to +55°C

Storage temperature -40°C to +60°C

Ingress protection IP67

ATEX / IECEx/ UK Ex certificate  II 1G Ex ia IIC T3 Ga or  II 3G Ex ic IIB T3 Gc

Housing material Polyamide (PA6)

POWER SUPPLY

Battery type Non-replaceable long life Li-MnO₂ battery

Battery lifetime up to 10 years (depending on the device's target configuration, environmental conditions, and user interaction with the device)

MECHANICAL PARAMETERS

Dimensions NEO X4A6: H (w/o antenna) x W x D: 90 mm x 91 mm x 35 mm
NEO Y4A6: H (w/o antenna) x W x D: 102 mm x 91 mm x 35 mm

Weight ~235 g

INTRINSICALLY SAFE PARAMETERS

Connector of the adapter Uo=5,4 V; Io= 20 mA; Po=25 mW; Co=65 uF; Lo=800 uH
Ui=5,4 V; Ii=0,2 A; Pi=1 W; Li, Ci – negligible

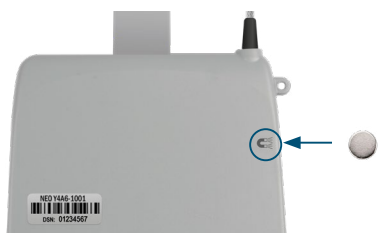
SMA conector Uo=10 V; Io=0,2 A; Po=2 W; Co=1 uF; Lo=1 uH

DEVICE OPERATING MODES

NEO x4A6 can operate in two modes: **seal mode** and **run mode**.

The modes differ in modem operation, BLE communication and battery consumption. However, in both modes you can collect data, configure the device on-site and run diagnostics with dedicated SITA application.

NEO OPERATION IN SEAL MODE



For safe transport and in order to minimize the battery consumption during the storage (prior the installation), the device is in SEAL mode directly after the production. In SEAL mode NEO x4A6 counts pulses but no mobile communication is performed*. However, in SEAL mode it is possible to activate BLE communication. To do so, swipe the magnet near the magnet icon printed on the casing.

- Minimized battery consumption
- Pulse counting active
- No mobile communication
- BLE on demand

Once the BLE communication is activated, advertising frames are sent for 3 hours.

*It is possible to wake up the device from SEAL mode during the installation procedure performed with SITA application. For more please refer to: [Device Operation in SITA application](#).

NEO OPERATION IN RUN MODE

NEO x4A6 can enter RUN mode with SITA application. In this mode the device operates regularly - it takes pulses from the meter and transfers the data over mobile network to acquisition server periodically (e.g. daily at specified time). The Bluetooth 5.4 module embedded in the device sends the advertising BLE frames continuously.

- Pulse counting active
- Regular mobile communication
- Continuous BLE

THE CONTENT OF AN ADVERTISING FRAME TRANSMITTED BY NEO

In both modes it is possible to communicate with the device by BLE. Once the device is connected by BLE, a two-way communication using IMR WAN 3 protocol starts.

Firmware version	Device firmware version
Battery level	Remaining battery power [%]
Status in the current daily period:	• maximum temporary/hourly flow is exceeded • magnet tamper detection • detection of device removal from gas meter • BLE connection is active • extreme temperature of the device is exceeded • device warning • device error / service required

Gas day volume & timestamp*	• gas volume registered in the last gas day • timestamp of the gas day
Volume*	Volume registered by pulse counter in pulse rate units, where the pulse rate is a parameter of the meter totalizer
Clock*	Device clock in UTC
Time left for BLE**	Minutes left until the end of BLE communication
Serial number	Device serial number

* Applies only to advertising frames of NEO in **RUN mode**

** Applies only to advertising frames of NEO in **SEAL mode**

DEVICE INSTALLATION

The NEO logger is installed on the gas meter in just a few simple steps, secured with plastic seals. The process of mechanical assembly is performed in the following way and varies depending on the used gas meter (and assigned adapter).

NOTE Adapter and compatible gas meter details are provided in the [Adapters](#) section.

NOTE The seal should be placed below the brim to prevent its accidental removal.

HONEYWELL, ELSTER, LANDIS+GYR, GAS SOUZAN, KROMSCHROEDER

NEO X4A6

Necessary equipment

- NEO X4A6
- adapter IC E015/IC L015
- 1 x Blue snap seal
- 2 x Philips head screw
- 2 x IMR seal
- 1 x twist plastic meter seal
- a flat-head screwdriver
- pincers

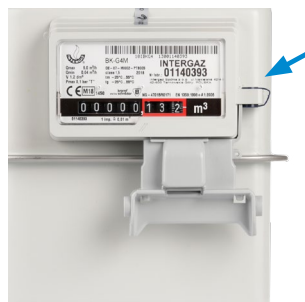
STEP 1

Insert the **IC E015/IC L015** adapter on the gas meter.



STEP 2

Secure the adapter with a blue seal.



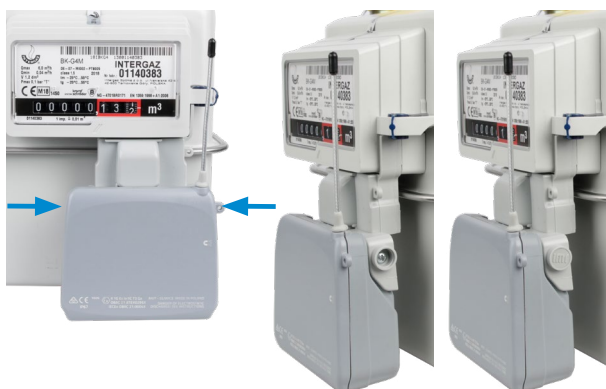
STEP 3

Fix NEO to the adapter.



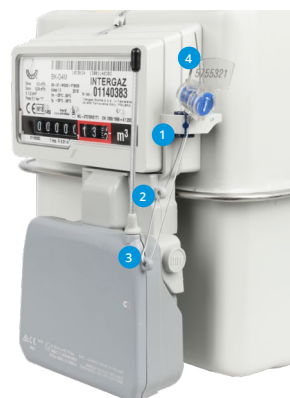
STEP 4

Screw and seal NEO with two grey IMR seals on both sides of the cover.



STEP 5

Secure the whole set with a plastic meter seal.



Install the seal by threading the wire in the following order: blue seal (1), sealing handle of the adapter (2), sealing handle of the NEO (3). Then thread the wire through the seal cylinder (4). Tighten the seal by rotating the plastic wing clockwise. Firmly hold plastic body in one hand and apply lateral force to break off the plastic wing.

LANDIS+GYR, HONEYWELL, ELSTER,

NEO Y4A6

Necessary equipment

- NEO Y4A6
- adapter IC L013
- 1 x Blue snap seal
- 2 x Philips head screw
- 2 x IMR seal
- 1 x twist plastic meter seal
- a flat-head screwdriver
- pincers

STEP 1

Insert the **IC L013** adapter on the gas meter and secure it with a blue seal.



STEP 2

Fix NEO to the adapter.



STEP 3

Screw and seal NEO with two grey IMR seals on both sides of the cover.



STEP 4

Secure the whole set with a plastic meter seal.



Install the seal by threading the wire in the following order: blue seal (1), sealing handle of the NEO (2). Then thread the wire through the seal cylinder (3). Tighten the seal by rotating the plastic wing clockwise. Firmly hold plastic body in one hand and apply lateral force to break off the plastic wing.

ELEKTROMETAL, KALE KALIP

NEO X4A6

Necessary equipment

- NEO X4A6
- adapter IC K015
- 3 x Philips head screw
- 2 x IMR seal
- 1 x twist plastic meter seal
- a flat-head screwdriver
- pincers

STEP 1

Fix and screw the **IC K015** adapter to the gas meter.



STEP 2

Seal the adapter with grey IMR seal.



STEP 3

Fix NEO to the adapter.



STEP 4

Screw and seal NEO with two grey IMR seals on both sides of the cover.



STEP 5

Secure the whole set with a plastic meter seal.



Install the seal by threading the wire in the following order: sealing handle of the NEO (1), sealing handle of the adapter (2), sealing handle of the gas meter (3). Then thread the wire through the seal cylinder (4). Tighten the seal by rotating the plastic wing clockwise. Firmly hold plastic body in one hand and apply lateral force to break off the plastic wing.

METRIX, METRIX ITALIA

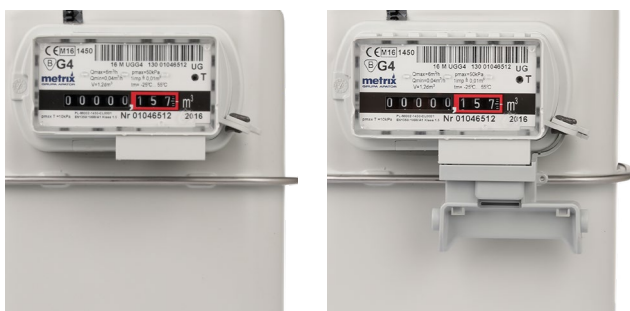
NEO X4A6

Necessary equipment

- NEO X4A6
- adapter IC M015
- 1 x Blue snap seal
- 2 x Philips head screw
- 2 x IMR seal
- 1 x twist plastic meter seal
- a flat-head screwdriver
- pincers

STEP 1

Fix the **IC M015** adapter on the gas meter.



STEP 2

Secure the adapter with a blue seal.



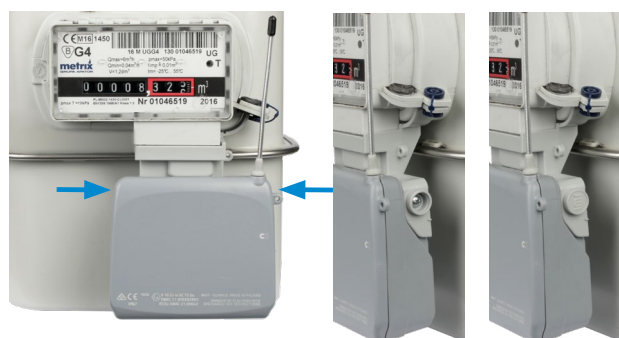
STEP 3

Fix NEO to the adapter.



STEP 4

Screw and seal NEO with two grey IMR seals on both sides of the cover.



STEP 5

Secure the whole set with a plastic meter seal.



Install the seal by threading the wire in the following order: sealing handle of the NEO (1), sealing handle of the adapter (2), sealing handle of the gas meter (3). Then thread the wire through the seal cylinder (4). Tighten the seal by rotating the plastic wing clockwise. Firmly hold plastic body in one hand and apply lateral force to break off the plastic wing.

ITRON, ACTARIS, SCHLUMBERGER

NEO X4A6

Necessary equipment

- NEO X4A6
- adapter IC R015
- a flat-head screwdriver
- 3 x Philips head screw
- 2 x IMR seal
- 1 x twist plastic meter seal
- pincers

STEP 1

Thread the wire through the two holes located below the meter counter.



STEP 2

Fix the **IC R015** adapter on the gas meter.



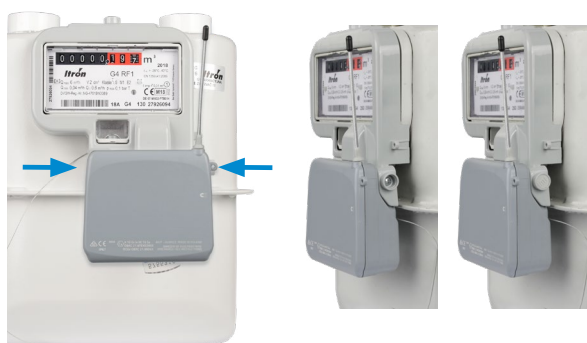
STEP 3

Screw and seal the adapter with the grey IMR seal.



STEP 4

Fix NEO to the adapter. Then, screw and seal the NEO with two grey IMR seals on both sides of the cover.



STEP 5

Secure the whole set with a plastic meter seal.



Install the seal by threading the wire in the following order: two holes below the meter counter (1) as described in step no.1, sealing handle of the NEO (2), sealing handle of the adapter (3). Then thread the wire through the seal cylinder (4). Tighten the seal by rotating the plastic wing clockwise. Firmly hold plastic body in one hand and apply lateral force to break off the plastic wing.

GAS METERS EMBEDDED WITH PULSE OUTPUT

NEO X4A6

Necessary equipment

- NEO X4A6
- adapter IC U015
- a flat-head screwdriver
- 2 x Philips head screw
- 2 x IMR seal
- 1 x twist plastic meter seal
- pincers

STEP 1

Connect the wires to the **IC U015** adapter as indicated on its casing and on the cable.



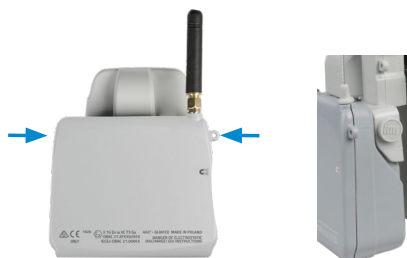
STEP 2

Fix NEO to the adapter and screw on both sides of the cover.



STEP 3

Seal the NEO with two grey IMR seals on both sides of the cover.



STEP 4

Seal the NEO with two grey IMR seals on both sides of the cover.



Install the seal by threading the wire in the following order: sealing handle of the adapter, sealing handle of the NEO. Then thread the wire through the seal cylinder. Tighten the seal by rotating the plastic wing clockwise. Firmly hold plastic body in one hand and apply lateral force to break off the plastic wing.

ASSEMBLY METHODS



Wall mounting with screws.



Wall mounting with double sided tape.



Pipe mounting with dedicated handles and plastic ties.

DEVICE OPERATION IN THE SITA APPLICATION

DEVICE REGISTERING IN THE SYSTEM WITH SITA APPLICATION



After the mechanical assembly of the NEO device, an action must be performed to register the device in the selected location. The operation is performed using the SITA application. The procedure involves completing the installation form in the app, where you input details about the location, gas meter parameters, and readings. The installation steps in the app may vary depending on the system settings, configuration, and specific client requirements.

SITA 4 - CONVENIENT DATA ACCESS AND CONFIGURATION

SITA 4 is a mobile application designed for Android devices, supporting on-site procedures such as installation and configuration of various IoT data loggers and gateways.

Communication between the SITA application and the NEO data logger is carried out using Bluetooth communication.



With the SITA 4 application you can perform the following procedures in the NEO x4A6:

Device installation/
uninstallation

Reading current data
from the data logger

Meter index
synchronization

Synchronization of
the device clock with
the selected time zone

Reading archive data
from selected
time period

Server connection
test
(IoT verification)

Gas day/gas month
configuration

APN
configuration

Configuration of schedules
for automatically executed
commands

Review and configuration
of alarms recorded
by the device

Arming
accelerometer

Software
update

Switching device modes
(seal mode/run mode)

NOTE For more detailed information, please refer to the SITA 4. User Guide.

REPLICATED PULSE MEASUREMENT

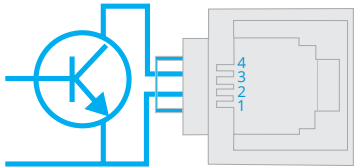
Thanks to the replicated pulse output, NEO x4A6 can be connected to 3rd party data acquisition system. The output is located in a dedicated IMR adapter and can provide meter pulse output connections to other meter pulse utilization devices, without interfering or disrupting the collection of data and having minimal effect on any power source within the AMR device.

STEP 1

Prepare the cable and crimp the RJ11 connector to the cable using crimping tool. The wires should be inserted into the connector according to the diagram below.



- 1 Short-circuited with wire no. 4*
 - 2 Ground
 - 3 Impulse output
 - 4 Short-circuited with wire no.1*
- *Pins internally connected in the socket



STEP 2

Plug the connector into the socket in the adapter as shown in the picture.



PARAMETERS

Circuits	One intrinsically safe circuit	Maximum input current I_i	40mA
Connector type	RJ-11 /RJ-9	Maximum output current I_o	1mA
Max cable length	3m	Maximum internal capacitance C_i	Negligible
Maximum input voltage U_i	30V	Maximum internal capacitance C_o	40uF
Maximum output voltage U_o	5,88V	Maximum internal inductance L_i	Negligible
Maximum input power P	1,1W	Maximum external inductance L_o	1mH
Maximum output power P_o	1mW		

SCOPE OF DATA

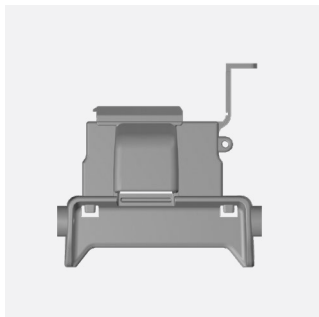
The content of data packet sent by NEO x4A6 depends on configuration, while the frequency of data transfer is set in schedules. The exemplary information contained in the data packet sent by NEO is listed below.

Daily readouts packet	• Gas meter pulse rate		
	• End timestamp of the gas day		
	• Total volume registered in the end of the gas day		
	• Current meter index		
	• Maximum instantaneous flow on the gas day		
	• Timestamp of the maximum instantaneous flow during the gas day		
	• Maximum hourly flow during the gas day		
	• Timestamp of the hourly flow during the gas day		
	• Frequency of meter index registration [e.g. one hour]		
	• Meter index differences for the subsequent registration periods [e.g. one hour]		
	• Ambient temperature [°C]		
	• Battery level [%]		
	• Mobile signal strength [0-31]		
	• Current date and time [UTC]		
	• Status of the accelerometer		
	• Firmware version		
Device status from the last gas day	• Magnet tamper detection		
	• Device removal from the meter		
	• Exceeded maximum allowed hourly flow		
	• Exceeded maximum allowed instantaneous flow		
	• Exceeded maximum allowed temperature		
	• Active BLE connection		
	• Active magnet button		
	• Device warning	• significant change in device clock • change in volume counter	• device installation/uninstallation • discontinuity of meter index registration
	• Device error	• SIM card error • modem error • low battery level	• low voltage detected • real time clock error • memory integrity error

ADAPTERS

Adapters are designed for the mechanical installation of the NEO x4A6 on various gas meters. Compact and robust, they are engineered to withstand harsh conditions and ensure compatibility with a wide range of popular gas meter models. They optionally feature an RJ11 replicated pulse output, allowing seamless connection to third-party data acquisition systems.

IC EX15 (ACTIVE)



GAS METER TYPE

Honeywell/Elster/ Kromschroeder

BK G1.6-BK G6

Gas Souzan

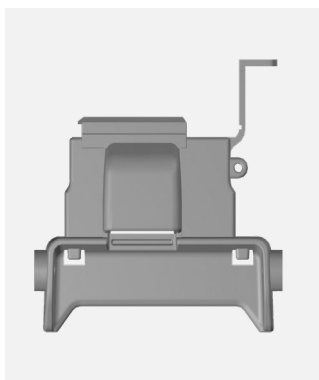
VERSIONS

Standard version - IC E015

With replicated pulse output - IC E115

EMBEDDED SENSOR - Yes

IC LX15 (ACTIVE)



GAS METER TYPE

Landis +Gyr/AMPY

Model: 750, 1010

Honeywell/ELSTER AMCO/AMPY

BK G1.6-BK G6

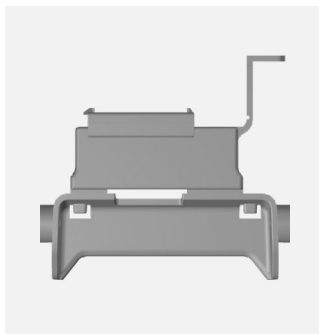
VERSIONS

Standard version - IC L015

With replicated pulse output - IC L115

EMBEDDED SENSOR - Yes

IC L013 (PASSIVE)



GAS METER TYPE

Landis +Gyr/AMPY

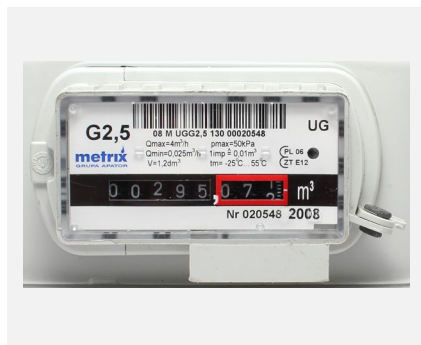
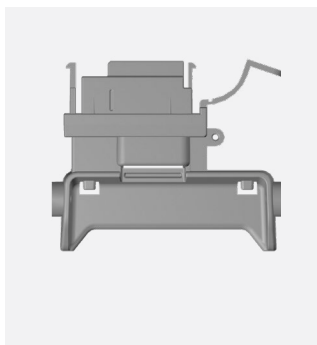
Model: 750, 1010

Honeywell/ELSTER AMCO/AMPY

BK G1.6-BK G6

EMBEDDED SENSOR - No

IC MX15 (ACTIVE)



GAS METER TYPE

Metrix UG1.6, UG2.5, 6G4, 6G5, 2G10, 2G16, 2G25, 2G40, 2G65, UG4, UGT4

Metrix Italia UG-ALU

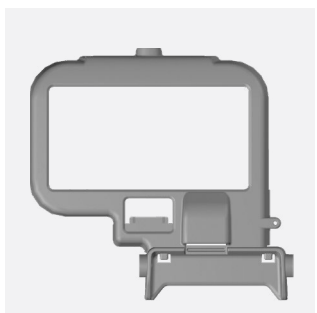
VERSIONS

Standard version - IC M015

With replicated pulse output - IC M115

EMBEDDED SENSOR - Yes

IC RX15 (ACTIVE)



GAS METER TYPE

Itron/Actaris/Schlumberger

RF1, ACD

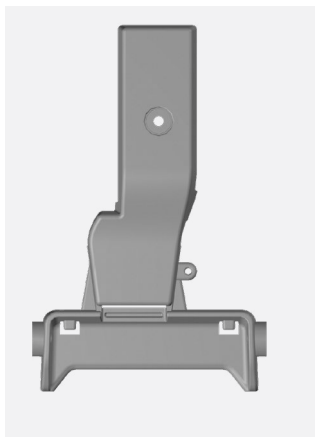
VERSIONS

Standard version - IC R015

With replicated pulse output - IC R115

EMBEDDED SENSOR - Yes

IC KX15 (ACTIVE)



GAS METER TYPE

Elektrometal

EM G1.6, EM G2.5, EM G4

Kale Kalip

VERSIONS

Standard version - IC K015

With replicated pulse output - IC K115

EMBEDDED SENSOR - Yes

IC UX15 (ACTIVE)



GAS METER TYPE

Other gas meters equipped with their own pulse generator, including rotor and turbine gas meters with LF pulse output

VERSIONS

With replicated pulse output - IC U115

EMBEDDED SENSOR - Yes

ACCESSORIES

ANT GSM SMA STRAIGHT



Technology: GSM/UMTS
Frequency: 800/900/1700/1800/1900/2100 MHz
Gain: 2 dBi
Impedance: 50 Ω
Connector: SMA male
Mounting method: connector

ANT GSM AO-AGSM-MG5S



Technology: GSM
Frequency range: 698...960MHz, 1,71...2,7 GHz
Gain: 5 dBi

Impedance: 50 Ω
Connector: SMA male
Mounting method: magnet
Cable length: 3m

