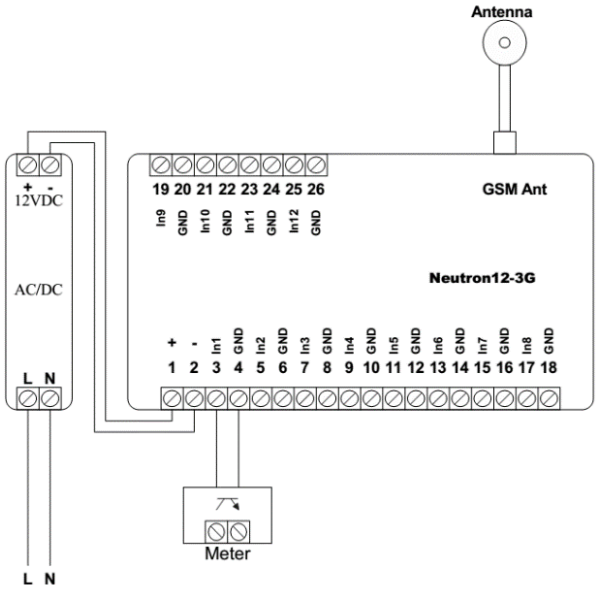
Quick Guide

Neutron12-3G Remote Pulse Collector

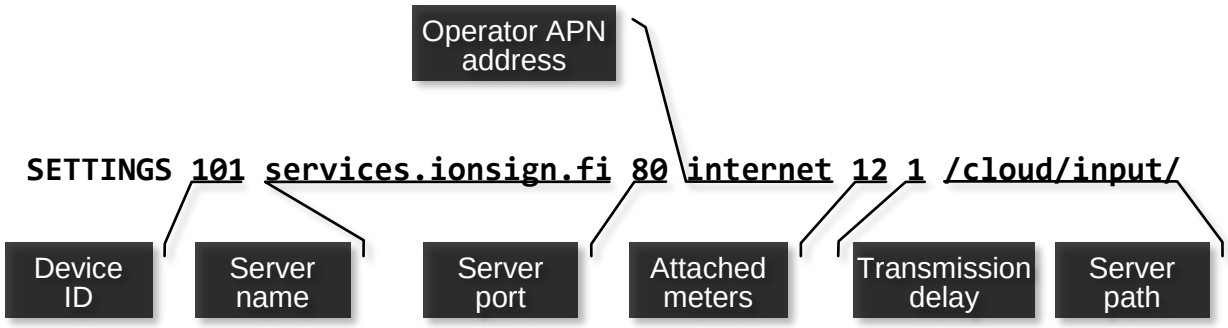


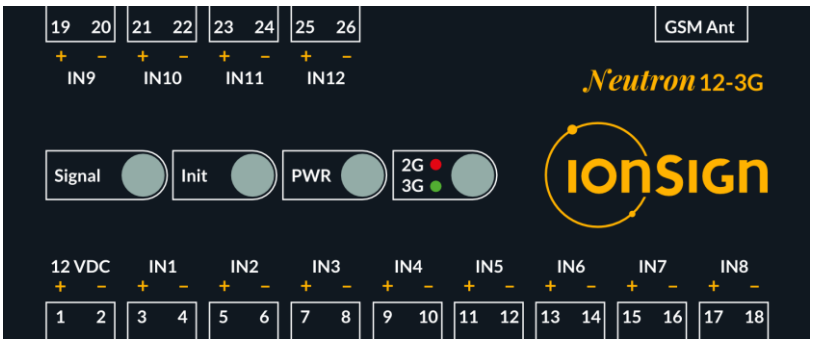
For example JAMAK 2x(2+1)x0,5mm2 instrumentation cable can be used between the meter and Neutron12-3G. The open collector or relay output of a single meter is connected to Neutron12-3G as shown above.

Introducing Neutron12-3G:

1. Insert SIM card to its slot on top of the device, PIN query disabled.
2. Connect the power supply, meter(s) and antenna to the device as in the enclosed diagram. Connect to the mains.
3. Within 15 sec the 2G/3G led starts to double blink to indicate the device is looking for a GSM network. When connected, the 2G/3G led only blinks once in intervals.
4. A lit Signal led indicates a good GSM signal. If it blinks or remains off, try to find a better place for the antenna, within 5 minutes of power up.
5. Send the **SETTINGS** command to the device as an SMS. A lit Init led indicates an established server connection. If the Init led remains blinking, the command was received, but server hasn't responded.

When in operation, the PWR led toggles between ON/OFF with every pulse received.





*The above example command sets device **101** to start collecting hourly pulse data and send it to server **services.ionsign.fi**, path **/cloud/input/** and port **80**, using **internet** as APN. Device 101 has **12** inputs and data is sent **one minute** after midnight, at 00:01.*

User and Installation Guide

Neutron12-3G Remote Pulse Collector

1 General

Neutron12-3G is a pulse concentrator designed for collecting and reporting pulses from varying kinds of consumption meters with a pulse output, e.g. electricity, gas, heat or water meters. Pulses are collected on an hourly basis, locally stored and sent to the server once per day.

2 Indicator lights

PWR led is ON	The device has power
PWR led goes ON/OFF	A pulse was registered (during operation)
2G/3G led blinks twice	The device is looking for a GSM network
2G/3G led blinks red	The device is in 2G network
2G/3G led blinks green	The device is in 3G network
Signal led is OFF	The device is not in the GSM network
Signal led is ON	The device is in the GSM network
Signal led blinks	The device has poor GSM signal strength
Init led blinks	SETTINGS command was received, server hasn't responded
Init led is ON	The device has server connection

3 Commands

The device is controlled with SMS messages sent to the SIM card's number. Except for the STATUS command, the device doesn't send replies. In the messages, commands and parameters are separated by one space character (␣ in examples).

SETTINGS␣*<Device identifier>*␣*<Server address>*␣*<Server port>*␣*<APN>*␣*<Input count>*␣*<Transmission delay>*␣*<Server path>*

With the SETTINGS command all required settings are given and collecting and sending of pulse data is started.
Device identifier is a unique device ID. Range is 1-1000000.
Server address is the IP address of the server. Also a domain name server name can be used. Maximum length is 30 characters.
Server port is the port number where the server application waits for transmissions.
APN is the Access Point Name of your operator for the GPRS/3G connection. Maximum length is 19 characters.
Input count is the number of connected meters. Range is 1-12.
Transmission delay helps to avoid a large number of devices sending pulse data to the server at the same time. Range is 0-1000 minutes. With value zero (0) the data is sent immediately at midnight, at 00:00.
Server path is the path in the server where data is saved.

INTERVAL␣<Time>

With the INTERVAL command the device can be set to send momentary pulse data, in addition to the hourly pulse data, with a defined interval. The ***Time*** parameter defines the interval between consecutive transmissions. Range is 60-65535 seconds. With the zero value (0), momentary data sending is stopped.

SENDNOW

With the SENDNOW command the device sends incomplete pulse data to the server immediately. This command has no parameters.

FACTORY

With the FACTORY command the device resets all settings and pulse data. This command has no parameters.

STATUS

To the STATUS command, the device replies with an SMS of general status information. STATUS command has no parameters.

Status information includes the following:

- Device settings validity: [Yes | No].
  (Also device ID, if the device has valid settings).
- Data sending to server initialized: [Yes | No].
- Most recent device IP connection initialized: [Yes | No].
- Most recent TCP/IP connection to server: [Yes | No].
- Most recent server reply to device data: [No | Success | Error].
- GSM operator name.
- GSM signal strength: [dBm value | Unknown].

Signal strength -113 dBm indicates a value of -113 dBm or less. Signal strength -51 dBm indicates a value of -51 dBm or greater.

4 Failure recovery

The device has no built-in backup power, so pulses are not collected nor sent during power failures. When power supply resumes however, the device assumes all prior settings and starts collecting and sending data without any need for user intervention.

For GSM network failures, the device has a built-in local buffer of 30 days for keeping collected data stored for later transmission. When the GSM network resumes service, all buffered data is sent to the server without any need for user intervention.

5 Neutron12-3G technical specifications

- Inputs: 12 pulse inputs for open collector or relay outputs of meters. Open collector or relay output sourcing voltage 12 VDC, maximum sourcing current 5mA.
- Operating voltage: 11…13 VDC.
- Real-time clock: 4 days backup.
- Size: WxHxD 105 x 90 x 52 mm (6 module wide DIN rail enclosure).
- Protection class: IP20.
- Operating temperature: -25 °C...+55 °C.
- RH: 5 % - 95 % non-condensing.
- Local data storage capacity: 30 days for each input channel.
- Data communication: Integrated GSM/GPRS module. Conforming the following directives and standards:
  - R&TTE Directive 1999/5/EC (Radio Equipment & Telecommunications terminal Equipment)
  - Low Voltage Directive 73/23/EEC and product safety Directive 89/336/EEC for conformity for EMC
  - GSM (Radio Spectrum). Standard: EN 301 511 and 3GPP 51.010-1
  - EMC (Electromagnetic Compatibility). Standards: EN 301 489-1 and EN 301 489-7
  - LVD (Low Voltage Directive) Standards: EN 60 950
- Antenna: external, SMA connector.

6 Warranty

ionSign grants a warranty of two (2) years for all delivered devices and software services. The warranty starts on the date of the delivery and it covers material and manufacturing defects. The warranty does not cover defects caused by improper use or installation nor does it cover defects caused by factors out of ionSign's control. These would be for instance grid malfunction or service changes of network operators services. ionSign delivers a new device to replace the defected one, without cost. Alternatively, ionSign may repair the defected device. The defected device must be returned to ionSign, if required, at ionSign's cost. The warranty does not cover dismantling, installation, and introduction costs and the like. ionSign warrants that the provided software essentially manage with their designed tasks, at the time of delivery. All significant software defects are covered by the warranty. The defects will be resolved without unnecessary delay. The resolution may be an instruction to circumvent the defect. If the delivery includes third party products or services, these are only covered by the applicable warranty provided by that third party. Title to the delivered goods transfers to the client, when the invoiced price is paid in full. All immaterial rights related to devices and services remain the property of ionSign. If the service was a design assignment, the client assumes the right to use and further develop the assignment results. ionSign is eligible to use the client's name as a reference in its marketing. ionSign is not eligible to disclose the order details without prior consent. In case of a force majeure, preventing to act according to the purchase agreement, the affected party will start immediate negotiations to assess the effects of the obstacle on the scope and schedule of the purchase agreement. ionSign appropriately backs up client's data residing on its servers. In spite of this, ionSign assumes no responsibility of possible damage due to loss of data. ionSign assumes no responsibility of direct or indirect damage to property or people, nor work or travel expenses, caused by using its services or devices, unless due to gross negligence. ionSign's financial liability is always limited to the value of the delivered goods and services, unless otherwise inflicted by the Finnish law.

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