

NSG receiver

Data transmission from
REGGAE communicators,
data conversion into Sur-Gard format

Document: 1.60



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INTRODUCTION:

This manual describes the NSG receiver device and the steps for its connection to ARC.

NSG receivers allow the safe connection to the Technological Centre network of the NSG using two independent channels (LAN and GSM/GPRS) and enables the reception of data from asset orientated devices REGGAE and its conversion to Sur-Gard.

Further details about the possibilities of the NSG receiver and the services granted by the NSG network can be found through contacts given on www.namsystem.com.

BASIC PARAMETERS

Main channel for communication with NSG:	Encrypted connection via Internet
Back-up channel for communication with NSG:	GSM/GPRS through own APN
Output Sur-Gard:	TCP/IP (optionally RS232)
Number of attachable devices (REGGAE):	0xFFFF = 65535
Formats of output codes:	4+2, Contact ID

CONNECTION

For the correct usage of the NSG receiver device it is necessary to first become acquainted with this manual. The configuration of NSG receiver devices is always carried out by NAM system, a.s.

Note: Serial ports are not supplied as standard with the device.

In order to connect the NSG receiver device, it is necessary to assign one connection to the internet (can be also through local network LAN), ideally with an automatically configured IP address assisted by a DHCP protocol.

The NSG receiver must have access via these connections:

- On the internet to the remote UDP port 1194 in the domain of the technological centre used.
- For time synchronization, access to the time server at UDP port 123 (normally use one of the following: ac-ntp0.net.cmu.edu, ptbtime1.ptb.de, ac-ntp1.net.cmu.edu, ntp.xs4all.nl, ptbtime2.ptb.de, cudns.cit.cornell.edu, ptbtime3.ptb.de).

For the local network, to which the NSG receiver is connected, IP addresses 192.168.3.0/24 and 10.0.0.1/32 cannot be used.

The WAN connector NSG receiver should be connected to your local network with connectivity to the internet, the LAN socket is designated for connection of the PC to the ARC software or for connection of the external module MOXA (conversion to RS232).

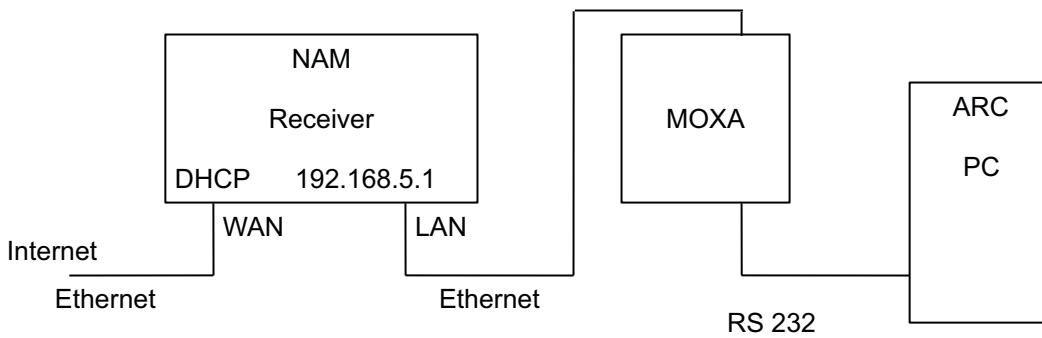
If you need output from the NSG receiver via protocols Sur-Gard TCP/IP, this is normally accessible at 192.168.5.1:1025 at the socket marked „LAN“.

If you already use sub-network 192.168.5.0/24 in your local network, we can change your IP address for the LAN connector on request.

Methods of connection:

Connection with the output at the serial port

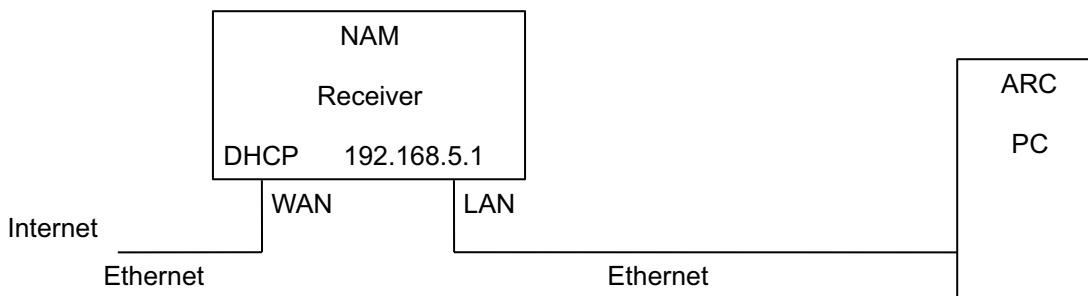
- Connect an ethernet cable with connectivity to the internet (for example via local network) to the WAN socket.
- Connect a linear cable converter MOXA to the LAN socket.
- To the converter MOXA you can connect the serial port to the PC, on which the ARC software is running.



Note: External converter MOXA (TCP/IP) – RS232 is not supplied as standard.

Connection with output TCP/IP (recommended)

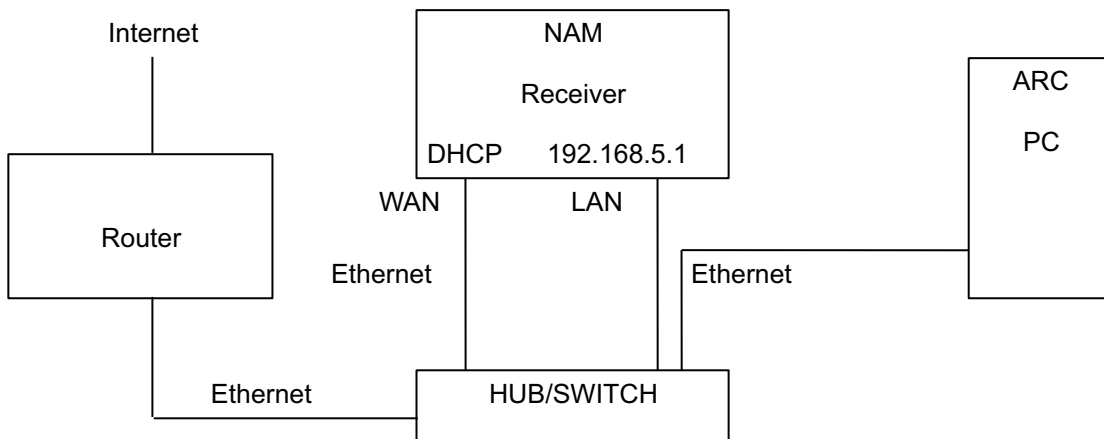
- Connect an ethernet cable with connectivity to the internet (for example via local network) to the WAN socket.
- Connect, by linear cable, the network card of the PC (that has the monitor panel software) to the LAN socket.
- Into the monitor panel software it is necessary to set the IP address of the device at 192.168.5.1 (or different address if you have requested a change) and TCP port 1025.



Connection via local network with output TCP/IP

Connect both the WAN output and one of the LAN outputs to HUB or SWITCH in the local network. This network must be connected to the internet so that the NSG receiver can receive messages from the asset orientated device (REGGAE) of the Technological centre. It is important that in this connection there are two sub-networks in the local network – the original sub-network of the local network and a new sub-network (normally 192.168.5.xxx), designated for communication with the computer of the ARC only.

If the ARC computer should communicate with the NSG receiver and with the local network/internet, it must have either two addresses in two sub-networks (usually it is not possible to use DHCP – both addresses must be submitted statically) or two network cards. We recommend that you use the IP address of the computer for connection to the NSG receiver 192.168.5.100.



In this connection it is necessary to use ARC software that is capable of communicating with TCP/IP protocol Sur-Gard. In the ARC software it is necessary to set up an IP address and TCP port for the NSG receiver (normally 192.168.5.1:1025).

PROCEDURE OF CONNECTING AND RECOVERY

- A. Connect the NSG receiver according to the selected linkage described in the previous chapters:
 - if communicating by Sur-Gard format over the serial line
 - or if communicating by Sur-Gard format over TCP/IP

- B. After connection, connect the power voltage of the NSG receiver and wait 5 minutes for the boot up. The power led of the NSG receiver should be shining permanently, so as indicators of the corresponding inputs LAN and WAN should shine or blink.

After each shutdown of the NSG receiver and after turning on again, it is necessary to wait 5 minutes for the device to reboot!

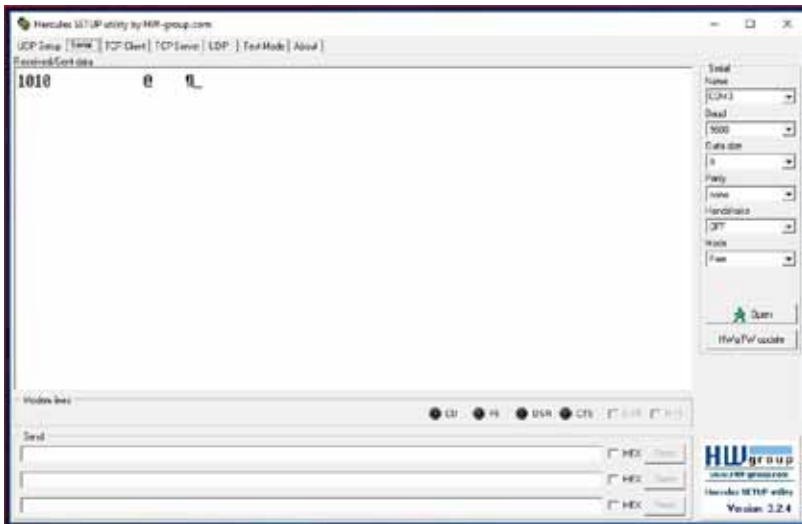
- C. Turn on the ARC by software and configure the NSG receiver connection (serial line or TCP port), sometimes it might be necessary to turn off the software and turn it on again. ARC should at least receive message R350 from the object 0, which indicates connection renewal of the NSG receiver to Technological centre.

If there is no message received in the ARC, check the connection between the ARC software and the NSG receiver.

1. At first check if the ARC software indicates the connection loss with the Sur-Gard receiver (NSG receiver), (usually after half a minute).
Then check if connection between the NSG receiver and the ARC works:

a. When connected over the serial line:

- I. Turn on any serial terminal, for example Hercules, HyperTerminal, etc.
- II. Set the connection parameters (serial port, speed, bits number, data flow control none).
- III. At the latest after 30 seconds, there should appear incoming message (messages) in the Terminal:



If the message appeared (in our case text starting 1010 – heartbeat) and the ARC indicates loss of connection with the Sur-Gard receiver, there is probably a problem in the ARC software settings.

If there is no message appeared in Terminal, problem is in the serial port connection or in the powering of the NSG receiver.

b. When connected over TCP/IP: (via software tool "TELNET" or similar)

- I. Press Start – Launch and type "telnet <ip_address> <TCP_port>", where for the <ip_address> and <TCP_port> complete the real parameters (standardly 192.168.5.1 and 1025 – command will be telnet 192.168.5.1 1025).
- II. In the Telnet window should over half a minute gradually appear at least one message (for example on the next picture there are several messages starting 1010 – heartbeat – indicating presence of the receiver in the SurGard format).



- III. If message appeared in the Telnet window and the ARC software indicates loss of connection with the Sur-Gard receiver, the problem is probably in the ARC software settings.

If there is no message appeared after half a minute in the Telnet window, the problem is probably in PC and NSG receiver connection, or in the powering of the NSG receiver. In this case also check the settings of the PC network card. You can also try to launch Start – Launch and type cmd and confirm. Then type into the window command "ping <ip_address>" (by default settings "ping 192.168.5.1"). If the answers are not coming, the problem is in the network card settings or in the NSG receiver connection.

2. If the ARC does not indicate the connection loss with the receiver, we can test the entire route. On the supplied asset orientated device REGGAE after its turn on press the tamper switch. During few seconds should in ARC occur a message (typically R144). After releasing the tamper, there should occur another message (typically E144).

If the message about the tamper change does not occur (and connection between PC and the NSG receiver is okay – ARC software does not report the communication outage with the receiver), the problem is probably in the NSG receiver connection to the Technological centre. On the computer connected on LAN of the NSG receiver in the Command Line Interface try to enter command "ping 194.108.76.198" (it is necessary to ensure, that packets pass through the NSG receiver, for example by disconnecting cables from other computer network cards except that, where the NSG receiver is connected). If the answers are returning back, the problem may be that in the local network there is traffic banned on port 1194 (you cannot test this by command ping). If the packets are not returning, there is probably a problem in connectivity of WAN connection into the internet.

OUTPUT IDENTIFICATION NUMBERS OF THE DEVICE AND CODES

For each asset orientated device (REGGAE) it is possible to set up a transmitter number. On each asset orientated device (REGGAE) it is possible to distinguish up to 8 connected ESS panels, their identification numbers being submitted into the configuration of the asset orientated device to which they are connected.

The consequent device number, under which messages arrive to the ARC, is created such that the first three of the sixteen ciphers (0-9, A-F) are gained by transferring the number of the transmitter to the sixteen cipher system. The last cipher denotes the sequence of the identification number of the device in the configuration of the asset orientated device. In cases where the ID of a given security panel is not configured in the asset orientated device, the last cipher of the ID device received from the ESS to the asset orientated device is used as the last cipher for identifying the device from the NSG receiver.

Example:

For example – the REGGAE device with transmitter number 12310, to which ESS with the ID number 5678 is connected, this being stored in second position in the REGGAE configuration. Messages from the ESS arrive under the number of the asset 07B2, because 7B16=12310 and 2 represents the rank of the ESS identification number in the REGGAE configuration.

NSG receivers transmit codes accepted from the ESS panel without change (in Contact ID or 4+2 formats). Apart from data from the ESS panel, the REGGAE device can transmit its own messages (changes to its inputs, breakdown/restart of communication, problem statuses) in the propriety format of NAM system a.s. In the NSG receiver these messages are converted to Contact ID messages (see point E. codes of own messages from REGGAE in Contact ID format). Own messages from the REGGAE device are sent with the number of the device created in such a way that the first three ciphers represent the sixteen cipher number of the transmitter and the last cipher is „A“ (so that codes of messages from the ESS do not coincide with codes of the REGGAE devices own sent messages).

Output message format

A. Basic Signal Protocol

This protocol is used for messages in formats 4+2 and 4+3.

1RRLssssAAAAAsXGYYY[DC4]

Where:

Code	Code meaning
1	Protocol ID
RR	Receiver number (standardly 01)
L	Line number (standardly 1)
s	Space
AAAAAA	device ID. Usually 4 digits with two introductory spaces
X	Occurrence code. Usually space
G	Space
YYY	Occurrence code
[DC4]	Terminator, 14 Hex

B. Heartbeat Signal Protocol

Next message is sent regularly from Sur-Gard device. It allows ARC software to detect presence and activity of receiver.

1010sssssssssss@ssss[DC4]

Where:

Code	Code meaning
s	Space
@	Supervisory Signal
[DC4]	Terminator, 14 Hex

C. Contact-ID Protocol

Messages accepted in format Contact-ID and also own messages translated from proprietary format are sent in this format.

5RRLs18AAAAQXYZGGCCC[DC4]

Where:

Code	Code meaning
5	Protocol ID
RR	Receiver number (standardly 01)
L	Line number (standardly 1)
s	Space
18	Contact-ID – format identification
AAAA	Four-digit device ID
Q	Qualifier (characters E, R and P) In the messages code list there are occurrences codes including this qualifier
XYZ	Occurrence code
GG	Group number, where this occurrence originate
CCC	Zone (loop) number or user identification
[DC4]:	Terminator, 14 Hex

D. Clock Signal Protocol

In the NSG receiver it is available on request to turn on the message sending with the message time. In this case next format is used:

1RRLssssAAAAAsXGYYYHH:MM:SS-dd/mm[DC4]

5RRLs18AAAAQXYZGGCCCHH:MM:SS-dd/mm[DC4]

Where:

Code	Code meaning
HH	Hours
MM	Minutes
SS	Seconds
dd	Day
mm	Month

E. Codes of own REGGAE messages in format Contact ID

Code	Basic messages
E350	Loss of connection with the asset
R350	Renewal of connection with the asset
E351	Duplicate asset with the same number
E355	Losing the message from the asset
R351	Cancelling the duplicate asset
E625	REGGAE time synchronization
E352	Failure of the REGGAE tel. line
R352	Renewal of the REGGAE tel. line
E357	Failure of the REGGAE GPRS modem
E305	Reset REGGAE
E312	Supply decrease
E311	Battery disconnection
R311	Battery connection
E301	Power cut 230 V
R301	Renewal 230 V
E302	Low battery voltage
E353	PSTN disconnected
R353	PSTN connected
R306	Firmware upgrade
E354	Failure of tel. communication: (parity failure, invalid message length, repeated message failure, max. number of repeating):
E359	SMS limit exhausted
R359	Renewal of the SMS limit
E358	Loss of GPRS signal
R358	Renewal of GPRS signal
E356	Loss of communication with ARC
R356	Renewal of communication with ARC

Code	Basic messages
E330	Loss of communication via serial line ³
R330	Renewal of communication via serial line
E605	REGGAE uses GPRS channel
R605	REGGAE uses LAN channel
E350	Loss of connection between the NSG receiver and Technological centre (always with designation number 0000)
R350	Renewal of connection between the NSG receiver and Technological centre (always with designation number 0000)
E351	Loss of main route of the NSG receiver into Technological centre (always with designation number 0000)
R351	Renewal of main route of the NSG receiver into Technological centre (always with designation number 0000)
E352	Loss of backup route of the NSG receiver into Technological centre (always with designation number 0000)
R352	Renewal of backup route of the NSG receiver into Technological centre (always with designation number 0000)

¹ If you set the same transmitter number for two REGGAE transmitters in your network, then you can not distinguish from which of them the message came from. Presence of two transmitters with the same number is indicated by this message. If you turn off one of these duplicated transmitters, it will generate message "Cancelling of duplicated asset".

² In case of loss of GPRS connection are important messages transmitted by SMS. Every transmitter REGGAE has set SMS limit which can be transmitted for a given time period. This message indicates exhaustion of this limit. After expiration of the period and after renewal of the limit the message is generated "Renewal of the SMS limit".

³ In case of device REGGAE amos, security panel Amos communicates with the REGGAE communication feature over serial line. In case, that panel Amos is not communicating for specified time, this message is generated.

⁴ These messages contain input number – as a three-digit number at the end of the code.

Examples of messages:

- A. The transmitter with the object number 123 receives messages from the panel in the format CID 456718314401003. If the device with ID 4567 is not defined in the REGGAE device, the number of transmitter 07B is added to the last cipher of the device ID and the message is sent to the ARC in the format 5011 1807B7R14401003.
- B. The transmitter with the object number 123 changes input 0 to the level log. 0. The ARC receives the message: 5011 1807B0E1400000.

Code	REGGAE inputs and outputs changes
R140	Setting the log. input
E140	Dropping the log. input
R141	Setting the log. output
E141	Dropping the log. output
E144	Tamper open (input number 11 or 12)
R144	Tamper closed (input number 11 or 12)
R313	Reset button released (input number 13)
E313	Reset button pressed (input number 13)
E429	Access to the REGGAE configuration

Code	Messages generated by setting the input type ⁴
E140	Alarm
R140	Renewal
E110	Fire
R110	Renewal of fire
E101	Emergency
R101	Renewal of emergency
E150	Disorder
R150	Renewal of disorder
R400	Closed by the user
E400	Opened by the user
E301	Outage of power supply
R301	Renewal of power supply
E311	Outage of battery
R311	Renewal of battery
E604	System test (next occurrences will be sent)
R604	End of the system test

Factory setting of NSG receiver

(Changes in parameters can only be carried out by the producer of the device – NAM system, a.s.)

Setting WAN	DHCP
LAN (TCP/IP)	IP address NSG receiver: 192.168.5.1
TCP port	1025
Output protocol	Sur-Gard
Number of receiver	01
Number of route	01
Exception	The IP address 192.168.5.2. cannot be used in the LAN network.

PRODUCER:

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