Instruction Manual

WA-NEX

Wired Network Extender

2024
Version 2.0.3

For programming information, see the Wired System Programming Guide

For further installation information, see the Wired RAK Application Sheet

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What is the WA-NEX?

The WA-NEX is a Wired network extender consisting of two isolated connection points.

There are two main uses for the WA-NEX:

- Systems that exceed the maximum cable length of 3000m for radial Wired networks or 1500m for star Wired networks. The WA-NEX is used to partition the system, creating two smaller Wired networks as if it were a single system.

- When there are three or more cables at a single connection point and the use of a RAK-STAR is not possible. This is typical when retrofitting a 4-core system. For more information, see Appendix 1: WA-NEX 4 Core.

NB
A system with approximately two fully populated RAK-STAR units will be approaching the 3000m limit in a typical installation. This can vary depending on the nature of the installation and the resulting routes taken by the cables.

Installation Principles

- The WA-NEX punchdown connections can accommodate two cables of the same type on each side of the board.
- The HUB should be connected to the Master side.
- The Remote and Master sides of the WA-NEX have an RJ11 port, which may be used to connect a single Rako Wired accessory. The RJ11 ports must not be used for connecting multiple devices.
- The “Power Link” jumper can be used to connect and disconnect the 15V Wired network supply between the Master and Remote sides of the system.
- If both the Master and Remote sides have independent power, the power link can be removed; if the remote side has no power source, the power link must be fitted.

Terminating the WA-NEX

There are two sets of termination jumpers on the WA-NEX, one for each half of the newly partitioned network. These must be terminated in the same fashion as any other Rako Wired device. As two Wired networks are being connected, the correct termination for each system is required.

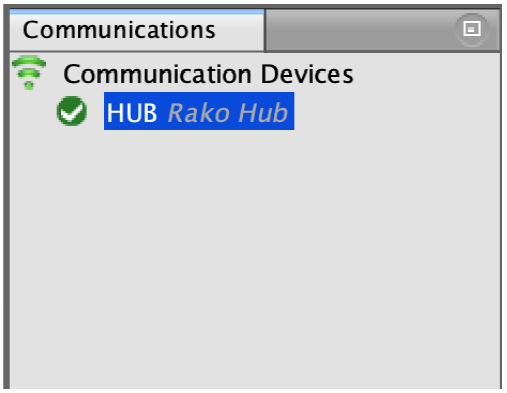
Terminated
For end-of-line termination, use if the WA-NEX is connected to anything except a RAK-STAR.

Star Terminated
Use this termination if the WA-NEX is connected to a RAK-STAR.

Un-Terminated
If the connection point is in the middle of a Wired network, remove the termination jumpers.

Adding the WA-NEX as a device

To address the WA-NEX, first connect to a HUB connected to the Master side. For full instructions on how to connect to a HUB, see the Rasoft Pro programming guides.



When the HUB is successfully connected to Rasoft Pro, it should appear in the communications window with a green tick next to the HUB name.

- Select "File" - "New Device" to open the "New Device Wizard."

- Select the WA-NEX from either the "Wired" or "All" device lists.

- Give the device a suitable name and leave "Automatic ID" selected.

- When prompted, press and hold the setup button on the WA-NEX. When the "A" status LED begins to flash, release the setup button.

Once the WA-NEX has been added as a device, it will appear in the device list:



NB
Although it is not mandatory, it is advisable to set up the WA-NEX in order to access its diagnostic features in Rasoft Pro.

Diagnostic features of the WA-NEX

Each of the network diagnostic LEDs at the top of the PCB (A-F) gives information on the state of either side (Master and Remote) of the Wired network.

A (Master In)
Blue LED. Will flash whenever a command is received by the WA-NEX from the master side of the network.

B (Master Error)
Red LED. Will display solid if no network can be found on the Master side of the WA-NEX. It will flash red if there is a network connected on the Master side but there is an error in communication (likely a cabling fault).

C (Remote In)
Blue LED. This LED will flash whenever a command is received by the WA-NEX from the remote side of the network.

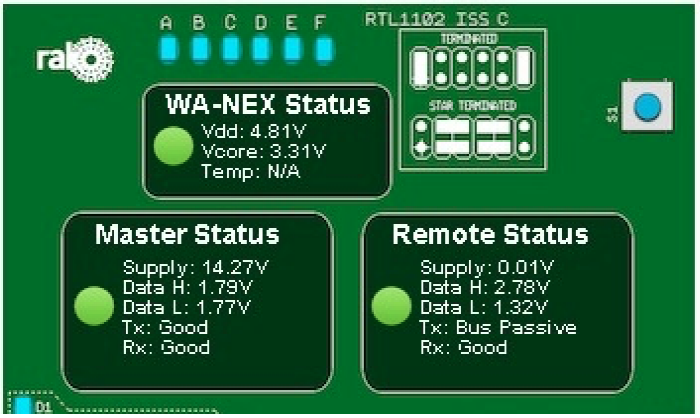
D (Remote Error)
Red LED. Will display solid if no network can be found on the Remote side of the WA-NEX. It will flash red if there is a network connected on the Remote side and if there is a communication error (likely a cabling fault).

E (Master Out)
Blue LED. This LED will flash whenever a command is transmitted by the WA-NEX to the Master side of the network.

F (Remote Out)
Blue LED. This LED will flash whenever a command is transmitted by the WA-NEX to the Remote side of the network.

Diagnostic features using Rasoft Pro

Once added to the system, the WA-NEX will give diagnostic feedback about the state of the Rako Wired network:



Pressing “Poll” will run a diagnostic check on both sides of the system. If there is a problem such as “Remote CAN Voltage Too Low” or “Short on Master Data Side," it will appear to the right of the screen in Rasoft Pro. In most cases, an advised course of action will also be given.

Appendix 1: WA-NEX 4 Core

The WA-NEX module can be used when multiple 4-core cables are Wired back to a single location; this is especially useful for systems using pre-existing cables.

In the diagram below, four cables are being connected to the WA-NEX, which creates two systems. The Master side is a radial starting at the RAK-LINK and ending at a WCM keypad. The Remote side of the system begins at a WCM keypad and ends at a WCM keypad.

Appendix 2: WA-NEX between RAK-STAR units

On a RAK-STAR system, the maximum distance of the data cable is 1.5km. When the system becomes too large, intermittent operation is the most common symptom. If a system is too large, the WANEX can be implemented between RAK-STAR units to create two smaller systems.