WA-NEX User Manual

What is the WA-NEX?

The WA-NEX is used to partition RAKO systems that have exceeded the maximum cable distance of the RAKO wired network. Once partitioned by a WA-NEX the two partitioned halves will behave exactly as if it were a single wired network.

The RAKO wired system has a maximum data network length of 3000m. When using a RAK-Star the cable length is effectively doubled as the data travels out and returns on the same cable. This means the maximum is reached with 1500m of cable.

The symptom of this maximum data length being exceeded is that newly added CAN devices will cause other network devices to disappear from the system. If keypads or other devices that were previously appearing as online start going offline as new ones are added and the system is large then it is very likely that the total data length has been exceeded.

As a rule of thumb a system with two fully populated RAK-Stars will be approaching the 3000m limit in a typical installation. Obviously this can vary dramatically depending on the nature of the installation and resulting routes taken by the cables.

Installing the WA-NEX

Connections

The WA-NEX has both punch-down and RJ11 ports that can be used to connect it to each half of the newly partitioned system. As indicated on the board the wired network with the Bridge should be connected to the "Master" side and the other to the "Remote" side.

Spurs

If possible it is good practice to only have as single cable coming from each of the Master and Remote sides of the WA-NEX and to avoid using spurs While a network with multiple spurs from the WA-NEX will operate correctly it should only be used when inadequate cabling is present for a daisy chain or star (home run configuration).

See WA-NEX Application data sheet for more information on using this product to form multiple spurs.
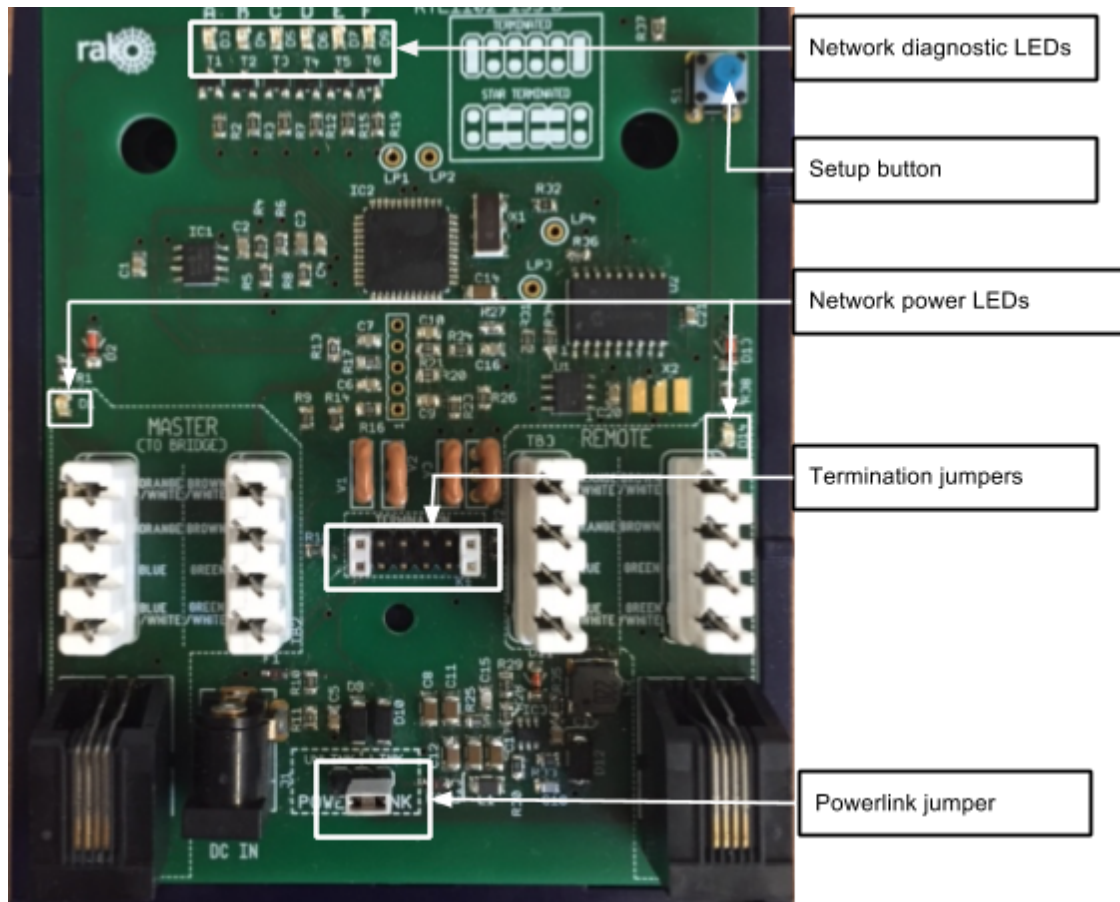
Setting jumpers and terminations

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 systems are required. Imagine the three sets of termination jumpers on the left being related to the master and those on the right to the remote.

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.

These must be set correctly for the WA-NEX to communicate between the two wired networks.

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. It may be that each half has its own power source (RAKLink) and therefore it may be preferable to keep the power separate

whereas a small additional cable run created by the WA-NEX may require power from the main network.

Adding the WA-NEX as a device

To address the WA-NEX first connect to a Bridge attached to the Master side in the normal fashion. For full instructions on how to connect to a Bridge see any of the Rasoft Pro programming guides.

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

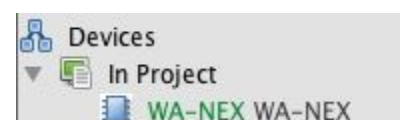- Select "File" - "New Device" to open the "New Device Wizard"

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

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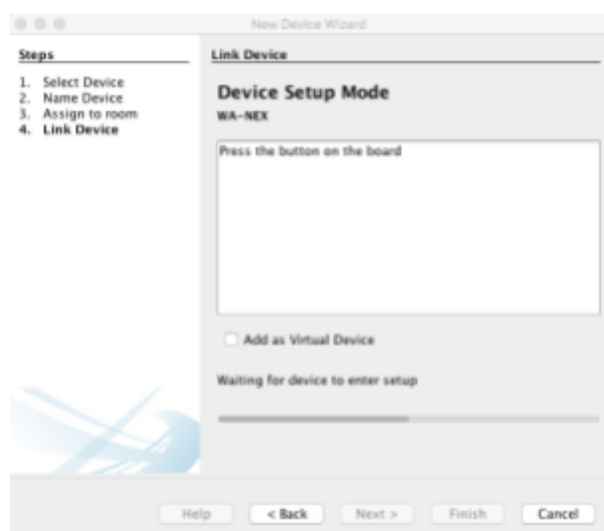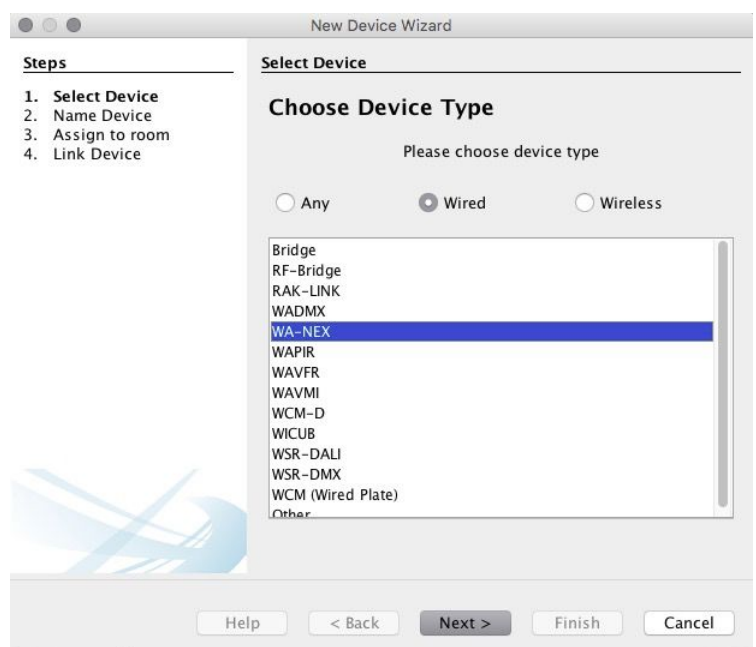
Once the WA-NEX has been added as a device it will appear in device list:

NB

It is not necessary to setup the WA-NEX as a device in the software for it to successfully partition the system: the WA-NEX can be used as a plug and play device.

It is advisable that the WA-NEX is set up for two reasons. Firstly it is a good idea to have the presence of the device visible on the software as a record for any future work. There are also diagnostic tools and information available from the software that may help with fault finding if cabling problems remain on the wired network.

Diagnostic features of the WA-NEX

Diagnostic using circuit board LEDs

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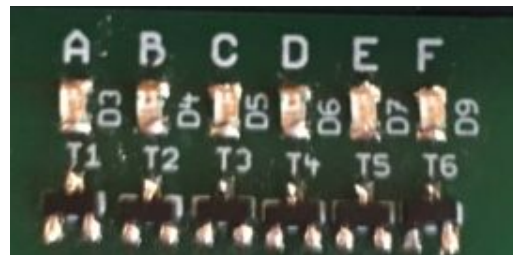
A (Master In):
Blue LED. This LED will flash whenever a command is received by the WA-NEX from the master side of the network.

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

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

F (Remote Out):
Blue LED. 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 addressed the WA-NEX can give diagnostic feedback about the state of the Rako wired network:
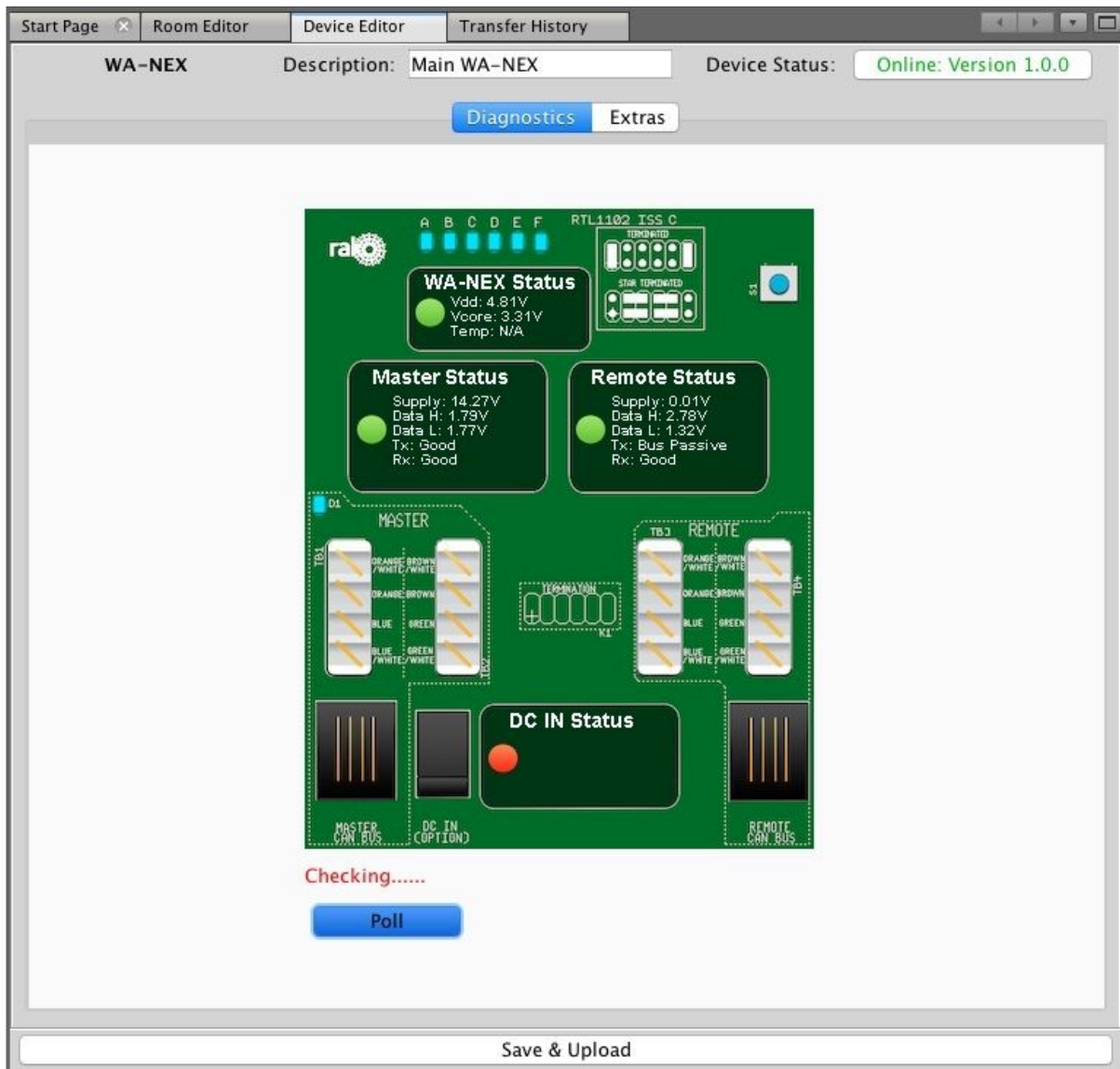
Pressing "Poll" will run a diagnostic check on both sides of the system. If there is a problem such as "Remote CAN Voltage too low" or "Short on Master Data side" it will appear to the right of the screen in Rasoft Pro. In most cases an advised course of action will also be given.