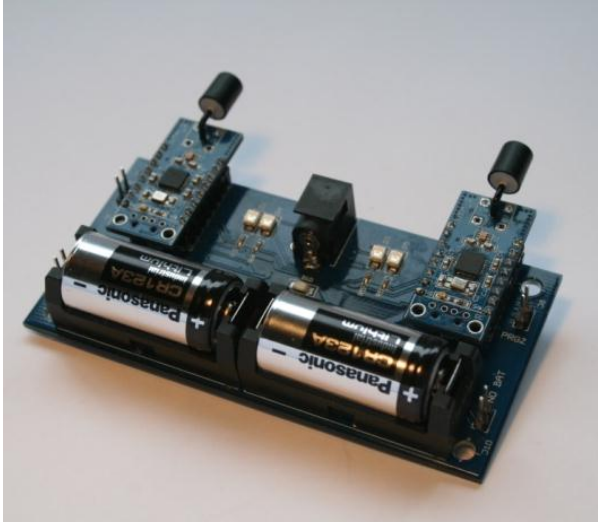


## MCK4000 NHSRN REPEATER

Repeater		
	Article number:	NRM_1
	Size:	100 x 50 x 18 mm
	Function:	NTMs transmit digital information in packages called frames. A repeater retransmits these frames to extend range and to create multipath data transmission. It uses two frequency bands.
	Standards:	EN300-220-1 EN300-220-2 EN300-220-3 IEEE 802.15.4 EN54-4 EN54-25
Specifications		
<p><b>Description</b></p> <p>A radio link in the Ninthway radio network transmits digital information in packages called frames.</p>	<p>A repeater provides possibility to extend the range of NTM transceivers in the radio network.</p> <p>It provides a way to reach and control NTM's anywhere in the network.</p> <p>The radio network operates on two frequency bands called SAN and BBN. The gateway houses an NTM for each frequency band. The two NTM's are linked via a high speed I2C connection.</p> <p>Both NTM's operate in function 2 mode. The SAN NTM communicates with local sensor and actor devices; the BBN NTM provides a separate link between repeater stations and other gateways.</p> <p>The repeater is set up like any other device in the radio network. It needs:</p> <ul style="list-style-type: none"> <li>• a house code (Network ID)</li> <li>• a gateway number</li> <li>• a device number</li> <li>• an actor or control group number</li> <li>• a low voltage detection level</li> <li>• status timing period</li> </ul>	

## MCK4000 NHSRN REPEATER

Repeater	
<b>Synchronisation</b>	<ul style="list-style-type: none"> <li>power level of the transceivers</li> </ul> <p>For setup use a remote programmer.</p> <p>The SAN transceiver on the repeater emits a beacon signal to synchronise the communication between the gateway and surrounding actor devices.</p> <p>To save power, actors are normally switched off, to be awoken by its internal clock, just in time to receive the beacon signal. The beacon signal will tell the actor whether or not more data is to be expected and it should stay awake or go back to sleep again.</p> <p>Newly received data frames are immediately broadcasted on the BBN band.</p> <p>Newly received control (MAC)frames are immediately transmitted on the BBN transceiver and directly after the beacon signal by the SAN transceiver.</p> <p>All frames are checked whether they are new or already known. The last ones are ignored.</p> <p>The repeater relays all frames with the proper house code, forming an open network for any device having the proper house code and proper IEEE 802.4.15 frame specifications.</p> <p>Within a network there is room for 15 different gateways each handling a maximum of 4095 devices.</p> <p>It is a modular design, consisting of a pcb carrying a 40 pin connector to connect to a gateway module that provides the hardware connection to an external link.</p> <p>A number gateway modules are available.</p> <ul style="list-style-type: none"> <li>Serial module providing RS232 link.</li> <li>USB module, providing an client USB link</li> </ul> <p>ESP module, simulating an Hochiki ESP loop I/O device for 255 network devices</p>
<b>Connections</b>	Power Jack 2.5 mm male.
<b>Indicators</b>	<p>At both side of the power jack there are 2 leds.</p> <p>D2 and D5 indicate proper functioning of the NTM.</p> <p>D4 and D3 indicate failure in connection between the NTM's</p> <p>The LED under the power jack is the charge indicator for the rechargeable batteries. LED on means charging.</p>
<b>Jumpers</b>	<p>NO_BAT jumper overrides presence detection of batteries. In case no batteries are placed.</p> <p>BAT_ON jumper links batteries to the power supply of the repeater. When omitted power must come from power jack.</p>

## MCK4000 NHSRN REPEATER

Repeater	
	The Prog jumper connects the adjacent NTM to the serial pins on the Semtec connector.
<b>Power supply and current consumption</b>	<p>Via power jack pin is + Voltage 9-12V DC Current Non charging: approx.: 100 mA Current charging: 1 A Current limited input</p> <p>PCB contains 2 CR123 battery holders for rechargeable batteries. The repeater will not power-up unless these batteries are placed or power is or the NO-BAT jumper is placed.</p> <p><i>Non rechargeable batteries may be used, provided there is no power supply on the power jacket.</i></p>
<b>NTM modes</b>	For repeater functioning the NTM's are set to function 2.
<b>Mounting instructions</b>	Housing has a damping effect on the transceivers. For optimal performance either use a housing that exposes the JJB antenna or request for NTM's with MCX connector instead of the JJB antenna. This will allow the use of external optimized antennae.
<b>Additional information</b>	<p>Datasheet NTM_3 Application note 1 Programming the NTM Application note 2 Ninthway high secure radio network</p>