

User manual



RipEX2-HS

Hardware



Configuration



Parameters



fw 2.1.2.0
2025-01-24
version 1.7

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- Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors), or be totally lost. Significant delays or losses of data are rare when wireless devices such as the RipEX2-HS are used in an appropriate manner within a well-constructed network. RipEX2-HS should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. RACOM accepts no liability for damages of any kind resulting from delays or errors in data transmitted or received using RipEX2-HS, or for the failure of RipEX2-HS to transmit or receive such data.
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1. Quick guide

RipEX2-HS serves as a redundant station equipped with two standard RipEX2 radio modems using a hot standby functionality. All you have to do to put it into operation is to connect properly all connectors and configure internal RipEX2 units using a PC and a web browser.



Fig. 1.1: RipEX2-HS

To configure RipEX2 units please see *RipEX2 Configuration*¹



Note

RipEX2 access defaults: IP 192.168.169.169/24, username: admin, password: admin or IP 10.9.8.7 when accessing over the optional USB/ETH adapter or Wifi adapter.

Power on the RipEX2-HS and wait approx. for 25 seconds for the RipEX2 OS to boot. When accessing over the optional USB/ETH adapter or Wifi adapter, your PC will get its IP settings from the built-in DHCP server and you have to type `https://10.9.8.7` in your browser.

When accessing over Ethernet, set a static IP `192.168.169.x/24` on your PC first, connect your PC to RipEX2 ETH interface, start your browser and type `https://192.168.169.169` in the address line. When accessing RipEX2 for the first time and using https, you have to accept the https security certificate issued by RACOM.



Note

Both RipEX2 units are in factory default settings.

¹ <https://www.racom.eu/eng/products/m/ripex2/set.html>

1.1. RipEX2-HS establishing connection

- Use the HS chassis MODE selector button and set it to *Unit A*
- Turn off Unit B (via power supply)
- Configure Unit A:
 - Follow the common *RipEX2 configuration*²
 - And follow the HS special steps further in *Chapter 5, RipEX2-HS Settings*
- Download the Unit A configuration and turn this unit off
- Turn on Unit B and use the HS chassis MODE selector button and set it to Unit B
- Upload the previously saved configuration from Unit A to Unit B. Edit its configuration afterwards:
 - Rewrite station name (SETTINGS > Device > Unit)
 - Change the Chassis position to “Unit B” (SETTINGS > Services > Hot standby)
 - Change the management address within the SETTINGS > Interfaces > Ethernet menu (the IP address of Network Interface with the “Range for virtual address” checked)
- Turn on Unit A
- Use the HS chassis MODE selector button and set it to AUTO

² <https://www.racom.eu/eng/products/m/ripex2/set.html>

2. Product

2.1. Dimensions

2.1.1. RipEX2-HS

19" rack 3U, H × W × D: 120 × 442 × 360 mm (4.72 × 17.40 × 14.17 inch.)

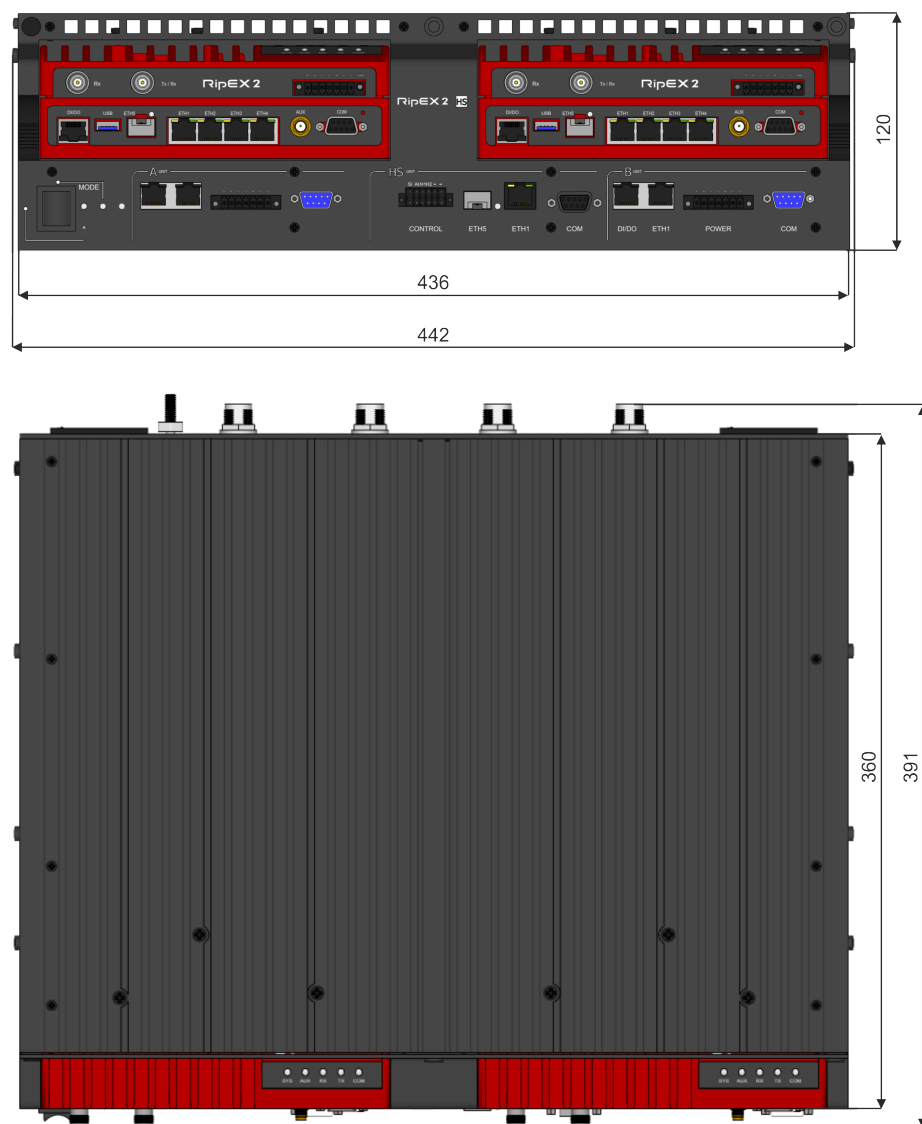


Fig. 2.1: RipEX2-HS dimensions

2.1.2. RipEX2-RD

19" rack 3U, H × W × D: 87 × 442 × 360 mm (3.42 × 17.40 × 14.17 inch.)

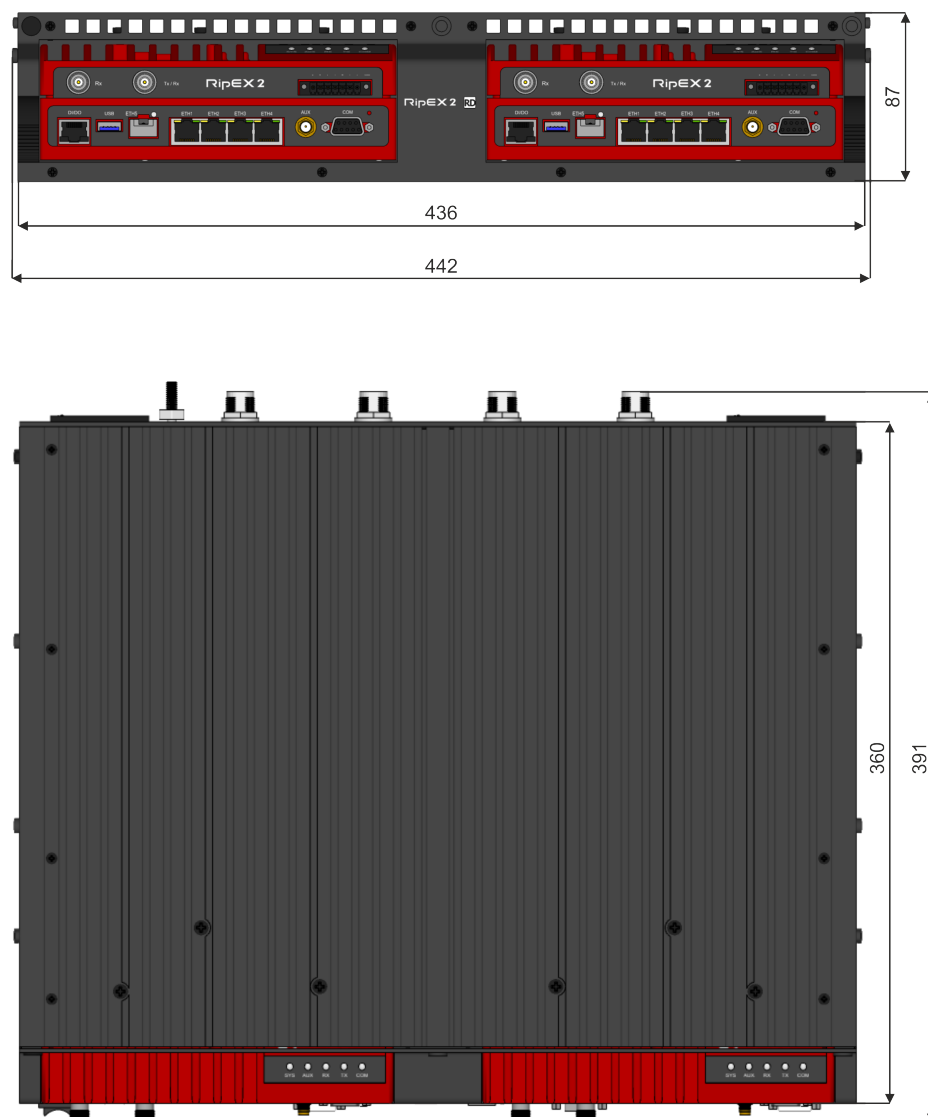
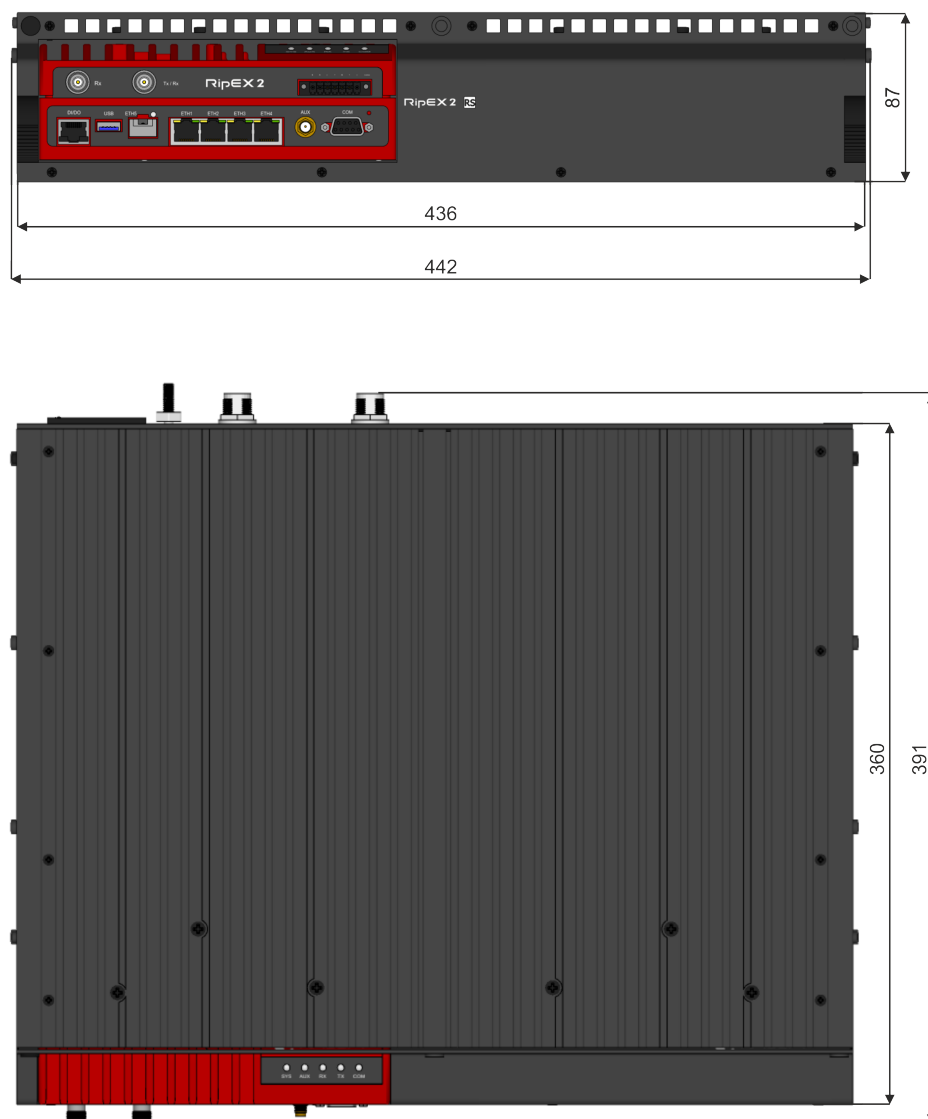


Fig. 2.2: RipEX2-RD dimensions



2.2. Front panel RipEX2-HS



Fig. 2.4: RipEX2-HS front panel

2.2.1. Connectors available on front panel

All connectors for RipEX2 units are described in RipEX2 User manual (*Chap. 1.2*)

Connectors of the RipEX2-HS are splitted to three sections: HS unit, "A" unit and "B" unit.

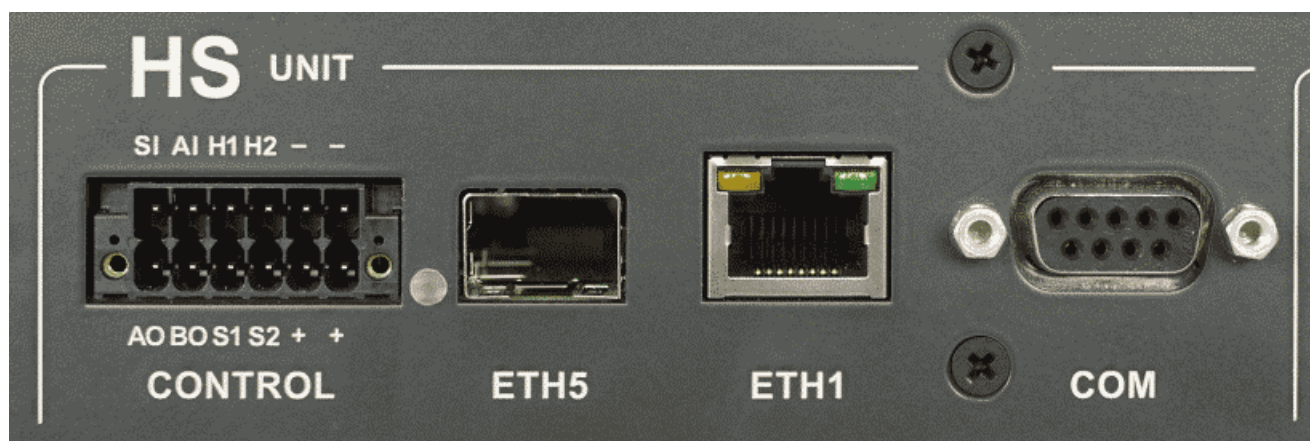


Fig. 2.5: HS unit

Connectors of this sections serves as connection with external equipment.

Description of each connector is the same as with RipEX2 unit and you can find it in RipEX2 manual.

ETH1 and ETH5 (SFP) are connected to an internal switch, for connection of both ETH to the individual RipEX2, units the ETH1 connector in A unit and B unit section shall be used.

12 pin connector (Type of plug Phoenix Contact 1790331)

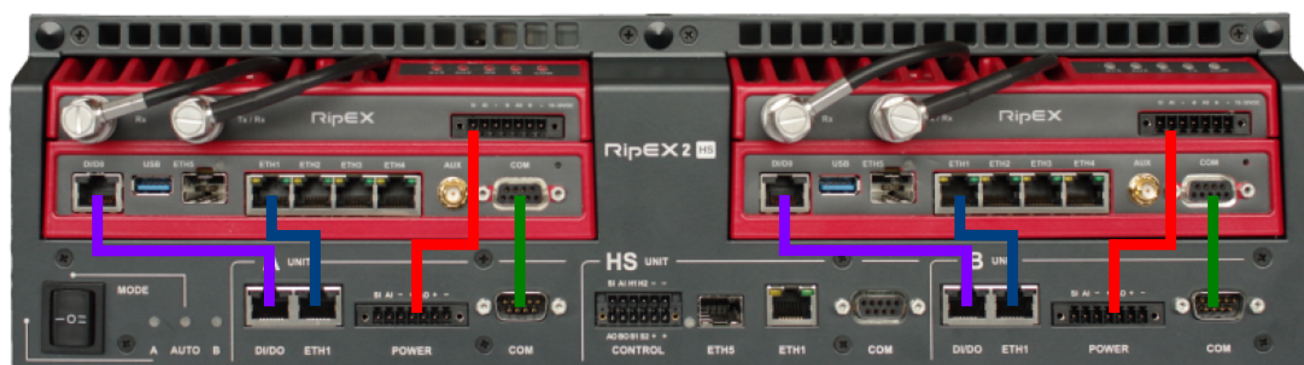
Pin description	
SI Sleep input	This input is connected to the SI pin on power connector of the active RipEX2 unit
AI Alarm input	This input is connected to the AI pin on power connector of the active RipEX2 unit
H1	Allows HW driven switching between active units in AUTO mode

Pin description	
H2	Allows HW driven switching between active units in AUTO mode
AO	Alarm output of the "A" unit RipEX2
BO	Alarm output of the "B" unit RipEX2
S1	Alarm status output – indication of an alarm of HS controller
S2	Alarm status output – indication of an alarm of "A" unit or/and "B" unit



Fig. 2.6: A unit, B unit

Connectors of this section has to be interconnected with respective connectors of appropriate RipEX2 unit.



2.2.2. LED panels description

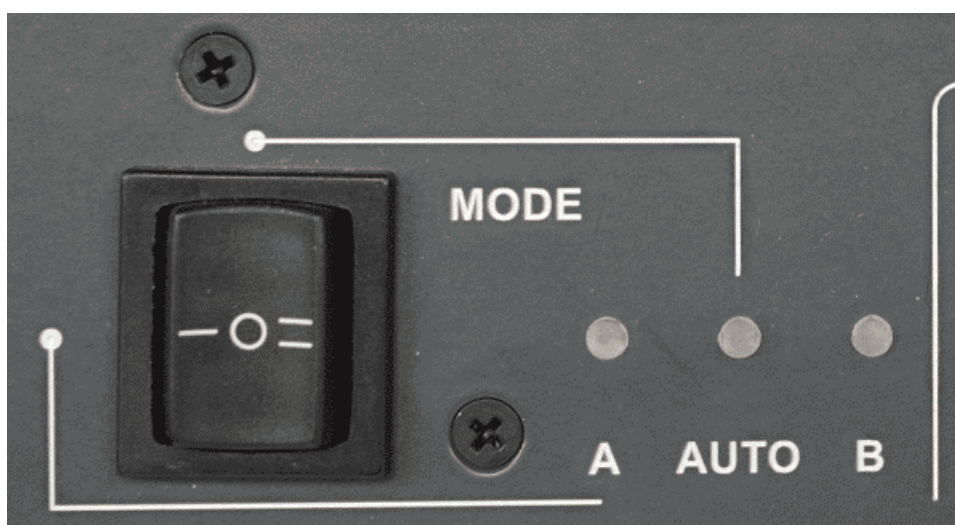


Fig. 2.7: LED panel

Tab. 2.1: LED panel description

	Symbol	Description
1	AUTO	<p>Dark mode AUTO is not active</p> <p>Green solid – ready, both RipEX2 units powered and no alarm known</p> <p>red solid – alarm status, when only this LED is red indicates alarm of the controller, otherwise together with unit in alarm status</p> <p>dark – RipEX2 "A" is not active</p>
2	A	<p>Green solid – Unit "A" active - selected as active by switch</p> <p>green blinking – AUTO mode ready to serve</p> <p>Red solid – unit in alarm status</p> <p>Red blinking – power supply alarm (together with red solid AUTO LED)</p>
3	B	<p>Green solid – active - selected as active by switch</p> <p>Green blinking – AUTO mode ready to serve</p> <p>Red solid – unit in alarm status</p> <p>Red blinking – power supply alarm (together with red solid AUTO LED)</p>

Tab. 2.2: MODE selector

MODE	Description
A	RipEX2 unit "A" hard selected – it remains active even in case of alarm on unit "A"
AUTO	AUTO mode – A unit active till an alarm status on "A" unit occurs, which causes switching to unit "B".
B	RipEX2 unit "B" hard selected – it remains active even in case of alarm on unit "B"

For more details see *Chapter 4, RipEX2-HS in detail*.



Note

When testing the changeover, please wait at least 30 seconds between individual tests.

2.3. Rear panel

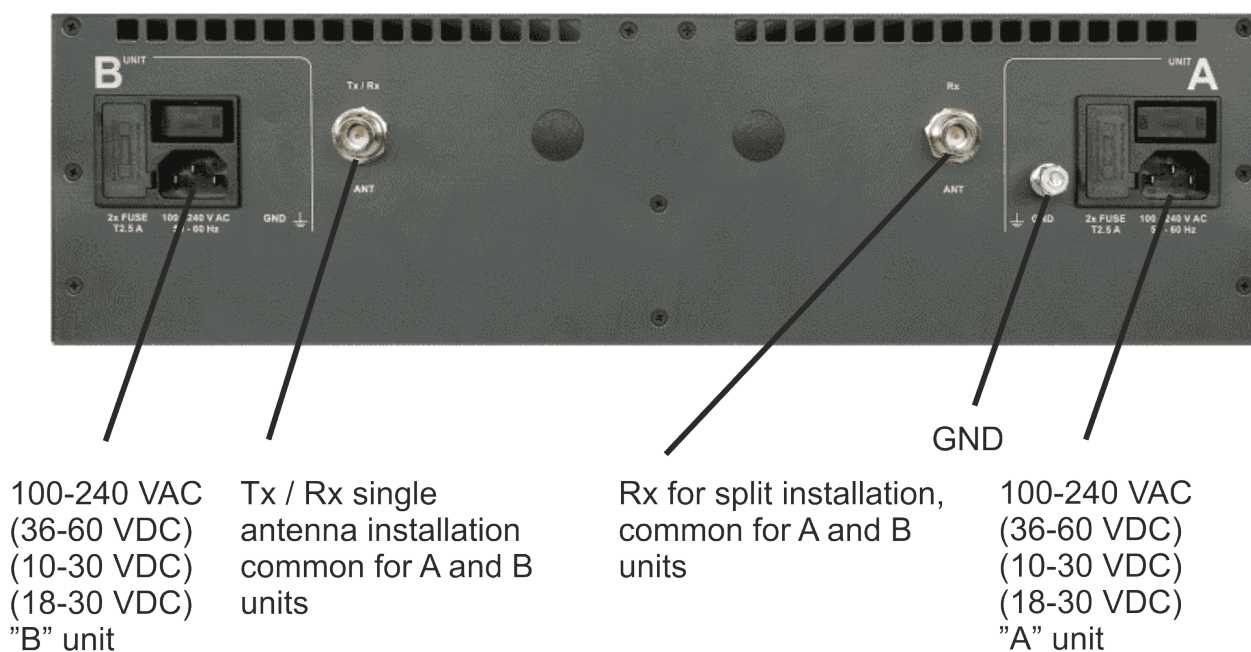


Fig. 2.8: RipEX2-HS/RD/RS rear panel

2.3.1. Common connectors

2.3.1.1. Antenna

There are different models in terms of antenna connectors. N-female connector is always used.



Fig. 2.9: N connector

2.3.2. A and B connectors

2.3.2.1. Power supply connector AC model

100–240 V AC equipped with T2.5A fuse

Optionally 36-60 V DC, 18-30 V DC or 10-30 V DC



Fig. 2.10: Power supply connector AC model

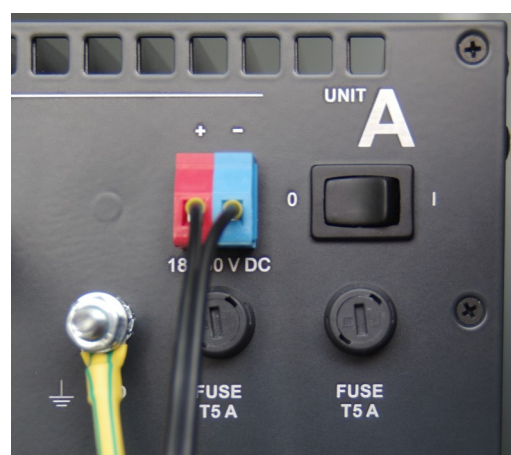
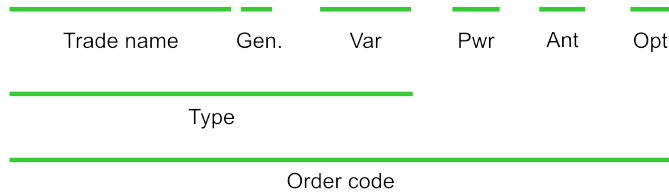


Fig. 2.11: Power supply connector DC model

2.4. Ordering codes

RipEX2-HS-A-A-D



Trade name – trade and marketing name of the product. This name is used for all products within the same product family.

Possible values: RipEX

Gen – generation of the product of specific Trade name. The very first generation doesn't have any number in this position.

Possible values: 2

Var – designation of product variant

Possible values:

HS – 19" chassis, Hot Standby controller, 2x pow.supply, for 2x RipEX2 (excl.)

RD – 19" chassis, without controller, 2x pow.supply, for 2x RipEX2 (excl.)

RS – 19" chassis, without controller, 1x pow.supply, for 1x RipEX2 (excl.)

Pwr – power input

Possible values:

A – 100-240 VAC, 50-60 Hz

D – 36-60 VDC, positive grounding possible

E – 10-30 VDC

F – 18-30 VDC, positive grounding possible

Ant – antenna connectors

Possible values:

A – Var. HS: 1× N-female (Tx/Rx) – antenna switched for A and B unit

B – Var. HS: 2× N-female (Tx/Rx, Rx) – antennas switched for A and B unit

D – Var. HS or RD: 4× N-female (Tx/Rx, Rx; Tx/Rx, Rx) – no antenna switch, separate antennas for A and B unit

E – Var. RS: 2× N-female (Tx/Rx, Rx)

Opt – designation of internal option, if it is used

Possible values:

none

D – 1x internal duplexer, frequency details should be specified, for Var. RS + Ant. E or Var. HS + Ant. B

Type – specific product type for which type approvals like CE, FCC etc. are issued

Possible values:

RipEX2-HS (RipEX2-RD, RipEX2-RS in Code)

Order code – printed on Product label on the housing and used on Quotations, Invoices, Delivery notes etc.

3. Installation

3.1. Mounting

RipEX2-HS is delivered by default with Mounting kit, which contents:

- 2× Adjustable rail (adjustable for 19" Rack depths in range of 380-640mm)
- 2× Locking L-holders
- 10× M6 screws + cage nuts



Fig. 3.1: RipEX2-HS Rack mounted



Note

Pull-out holders (placed on both front sides of the chassis) servers only for pulling the RipEX2-HS out of the shelf, not for carrying.

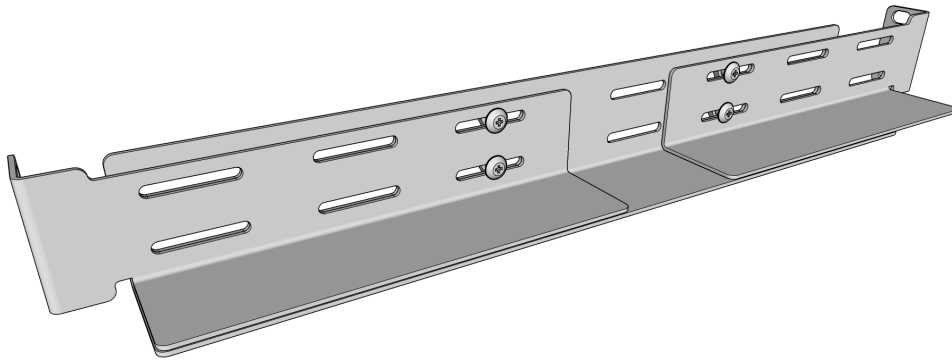


Fig. 3.2: RipEX2-HS/RD/RS adjustable rail



Fig. 3.3: Locking L-holder

3.2. Power

Power supply according to the HW variant of RipEX2-HS see <https://www.racom.eu/eng/products/ripex-hot-standby.html#features>¹

3.2.1. 100–240 V AC, 50–60 Hz

Since there are two independent power supplies, one for each RipEX2 unit, it is recommended to connect each power supply to a separate power phase with individual circuit breakers. When one phase would be off, RipEX2-HS will still be On.

There are individual power connectors for each power supply. See *Section 2.3, “Rear panel”*.

3.2.2. 36–60 V DC

There are also two independent power supplies with 36 to 60 V DC input voltage, one for each RipEX2 unit; input conductors are isolated from the rest of the RipEX2-HS and thus allows positive or negative grounding. The electric strength is 4 kV AC / 1 min.



Note

When positive grounding is used, neither device connected via RS232, USB, ETH can have negative grounding!

There are individual power connectors for each power supply. See *Section 2.3, “Rear panel”*

3.2.3. 10–30 V DC

There is not any internal power supply in this option, powering is the same as for standard RipEX2.

The supply must be capable of providing the required input for the projected RF output. The power supply must be sufficiently stable so that voltage does not drop when switching from receive to transmit, which takes less than 1.5 ms. To avoid radio channel interference, power supply must meet all relevant EMC standards. Never install a power supply close to the antenna. Maximal supply cable length is 3 m, and recommended wire cross section 1.0 mm².

3.2.4. 18–30 V DC

There are also two independent power supplies with 18 to 30 V DC input voltage, one for each RipEX2 unit; input conductors are isolated from the rest of the RipEX-HS and thus allows positive or negative grounding. The electric strength is 4 kV AC / 1 min.

When positive grounding is used, neither device connected via RS232, USB, ETH can have negative grounding! There are individual power connectors for each power supply. See *section 3.3, “Rear panel”*

3.3. Grounding

The grounding screw on the rear panel has to be properly connected to the grounding point of the rack. The minimal required copper conductor cross-section is 4 mm².

¹ <https://www.racom.eu/eng/products/ripex-hot-standby.html#order-codes>

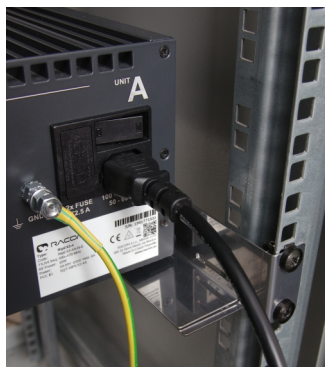


Fig. 3.4: RipEX2-HS grounding in the rack

3.4. Antenna

For antenna installation refer to *RipEX User manual*².

² <https://www.racom.eu/eng/products/m/ripex/instal.html#antenna-mount>

4. RipEX2-HS in detail

4.1. Functionality

There are two standard RipEX2 units with identical configurations inside RipEX2-HS. Both units are booted, however only one is active. Some interfaces (COM, ETH1 and Radio) of the non-active unit are disconnected.



Note

Even if Rx on inactive RipEX2 unit LED panel is blinking when the active unit is transmitting, these packets are not received. I.e. they don't take part in Statistic, Neighbours or Graphs.

When the active unit HW alarm output changes to “On” (e.g. when a controlled value exceeds the respective threshold), the controller automatically switches interfaces (COM, ETH1, ANT—if applicable) to the second unit and it takes over all functions. Since both units are using the same MAC addresses (MAC cloning), there is a minimal drop-out while switching, approx 5 s.

When RipEX2 units inside RipEX2-HS are in Bridge mode, the first switch-over takes approx. 30 s. It is because hot standby RipEX2 ARP table is clear and has to be filled with first packets (forward delay). The next switch-over takes approx 5 s. When Operating mode is Router, even the first switch-over takes approx 5 s. When ARP proxy in Router mode is used, switch-over time(s) is equal to that of the Bridge mode.

4.2. Block diagram

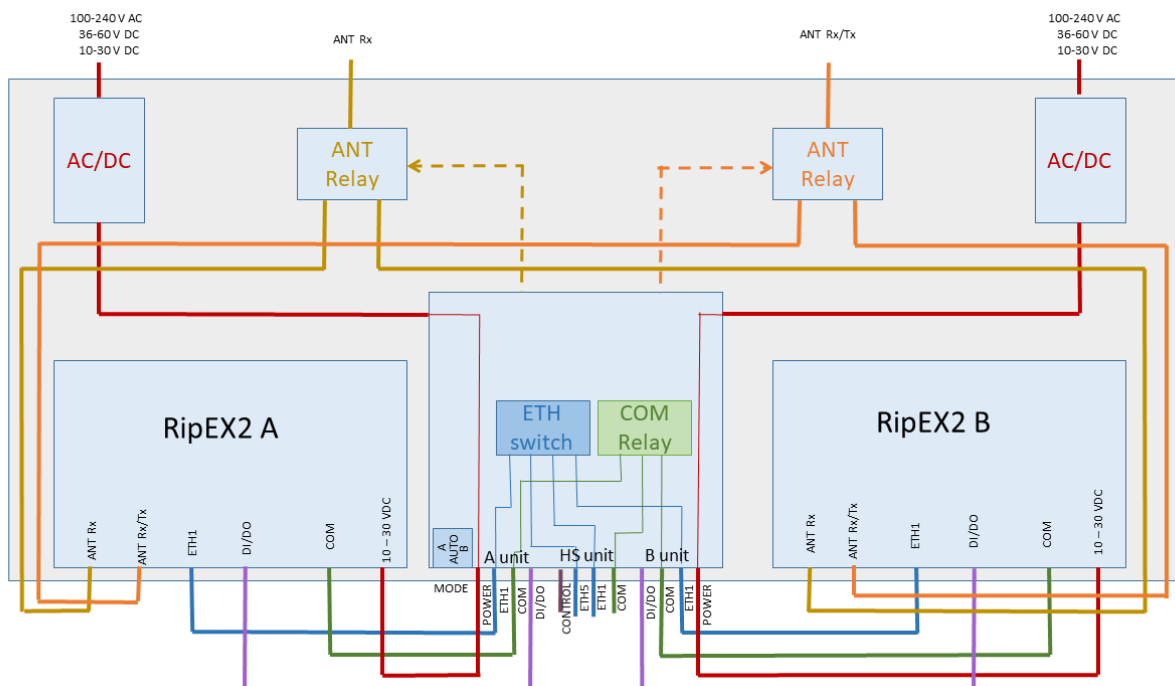


Fig. 4.1: Block diagram

4.3. Operating modes

- **Auto** – primary active is RipEX2 “A”, when it fails, controller automatically switches-over to RipEX2 “B”. When both units are with alarms, “A” unit remains active.
- **A** – only RipEX2 “A” is active and controller will never switch to RipEX2 “B”
- **B** – only RipEX2 “B” is active and controller will never switch to RipEX2 “A”

A and **B** modes are supposed to be used only for the maintenance/testing and not for normal service.

4.4. Switching over

In order to achieve maximum reliability, the controller is software free. Switching-over is based only on HW alarm outputs of RipEX2 units and the HW signals from their power supplies.

The HW alarm of active RipEX2 or its power supply will cause the immediate and unconditional switch-over to hot standby RipEX2. If there are any packets waiting in queues of RipEX2 which becomes inactive, these packets are discarded after switch-over.

4.4.1. Power alarm

Power supply of respective unit is “Off” when the input voltage from the respective power supply to the controller is out of voltage working range.

Some borderline examples for Auto mode (Primary unit is always “A”. The second unit is standby):

1. Power alarm of Primary unit is “On”
 - Standby unit becomes active
2. Primary unit alarm is “On” and Power alarm of Standby is “On” or Standby unit alarm is “On”
 - Nothing will be done. Primary unit remains active
3. Primary unit alarm is “On”, it was switched to Standby unit, Primary unit alarm disappeared
 - it will be switched back to Primary unit immediately (the protective timeout of 30 s will be held for shorter HW alarm output changes)

4.5. HW alarms

In order to achieve maximum reliability, the controller is software free. Switch-over is based only on HW alarm outputs of RipEX2 units and their power supplies.

Switch-over is based on HW alarm outputs of RipEX2 units, their power supplies and detector of radio Tx and antenna degradation.

5. RipEX2-HS Settings

The settings of individual RipEX2 units is available in RipEX2 User manual *chapter 7 Settings*¹. Only special settings for controller version of the RipEX2-HS is mentioned below.

5.1. Hot standby settings

Following settings is supported by the controller version of the RipEX2-HS, where the controller manages the active and passive/standby RipEX2-HS units and their accessing to the shared channels (e.g. radio).

The HW switch (mode selector) has to be set to AUTO position for switching between units, otherwise the selected unit remains active even if an error occurs on the selected one.

AUTO regime allows switching to the standby unit when an error status occur in active unit – if both units are without alarms, the A unit will be active.

For detailed settings of unit switching (and its conditions of switching) see sections *Events*² and *Antenna detection*³ in RipEX2 User manual and section *"Switching over" Ripex2-HS*⁴.



Important

The communication between individual RipEX2-HS units and HS controller use DI/DO interfaces, so other use of these interfaces is not possible.



Note

HW option RipEX2e (product variant 'C' and 'D') cannot be used in Hot standby configuration.

¹ <https://www.racom.eu/eng/products/m/ripex2/set.html>

² <https://www.racom.eu/eng/products/m/ripex2/set.html#set-device-events>

³ <https://www.racom.eu/eng/products/m/ripex2/diagnostic.html#diag-tools-antenna>

⁴ https://www.racom.eu/eng/products/m/ripex2-hs/ripex_detail.html#d6e553

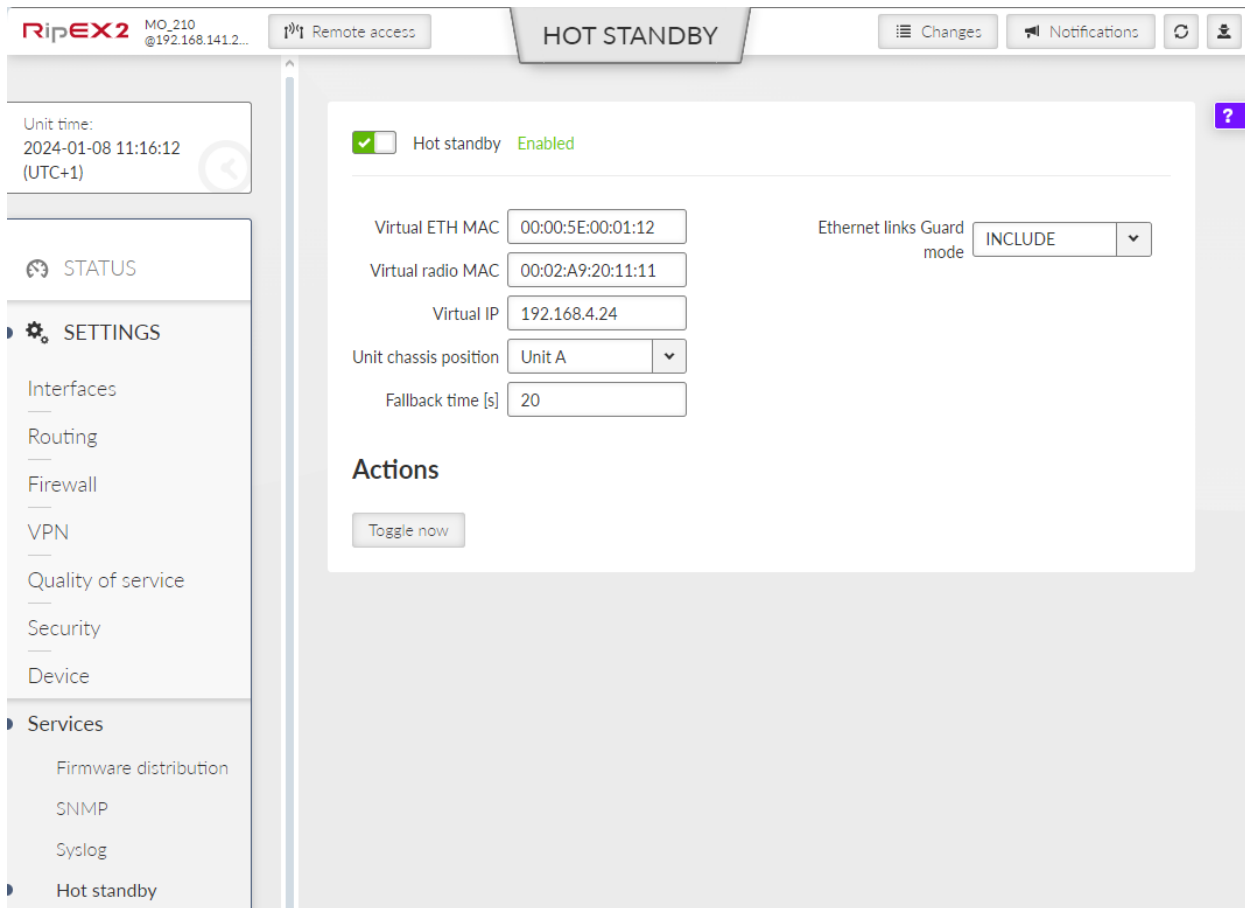


Fig. 5.1: SETTINGS > Services > Hot standby

Hot standby mode enabled

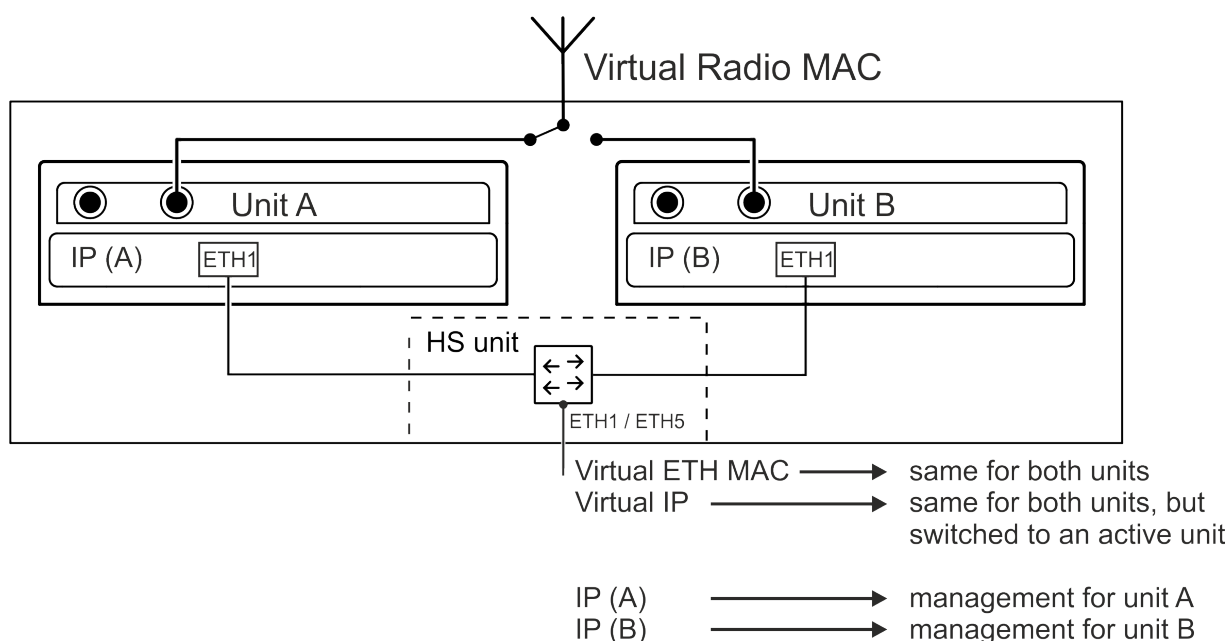
List box {On; Off }, default = "Off"
Switches Hot Standby functionality.

Virtual ETH MAC

MAC address of shared LAN interface. It should be same for both individual RipEX2-HS units. This MAC address has to differ from other MAC addresses used in unit. It is possible to use e.g. VRRP type of addresses: 00:00:5E:00:01:XX.

Virtual Radio MAC

While in HotStandby mode, it is necessary to set identical radio MAC address (HotStdby_RadioMac) in both stations, because protocol link address is derived from the address.



Virtual Radio MAC address has to differ from Virtual MAC address and all other addresses in the unit.

This parameter is used only, if the unit is running on Flexible protocol.

To prevent a collision with broadcast addresses (in case of Flexible protocol usage), the address must not be ended with :FF:FF:FF.

Virtual IP

This address has to fit into range of addresses used for the relevant network interface (e.g. ETH 1) and will be used as shared IP address for LAN interface. Typically used for connection of attached technology.



Note

The radio address used according to setting in SETTINGS > Interfaces > Radio > IP / Mask (and check "Range for virtual address" option) - the same address has to be set in both radio modems.

Unit chassis position

List box {Unit A; Unit B}, default = "Unit B"

Position of the unit in HS chassis, set Unit A for unit in A position and vice versa.

Fallback time

Time in seconds. The time delay to stay on the standby unit, after all alarms are solved.

Ethernet links Guard mode

List box {INCLUDE; EXCLUDE}, default = "INCLUDE"

Defines the behavior of guarding of ETH interfaces. "INCLUDE" requires all guarded lines in UP status – if one of these guarded lines is not in UP state, alarm occurs and the switching to the standby unit is executed. "EXCLUDE" requires at least one guarded line in UP status.

Toggle now

This button allows to switch from unit Active status to the non-active.

It will not be possible if:

- The second unit is in alarm status.
- The HW MODE selector is not set to AUTO.
- The unit is in not-active status.

5.2. Hot standby LAN interface settings

It is necessary to set LAN interface used for HS functionality.

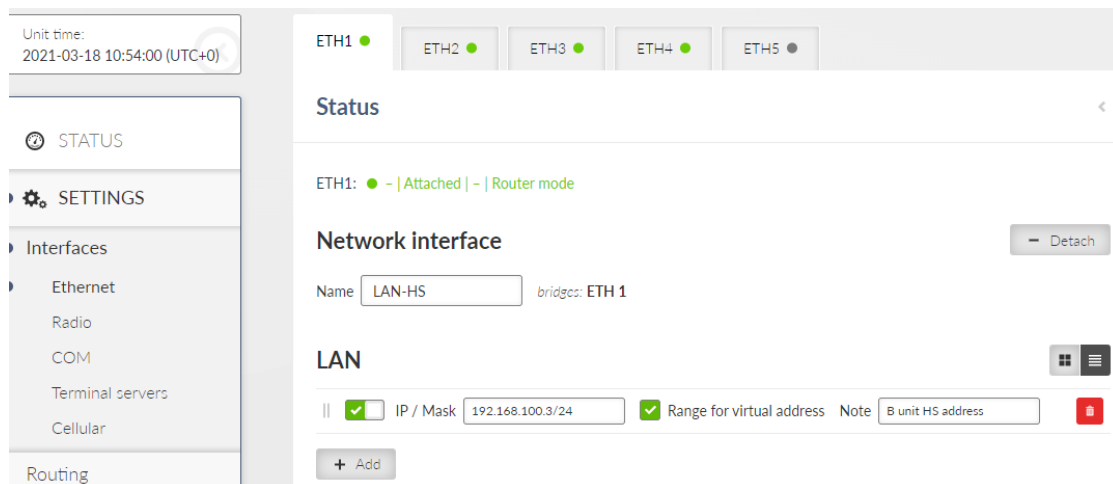


Fig. 5.2: SETTINGS > Interfaces > Ethernet

The Range for virtual address parameter is in this menu available only when HS functionality in the menu SETTINGS > Services > Hot standby is enabled (see above).

The parameter Range for virtual address has to be set to On for the LAN address interconnected with shared ETH interface (Range for virtual address set to On).



Note

Interconnected ETH interface IP addresses of both ETH addresses must be different as well as addresses of A and B units, yet in the same range as the virtual shared address (= together three different addresses in the same range).

5.3. Hot standby switching settings

The events which switch HS shall be set in menu SETTINGS > Device > Events, check the HS box for events required for switching from the active unit to the backup one. Settings in both units has to be the same.

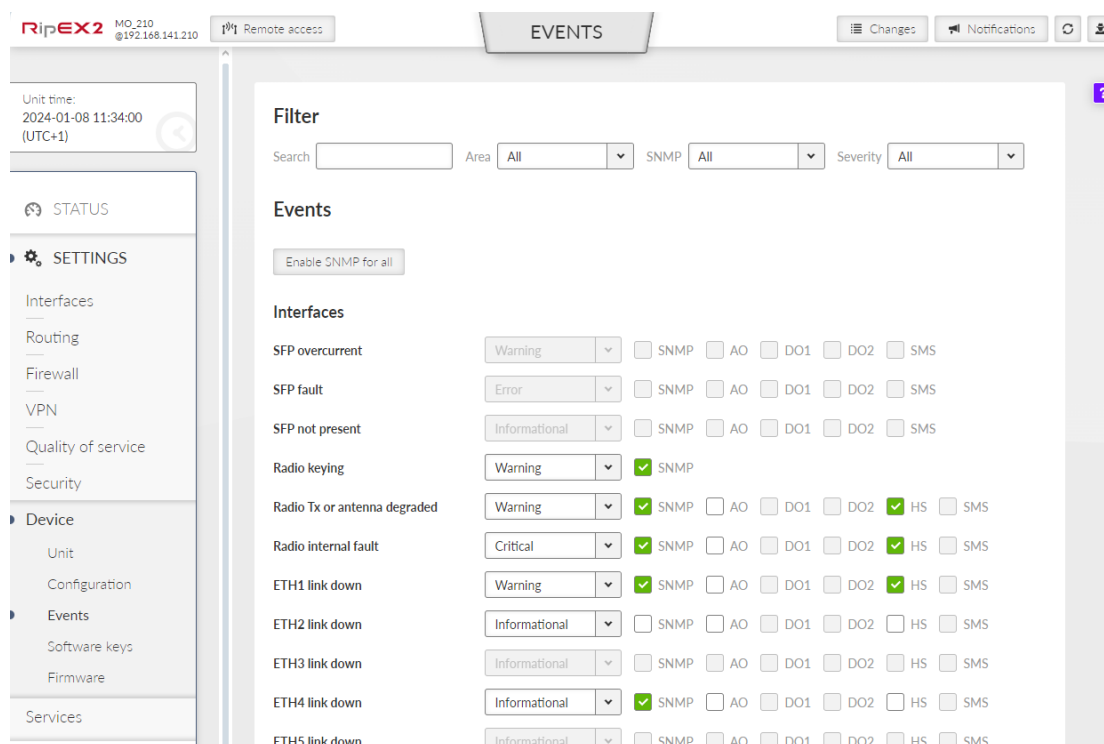


Fig. 5.3: SETTINGS > Device > Events

6. Technical parameters

Tab. 6.1: Technical parameters

Radio parameters		
The same as RipEX2 units used		
Electrical		
Primary power	HW models:	100–240 V AC, 50–60 Hz
		36–60 V DC, positive grounding possible
		10–30 V DC
		18-30 V DC, positive grounding possible
	Individual power supply for each RipEX2 unit	
Power consumption	HS own consumption typically <10 W (+ 1× Rx + 1× Rx/Tx of individual units)	
Interfaces		
Ethernet	1× 10/100 Base-T Auto MDI/MDIX switched with 1× 10/100/1000 Base-T 1000Base-SX/1000 Base-LX 1x RJ45, 1x SFP	
COM	RS232/RS485 SW configurable DB9F	
	600–115 200 bps	
Antenna	50 Ω N-female(s)	
	HW models (according to Antenna)	
	2× N-female – separate Tx / Rx and Rx, switched	
	4× N-female – separate Rx and Tx, separate for each RipEX2 unit	
HW inputs, HW outputs		"A" unit alarm, "B" unit alarm, HS controller alarm, "A" and/or "B" alarm
Environmental		
IP Code (Ingress Protection)	IP40	
MTBF	> 900 000 (> 100 years)	
Operating temperature	- 40 to +70 °C (-40 to +158 °F)	
Humidity	5 to 95 % non-condensing	
Storage	-40 to +85 °C (–40 to +185 °F) 5 to 95 % non-condensing	
Mechanical		
Dimensions HS	19" rack 3U H × W × D: 120 × 442 × 360 mm (4.72 × 17.40 × 14.17 in)	
Dimensions RD	19" rack 2U H × W × D: 87 × 442 × 360 mm (3.42 × 17.40 × 14.17 in)	
Dimensions RS	19" rack 2U H × W × D: 87 × 442 × 360 mm (3.42 × 17.40 × 14.17 in)	
Weight HS	8.9 kg (19.6 lbs), RipEX2 units excl.	
	12.1 kg (26.7 lbs), RipEX2 units incl.	
Weight RD	7.8 kg (17.2 lbs), RipEX2 units excl.	
	10.9 kg (24 lbs), RipEX2 units incl.	
Weight RS	7.45 kg (16.42 lbs), RipEX2 unit and duplexer incl.	

Diagnostic and Management	
Standard for individual RipEX2 units used	
LED panels	For each RipEX2 unit: standard RipEX2 LED panel (5× tri-color LEDs: SYS, AUX, RX, TX, COM) + 3× two-color LEDs: (A, AUTO, B) + 1x ETH5(SFP)
Approvals	
CE	RED, RoHS, WEEE

7. Safety, regulations, warranty

7.1. Frequency

The radio modem must be operated only in accordance with the valid frequency license issued by national frequency authority and all radio parameters have to be set exactly as listed.



Important

Use of frequencies between 406.0 and 406.1 MHz is worldwide-allocated only for International Satellite Search and Rescue System. These frequencies are used for distress beacons and are incessantly monitored by the ground and satellite Cospas-Sarsat system. Other use of these frequencies is forbidden.

7.2. Safety distance



Safety distances with respect to the US health limits of the electromagnetic field intensity are in Minimum Safety Distance tables below, calculated for different antennas and RipEX2 power levels. The distances were calculated according to the health limits and apply to far-field region only. Whenever the result is comparable or smaller than the actual size of the respective antenna, the field intensity is even smaller than the far-field based calculation and the safety limit is never exceeded. For output power 0.2 W or lower the safety limit is not exceeded at any distance and any of the antennas.

Tab. 7.1: Worst case Minimum Safety Distance

	Antenna Gain		
	5 dBi	10 dBi	15 dBi
160 MHz	2 m	3 m	5 m
300 and 400 MHz	2 m	2 m	4 m

For detailed Minimum Safety Distances refer to *RipEX User Manual*¹.

7.3. Electric power shock hazard



BEFORE uncovering the RipEX2-HS be sure that the power plug is disconnected. It is not allowed to use the RipEX2-HS without the cover because of the risk of electric power shock!

7.4. High temperature



When changing the RipEX2 units in an environment where the ambient temperature exceeds 55 °C, prevent human contact with the enclosure heatsink of the RipEX2 units.

¹ https://www.racom.eu/eng/products/m/ripex/safety.html#safety_dist

7.5. RoHS, WEEE and WFD



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EU DECLARATION OF CONFORMITY

Equipment	RipEX, RipEX2 RAy2, RAy3 MIDGE2, MIDGE3 RipEX-HS, RipEX2-HS
Manufacturer	RACOM s.r.o. Mirova 1283, 592 31 Nove Mesto na Morave, Czech Republic

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The equipment described above is in conformity with the Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended by Directive (EU) 2015/863, Directive 2012/19/EU of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE) and Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

REACH: Equipment mentioned above do not contain any substances from the "Candidate List of Substances of Very High Concern" with more than 0.1% of the global weight of the delivered item (without packaging of the item)

Compliance has been verified via internal design controls, supplier declarations and/or analytical test data.

Signed for and on behalf of the manufacturer:

Nove Mesto na Morave, 3rd May 2024
Marek Bobula, Technical director

Marek Bobula

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Fig. 7.1: EU Declaration of Conformity RoHS, WEEE

Waste Framework Directive Statement

According to the Directive 2008/98/EC on waste amended by Directive (EU) 2015/1127 and Directive (EU) 2018/851 (Waste Framework Directive) we hereby state that our products doesn't contain sub-

stances of very high concern (SVHC) listed on European chemical agency (ECHA) SCIP database candidate list in concentrations above 0.1 % w/w.

7.6. Conditions of Liability for Defects and Instructions for Safe Operation of Equipment

Please read these safety instructions carefully before using the product:

- Liability for defects does not apply to any product that has been used in a manner which conflicts with the instructions contained in this operator manual, or if the case in which the radio modem is located has been opened, or if the equipment has been tampered with.
- The radio equipment can only be operated on frequencies stipulated by the body authorised by the radio operation administration in the respective country and cannot exceed the maximum permitted output power. RACOM is not responsible for products used in an unauthorised way.
- Equipment mentioned in this operator manual may only be used in accordance with instructions contained in this manual. Error-free and safe operation of this equipment is only guaranteed if this equipment is transported, stored, operated and controlled in the proper manner. The same applies to equipment maintenance.
- In order to prevent damage to the radio modem and other terminal equipment the supply must always be disconnected upon connecting or disconnecting the cable to the radio modem data interface. It is necessary to ensure that connected equipment has been grounded to the same potential.
- Only undermentioned manufacturer is entitled to repair any devices.

7.7. Important Notifications

Sole owner of all rights to this operating manual is the company RACOM s. r. o. (further in this manual referred to under the abbreviated name RACOM). All rights reserved. Drawing written, printed or reproduced copies of this manual or records on various media or translation of any part of this manual to foreign languages (without written consent of the rights owner) is prohibited.

RACOM reserves the right to make changes in the technical specification or in this product function or to terminate production of this product or to terminate its service support without previous written notification of customers.

Conditions of use of this product software abide by the license mentioned below. The program spread by this license has been freed with the purpose to be useful, but without any specific guarantee. The author or another company or person is not responsible for secondary, accidental or related damages resulting from application of this product under any circumstances.

The maker does not provide the user with any kind of guarantee containing assurance of suitability and usability for his application. Products are not developed, designed nor tested for utilization in devices directly affecting health and life functions of persons and animals, nor as a part of another important device, and no guarantees apply if the company product has been used in these aforementioned devices.

7.8. Product Conformity

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EU DECLARATION OF CONFORMITY

Radio equipment type	Redundant hot standby chassis RipEX2-HS	suitable for RipEX2 units
Manufacturer	RACOM s.r.o. Mírova 1283, 592 31 Nove Mesto na Morave, Czech Republic	

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The radio equipment described above is in conformity with the Directive 2014/53/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

Harmonised standards used for demonstration of conformity:

Spectrum	According to RipEX2 unit EU DoC
EMC	EN 301 489-1 V2.1.1 EN 301 489-4 V3.1.1
Safety	EN 62368-1:2014 + A11:2017
SAR	According to RipEX2 unit EU DoC

Signed for and on behalf of the manufacturer:

Nove Mesto na Morave, 21st of January 2021
Jiri Hruska, CEO



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ver. 1.1

Fig. 7.2: EU Declaration of Conformity RED

7.9. Warranty

RACOM-supplied parts or equipment ("equipment") is covered by warranty for inherently faulty parts and workmanship for a warranty period as stated in the delivery documentation from the date of dispatch to the customer. The warranty does not cover custom modifications to software. During the warranty period RACOM shall, on its option, fit, repair or replace ("service") faulty equipment, always provided that malfunction has occurred during normal use, not due to improper use, whether deliberate or accidental, such as attempted repair or modification by any unauthorised person; nor due to the action of abnormal or extreme environmental conditions such as overvoltage, liquid immersion or lightning strike.

Any equipment subject to repair under warranty must be returned by prepaid freight to RACOM direct. The serviced equipment shall be returned by RACOM to the customer by prepaid freight. If circumstances do not permit the equipment to be returned to RACOM, then the customer is liable and agrees to reimburse RACOM for expenses incurred by RACOM during servicing the equipment on site. When equipment does not qualify for servicing under warranty, RACOM shall charge the customer and be reimbursed for costs incurred for parts and labour at prevailing rates.

This warranty agreement represents the full extent of the warranty cover provided by RACOM to the customer, as an agreement freely entered into by both parties.

RACOM warrants the equipment to function as described, without guaranteeing it as befitting customer intent or purpose. Under no circumstances shall RACOM's liability extend beyond the above, nor shall RACOM, its principals, servants or agents be liable for any consequential loss or damage caused directly or indirectly through the use, misuse, function or malfunction of the equipment, always subject to such statutory protection as may explicitly and unavoidably apply hereto.

Appendix A. Abbreviations

CLI	Command Line Interface	OS	Operation System
CTS	Clear To Send	PC	Personal Computer
DCE	Data Communication Equipment	PER	Packet Error Rate
DQ	Data Quality	PWR	Power
DTE	Data Terminal Equipment	RF	Radio Frequency
EMC	Electro-Magnetic Compatibility	RipEX	Radio IP Exchanger
FCC	Federal Communications Commission	RoHS	Restriction of the use of Hazardous Substances
FEP	Front End Processor	RSS	Received Signal Strength
GPL	General Public License	RTS	Request To Send
https	Hypertext Transfer Protocol Secure	RTU	Remote Terminal Unit
IP	Internet Protocol	RX	Receiver
kbps	kilobit per second	SCADA	Supervisory control and data acquisition
LAN	Local Area Network	SDR	Software Defined Radio
MAC	Media Access Control	SNMP	Simple Network Management Protocol
MDIX	Medium dependent interface crossover	TCP	Transmission Control Protocol
MIB	Management Information Base	TX	Transmitter
NMS	Network Management System	UDP	User Datagram Protocol
N.C.	Normally Closed	VSWR	Voltage Standing Wave Ratio
N.O.	Normally Open	WEEE	Waste Electrical and Electronic Equipment

Revision History

Revision

This manual was prepared to cover a specific version of firmware code. Accordingly, some screens and features may differ from the actual unit you are working with. While every reasonable effort has been made to ensure the accuracy of this publication, product improvements may also result in minor differences between the manual and the product shipped to you.

Revision 1.0 First issue	2019-01-03
Revision 1.1 Minor improvements	2019-09-06
Revision 1.2 Minor modifications	2019-11-25
Revision 1.3 Section Mounting modified	2020-02-28
Revision 1.4 FW 1.4.7.0 functionalities added	2020-12-03
Revision 1.5 FW 2.0.0.0 functionalities added	2021-20-04
Revision 1.6 FW 2.0.8.0 functionalities added Minor update of <i>Chapter 5, RipEX2-HS Settings</i> Power consumption in <i>Chapter 6, Technical parameters</i> added	2023-09-12