DIFFERENT BY DESIGN™

JMA DAS Platform
Local Commissioning User Guide

DAS Supervision Version: 4.3.6

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About this Guide

The DAS (Distributed Antenna System) supervision module web interface allows the monitoring, configuration, and commissioning of all the components managed by the DAS supervision module.

This document guides users with **admins** capabilities through the commissioning process of JMA distributed antenna systems (DAS).

Refer to the *JMA DAS Platform Remote Monitoring and Management User Guide* for detailed descriptions of the DAS supervision module web user interface, monitoring features, and configuration options.

What's New

This revision (rev.7) of the *JMA DAS Platform Local Commissioning User Guide* describes release 4.3.6 of the DAS supervision module, which adds support for the following new products:

- ED35B35TD, next generation dual-band optical transceiver, which operates in the 3450-3550MHz and 3700-3980MHz frequency bands (35B and 35T).
- ED35B35TDM and ED35B35TDS, next generation dual-band Master and Secondary Point-to-Point units, which operate in the 3450-3550MHz and 3700-3980MHz frequency bands (35B and 35T). See .
- RD35B35TWX2AT and RD35B35TWX2DT, next generation, dual-band, upgradable 10/20/40W, MIMO Software Defined Remote Units (SDRU), which operate in the 3450-3550MHz and 3700-3980MHz frequency bands (35B and 35T).
- RD35B35TWH2AT and RD35B35TWH2DT, next generation, dual-band, 5W, MIMO remote units, which operate in the 3450-3550MHz and 3700-3980MHz frequency bands (35B and 35T).

Release 4.3.6 of the DAS supervision module also introduces support for simulcast on dual-band Secondary Point-to-Point unit. See "Selecting the Dual-band NG PtoP Secondary Simulcast Configuration" on page 18.

Commissioning the DAS

Before commissioning, complete the DAS installation and power-up, as described in the JMA DAS Platform installation guides:

- *JMA DAS Platform Master Unit Installation Guide*
- *JMA DAS Platform Remote Units Installation Guide*
- *JMA DAS Platform Next Generation Remote Units Installation Guide*

Note: If the supervision module is equipped with the optional wireless modem, before start-up, insert the SIM card, enabled for data transfer and preferably unlocked (PIN code disabled).

The following are the steps required in the commissioning process:

1. Access the DAS web interface locally.

   See "Accessing the DAS Supervision Module Web Interface Locally" on page 8.

   Note: When the DAS includes next generation point-to-point links, the DAS components installed at the master unit location and the DAS components installed at the remote location are managed by two separate supervision modules. You need to connect to the supervision modules separately to complete the commissioning of the entire DAS.

2. Find and identify the DAS components.

   See "Discovering the DAS Components" on page 10.

3. Modify the system name and description and assign descriptive names to the DAS components to make management easier.

   See "Modifying the System Name and Description" on page 12 and "Assigning Names to the DAS Components" on page 13.

4. In TDD networks, set the frame structure of the TDD sync module according to the base station TDD configuration.

   See "Setting the TDD Sync Module" on page 14.

5. Select the proper NG OTRX simulcast configuration according to the system design.

   See "Selecting the NG OTRX Simulcast Configuration" on page 16.

6. Select the proper simulcast configuration for the Dual-band NG PtoP Secondary according to the system design.

   See "Selecting the Dual-band NG PtoP Secondary Simulcast Configuration" on page 18.

7. If required by the system design, set the Point-to-Point link RF gain.

   See "Adjusting the Point-to-Point Link RF Gain" on page 20 and "Adjusting the Next Generation Point-to-Point Link RF Gain" on page 19.

8. Set the parameters for the RF commissioning of points of interface (POIs) and remote units.

   See "RF Commissioning of Points of Interface and Remote Units" on page 21.

9. Check that all downlink RF power alarms are enabled.

See "Enabling Downlink RF Power Alarms" on page 39.

10. Set external alarms and relays.

See "Setting External Alarms and Relays" on page 40.

11. Set heartbeats and alarm notifications.

See "Setting Alarm and Heartbeat Notifications" on page 43.

12. Configure the following:

- Network security. See "Setting the Network Security" on page 47.
- DAS date and time. See "Setting the System Date and Time" on page 48.
- Options for testing the network connection. See "Setting Options for Testing the Network Connection" on page 49.

13. Configure the supervision module remote communication interface to allow remote management of managed components.

See "Setting the Supervision Module Communication Interface for Remote Management" on page 50.

14. Change the factory-set passwords and manage user accounts.

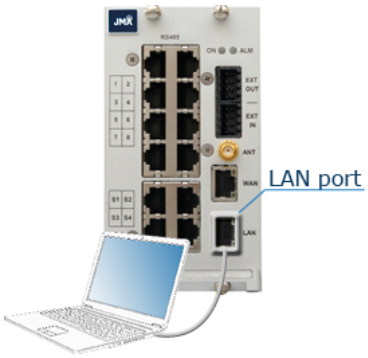
See "Managing Users" on page 53.

15. Create an inventory list to back up the current DAS configuration.

See "Creating and Managing Inventory Lists" on page 55.

Accessing the DAS Supervision Module Web Interface Locally

1. Connect your laptop to the **LAN** port, available on the front panel of the DAS supervision module.



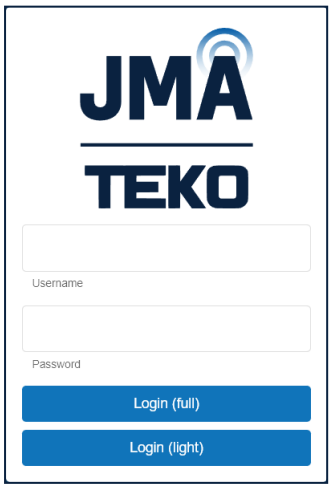
Note: When the DAS includes next generation point-to-point links, the DAS components installed at the master unit location and the DAS components installed at the remote location are managed by two separate supervision modules:

- The supervision module, which manages the DAS components installed at the Master Unit location, including the next generation point-to-point master component.
- The remote supervision module, which manages the DAS components installed at the remote location, including the next generation point-to-point secondary component, distant optical transceivers, and all connected remote units.

You need to connect to the supervision modules separately to complete the commissioning of the entire DAS.

2. Check that your laptop is configured to automatically obtain the IP address from the supervision module's built-in DHCP server.
3. Start a web browser.

   Note: In the web browser options it is advisable to set the security level to medium (or lower) and disable the pop-up blocker, to correctly display the web interface.
4. In the URL bar, type the factory-set local DAS IP address: **192.168.1.100**.
5. Click **Enter** for login.



6. Enter the factory-set username and password of the **admins** account:

User name: **admin**

Password: **Password1**

7. Click **Login (full)**.

- **Access Denied**

  If access is denied, check the username and password spelling, then log in with the correct details.

  Note: Username and **Password** fields are case-sensitive. Make sure to type the username and password with correct upper-case and lower-case letters.

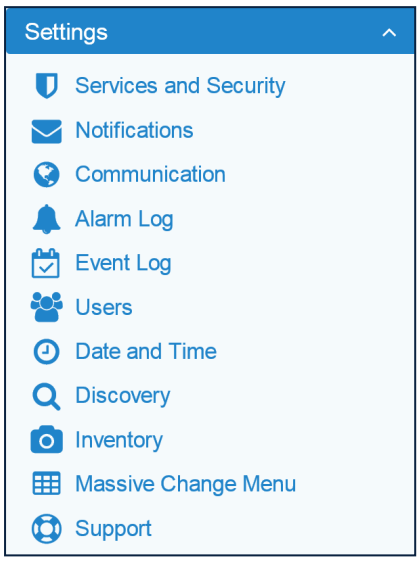
- **Successful Login**

  After successful login, the user interface opens with the **System** panel displayed.

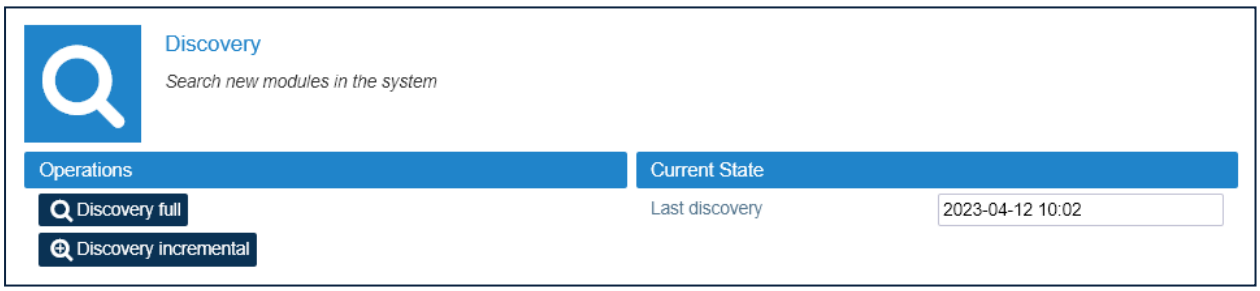
Discovering the DAS Components

To manage the physical components connected to the supervision module they must first be identified.

1. In the **Settings** menu, select **Discovery** to open the **Discovery** panel.



2. In the **Discovery** panel, click **Discovery full**.



3. In the **Please Confirm** dialog box, click **Proceed**.

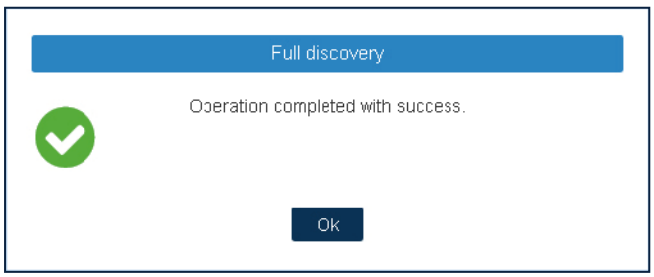
   If the discovery process is successful, the hierarchical architecture of the DAS components displays in the **New Tree** pane.

4. Verify that all expected components are listed in the tree.

   If not all expected devices are found by the discovery, check connections and power supply, then repeat the discovery.

5. Click **Accept discovery** to accept the discovery.

   The supervision module uploads the names of all the detected components and the **Full discovery** dialog box displays.



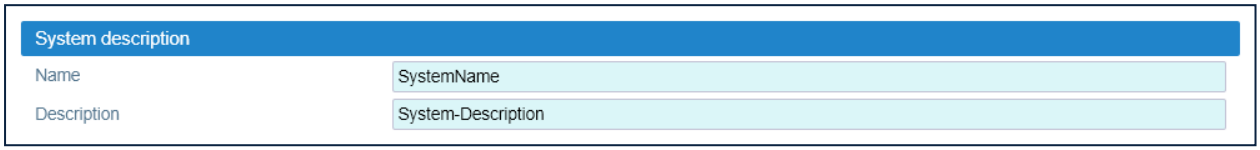
6. In the **Full discovery** dialog box, click **Ok** to complete the discovery.

Note: The discovery must be accepted to unlock the supervision system. Only after the full discovery is accepted, inventory lists and alarm logs, if any, are cleared, and the supervision module starts collecting the DAS alarms.

The discovered DAS physical components are populated in the **Physical Tree** only after the discovery is accepted. A progress bar below the **Physical Tree** indicates the progress of the operation.

Modifying the System Name and Description

1. Select the root node at the top of the **Physical Tree** to open the **System** panel.
   The root node is identified by this icon: .
2. In the **System Description** pane, enter the new name and description.



   The following characters are allowed:
   - Lowercase letters (a through z)
   - Uppercase letters (A through Z)
   - Base 10 digits (0 through 9)
   - Hyphen (-) and underscore (_)

   The application input validation feature warns users if invalid characters are entered and details what input is expected for the field.

   The **Save** tool in the toolbar and the background of modified fields turn yellow to highlight unsaved changes.
3. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to assign the new name and description to the DAS. The new system name is displayed in the **Physical Tree**.

Assigning Names to the DAS Components

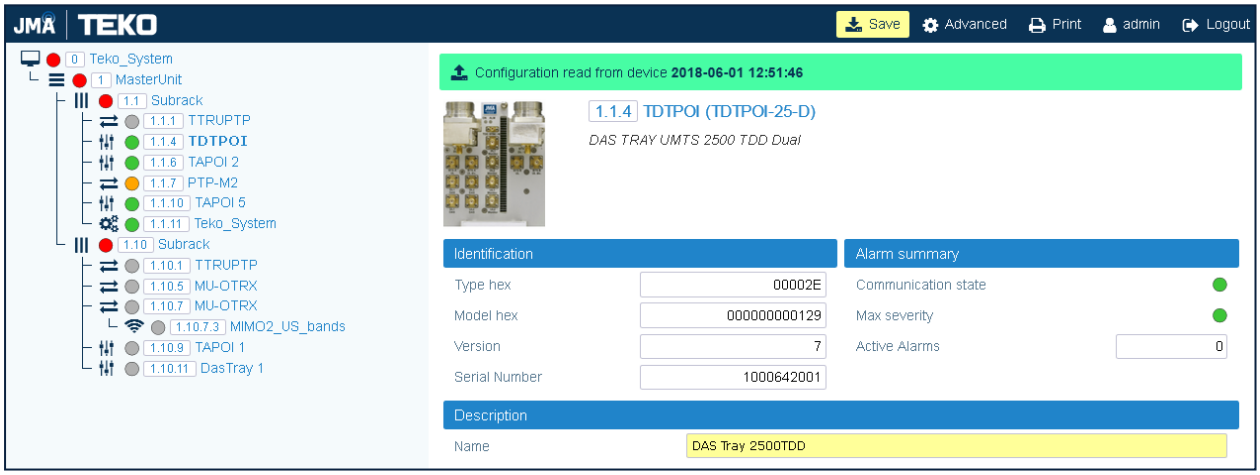
1. In the **Physical Tree**, select the component to display its details panel.
2. In the **Name** field, type a descriptive name for the node.

   The following characters are allowed:

   - Lowercase letters (a through z)
   - Uppercase letters (A through Z)
   - Base 10 digits (0 through 9)
   - Hyphen (-) and underscore (_)

   The application input validation feature warns users if invalid characters are entered and details what input is expected for the field.

   The **Save** tool in the toolbar and the background of modified fields turn yellow to highlight unsaved changes.



3. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to assign the new name to the DAS component. The name assigned to the component is displayed in the **Physical Tree**.

Note: The names of active points of interface (POIs) and remote units can be set either individually, in each component panel, or globally, accessing the Massive Change Menu. See "RF Commissioning of Points of Interface and Remote Units" on page 21.

Setting the TDD Sync Module

Note: The proper setting of the TDD sync module frame structure is crucial to optimal DAS performance in TDD networks.

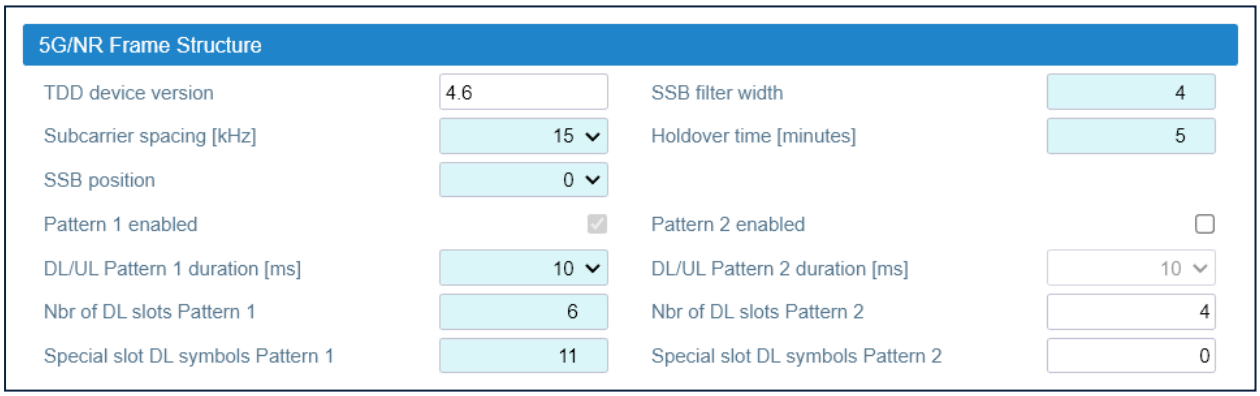
1. In the **Physical Tree**, select the TDD sync module to display its details panel.
2. Configure the frame structure as follows:

- **4G Systems (TSYNC Module)**

In the **Sync Frame Structure** pane, select *Configuration* and *Special Frame*, **according to the BS TDD configuration**:

- **Configuration**. Select the TDD downlink-uplink configuration (0-6), which defines how subframes are distributed between uplink and downlink, and the switch-point periodicity.
- **Special Frame**. Select the subframe configuration (0-8), which defines the length of the Guard period, Downlink Pilot Time Slot, and Uplink Pilot Time Slot.

- **5G Systems (TSYNC-N, TSYNC-C Modules)**



In the **5G/NR Frame Structure** pane, set the 5G/NR frame structure, **according to the BS TDD configuration**:

- Select the **Subcarrier spacing [kHz]**: *15kHz, 30kHz*, or *60kHz*.
- Select the **SSB Position**, that is the position in time of the SSB (Synchronization Signal Block) Carrier. Only one SSB Position per Pattern1+Pattern2 is supported.
- Optional: Enable **Pattern 2**. Pattern 1 is enabled by default. An additional synchronization pattern (Pattern 2) can be enabled.
- Select the duration (**DL/UL Pattern 1 duration**, **DL/UL Pattern 2 duration**).
- Set the number of downlink slots per pattern (**Nbr of DL slots Pattern 1**, **Nbr of DL slots Pattern 2**). **Note:** Each slot is made of 14 symbols in time domain.

- Set the number of DL symbols defined in the Special Slot Format (**Special slot DL symbols Pattern 1**, **Special slot DL symbols Pattern 2**). Refer to ETSI TS 38.213 Release 15, Table 11.1.1-1 for details.
- Set the **Holdover time [minutes]**, that is the time for which the TSYNC module will remain in a sync status even if the signal from the BS is absent.
  Note: At least 10 minutes of past lock are required.
- Set the **SSB filter width**.

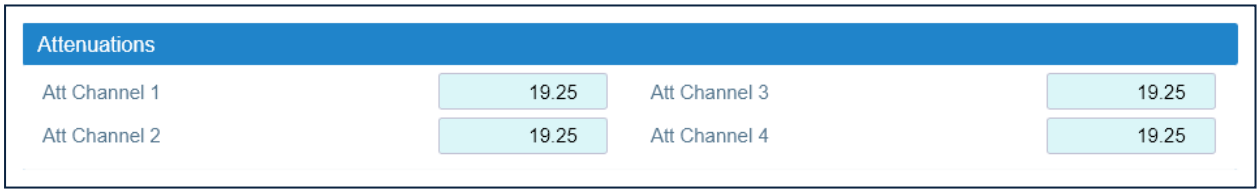
  The Standard 3GPP indicates that the SSB (Synchronization Signal Block) spans across four OFDM symbols in the time domain (default SSB filter width=4). If the CSI-RS (Channel State Information Reference Signal) period and position are the same as the SSB, by using a Spectrum Analyzer in the time domain, you will see a CSI-RS symbol close to the SSB, which is interpreted as the fifth symbol. So, for SSB period and CSI-RS period equal to 20ms, you must set the SSB filter width to 5. If you see more symbols close to the SSB, you must set higher values.

3. In the **Attenuations** pane, adjust the attenuation for each channel to compensate for the reference output signal path losses.

The **Attenuations** pane is available for the **TSYNC**, **TSYNC-N**, and **TSYNC-X** modules.

The attenuation to be removed is related to the passive combining on the DAS.

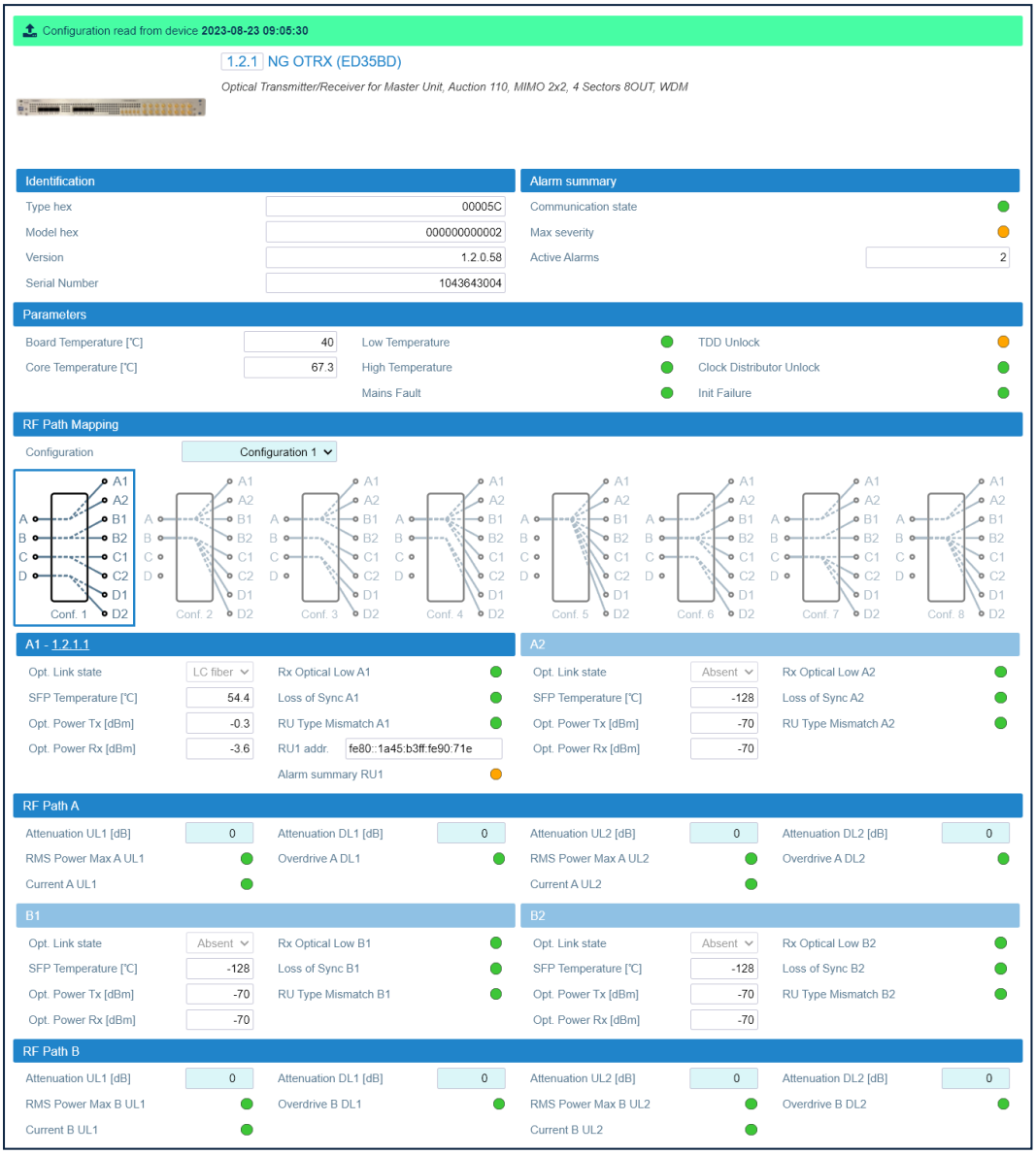
Note: The **TSYNC** and **TSYNC-X** module factory-set attenuation is 19dB. The **TSYNC-N** module factory-set attenuation is 26dB.



4. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save all the changes in the page.

Selecting the NG OTRX Simulcast Configuration

1. In the **Physical Tree**, select the NG OTRX to display its details panel.



2. In the **RF Path Mapping** pane, select the proper simulcast configuration from the **Configuration** drop-down list or choose a diagram. The diagram describes how RF signal is distributed to the connected remote units (RF path mapping).

When you select a configuration from the drop-down list, the diagram that corresponds to the selected configuration is highlighted. You can choose between eight different simulcast configurations.

Note: Refer to the system design to select the appropriate configuration.

Configuration 1 is the default factory configuration. If *Configuration 1* (default) is selected, the highlighted *Conf. 1* diagram shows that the signal from four different MIMO 2x2 cells will be simulcast by the NG OTRX transceivers (A, B, C, D) to four different pairs of remote units, connected to the NG OTRX optical ports (A1, A2, B1, B2, C1, C2, D1, D2).

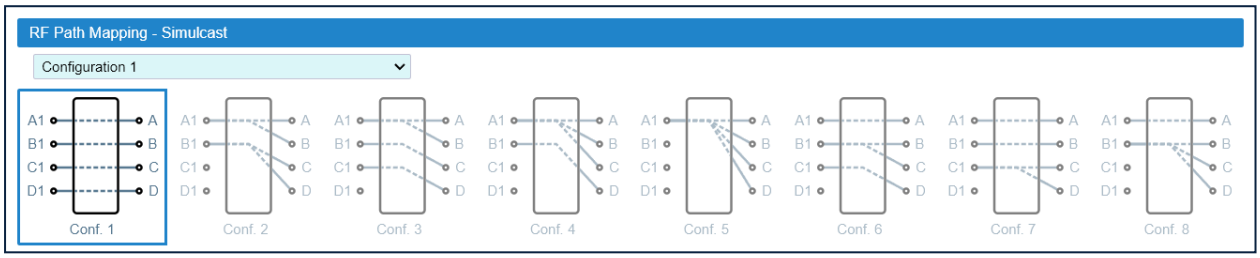
Note: Changing the simulcast configuration has no impact on the RF link: no attenuation adjustment is needed.

In the *JMA DAS Platform Master Unit Installation Guide*, refer to *Connecting the Next Generation Optical Transceiver to the Next Generation Remote Units* for details about remote units and NG OTRX (Next Generation Optical Transceiver) connection.

3. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to apply the selected configuration.

Selecting the Dual-band NG PtoP Secondary Simulcast Configuration

1. In the **Physical Tree**, select the dual-band Next Generation Secondary Point-to-Point Component (NG PtoP Secondary) to display its details panel.
2. In the **RF Path Mapping - Simulcast** pane, select the proper simulcast configuration from the **Configuration** drop-down list or choose a diagram. The diagram describes how RF signals are distributed.



Configuration 1 is the default factory configuration. When you select a configuration from the drop-down list, the diagram that corresponds to the selected configuration is highlighted. You can choose between eight different simulcast configurations.

Note:

- Refer to the system design to select the appropriate configuration.
- Changing the simulcast configuration has no impact on the RF link: no attenuation adjustment is needed.

3. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to apply the selected configuration.

Adjusting the Next Generation Point-to-Point Link RF Gain

For each RF path (A, B, C, D), the overall RF gain of the Point-to-Point link is 0dB at default attenuation settings. The following table details the Next Generation Point-to-Point link default attenuation settings:

Next Generation Point-to-Point Component	Default Downlink Attenuation for each RF Path, MIMO1 layer	Default Downlink Attenuation for each RF Path, MIMO2 layer	Default Uplink Attenuation for each RF Path, MIMO1 layer	Default Uplink Attenuation for each RF Path, MIMO2 layer
NG PtoP Master	0dB (Attenuation Tx1)	0dB (Attenuation Tx2)	0dB (Attenuation Rx1)	0dB (Attenuation Rx2)
NG PtoP Secondary	14dB (Attenuation Rx1)	14dB (Attenuation Rx2)	7dB (Attenuation Tx1)	7dB (Attenuation Tx2)

If required by the system design, you can increase the Point-to-Point link RF gain as follows:

1. In the **Physical Tree**, select the Next Generation Secondary Point-to-Point Component (NG PtoP Secondary).

   The following figure shows a detail of the NG PtoP Secondary panel with default RF attenuation settings:

2. To increase the downlink RF gain for a specific RF path, reduce the *Attenuation Rx1* and *Attenuation Rx2* in the appropriate **RF Path** pane (RF Path A, RF Path B, RF Path C, RF Path D).
3. To increase the uplink RF gain for a specific RF path, reduce the *Attenuation Tx1* and *Attenuation Tx2* in the appropriate **RF Path** pane (RF Path A, RF Path B, RF Path C, RF Path D).
4. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Adjusting the Point-to-Point Link RF Gain

- TTRUPTP Master (TTRUPTPMx-S) connected to a TTRUPTP Secondary **with** built-in splitter/combiner (TTRUPTPSx-S)

  In this application, the overall RF gain of the Point-to-Point link is 0dB at default attenuation setting. The following table details the default attenuation settings for the Point-to-Point link:

Point-to-Point Component	Default Downlink Attenuation	Default Uplink Attenuation
TTRUPTPMx-S	0dB (Att TX)	5dB (Att In=0dB, Att Out=5dB)
TTRUPTPSx-S	0dB (Att In=0dB, Att Out=0dB)	10dB (Att TX)

  If required by the system design, you can adjust default attenuations to increase the Point-to-Point link RF gain.

- TTRUPTP Master (TTRUPTPMx-S) connected to a TTRUPTP Secondary **without** built-in splitter/combiner (TTRUPTPSx-S-1)

  In this application, the overall RF gain of the Point-to-Point link is 7dB at default attenuation setting. The following table details the default attenuation settings for the Point-to-Point link:

Point-to-Point Component	Default Downlink Attenuation	Default Uplink Attenuation
TTRUPTPMx-S	0dB (Att TX)	5dB (Att In=0dB, Att Out=5dB)
TTRUPTPSx-S-1	0dB (Att In=0dB, Att Out=0dB)	10dB (Att TX)

  If RF gain is not required for the system, you can set the Point-to-Point link RF gain to 0dB as follows:

  1. In the **Physical Tree**, select the Master Point-to-Point Component (TTRUPTP Master) to display its details panel. In the **Receiver** pane, set the receiver uplink attenuation to 7dB (*Att In*, *Att Out*).
  2. In the **Physical Tree**, select the Secondary Point-to-Point Component (TTRUPTP Secondary without 4-way Splitter/Combiner, TTRUPTPSx-S-1) to display its details panel. In the **Receiver** pane, set the receiver uplink attenuation to 7dB (*Att In*, *Att Out*).

RF Commissioning of Points of Interface and Remote Units

The parameters for the commissioning of points of interface (POIs) and remote units can be set either individually, in each component panel, or globally, accessing the **Massive Change Menu**.

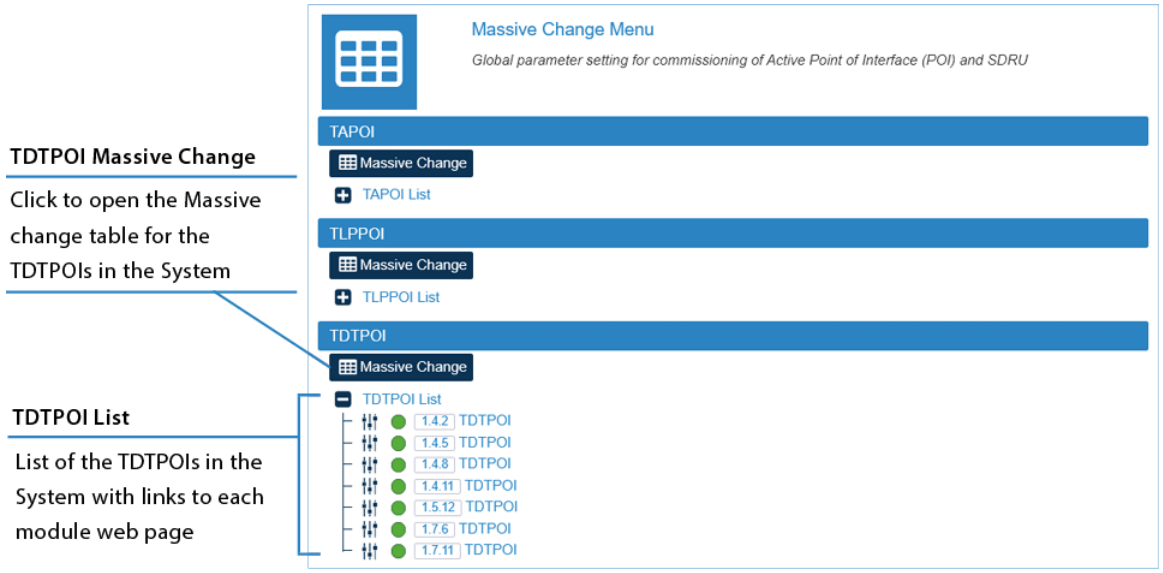
Setting Parameters Individually for Each Component

1. In the **Physical Tree**, select the component to display its details panel. Fields that can be edited by users have a light-blue background.
2. Modify parameters.

   The **Save** tool in the toolbar and the background of modified fields turn yellow to highlight unsaved changes.
3. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Setting Parameters with the Massive Change Menu

1. In the **Settings** menu, select **Massive Change Menu**. In the **Massive Change Menu** panel, active POIs and remote units are grouped by type. A **Massive Change** button is available for each type.

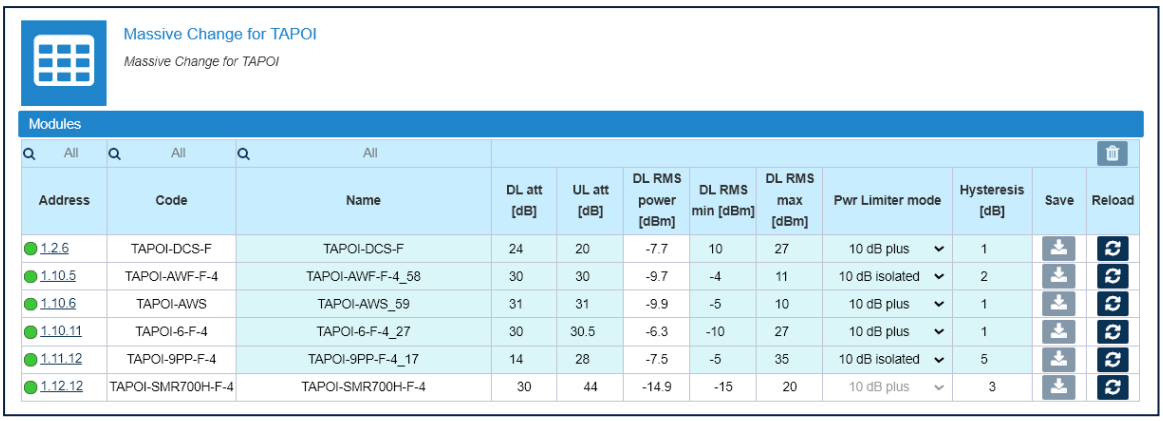


2. Click the **Massive Change** button to display the Massive Change table for all the components of the same type.

   Note: A pop-up, indicating the progress of the loading process, may display.

   If the process completes successfully, the pop-up closes and the Massive Change table is displayed.

   If the pop-up reports errors, click **Ok**. The Massive Change table is displayed, but changes to the components listed in the pop-up are disabled. Click the **Reload** button to reload information and enable changes.



Massive Change for TAPOI

Massive Change for TAPOI

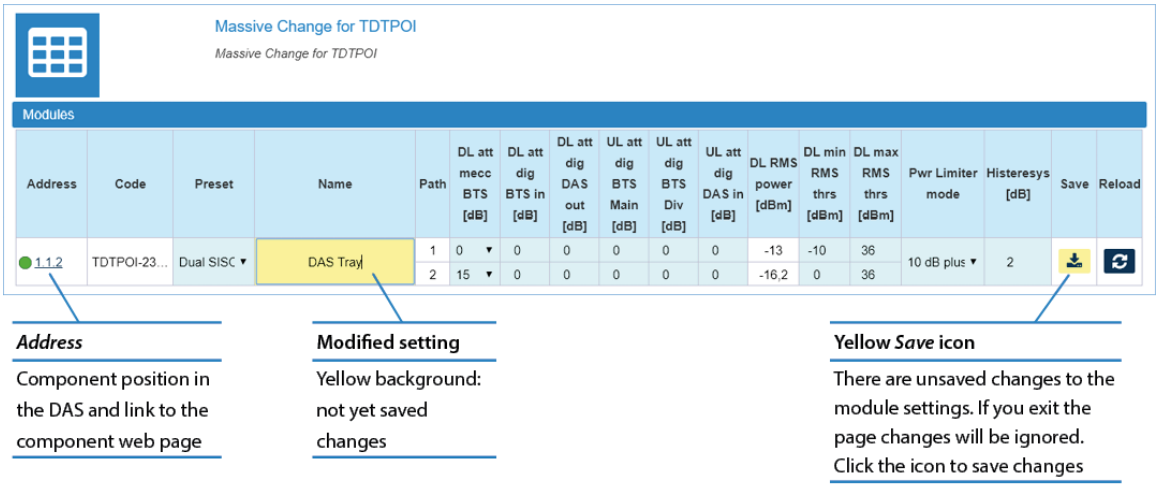
Modules

Address	Code	Name	DL att [dB]	UL att [dB]	DL RMS power [dBm]	DL RMS min [dBm]	DL RMS max [dBm]	Pwr Limiter mode	Hysteresis [dB]	Save	Reload
1.2.6	TAPOI-DCS-F	TAPOI-DCS-F	24	20	-7.7	10	27	10 dB plus	1		
1.10.5	TAPOI-AWF-F-4	TAPOI-AWF-F-4_58	30	30	-9.7	-4	11	10 dB isolated	2		
1.10.6	TAPOI-AWS	TAPOI-AWS_59	31	31	-9.9	-5	10	10 dB plus	1		
1.10.11	TAPOI-6-F-4	TAPOI-6-F-4_27	30	30.5	-6.3	-10	27	10 dB plus	1		
1.11.12	TAPOI-9PP-F-4	TAPOI-9PP-F-4_17	14	28	-7.5	-5	35	10 dB isolated	5		
1.12.12	TAPOI-SMR700H-F-4	TAPOI-SMR700H-F-4	30	44	-14.9	-15	20	10 dB plus	3		

3. Set configuration and parameters for each component.

4. Click the yellow save icon to save all changes for the module or place the cursor in any position in the row and press the **Enter** key on your keyboard.

Note: Changes must be saved for each module. A save icon is available for each row.



Massive Change for TDTPOI

Massive Change for TDTPOI

Modules

Address	Code	Preset	Name	Path	DL att mecc BTS [dB]	DL att dig BTS in [dB]	DL att dig DAS out [dB]	UL att dig BTS Main [dB]	UL att dig BTS Div [dB]	UL att dig DAS in [dB]	DL RMS power [dBm]	DL min RMS thrs [dBm]	DL max RMS thrs [dBm]	Pwr Limiter mode	Histeresys [dB]	Save	Reload
1.1.2	TDTPOI-23...	Dual SISO	DAS Tray	1	0	0	0	0	0	0	-13	-10	36	10 dB plus	2		
				2	15	0	0	0	0	0	-16.2	0	36				

Address

Component position in the DAS and link to the component web page

Modified setting

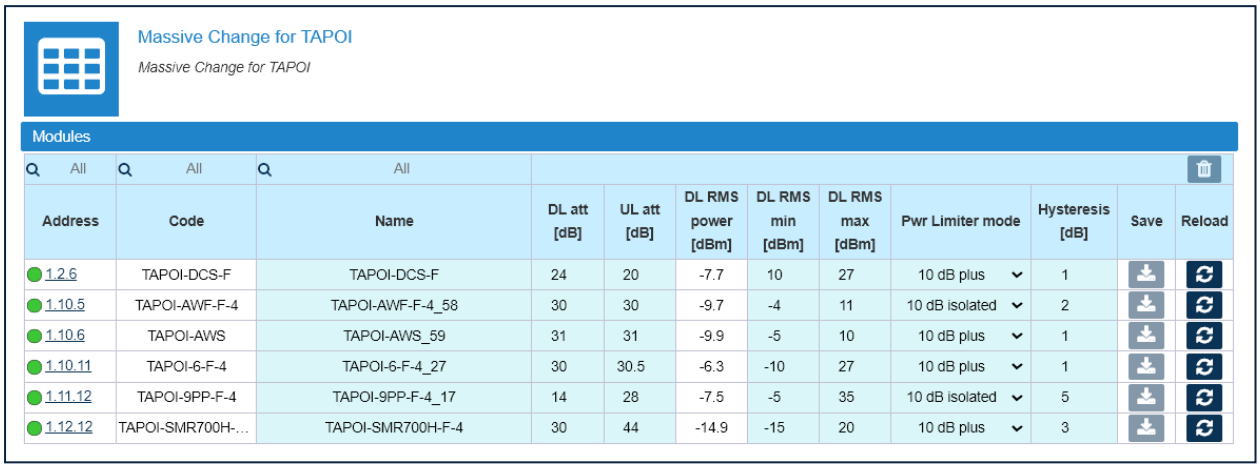
Yellow background: not yet saved changes

Yellow *Save* icon

There are unsaved changes to the module settings. If you exit the page changes will be ignored. Click the icon to save changes

Commissioning TAPOIs

1. In the **Settings** menu, select **Massive Change Menu**.
2. In the **TAPOI** pane, click the **Massive Change** button to display the Massive Change table for TAPOIs.



Address	Code	Name	DL att [dB]	UL att [dB]	DL RMS power [dBm]	DL RMS min [dBm]	DL RMS max [dBm]	Pwr Limiter mode	Hysteresis [dB]	Save	Reload
1.2.6	TAPOI-DCS-F	TAPOI-DCS-F	24	20	-7.7	10	27	10 dB plus	1		
1.10.5	TAPOI-AWF-F-4	TAPOI-AWF-F-4_58	30	30	-9.7	-4	11	10 dB isolated	2		
1.10.6	TAPOI-AWS	TAPOI-AWS_59	31	31	-9.9	-5	10	10 dB plus	1		
1.10.11	TAPOI-6-F-4	TAPOI-6-F-4_27	30	30.5	-6.3	-10	27	10 dB plus	1		
1.11.12	TAPOI-9PP-F-4	TAPOI-9PP-F-4_17	14	28	-7.5	-5	35	10 dB isolated	5		
1.12.12	TAPOI-SMR700H-...	TAPOI-SMR700H-F-4	30	44	-14.9	-15	20	10 dB plus	3		

3. In the Massive Change table, configure each TAPOI as follows:
   - **a** Assign a name to the component.
   - **b** Adjust uplink (UL) and downlink (DL) attenuation.

     After successful completion of relevant training courses, use the commissioning tool spreadsheet, provide by JMA, to calculate uplink and downlink attenuation to be set.

Description	Massive change label	Default setting (maximum level)
Digital Attenuation DL	DL Att	31dB
Digital Attenuation UL	UL Att	31dB

   - **c** Adjust the maximum and minimum input power thresholds for peak and rms detectors: DL RMS min and DL RMS max.

     Refer to the following table for the relationship between the maximum input power and the minimum downlink attenuation to be set for the module.

Maximum input power	Minimum attenuation setting (DL Att)
26dBm	1dB
27dBm	2dB
28dBm	3dB
29dBm	4dB
30dBm	5dB
31dBm	6dB
32dBm	7dB
33dBm	8dB

d Select the power limiter mode to protect the module.

The following options are available in the **Pwr Limiter mode** drop-down list:

- *Disabled*: The power limiter is disabled.
- *10dB isolated*: When the Power Limiter Mode is set to *10dB isolated* and the downlink input signal exceeds the user-set maximum input signal threshold (*Max Peak Power* or *Max Rms Power*, depending on the threshold set in the Power Limiter drop-down list), the module enters auto power-off.
- *10dB plus*: When the Power Limiter Mode is set to *10dB plus* and the downlink input signal exceeds the user-set maximum input signal threshold, the signal is 10dB attenuated.

e Set the Power Alarm **Hysteresis** to avoid repeated power alarm reports.

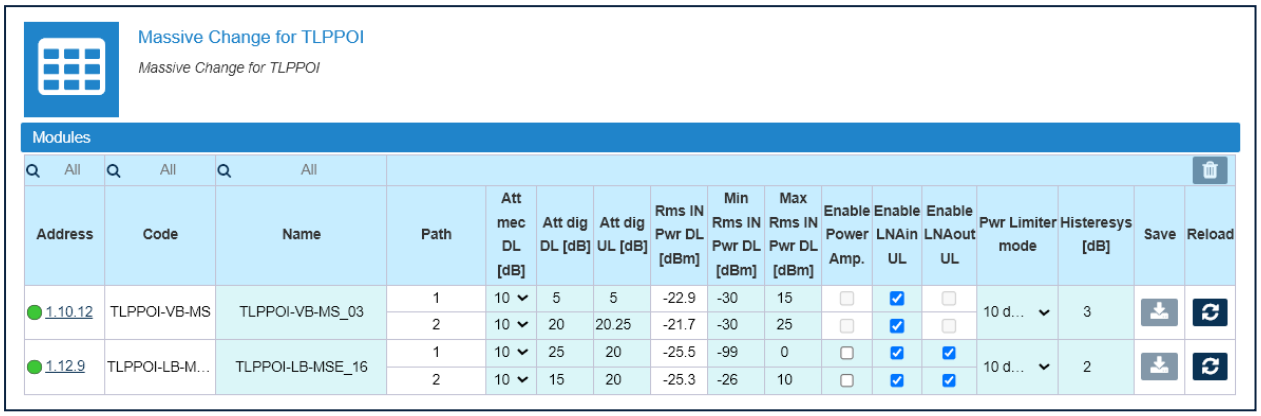
If the input power (DL RMS power) exceeds the input power threshold set for the path (DL RMS max), the power limiter alarm is triggered.

The alarm is cleared when: DL Rms Pwr [dBm] = DL RMS max [dBm] - Hysteresis [dB].

4. Click the yellow save icon to save changes for each module.

Commissioning TLPPOIs

1. In the **Settings** menu, select **Massive Change Menu**.
2. In the **TLPPOI** pane, click the **Massive Change** button to display the Massive Change table for TLPPOIs.



3. In the Massive Change table, configure each TLPPOI as follows:
   a. Assign a name to the component.
   b. Adjust uplink and downlink attenuation for each path.

      After successful completion of relevant training courses, use the commissioning tool spreadsheet, provide by JMA, to calculate uplink and downlink attenuation to be set.

      The following table details the default attenuation settings:

Description	Massive change label	Default setting (maximum)
Mechanical Attenuation BS (Base Station) Side	Att mec DL	0dB
Digital Attenuation - Downlink path	Att dig DL	20dB
Digital Attenuation - Uplink path	Att dig UL	20dB

   c. Adjust maximum and minimum input power thresholds for each path: *Min Rms IN Pwr DL* and *Max Rms IN Pwr DL*.
   d. If you need to turn on the downlink power amplifier to meet the downlink commissioning target, select the *Enable Power Amp.* check box for the specific path.

      Note:

      - There are limitations for the downlink power amplifier activation. The following table details the conditions that must be met to successfully enable the downlink power amplifier:

TLPPOI model	Condition to meet
TLPPOI-LB-MSE, TLPPOI-HB-MSE	Max RMS IN Pwr DL [dBm]-Att DL (mec+dig)[dB] ≤ 11dBm
TLPPOI-VB-MSE, TLPPOI-35T-MSE	Max RMS IN Pwr DL [dBm]-Att DL (mec+dig)[dB] ≤ 9dBm

When you select the *Enable Power Amp.* check box, if the conditions are not met, an error message displays and the power amplifier will not be enabled. To successfully enable the power amplifier, adjust the parameters to meet the conditions.

- When you enable the downlink power amplifier, the downlink attenuations for the path are automatically set as detailed in the following table:

Description	Massive change label	Default setting with Power Amplifier ON
Mechanical Attenuation BS (Base Station) Side	Att mec DL	10dB
Digital Attenuation - Downlink path	Att dig DL	15dB
Digital Attenuation- Uplink path	Att dig UL	15dB

The re-commissioning of the path is required.

e If you need to enable the uplink low noise amplifiers to compensate for high losses in the DAS MU and /or passive network, select the *Enable LNA out UL* check box and/or the *Enable LNA in UL* check box for the specific path.

Note: There are no limitations for the LNAs activation.

f Select the power limiter mode to protect the module.

The following options are available in the **Pwr Limiter Mode** drop-down list:

- *RF OFF*. If the Power Limiter Mode is set to *RF OFF*, when the rms downlink input power exceeds the user-set maximum input signal threshold (*Max Rms IN Pwr DL*) for the path (1 or 2), the *Pwr Limiter DL* (1 or 2) alarm is triggered and the path is switched off, until the alarm condition ceases (auto power-on).
- *10dB plus*. If the Power Limiter Mode is set to *10dB plus*:
  - When the rms downlink input power exceeds the user-set maximum input signal threshold (*Max Rms IN Pwr DL*) for the path (1 or 2), the Pwr Limiter DL (1 or 2) alarm is triggered and the path input power is reduced by 10dB, until the alarm condition ceases.
  - When the rms downlink input power (path 1 or 2) exceeds either the user-defined maximum input signal threshold (*Max Rms Power DL*) +10dB, or the allowed Absolute Maximum Input Power, the path (1 or 2) is switched off by the overdrive protection and the *Pwr Overdrive DL* (1 or 2) alarm is triggered.

    Note: The overdrive alarm needs to be cleared: when the alarm ceases, click the **Clear Overdrive** button to reset the path. The path is restored @ max attenuations (*Mec DL* and *Dig DL*) and the re-commissioning of the path is required.

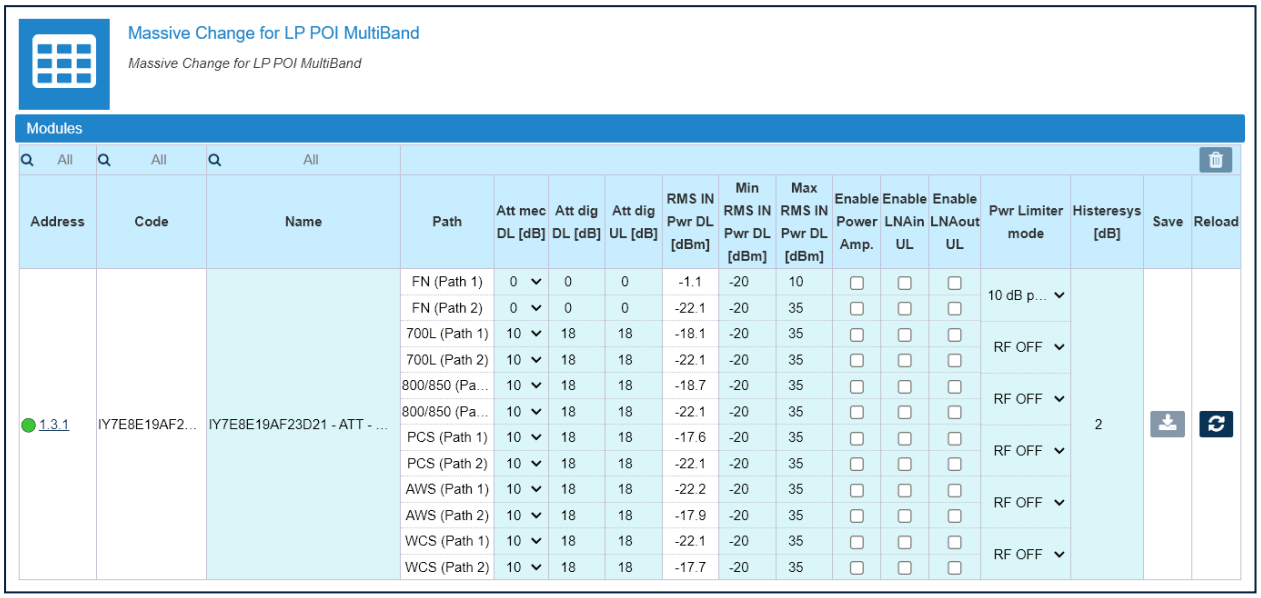
g Set the Power Alarm **Hysteresis** to avoid repeated power alarm reports.

If the input power (Rms IN Pwr DL) exceeds the maximum input power threshold set for the path (Max Rms IN Pwr DL), the power limiter alarm (Pwr Limiter DL) is triggered. The alarm is cleared when: Rms IN Pwr DL [dBm] = Max Rms IN Pwr DL - Hysteresis.

4. Click the yellow save icon to save changes for each module.

Commissioning LP POI MB

1. In the **Settings** menu, select **Massive Change Menu**.
2. In the **LP POI MB** pane, click the **Massive Change** button to display the Massive Change table for the components.



3. In the Massive Change table, configure each LP POI MB as follows:
   - **a** Assign a name to the component.
   - **b** Adjust uplink and downlink attenuation for each band (Path 1 and Path 2).

     After successful completion of relevant training courses, use the commissioning tool spreadsheet, provided by JMA, to calculate uplink and downlink attenuation to be set.

     The following table details the default attenuation settings:

Description	Massive change label	Default setting (maximum)
Mechanical Attenuation BS (Base Station) Side	Att mec DL	10dB
Digital Attenuation - Downlink path	Att dig DL	18dB
Digital Attenuation- Uplink path	Att dig UL	18dB

   - **c** Adjust maximum and minimum input power thresholds for each band (Path 1 and Path 2): *Min RMS IN Pwr DL* and *Max RMS IN Pwr DL*.

     Note: Refer to the following table for the relationship between the maximum input power threshold and the minimum mechanical downlink attenuation to be set for each band (Path 1 and Path 2):

Maximum Input Power Threshold (Max RMS IN Pwr DL)	Minimum Mechanica Downlink Attenuation (Att mec DL)
25–35dBm	10dB
<25dBm	0dB

d If you need to turn on the downlink power amplifier to meet the downlink commissioning target, select the *Enable Power Amp.* check box for the specific band/path.

Note:

- There are limitations for the downlink power amplifier activation. The following table details the conditions that must be met to successfully enable the downlink power amplifier:

LP POI MB model	Band	Condition to meet
IY7E8E19AFD21	700H, 800/850, PCS, AWS	Max RMS IN Pwr DL [dBm]-Att DL (mec+dig)[dB] ≤ 11dBm
IY7E8E19AF23D21	FN, 700L, 800/850, PCS, AWS	Max RMS IN Pwr DL [dBm]-Att DL (mec+dig)[dB] ≤ 11dBm
	WCS	Max RMS IN Pwr DL [dBm]-Att DL (mec+dig)[dB] ≤ 14dBm

  When you select the *Enable Power Amp.* check box, if the conditions are not met, an error message displays and the power amplifier will not be enabled. To successfully enable the power amplifier, adjust the parameters to meet the conditions.

- When you enable the downlink power amplifier, default downlink attenuations for the path are restored (see default attenuation settings on page 27) and the re-commissioning of the path is required.

e If you need to enable the uplink low noise amplifiers to compensate for high losses in the DAS MU and /or passive network, select the *Enable LNA out UL* and/or the *Enable LNA in UL* check box for the specific band/path.

Note: There are no limitations for the LNAs activation.

f For each band, select the power limiter mode to protect the module.

The following options are available in the **Pwr Limiter Mode** drop-down list:

- *RF OFF*. If the Power Limiter Mode is set to *RF OFF*, when the rms downlink input power exceeds the user-set maximum input signal threshold (*Max Rms IN Pwr DL*) for the path (1 or 2), the *Pwr Limiter DL* (1 or 2) alarm is triggered and the path is switched off, until the alarm condition ceases (auto power-on).
- *10dB plus*. If the Power Limiter Mode is set to *10dB plus*:
  - When the rms downlink input power exceeds the user-set maximum input signal threshold (*Max Rms IN Pwr DL*) for the path (1 or 2), the Pwr Limiter DL (1 or 2) alarm is triggered and the path input power is reduced by 10dB, until the alarm condition ceases.
  - When the rms downlink input power (path 1 or 2) exceeds either the user-defined maximum input signal threshold (*Max Rms Power DL*) +10dB, or the allowed Absolute Maximum Input Power, the path (1 or 2) is switched off by the overdrive protection and the *Pwr Overdrive DL* (1 or 2) alarm is triggered.

    Note: The overdrive alarm needs to be cleared: when the alarm ceases, click the **Clear Overdrive** button to reset the path. The path is restored @ max

attenuations (*Mec DL* and *Dig DL*) and the re-commissioning of the path is required.

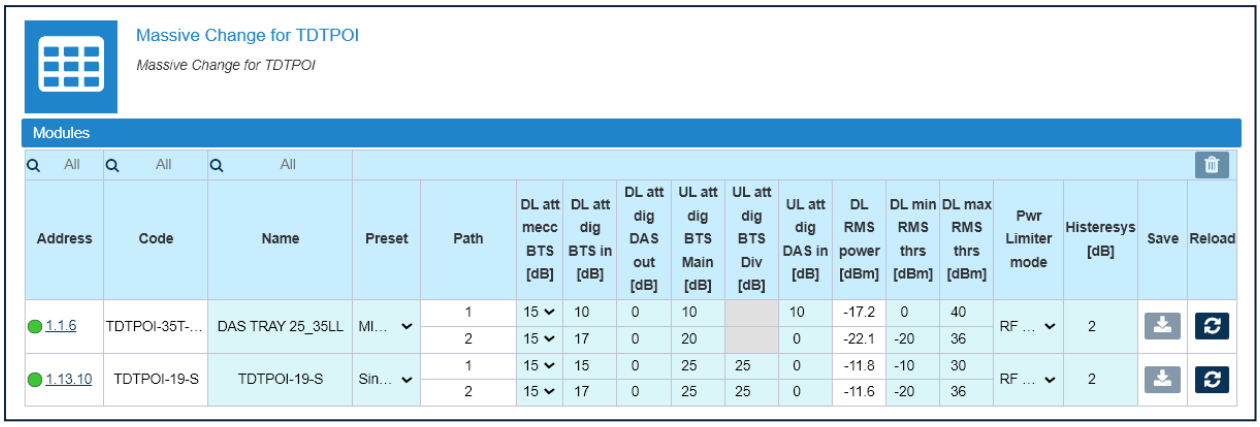
g Set the Power Alarm **Hysteresis** to avoid repeated power limiter alarm reports.

If the input power (Rms IN Pwr DL) exceeds the maximum input power threshold set for the path (Max Rms IN Pwr DL), the power limiter alarm (Pwr Limiter DL) is triggered. The alarm is cleared when: Rms IN Pwr DL [dBm] = Max Rms IN Pwr DL - Hysteresis.

4. Click the yellow save icon to save changes.

Commissioning TDTPOIs

1. In the **Settings** menu, select **Massive Change Menu**.
2. In the **TDTPOI** pane, click the **Massive Change** button to display the Massive Change table for TDTPOIs.



Address	Code	Name	Preset	Path	DL att mecc BTS [dB]	DL att dig BTS in [dB]	DL att dig DAS out [dB]	UL att dig BTS Main [dB]	UL att dig BTS Div [dB]	UL att dig DAS in [dB]	DL RMS power [dBm]	DL min RMS thrs [dBm]	DL max RMS thrs [dBm]	Pwr Limiter mode	Histeresys [dB]	Save	Reload
1.1.6	TDTPOI-35T-...	DAS TRAY 25_35LL	MI...	1	15	10	0	10		10	-17.2	0	40	RF ...	2		
				2	15	17	0	20		0	-22.1	-20	36				
1.13.10	TDTPOI-19-S	TDTPOI-19-S	Sin...	1	15	15	0	25	25	0	-11.8	-10	30	RF ...	2		
				2	15	17	0	25	25	0	-11.6	-20	36				

3. In the Massive Change table configure each TDTPOI as follows:
   - **a** Assign a name to the component.
   - **b** Adjust uplink and downlink attenuation for each path.

     After successful completion of relevant training courses, use the commissioning tool spreadsheet, provide by JMA, to calculate uplink and downlink attenuation to be set.

Description	Massive change label	Default setting (maximum)
Mechanical Attenuation BS (Base Station) Side	DL att mecc BTS	15dB
Digital Attenuation BS Side	DL att dig BTS in	17dB
	UL att dig BTS Main	25dB
	UL att dig BTS Div	25dB
Digital Attenuation DAS Side	UL att dig DAS in	0dB
	DL att dig DAS out	0dB

   - **c** Adjust maximum and minimum input power thresholds for each path: DL min RMS thrs and DL max RMS thrs.

     Refer to the following table for the relationship between the maximum input Power and the minimum downlink attenuation to be set for the path.

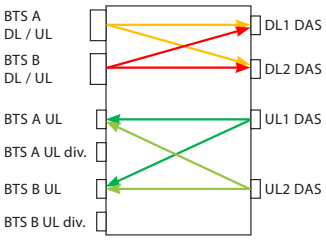
Minimum Downlink attenuation Mechanical	Maximum Input Power (no damage)		
	DAS Tray		Low Loss DAS Tray
	@40°C (+104°F) (*)	@55°C (+131°F) (*)	@55°C (+131°F) (*)
15dB	49dBm	47dBm	40dBm
10dB	46dBm	46dBm	36dBm
5dB	41dBm	41dBm	31dBm
0dB	36dBm	36dBm	26dBm
(*) DAS Tray operating temperature			

d Select the TDTPOI operation mode from the **Preset** drop-down list.

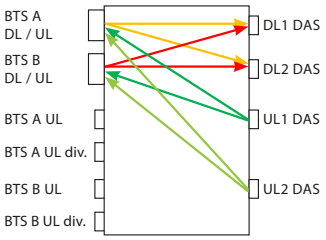
The Preset options set the module operating mode as detailed in the diagrams below:

› **Dual SISO**

Simplex Base Station without Diversity:

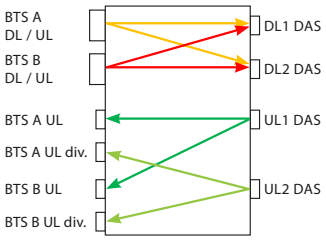


Duplex Base Station without Diversity

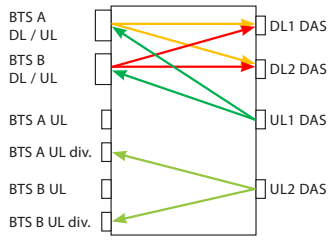


› **UMTS Div**

Simplex Base Station with UMTS Diversity:

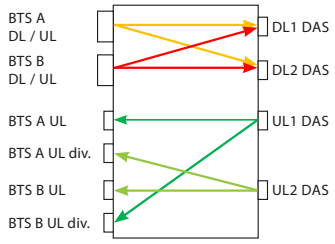


Duplex Base Station with UMTS Diversity:

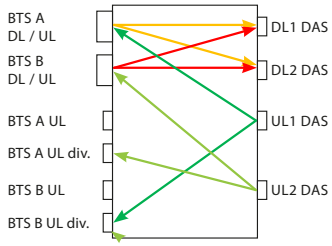


› **GSM Div**

Simplex Base Station with GSM Diversity:

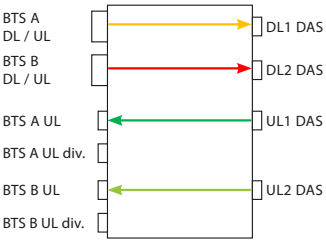


Duplex Base Station with GSM Diversity:

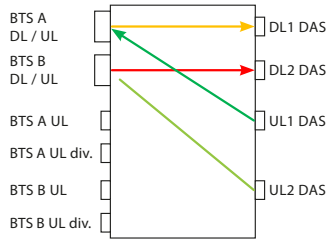


› **MIMO 2x2**

Simplex Base Station with GSM Diversity



Duplex Base Station with GSM Diversity



e Select the power limiter mode to protect the module.

The following options are available in the **Pwr Limiter mode** drop-down list:

- *RF OFF*: If the Power Limiter Mode is set to *RF OFF*, when the rms downlink input power exceeds the user-set maximum input signal threshold for the path (1 or 2), the Pwr Limiter DL (1 or 2) alarm is triggered and the path is switched off, until the alarm condition ceases (auto power-on).

- *10dB plus*: If the Power Limiter Mode is set to *10dB plus*, when the rms downlink input power exceeds the user-set maximum input signal threshold for the path (1 or 2), the Pwr Limiter DL (1 or 2) alarm is triggered and the path input power is reduced by 10dB, until the alarm condition ceases.

  Note: When the rms downlink input power (path 1 or 2) exceeds either the user-defined maximum input signal threshold +10dB, or the allowed Absolute Maximum Input Power, the path (1 or 2) is switched off by the overdrive protection and the Pwr Overdrive DL (1 or 2) alarm is triggered.

  The overdrive alarm needs to be cleared: when the alarm ceases, click the **Clear Overdrive** button to reset the path.

  The path is restored @ max attenuations (Mec DL and Dig DL) and the re-commissioning of the path is required.

f Set the Power Alarm **Hysteresis** to avoid repeated power alarm reports.

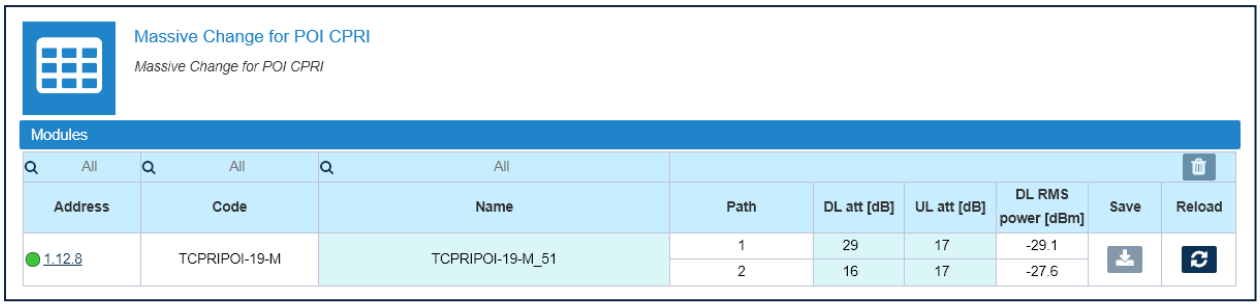
If the input power exceeds the maximum input power threshold set for the path, the power limiter alarm is triggered.

The alarm is cleared when: DL RMS power [dBm] = DL max RMS thrs - Power Alarm Hysteresis

4. Click the yellow save icon to save changes for each module.

Commissioning TCPRIPOIs

1. In the **Settings** menu, select **Massive Change Menu**.
2. In the **POI CPRI** pane, click the **Massive Change** button to display the massive change table for TCPRIPOIs.



3. In the Massive Change table configure each TCPRIPOI as follows:
   a. Assign a name to the component.
   b. Adjust uplink and downlink attenuation for each path.

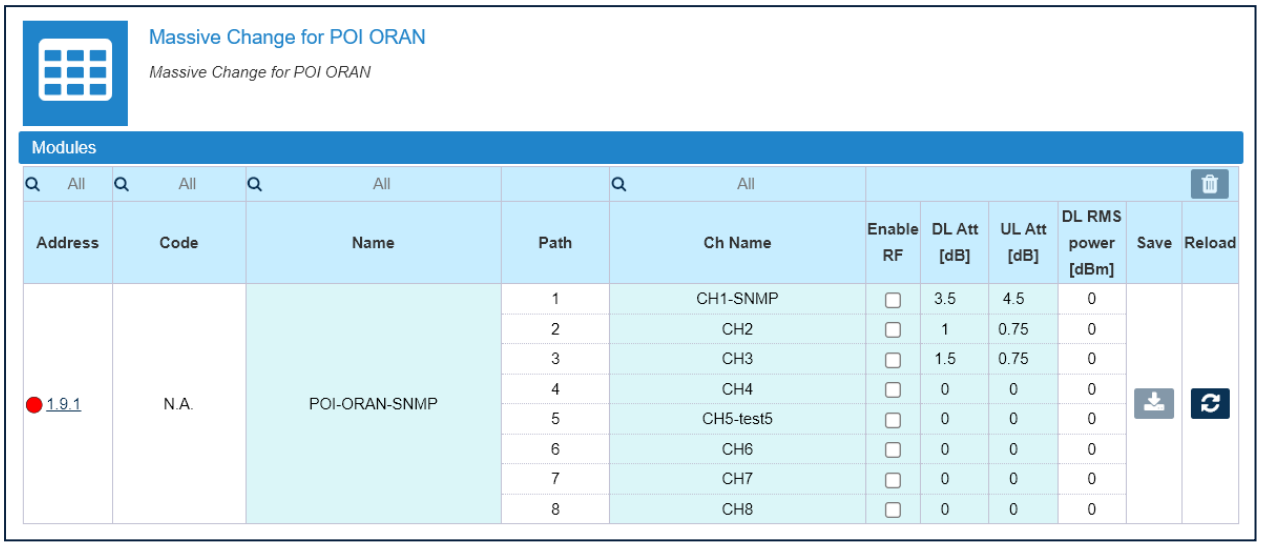
   After successful completion of relevant training courses, use the commissioning tool spreadsheet, provide by JMA, to calculate uplink and downlink attenuation to be set.

Massive change label	Default setting (maximum)
UL att	25dB
DL att	30dB

4. Click the yellow save icon to save changes for each module.

Commissioning POI ORAN

1. In the **Settings** menu, select **Massive Change Menu**.
2. In the **POI ORAN** pane, click the **Massive Change** button to display the Massive Change table for the components.



Address	Code	Name	Path	Ch Name	Enable RF	DL Att [dB]	UL Att [dB]	DL RMS power [dBm]	Save	Reload
1.9.1	N.A.	POI-ORAN-SNMP	1	CH1-SNMP	☐	3.5	4.5	0		
			2	CH2	☐	1	0.75	0		
			3	CH3	☐	1.5	0.75	0		
			4	CH4	☐	0	0	0		
			5	CH5-test5	☐	0	0	0		
			6	CH6	☐	0	0	0		
			7	CH7	☐	0	0	0		
			8	CH8	☐	0	0	0		

3. In the Massive Change table, configure each **POI ORAN** as follows:
   - **a** Assign a name to the component.
   - **b** Assign a name to each channel.
   - **c** Adjust uplink and downlink attenuation for of each channel.

     After successful completion of relevant training courses, use the commissioning tool spreadsheet, provided by JMA, to calculate uplink and downlink attenuation to be set.

     The following table details the default attenuation settings:

Description	Massive change label	Default setting (maximum)
Downlink Attenuation	DL Att	30dB
Uplink Attenuation	UL Att	25dB

   - **d** If you need to enable the uplink low noise amplifier to compensate for high losses in the DAS MU and /or passive network, select the *Enable LNA UL* check box for the specific channel.

     Note: The *Enable LNA UL* check box is available on the POI ORAN panel only.

     When you enable the uplink low noise amplifier, the attenuations for the path are automatically set as detailed in the following table:

Description	Massive change label	Default setting (maximum)
Downlink Attenuation	DL Att	30dB
Uplink Attenuation	UL Att	20dB

     The re-commissioning of the path is required.
   - **e** Enable RF
4. Click the yellow save icon to save changes.

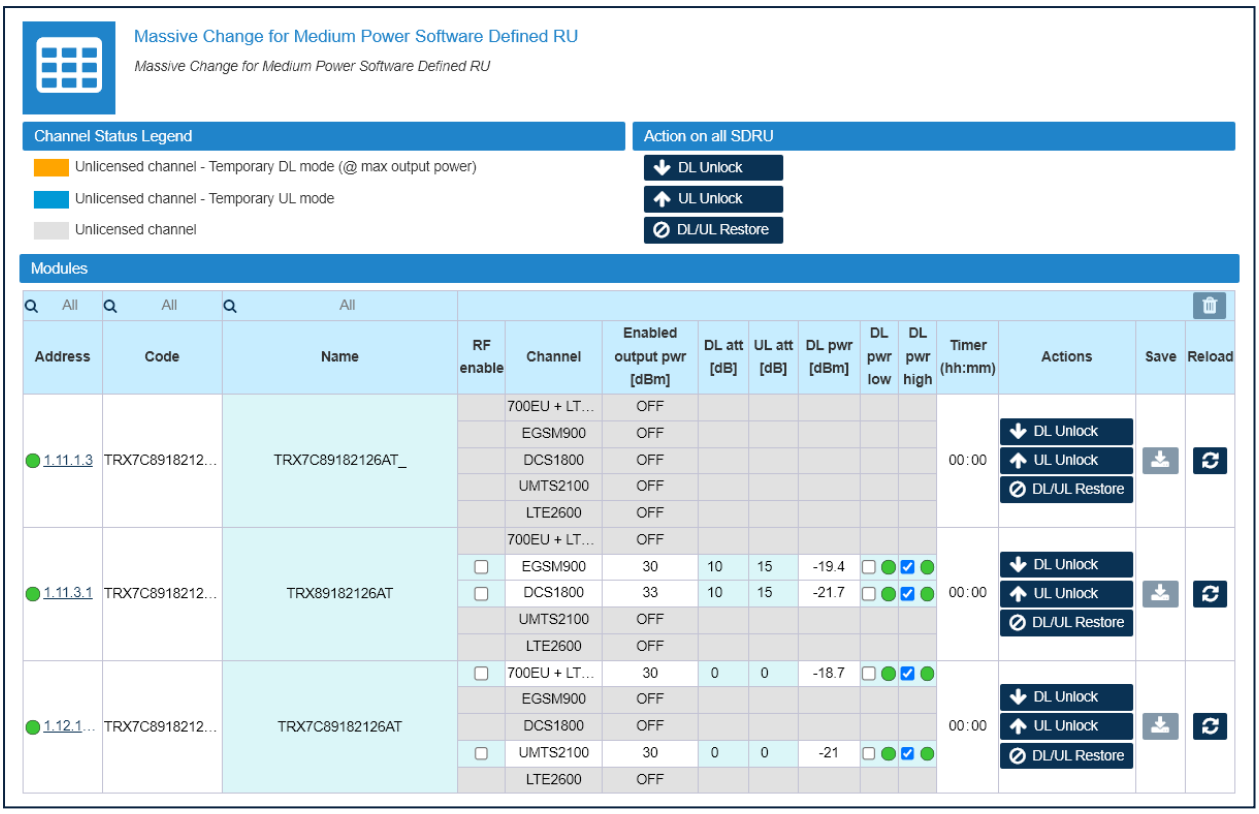
Commissioning Remote Units

1. In the **Settings** menu, select **Massive Change Menu**. In the **Massive Change Menu** panel, remote units are grouped by type.
2. Click the **Massive Change** button to display the Massive Change table for the remote units of the same type.

   Note: The operating bands and output power of Software Defined Remote Units (SDRU) are tied to license keys, which can be managed remotely using the *JMA Wireless SDRU Panel* software.

   In the Massive Change table for SDRUs, unlicensed channels are locked. If not all the expected channels and output power levels are available for commissioning, verify the activation of purchased features. Refer to the *JMA DAS Platform SDRU Panel User Guide* for details.
3. In the Massive Change table configure each remote unit as follows:
   a. Assign a name to the remote unit.
   b. Check the downlink output power (*DL Pwr*).
   c. If necessary, increase the DAS attenuation.
   d. Enable RF.
   e. Enable Downlink power alarms.
4. Repeat steps 2 and 3 for all the types of remote units installed in the DAS.
5. Click the yellow save icon to save changes for each unit.

Note: The Massive Change table for medium power (1.25W-to-2W) Software Defined Remote Units (SDRUs) provides additional tools to temporary unlock unlicensed bands for RF testing purposes.



You can apply the temporary unlock to either a single SDRU (buttons in the **Actions** column of the Massive Change table) or to all the SDRUs listed in the Massive Change table (buttons in the **Action on all SDRU** pane).

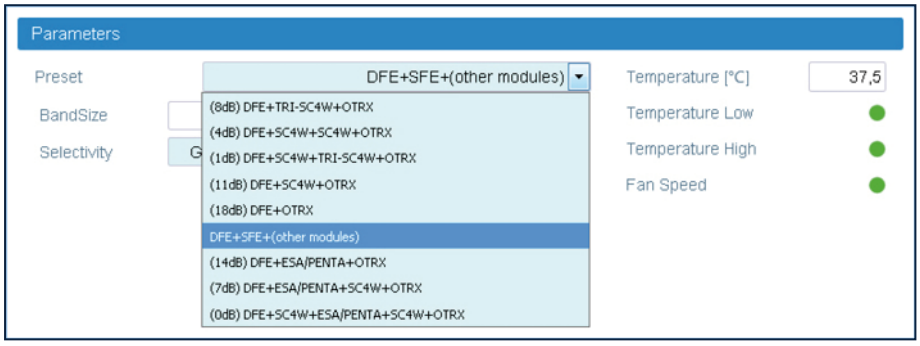
- Click **UL Unlock** to activate the UL path for unlicensed bands.
  In the Massive Change table, the row background color of unlicensed channels turns blue and the **Timer** displays the time elapsed since unlock.
- Click **DL Unlock** to activate the DL path for unlicensed bands (@ maximum output power).
  In the Massive Change table, the row background color of unlicensed channels turns orange and the **Timer** displays the time elapsed since unlock.
- Click **DL/UL Restore** to restore original licenses configuration and reset the timer.
  The row background color of unlicensed channels turns gray.

Note: The temporary unlock can be repeated.

RF Commissioning of Donor Front Ends (TDFEs)

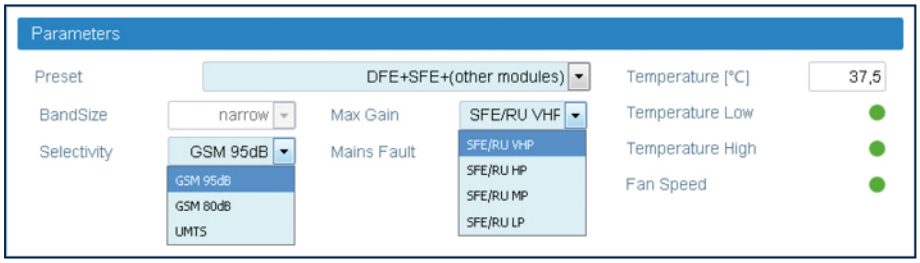
The parameters for the commissioning of Donor Front Ends (TDFEs) must be set individually for each component.

1. In the **Physical Tree**, select the Donor Front End to display its details panel.
2. Assign a name to the Donor Front End.
3. In the **Parameters** pane:
   a. Select the *Preset* corresponding to the DAS configuration for automatic gain setting.



   b. Select the Digital Filter *Selectivity* (Standard TDFE modules only).

   The *Selectivity* options allow the filter to be optimized either for low delay (*UMTS*) or for high selectivity (*GSM 95dB*).

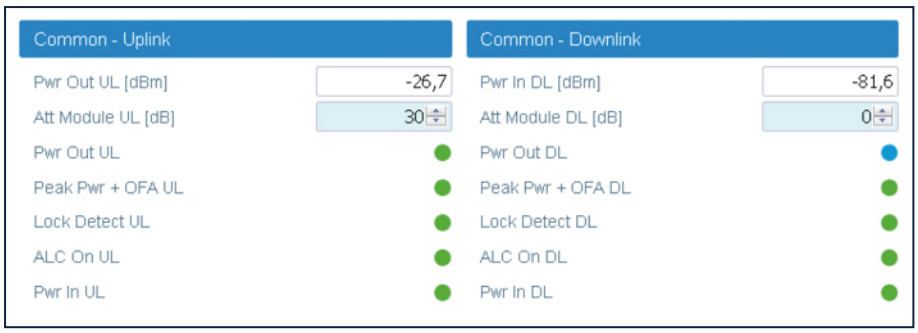


   The following options are available:

   - *GSM 95dB* is the most selective filter.
   - *GSM 80dB* is a less selective filter, introducing little bit less delay, as compared with the GSM 95dB option.
   - *UMTS* is optimized for introducing the lowest delay.

   c. Select the SFE/RU output power in the *Max Gain* drop-down list to display the proper downlink diagram in the Spectrum panel

4. In the **Common-Uplink** and **Common-Downlink** panes, adjust Uplink (UL) and Downlink (DL) attenuation for each path.



After successful completion of relevant training courses, use the commissioning tool spreadsheet, provide by JMA, to calculate uplink and downlink attenuation to be set.

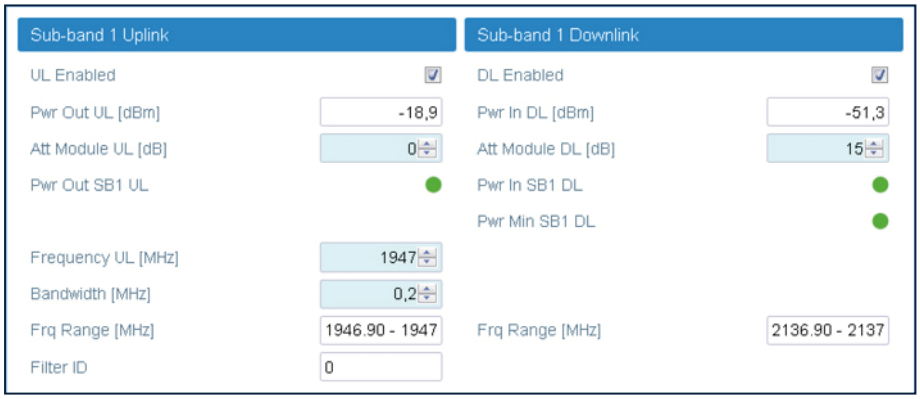
Description	Web page label	Defaul setting
Uplink Digital Attenuation	Att Module UL	30dB
Downlink Digital Attenuation	Att Module DL	30dB

5. In each sub-band pane:

a Adjust Uplink and Downlink attenuations (Att Module UL and Att Module DL).

b Set the Uplink Frequency band center (Frequency UL) and Bandwidth for each sub-band to be enhanced.

c Enable Uplink and Downlink for the sub-band.



6. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save all the changes in the page.

Enabling Downlink RF Power Alarms

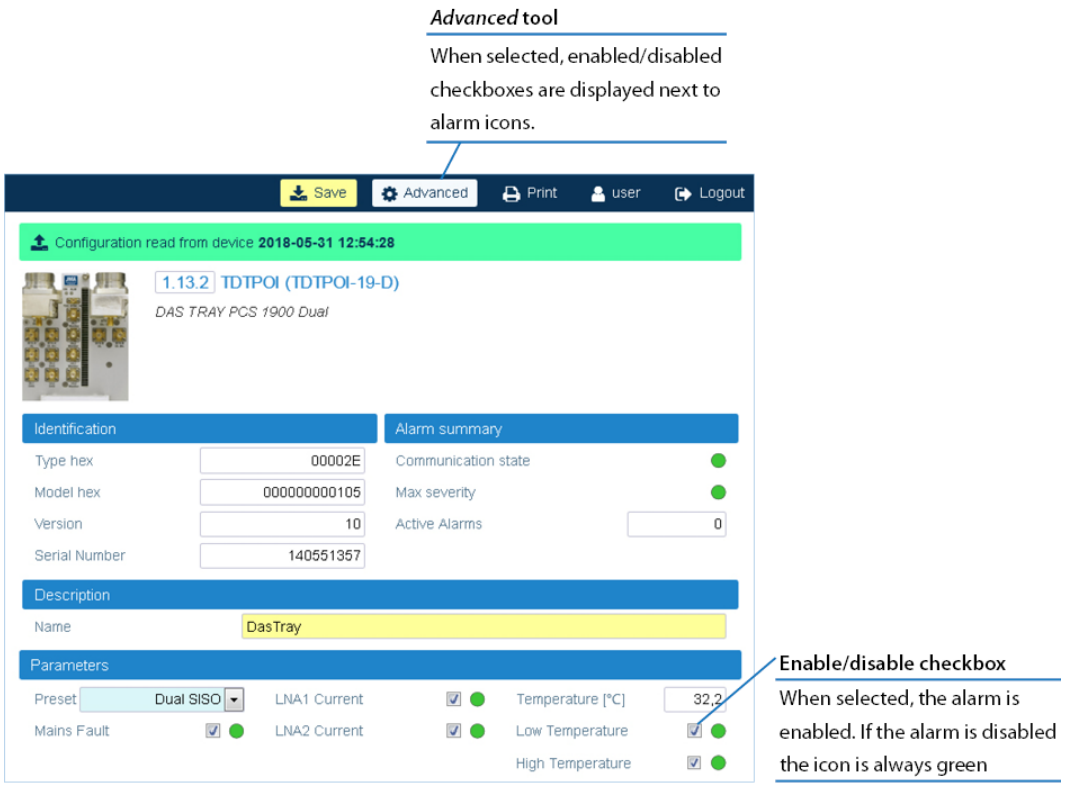
After completing the previous steps, it is strongly recommended to check that all the Downlink RF power alarms are enabled.

Enabling and Disabling Alarms

Alarms can be enabled or disabled in the detail panel of each component as follows:

- In the **Physical Tree**, select the DAS component to display its details panel.
- In the **Toolbar**, select the **Advanced** tool to display check boxes next to the alarm icons.
- Select the check box next to an alarm to enable the alarm. The **Save** tool in the toolbar turns yellow.
- To disable an alarm, deselect the check box. The Save tool in the toolbar turns yellow.

  Note: If an alarm is disabled, the icon is always green.
- Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.



Setting External Alarms and Relays

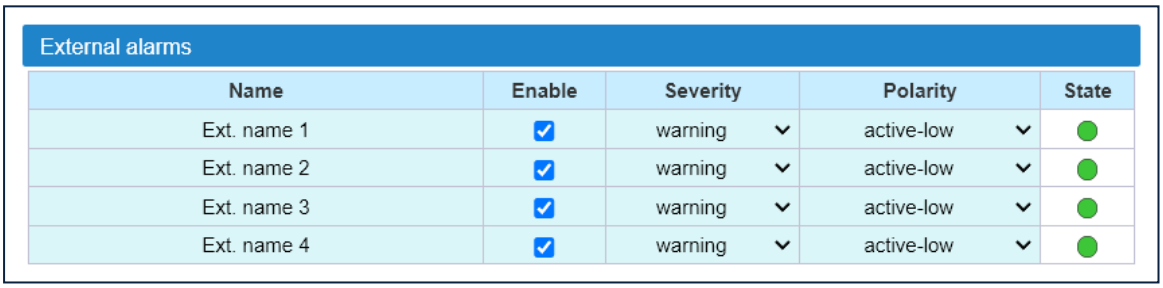
External Alarms

Alarms generated by external devices can be connected to the external alarms input connector (EXT IN), available on the following DAS components:

- Supervision module (**TSPV**)
- Alarm Board
- Remote units (**RU**)
- Next Generation remote units (**NG RU** and **NG SDRU**)

Configure and enable monitoring of external alarms as follows:

1. In the **Physical Tree**, select the DAS component to display its details panel.
2. In the **External alarms** table, assign names, severity (*Critical, Major, Minor, Warning*), and polarity (*active-high* or *active-low*) to the alarms.



3. Select the **Enable** check box to enable monitoring of configured external alarms.
4. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save all the changes in the page.

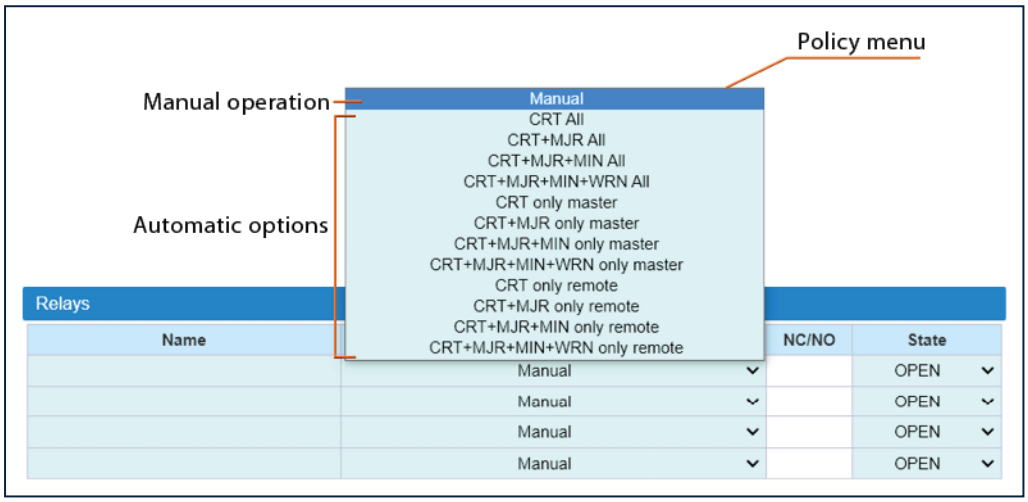
Relays

The EXT OUT connector is available on the following DAS components:

- Supervision module (TSPV)
- Remote units (RU)

Configure the logic of the relays in the **Relays** pane, available on the supervision module (TSPV) and remote units detail panels.

Supervision Module (TSPV)



1. In the **Physical Tree**, select the supervision module to display its details panel.
2. In the **Relays** pane, assign a descriptive name to the relay.
3. From the **Policy** menu, select either the *Manual* or an automatic mode.

- *Manual*: The relay is switched manually by the operator.
    a. Select the relay status, *Open* or *Closed*.

- Automatic mode: The relay is triggered automatically by alarms occurring in the DAS.

  a Select one automatic option from the list of predefined triggering alarm events:

  When the *CRT+MJR+MIN+WRN All* option is selected, alarms are not filtered: the relay is triggered when an alarm arises in any component of the DAS.

  The other predefined triggering events filter alarms by device type and alarm severity:

  Alarm severity filter:

  CRT+MJR+MIN (Critical + Major + Minor) – The relay is triggered when an alarm with a severity level equal to, or higher than Minor arises.

  CRT+MJR (Critical + Major) – The relay is triggered when an alarm with a severity level equal to, or higher than Major arises.

  CRT (Critical) – The relay is triggered when an alarm with a severity level equal to Critical arises.

  Device type filter:

  only master – The relay is triggered when an alarm arises in any component of the master unit.

  only remote – The relay is triggered when an alarm arises in a remote unit.

  b Set the relay status (NC/NO):

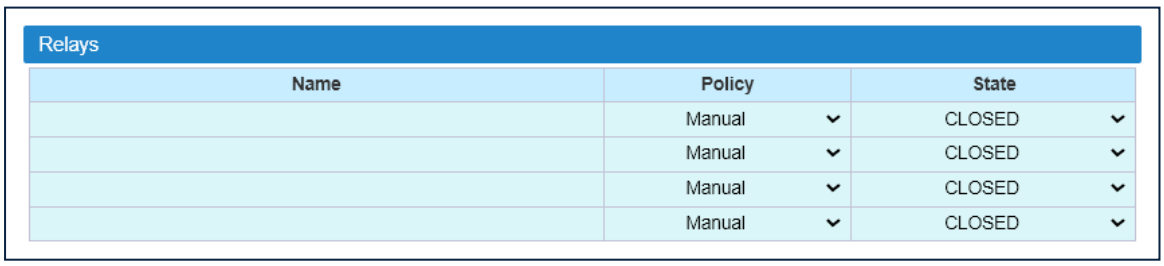
  NO: the relay closes when the alarm condition selected in the Policy menu occurs.

  NC: the relay opens when the alarm condition selected in the Policy menu occurs.

4. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Note: The policy and relay state are applied after the relay is triggered by an alarm.

Remote Units



You can manually switch the external outputs of remote units as follows:

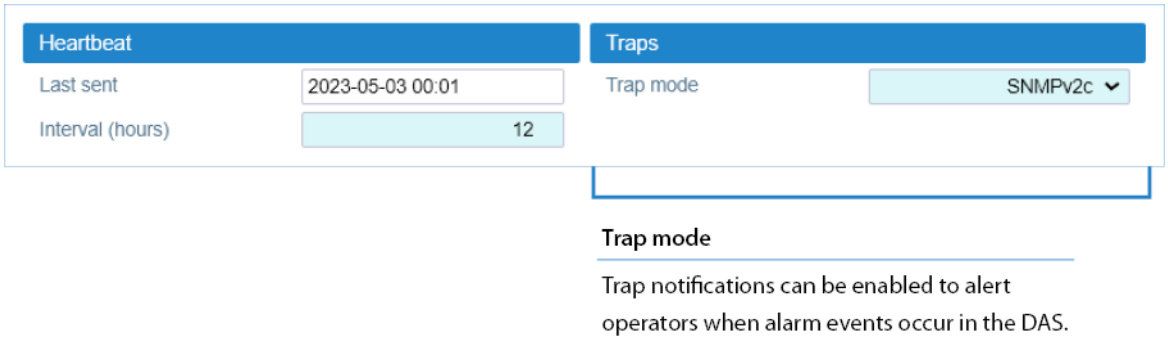
1. In the **Physical Tree**, select the remote unit to display its details panel.
2. In the **Relays** pane, assign a descriptive name to the relay.
3. From the **State** drop-down list, select *Open* or *Closed*.
4. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save all the changes in the page.

Setting Alarm and Heartbeat Notifications

SNMP traps and SMS alerts can be forwarded to periodically test the system availability and to alert operators when alarm events occur in the DAS.

Enabling SNMP Traps

1. In the **Settings** menu, select **Notifications** to access the **Notifications** panel.
2. From the **Trap mode** drop-down list, in the **Traps** pane, select either *SNMPv2c* or *SNMPv3* to enable alarm notifications to be sent out.

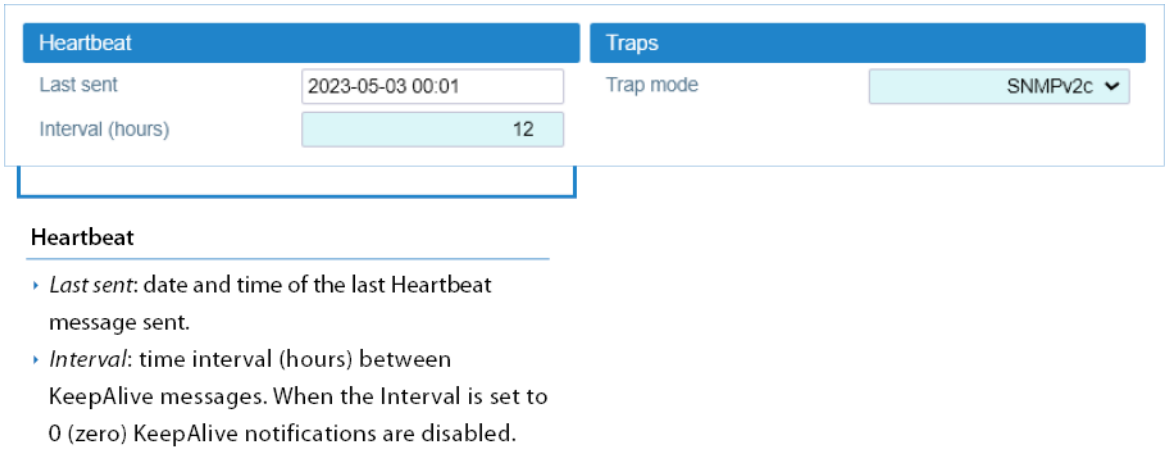


3. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Setting Heartbeat Notifications

1. In the **Heartbeat** pane, set the time **Interval (hours)** between heartbeat notifications.
2. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Note: When the heartbeat interval is set to 0 (zero) heartbeat notifications are disabled.



Setting Alarms and Heartbeat Trap Destinations

In the **Trap notifications** table, you can set up to five trap destinations to receive SNMP notifications.

1. Add each trap receiver as follows:
   a. Set the **IP address** and **Port** of the SNMP trap destination.

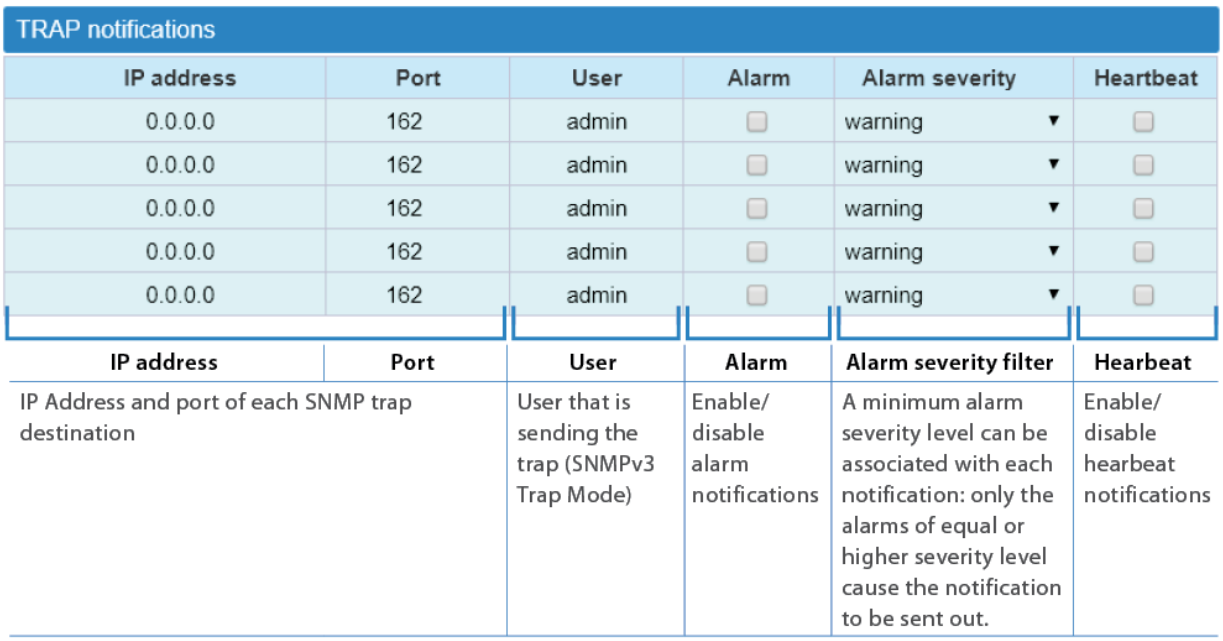
      Note: When the DAS is part of a Network managed via JMA Operation Management Centre (OMC), the OMC Server IP address can be set as one of the recipients of the SNMP trap notifications, in order to optimize the alarm monitoring of the DAS (refer to the *OMC Software Installation and Configuration Guide*).

   b. Select the **User/Community** that is sending the trap (SNMPv3 Trap Mode only).

   c. From the **Alarm severity** drop-down list, select the minimum alarm severity for notifications to be sent out. Only the events of equal or higher severity level cause the trap notification to be sent out.

   d. Select the **Alarm** check box to enable SNMP traps to be forwarded to the trap destination.

   e. Select the **Heartbeat** check box to enable heartbeat notifications to be forwarded to the trap destination.

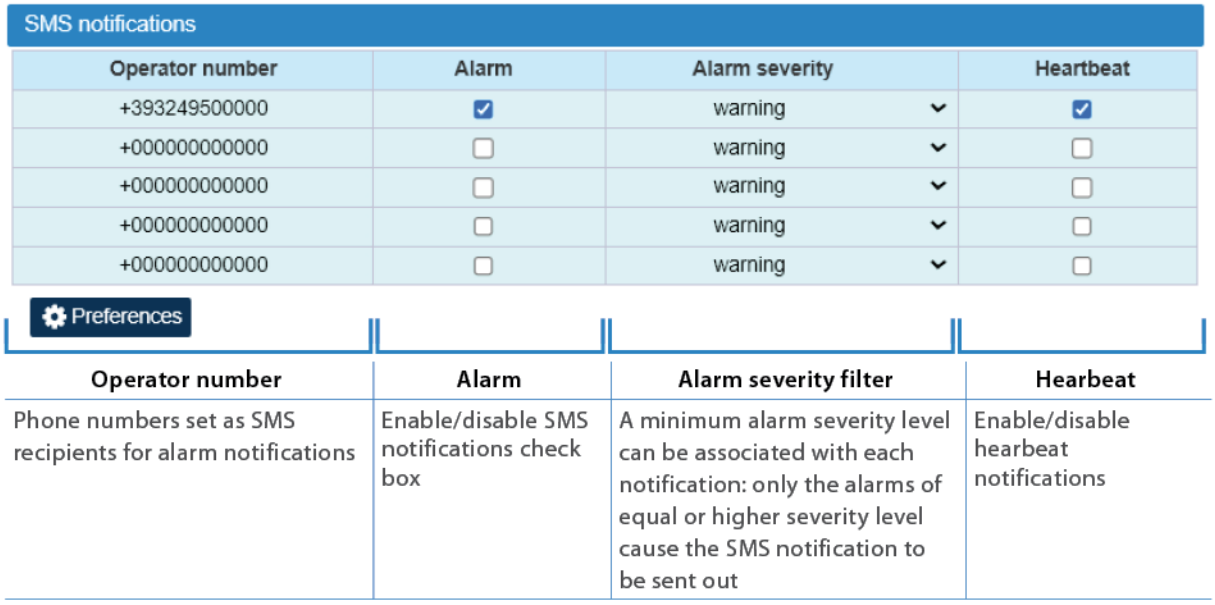


2. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

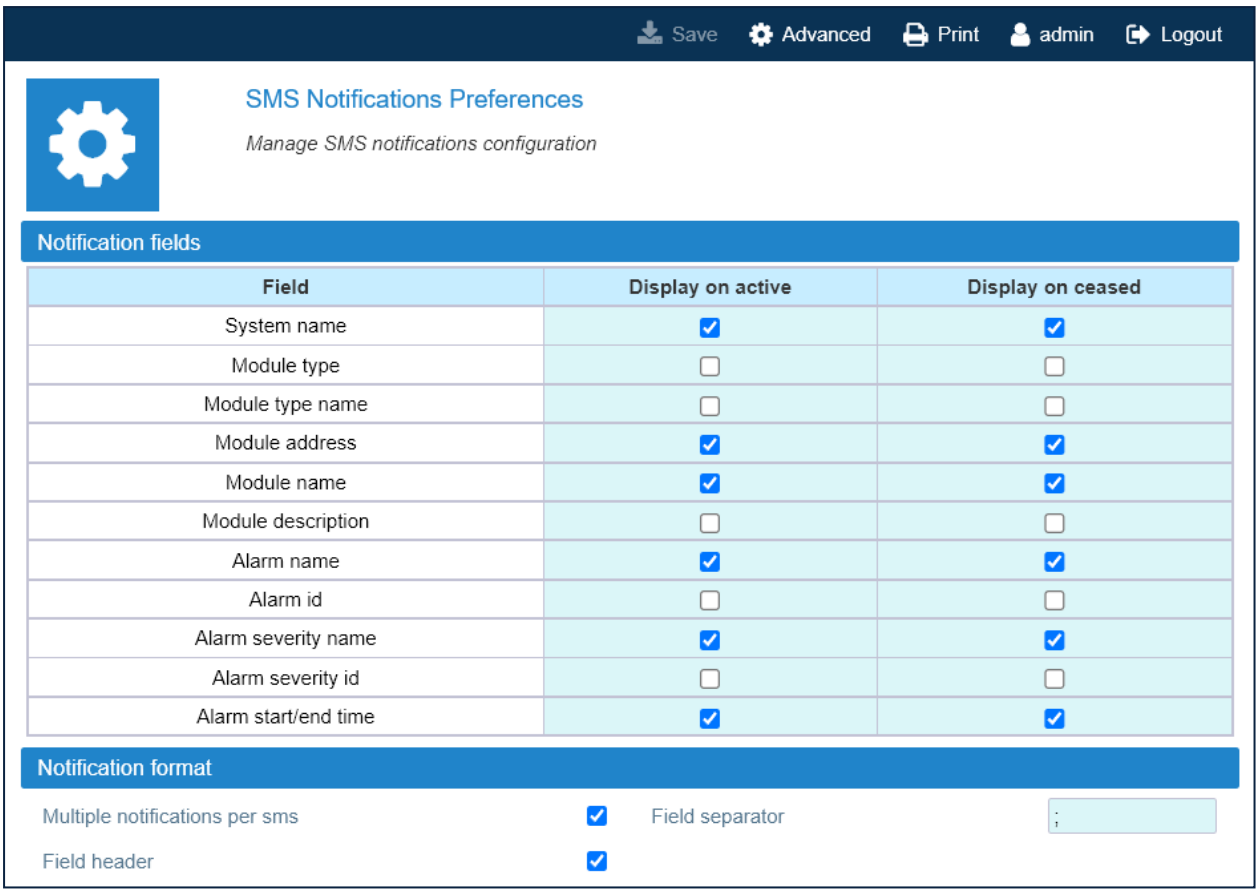
Setting SMS Notifications

In the **SMS notifications** table, you can set up to five operators' phone numbers to receive SMS alarm and heartbeat notifications.

1. In the **Settings** menu, select **Notifications** to access the **Notifications** panel.



2. Add each SMS recipient as follows:
   a. In **Operator number**, insert the recipient's phone number.
   b. From the **Alarm severity** drop-down list, select the minimum alarm severity for SMS notifications to be sent out. Only the events of equal or higher severity level cause the notification to be sent out.
   c. Select the **Alarm** check box to enable SMS notifications.
   d. Select the **Heartbeat** check box to enable heartbeat notifications.
3. Click the **Preferences** button to select information to be included in the SMS (*Notification fields*) and to select the SMS notification format preferences (*Notification format*).



4. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Setting the Network Security

1. In the **Settings** menu, select **Services and Security**.
2. Enable or disable network services to set the appropriate security level for the supervision module communication interfaces.

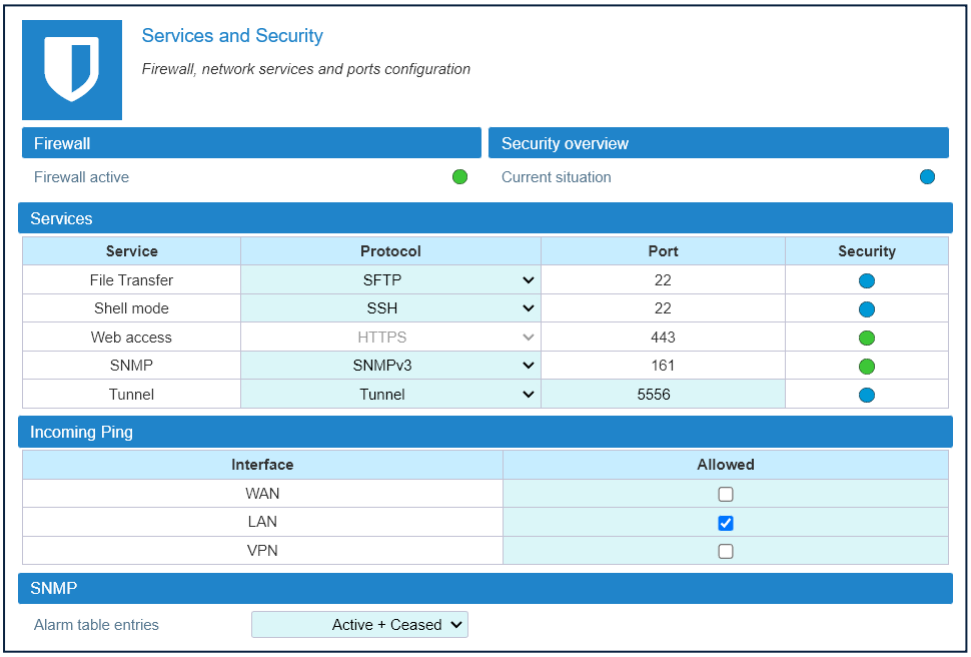
   In the **Services** table, colored icons indicate the security level of each service:

   - Orange: unsafe service.
   - Cyan: safe but not necessary service.
   - Green: safe service.

   In the **Security overview** pane, the color-coded icon provides an at-a-glance view of the network security status.
3. Enable or disable incoming ping for the supervision module communication interfaces.
4. Click the yellow **Save** tool or press the **Enter** key on your keyboard to save all the changes in the page.

Setting a Secure Network

1. For a secure network, configure services as shown in the following figure:



2. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Note:

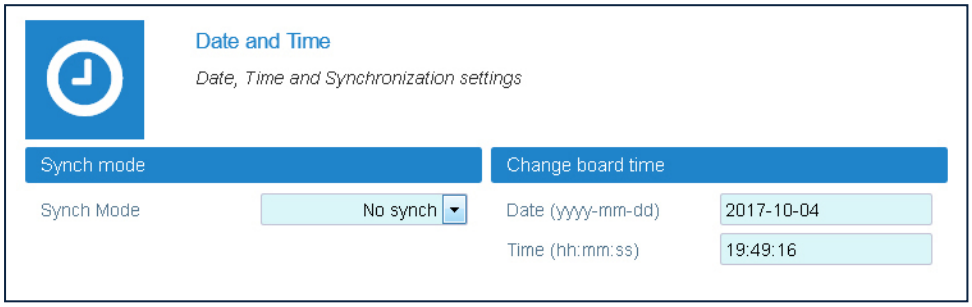
If the *Tunnel* is disabled (OFF), the DAS cannot be managed via JMA OMC nor can Software Defined Remote Units (SDRUs) feature configuration and licensing be performed via the SDRU Panel.

The web server accepts only Secure HTTP (HTTPS) connections: make sure to use port 443 to communicate with the supervision module.

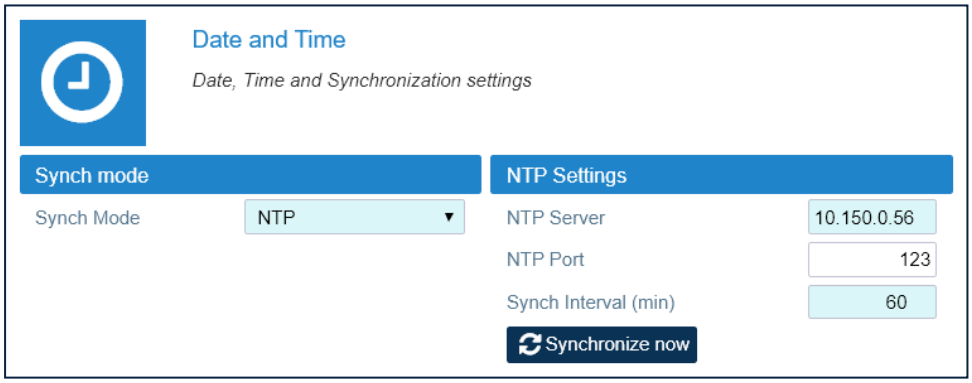
Setting the System Date and Time

1. In the **Settings** menu, select **Date and Time**.
2. From the **Synch Mode** drop-down list, select the synchronization mode:
   a. Select *No synch* to manually set the DAS date and time.

      In the **Change board time** pane, enter the board date and time in Local Time Standard.



   b. Select *NTP* to enable and configure the automatic clock synchronization service.
      - Enter the NTP Server IP address in the **NTP Server** field.
      - In the **Synch Interval** field, set the time interval (minutes) between automatic time synchronization.
      - Click **Synchronize now** to check the NTP Server availability.



3. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Setting Options for Testing the Network Connection

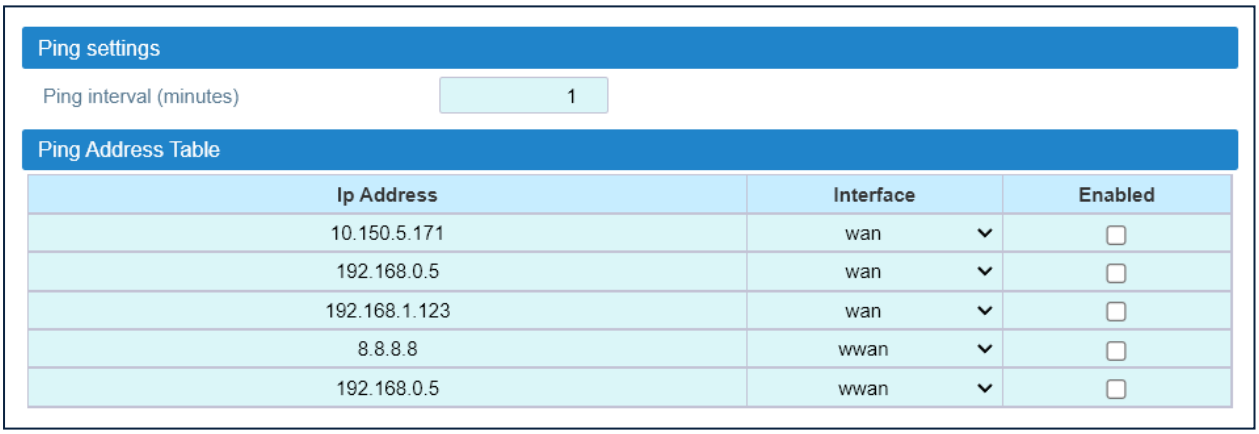
You can set up to five IP Addresses to periodically test the network connection as follows:

1. In the **Settings** menu, select **Communication**.
2. In the **Ping settings** pane, set the **Ping interval** between ping attempts.

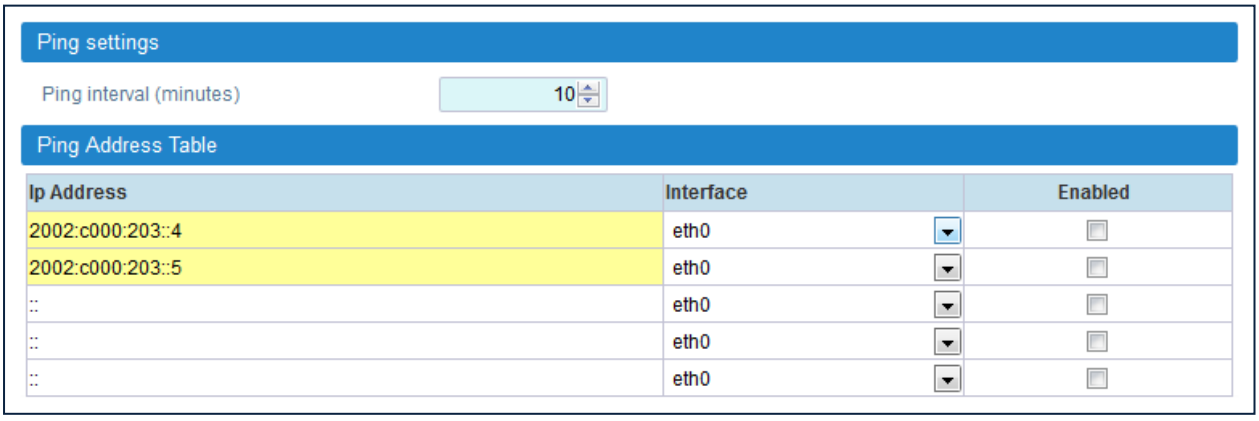
   Note: The ping interval is set as a global ping configuration option.
3. In the **Ping Address Table**, select the connection to be tested from the **Interface** drop-down list.
4. Set the **IP Address** for the network connectivity test.
5. Select the **Enabled** check box.
6. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Note: JMA recommends that you set at least one IP address always available because if the ping test fails, the network interface will be restarted.

An example of the **Ping Address Table** with configured IPv4 addresses is shown in the following figure:



An example of the **Ping Address Table** with configured IPv6 addresses is shown in the following figure:



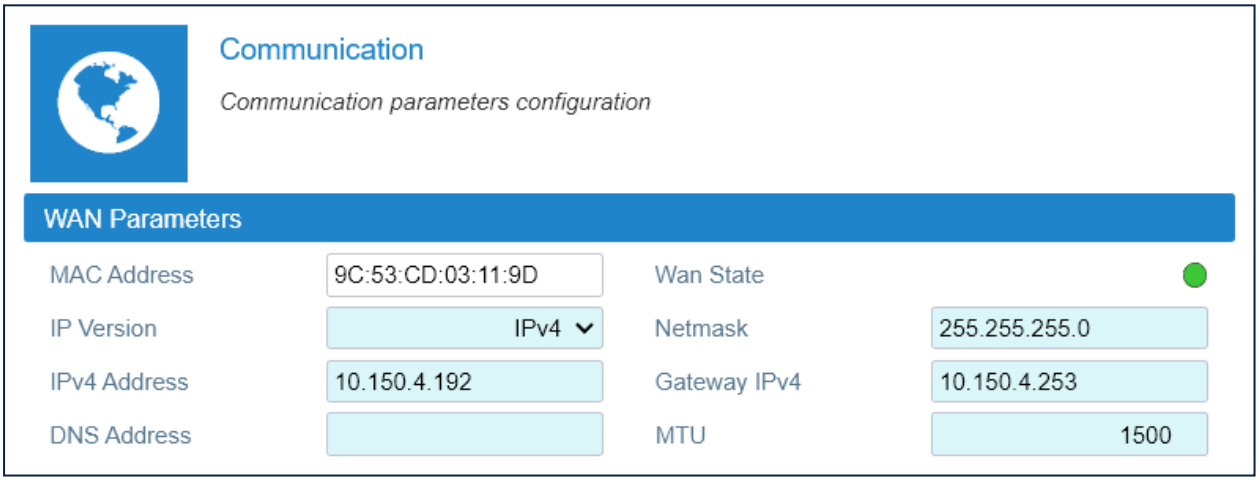
Setting the Supervision Module Communication Interface for Remote Management

After the commissioning of the DAS is complete, configure the DAS communication interface for remote management.

Setting the WAN Interface

1. Contact the Network Administrator to get the parameters for the configuration of the supervision module WAN interface.
2. In the **Settings** menu, select **Communication**.
3. In the **WAN Parameters** pane, select the IP (Internet Protocol) version, IPv4 or IPv6, from the *IP version* drop-down list.

   Note: To avoid connection issues, JMA strongly recommends to switch from IPv4 to IPv6, or vice versa, only when connected locally to the supervision module LAN port.



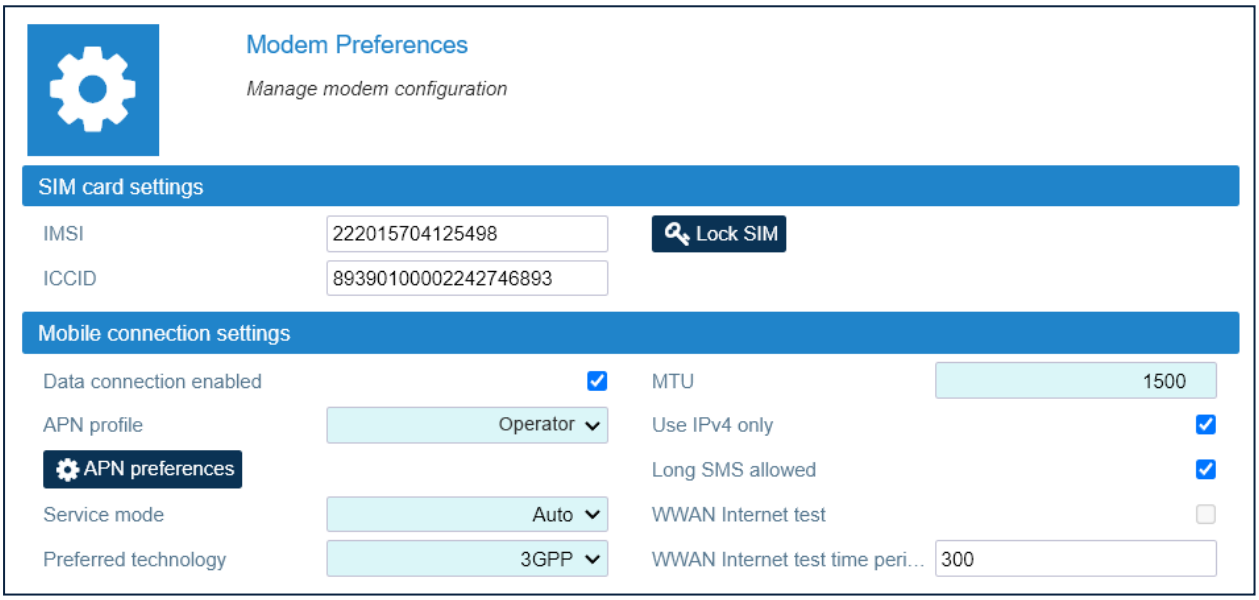
4. Enter the information provided by the Network Administrator to configure the connection.
5. Set the WAN *MTU*, Maximum Transmission Unit size, if necessary.
6. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save all the changes in the page and allow redirection to the new IP address.
7. Connect the Wide Area Network (WAN) to the supervision module WAN port, to allow the remote management of the DAS.

Caution: Never connect the Wide Area Network to the LAN port. The DHCP server, running on the LAN port, may cause connectivity issues in the Wide Area Network.

Setting the Wireless WAN Interface (Modem)

1. In the **Settings** menu, select **Communication**.
2. In the **Modem Parameters** pane, select the **Modem preferences** button to access the modem configuration parameters.

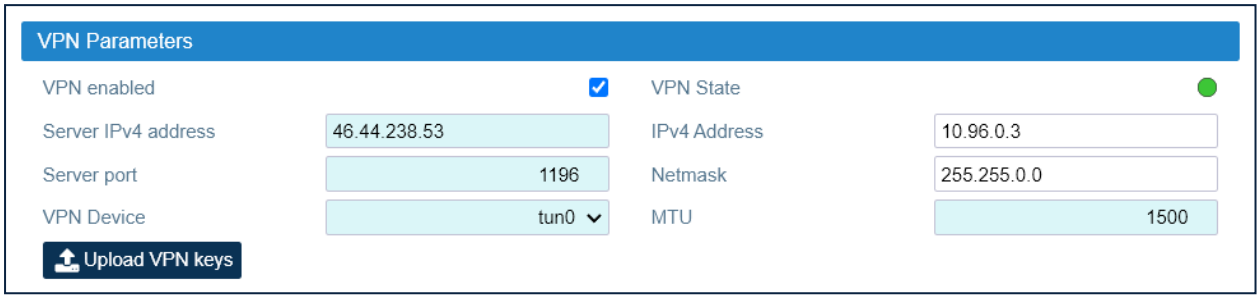
   Note: To reboot the modem and restart the WWAN connection, click the **Modem commands** button. A simple terminal for sending AT commands to the modem is also available.
3. Configure the wireless connection and APN preferences.



4. Select the **Data connection enabled** check box to enable the wireless connection.
5. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save changes.

Setting the VPN

The VPN Client available on the supervision module allows a secure access to the DAS over unsecured networks (such as the Internet).



1. In the **Settings** menu, select **Communication**.
2. Select the **VPN Device** type (Tap or Tun).
3. Enter the VPN server IPv4 address and port.
4. Set the VPN MTU, Maximum Transmission Unit size, if necessary.
5. Upload VPN keys (Certification Authority, Client Certificate, Client Key), if needed.
6. Select the **VPN enabled** check box to enable the VPN connection.
7. Click the yellow **Save** tool in the toolbar or press the **Enter** key on your keyboard to save all the changes in the page and apply the new VPN settings.
8. Check that the **VPN State** icon turns green within a few seconds.

Note: The IP Address allocated by the VPN Server to the VPN Client is displayed in the IPv4 Address field.

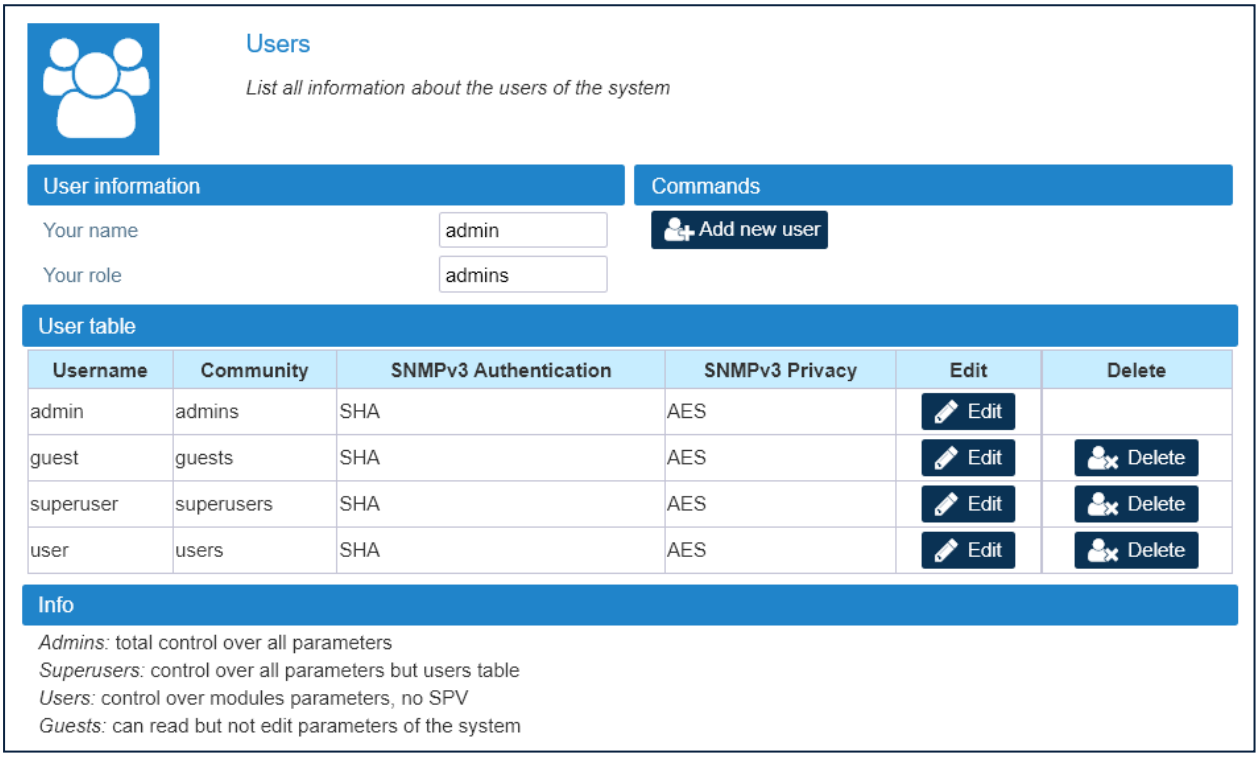
Managing Users

Users with **admins** role permissions can manage their own account and other user accounts.

Editing and Deleting Existing Accounts

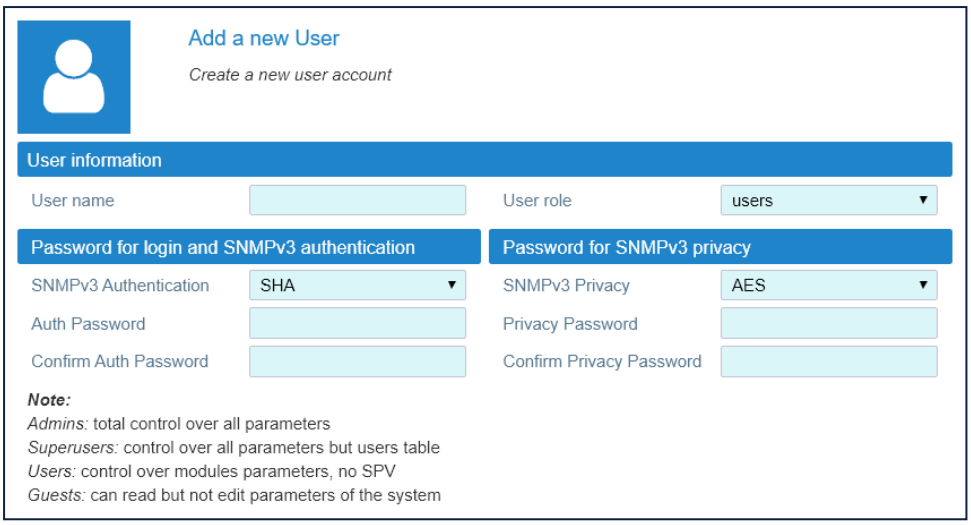
1. In the **Settings** menu, select **Users** to open the **Users** panel.
2. In the **User table**, click **Edit** to edit accounts.
3. Click **Delete** to delete accounts.

NOTE: At least one account with administrative permissions (admins role) must be present and cannot be deleted.



Adding a New User

1. In the **Settings** menu, select **Users** to open the **Users** panel.
2. In the **Commands** pane, click **Add new user**.
3. Enter the new user name in the **User name** field.



4. Select a role for the new user from the **User role** drop-down list.

The following table lists the capabilities associated with each role and the factory-set username and password for each role:

User Role (Community)	Factory-set Username and Password	Capabilities
admins	User name: admin Password: Password1	Total control over all parameters.
superusers	User name: superuser Password: Password1	Control over all parameters except users table.
users	User name: user Password: Password1	Control over modules parameters, no supervision (SPV).
guests	User name: guest Password: Password1	Can read but not edit parameters of the system (read-only user).

5. Enter the user's password for login and SNMPv3 authorization twice, both in the **Auth Password** field and in the **Confirm Auth Password** field.

Password Requirements

Passwords must be at least eight characters long and must contain characters from the following categories:

- lowercase letters (a through z)
- uppercase letters (A through Z)
- base 10 digits (0 through 9)

The user’s input validation feature warns users if invalid characters are entered and details what input is expected for the field.

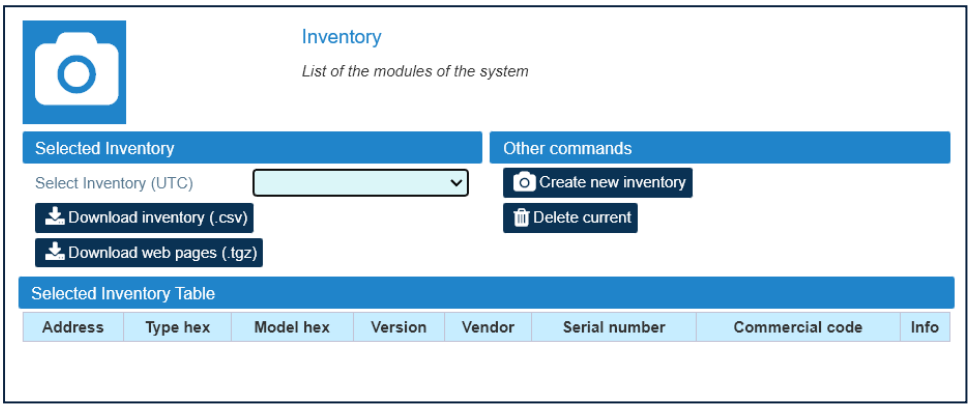
Creating and Managing Inventory Lists

When commissioning is complete, JMA strongly recommends that you create an Inventory list to back up the DAS configuration.

Note: Existing inventory lists are cleared when a new **Discovery full** is accepted. See "Discovering the DAS Components" on page 10.

Creating an Inventory List of the DAS Current Configuration

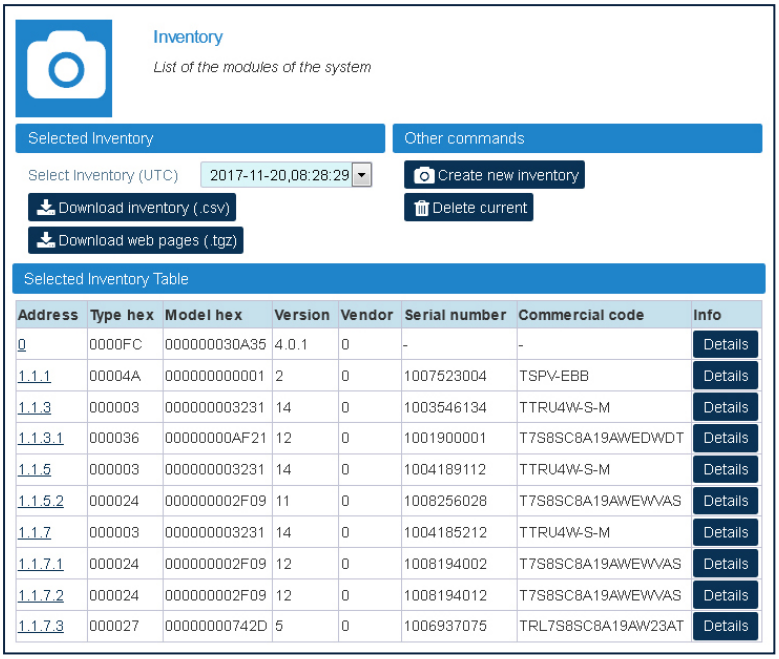
1. In the **Settings** menu, select **Inventory**.
2. In the **Other Commands** pane, click **Create new inventory**.



Note: Inventory tasks, or web pages download, made by a user are shared with the other connected users, whose activity will stall until the operation is complete.

Selecting an Inventory List

1. In the **Settings** menu, select **Inventory**.
2. In the **Selected Inventory** pane, select a list from the **Select Inventory (UTC)** drop-down list. The selected inventory list displays in the **Selected Inventory Table**.

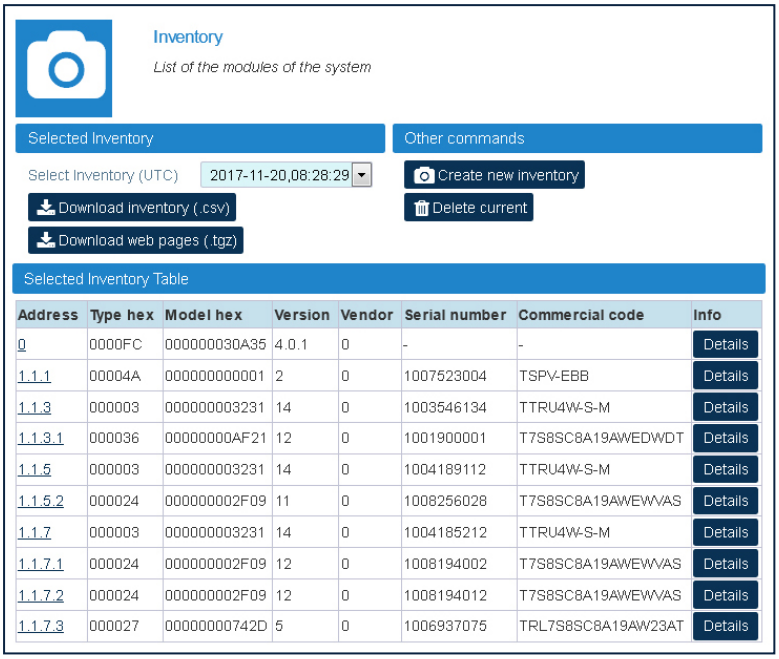


After an inventory is selected:

- You can click **Download inventory (.csv)** to download the selected inventory list in csv (Comma Separated Value) format.
- You can click **Download Web Pages (.tgz)** to download a compressed file (.tgz format), containing the selected inventory list web pages. Extract files to a folder to browse offline web pages.
- In the green bar at the top of each device main panel, the **Inventory** button is available for authorized users to restore the device configuration from the selected inventory list. Refer to the *JMA DAS Platform Remote Monitoring and Management User Guide* for details.

Downloading Inventory Lists (csv Format)

1. When different inventory lists are available, select an inventory list from the **Select Inventory (UTC)** drop-down list. The selected inventory displays in the **Selected Inventory Table**.



2. Click **Download inventory (.csv)** to download the selected inventory list in csv (Comma Separated Value) format.

Downloading Inventory Lists (Web Pages)

1. When different inventory lists are available, select an inventory list from the **Select Inventory (UTC)** drop-down list. The selected inventory displays in the **Selected Inventory Table**.
2. Click **Download Web Pages (.tgz)** to download a compressed file (.tgz format), containing the selected Inventory list web pages.
3. Extract files to a folder to browse offline web pages.

Getting Help: Technical Support Contact Information

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Abbreviations

AGC
Automatic Gain Control

APN
Access Point Name

BS
Base Station

CPRI
Common Public Radio Interface

CSI-RS
Channel State Information Reference Signal

csv
Comma Separated Value

DAS
Distributed Antenna System

DHCP
Dynamic Host Configuration Protocol

DL
Downlink

EU
European Union

FQDN
Fully Qualified Domain Name

HTTP
Hypertext Transport Protocol (http://)

HTTPS
secure Hypertext Transport Protocol (https://)

IPv4
Internet Protocol version 4

IPv6
Internet Protocol version 6

ITE
Information Technology Equipment

LAN
Local Area Network

LMT
Local Maintenance Terminal

MIMO
Multiple Input, Multiple Output

MU
Master Unit

NEM
Network Element Manager

NG
Next Generation

NTP
Network Time Protocol

O-RAN
Open Radio Access Network

PDU
Power Distribution Unit

PSU
Power Supply Unit

PTP
Precision Time Protocol

RAL
Restricted Access Location

RF
Radio Frequency

RU
Remote Unit

SDRU
Software Defined Remote Unit

SISO
Single Input, Single Output

SMS
Short Message Service

SNMP
Simple Network Management Protocol

SSB
Synchronization Signal Block

Syslog
System Logging Protocol

TCP
Transmission Control Protocol

TDD
Time Division Duplex

TDFE
Digital Donor Front End

UDP
User Datagram Protocol

UK
United Kingdom

UL
Uplink

UPS
Uninterruptible Power Supply

UTC
Universal Time Coordinated

VPN

Virtual Private Network

WAN

Wide Area Network

WDM

Wavelength Division Multiplexing

WWAN

Wireless Wide Area Network