USER MANUAL

LNB 1:1 Redundant Switch

ODU FW Version: 1.0.0

IDU FW Version: 1.0.0
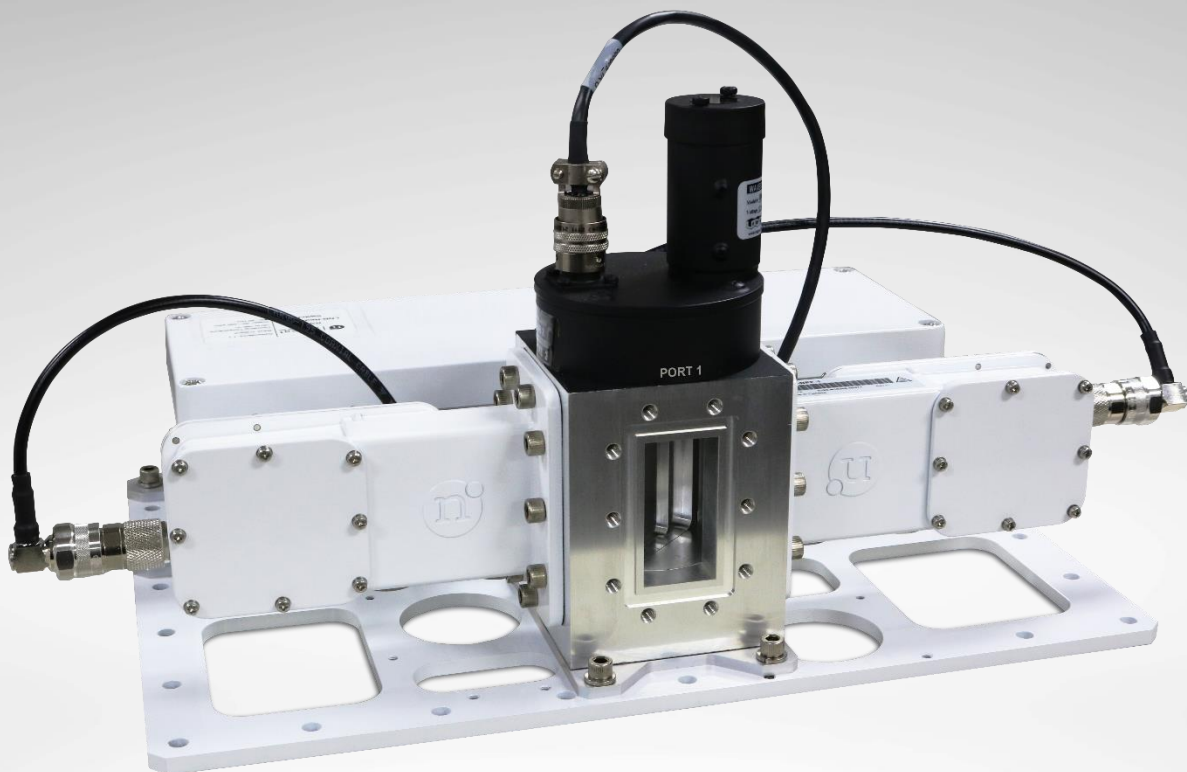
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Acronyms

AC	Alternating Current
CI	Control Interface
IDU	Indoor Unit
IFL	Interfacility Link
LNB	Low-noise Block Downconverter
RF	Radio Frequency
SNMP	Simple Network Management Protocol
ULC	Universal LNB Controller

Safety

Warning		**Changes or Modifications to Equipment** Changes or modifications to this equipment, not expressly approved by the manufacturer, could void the user's authority to operate the equipment.
Warning		**Accessories and Devices** Use of non-approved accessories or devices may lead to a degradation in performance, damage to equipment, or potential hazards.
Warning		**AC Power** This device uses AC power. Proper grounding of equipment is necessary for safety purposes.

# 1. LNB 1:1 Redundant Switch System Overview

1.1 Operation

The LNB 1:1 Redundant Switch system (RSW) provides LNB redundancy by automatically switching to a backup LNB in the event of an LNB failure. During normal operation, there is one Active LNB and one Standby LNB which are both monitored continuously. LNB health monitoring is accomplished by watching the LNB active power consumption. If the active LNB falls outside of a specified window, the RSW automatically switches to the backup LNB.

1.2 System

1.2.1 Headless Operation (ODU Only)

The RSW is headless, meaning that it can be operated without the use of an Indoor Unit (IDU). All monitoring and control (M&C) can be performed over Ethernet using the Web Interface or via SNMP. The Outdoor Unit (ODU) contains all control circuitry and is connected to the user's system through the Interfacility Link (IFL).
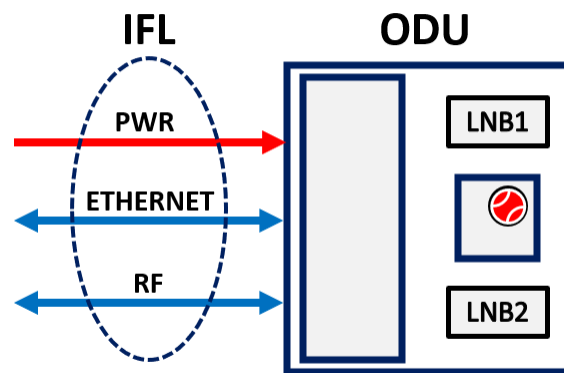
1.2.2 System with Optional IDU

The Indoor Unit (IDU) is an optional add-on which provides a 1U server rack with an M&C interface. The IDU interfaces with the ODU via an LCD panel and buttons, and has configurable alarms in the event of an ODU fault.
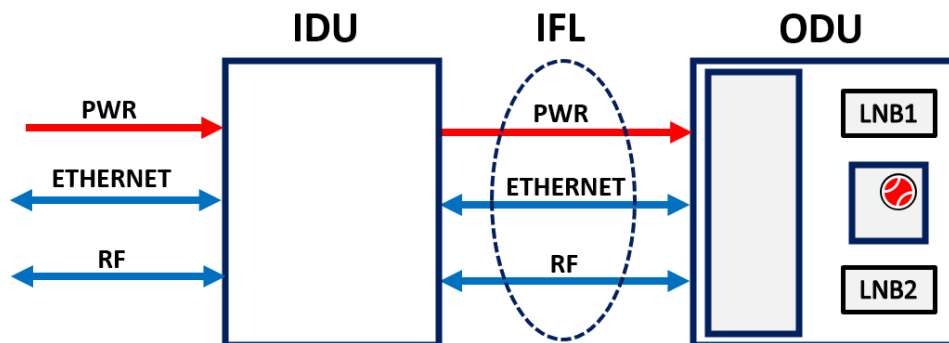
2. Getting Started

This section will outline the RSW installation and setup.

2.1 Warnings

⚠️ If the RSW is configured for AC power, before powering on the unit, make sure that the system is properly grounded. This is required for safety purposes.

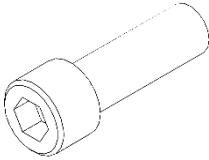⚠️ Do not open the ODU controller box lid while the system is powered on.

⚠️ Inspect all cables for damage prior to connecting them to the system.

2.2 ODU Setup
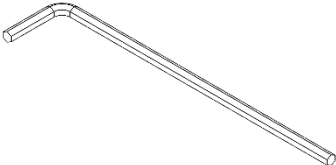
2.2.1 Ku/Ka-Band LNB Installation

LNB installation for Ku-band and Ka-band components are identical, except different sized fasteners are provided.

The following components are included with the LNB mounting kit.

Item 1 (Socket Cap Screw)	Item 2 (Washer)	Item 3 (Loctite)
8x for 1:1 RSW 12x for 2:1 RSW	8x for 1:1 RSW 12x for 2:1 RSW	1x

The following tools are required. (Not included with the mounting kit)

Tool 1 (Hex Key)
M2.5 for Ka-Band M3 for Ku-Band

Note the interfaces shown below.

(Interfaces for Rx In 2, IF Out 3 and LNB 3 are only present in 2:1 redundant switches)
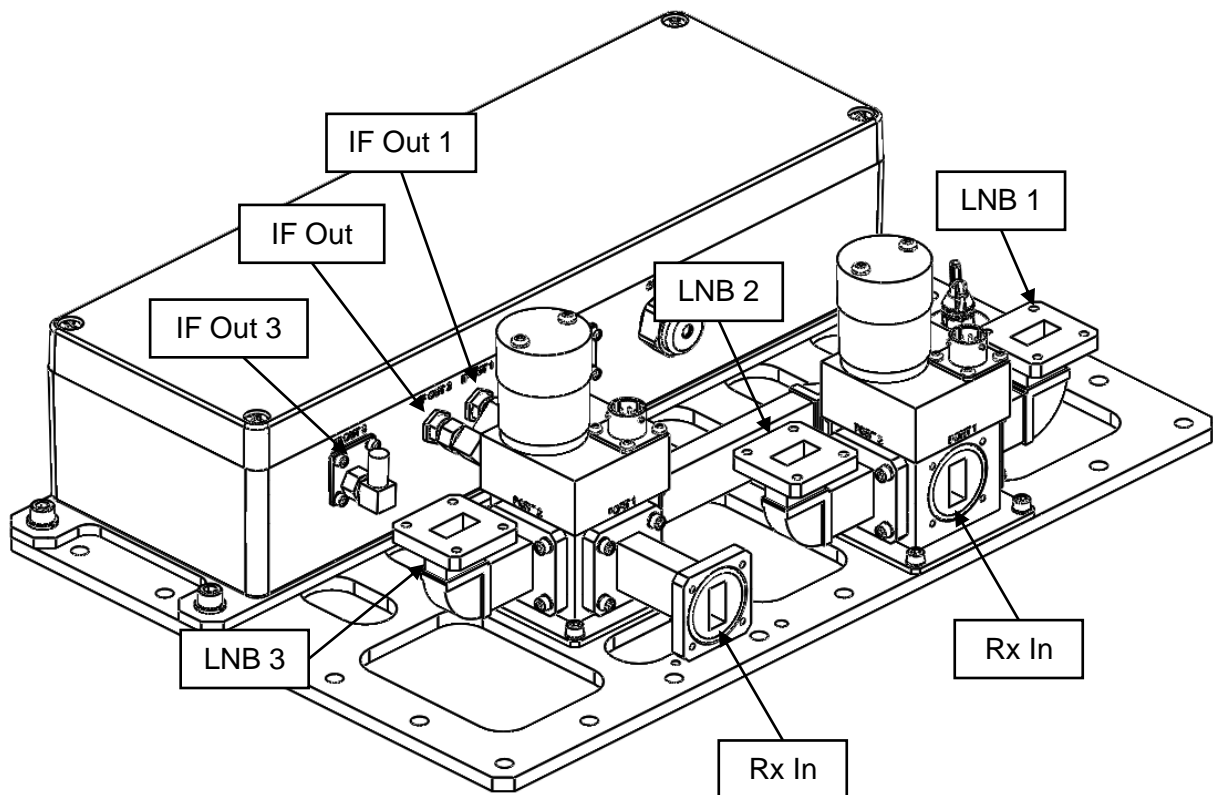
IF Out 1

LNB 1

IF Out

LNB 2

IF Out 3

LNB 3

Rx In

Rx In

Repeat the following steps for each LNB interface:

1. Remove any tape on the waveguide interface.

2. Insert the gasket included with the LNB into the groove on the LNB.

Gasket

LNB
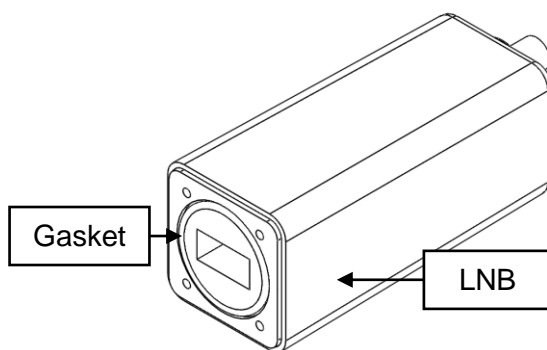
3. On the thread of Item 1, apply two to three drops of Item 3. Repeat this step for four times.
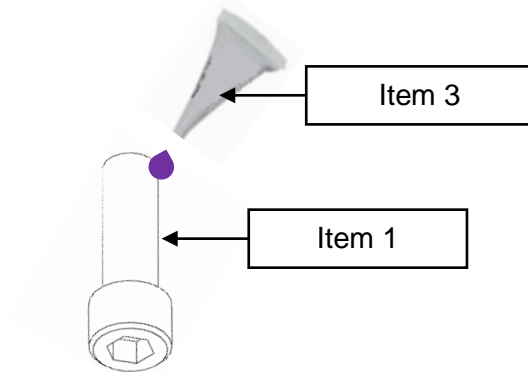
4. Install the LNB onto the Rx In of redundant switch using the Item 1from step 3 above and one Item 2 on each Item 1 with Tool 1.
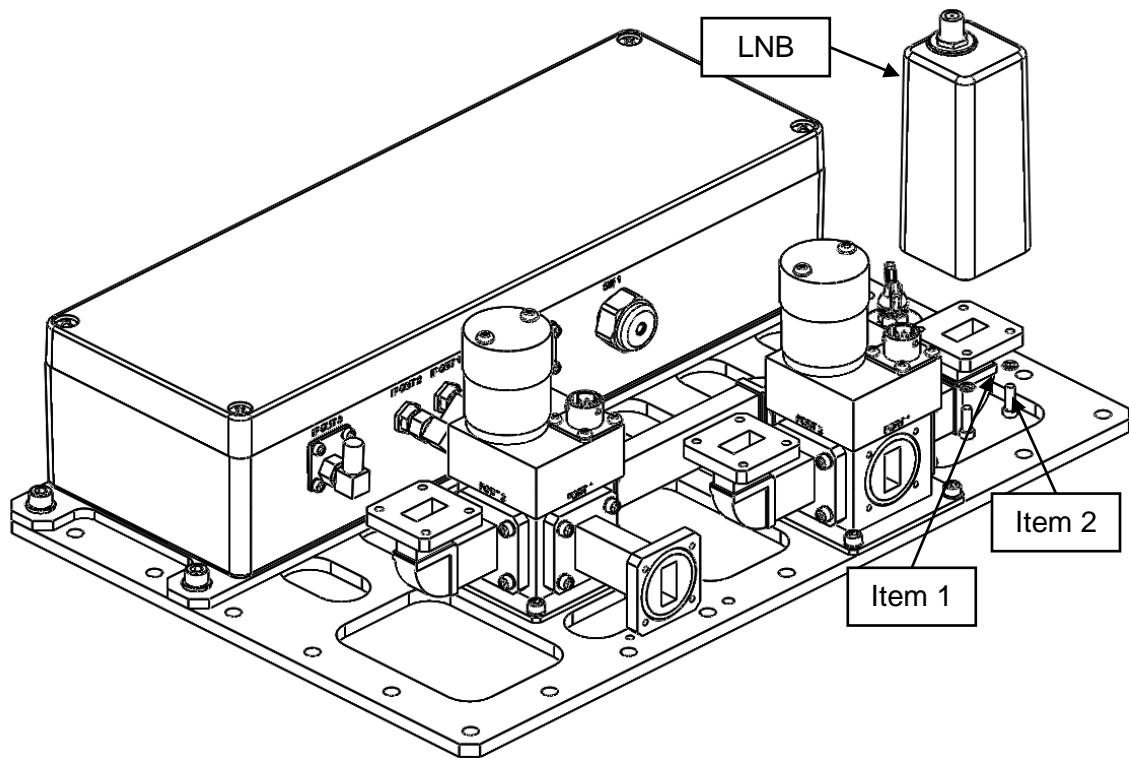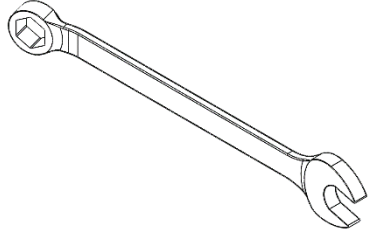
5. Connect the LNB to the IF Out port with the matching number for the LNB position. (i.e. LNB 1 connects to IF OUT 1)

2.2.2 C-Band LNB Installation

The following components are included with the LNB mounting kit.

Item 1 (Socket Cap Screw)	Item 2 (Washer)	Item 3 (Threadlocker)
14x	14x	1x
Item 4 (Gasket)	**Item 5 (Adaptor Plate)**	**Item 6 (Set Screw)**
2x	2x	6x
Item 7 (Nut)		
6x		

The following tools are required (not included with the mounting kit).

| Tool 1 (Hex Key)	Tool 2 (Hex Key)	Tool 3 (Wrench)
3/16"	1/8"	7/16"

Note the interfaces shown below.

IF Out 1

IF Out 2

LNB 1

Rx In

LNB 2

Repeat the following steps for each LNB interface:

1. Remove any tape on the waveguide interface.

2. On the end opposite to the socket head of Item 6, apply two to three drops of Item 3. Complete this step for three Item 6.
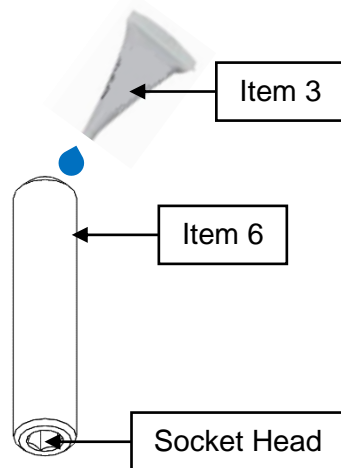
3. Fasten Item 6 from step 2 above into the LNB interface using Tool 2.
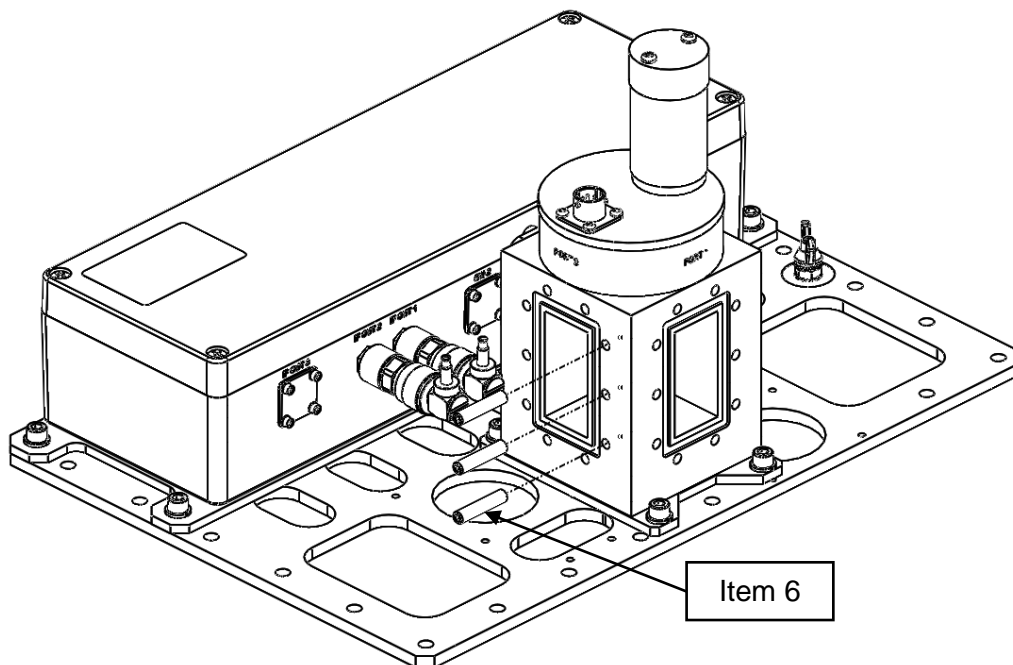
4. Insert Item 4 into the LNB interface on the redundant switch and align Item 5 onto Item 6 installed from step 3 above.

Item 4

Item 5
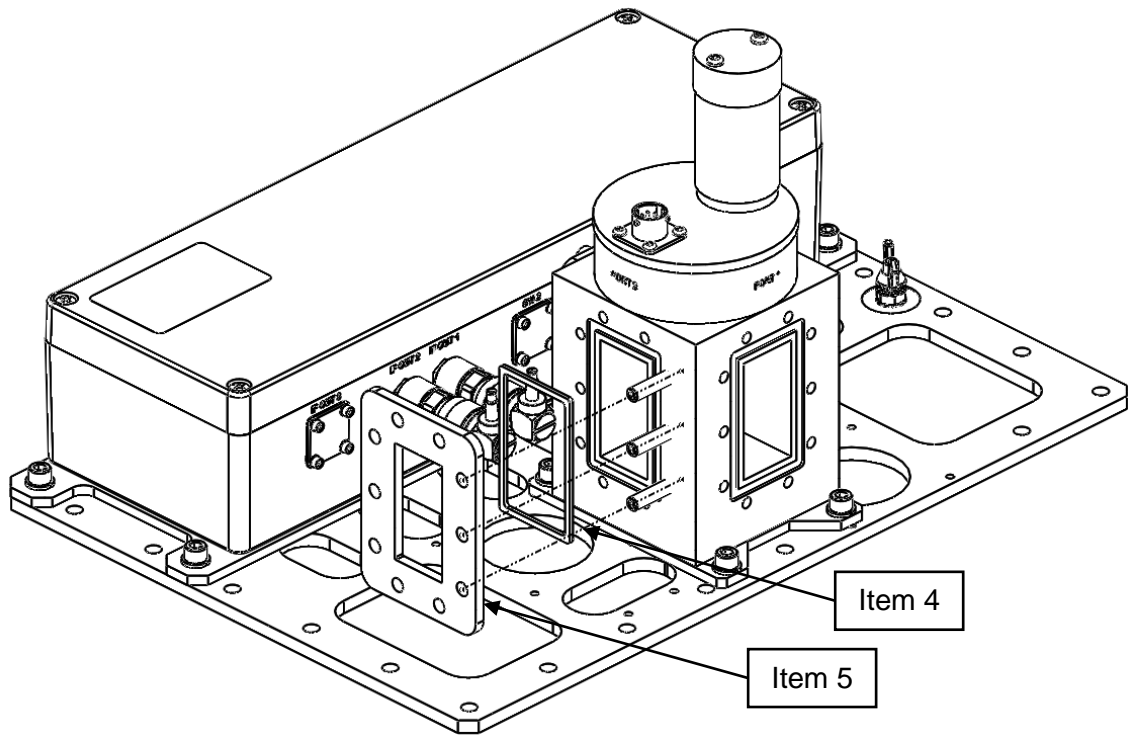
5. Insert the gasket included with the LNB into the groove on the LNB.

LNB

Gasket
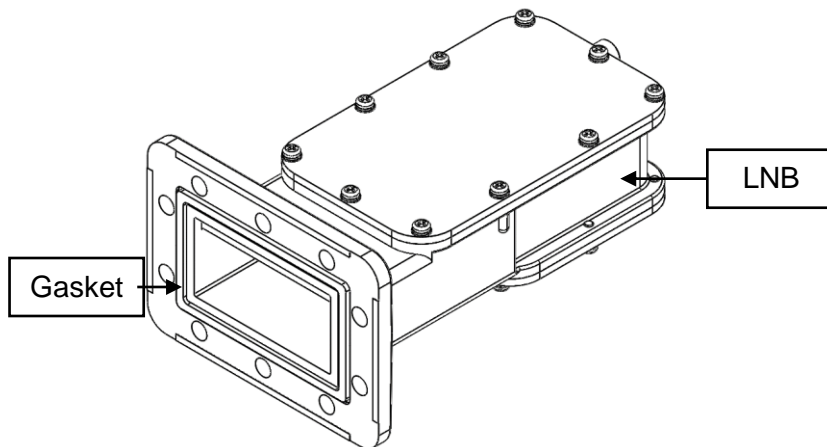
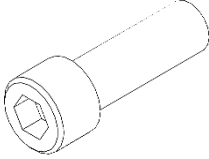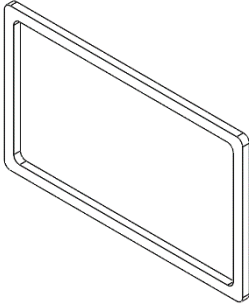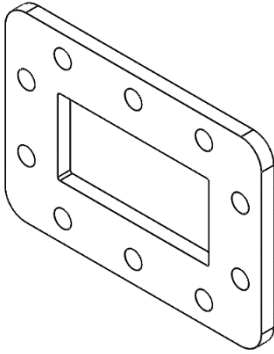6. On the thread of Item 1, apply two to three drops of Item 3. Complete this step for five Item 1.
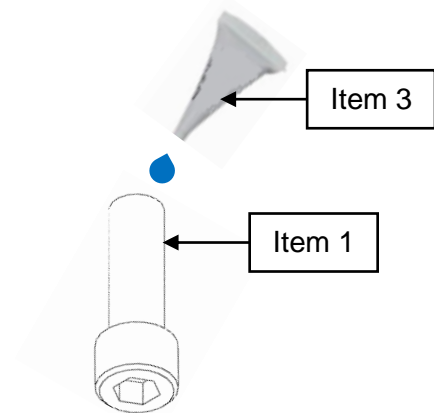
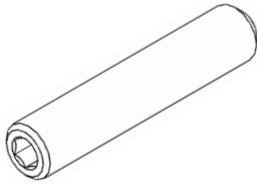6. Install the LNB onto the Rx In of redundant switch using Item 1 fromstep 5 above and one Item 2 on each Item 1 with Tool 1.
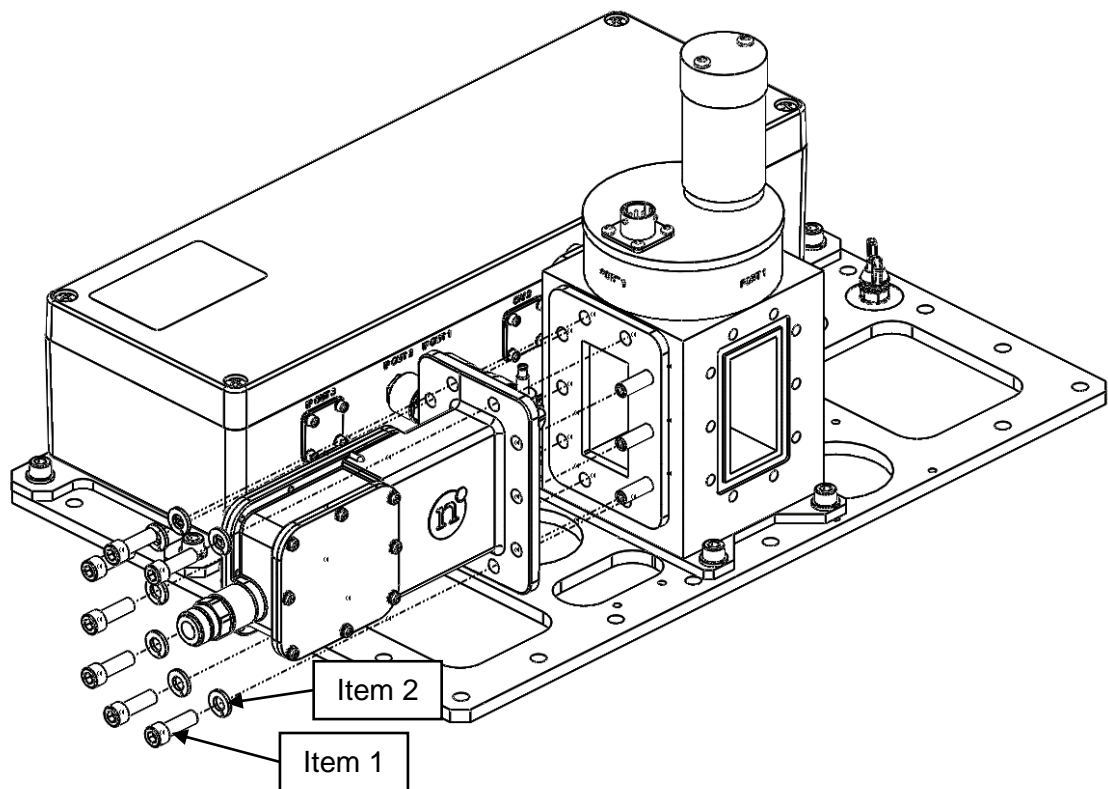
7. Fasten Item 7 onto Item 6 installed onto the redundant switch using Tool 3.

Item 7
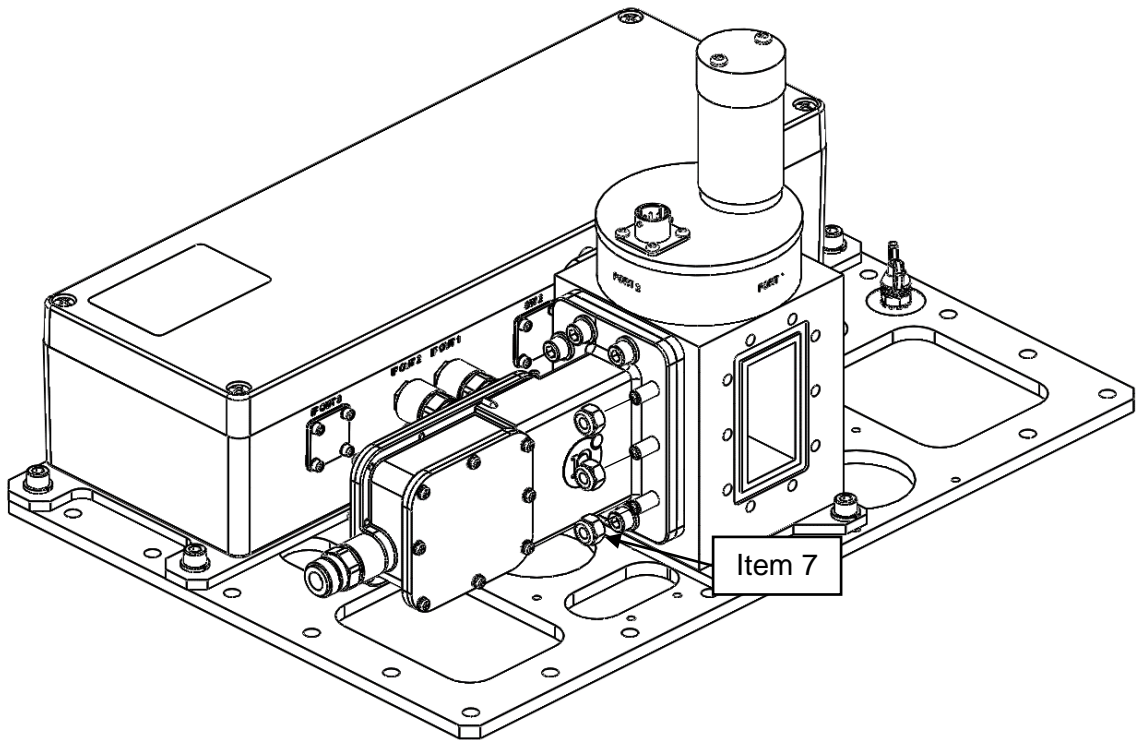
8. Tighten all surrounding screws and nuts to fasten the LNB onto the redundant switch.
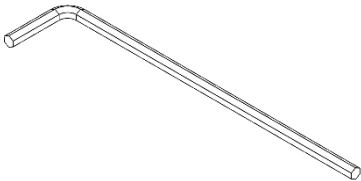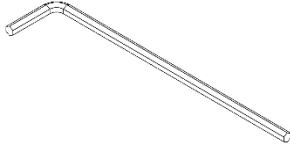
9. Connect the LNB to the IF Out port with the matching number for the LNB position.
   (i.e. LNB 1 connects to IF OUT 1)

2.2.3 Baseplate installation

Refer to the diagram below for the location of all mounting holes on the redundant switch baseplate. Depending on the redundant switch configuration, some holes may be inaccessible.
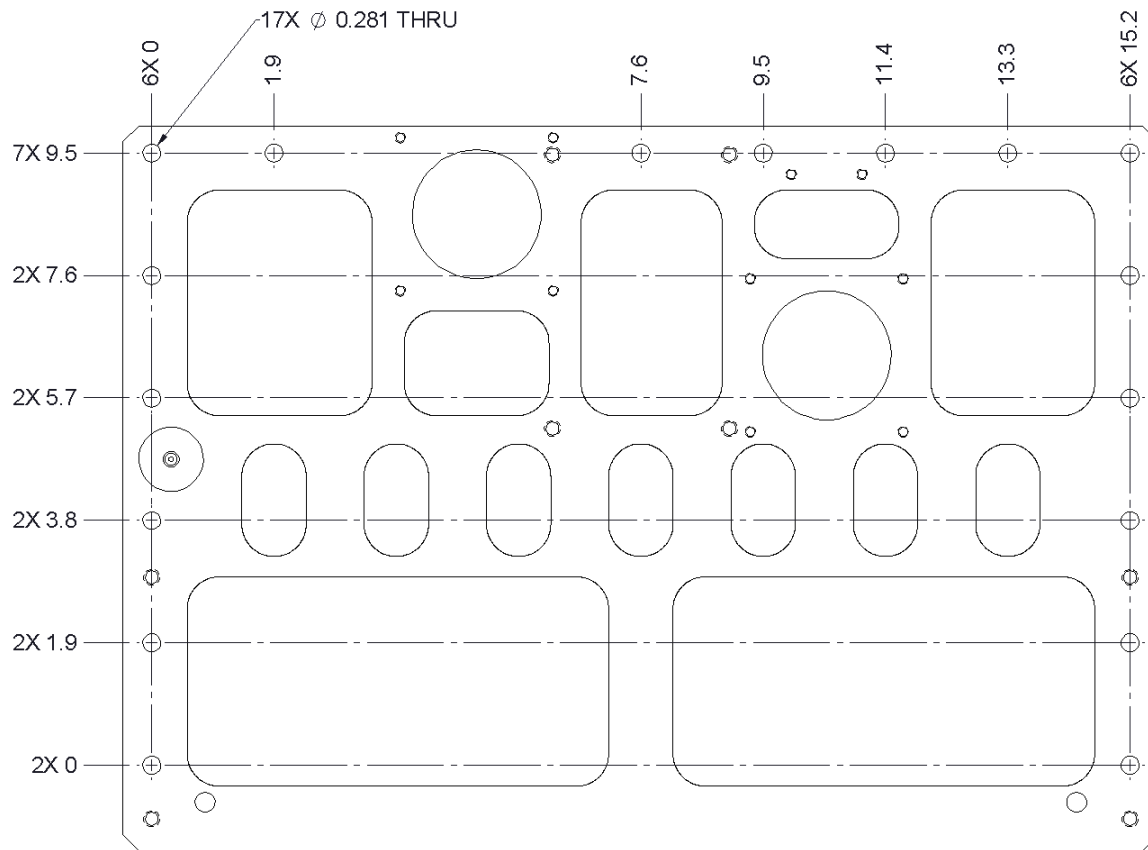
Follow these general guidelines when mounting the redundant switch:

- Engage a minimum of 15 holes
- Use medium strength threadlocker

2.3 ODU IFL installation

This section covers the steps to install the IFL to the ODU.

The IFL consists of:

- 1 x Power cable
- 1 x Ethernet cable
- 1 x RF Cable

1. Locate the ODU side of the IFL (labeled "ODU").

2. Attach the RF cable to the IF1 connector as shown below.

3. Attach the PWR connector to the ODU. Ensure that the cable is threaded onto the connector.

4. If you have purchased the optional IDU, proceed to Section 2.4. If the RSW is being operated in the headless configuration, you can now power on the system by connecting the PWR cable to AC power.

2021-12-20 DOC-001527 Rev A
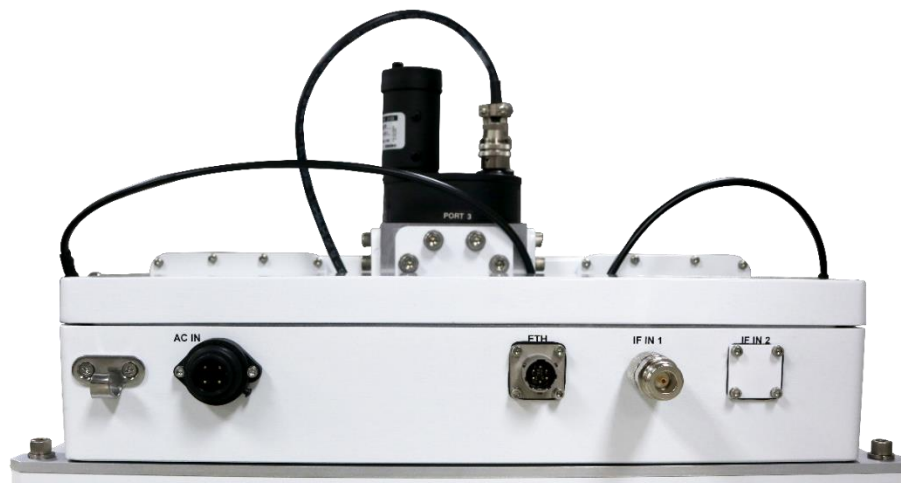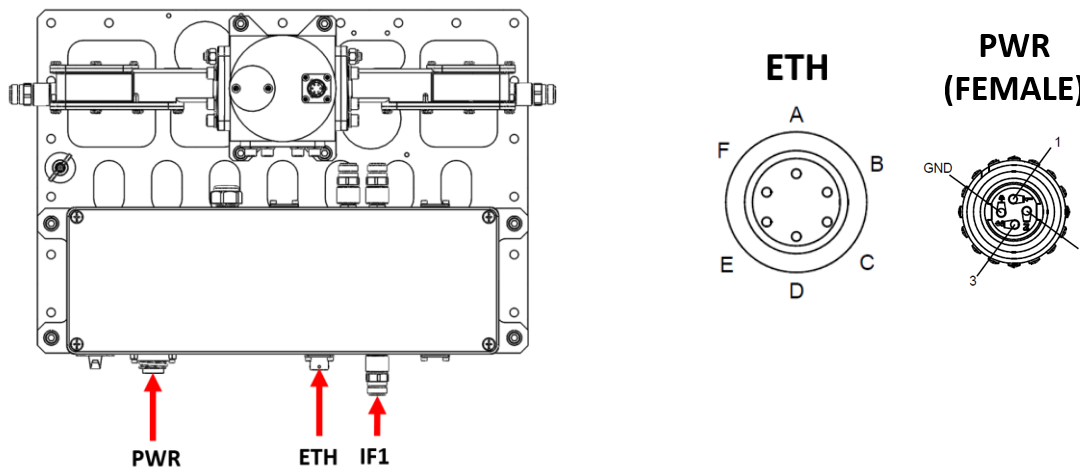
2.4 IDU installation (Optional)

This section outlines the steps to install the IDU.
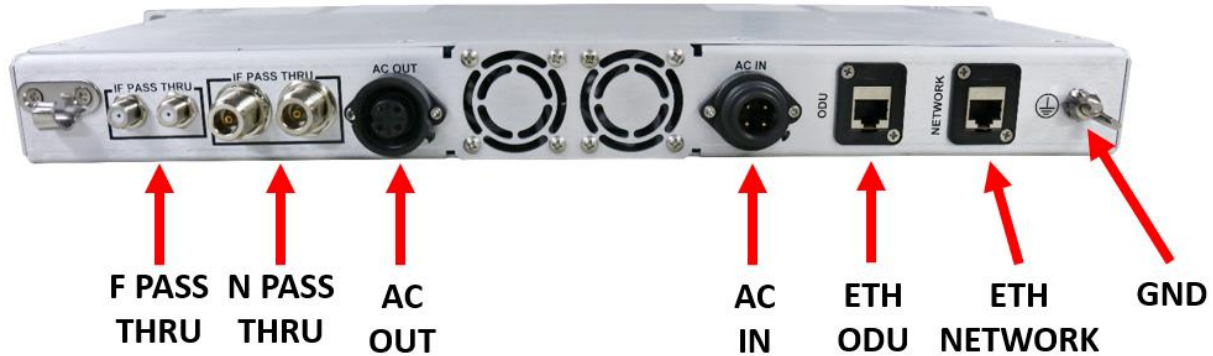
1. Connect the ODU RF cable to one of the IF PASS THRU connectors. Use the applicable RF connector type for the IFL provided.

2. Connect the modem RF cable to the unused IF PASS THRU connector.

   a. If the IFL uses an N connector, the modem must also be connected to the **N PASS THRU** section.

   b. If the IFL uses an F connector, the modem must also be connected to the **F PASS THRU** section.

3. Connect the Ethernet RJ-45 connector from the IFL to the ETH ODU port.
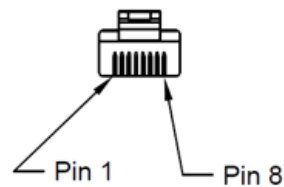
4. (Optional) Connect the Network port to any external network connection (cable not included).

5. Connect the AC OUT port to the AC Power connector on the IFL.
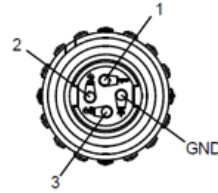
6. Connect the AC IN port to the IDU power cable. Ensure that the cable is threaded onto the connector.

7. Power on the system.

2.5 Safety Ground

A safety ground connection point is provided on the ODU and IDU. If the AC power input has no earth ground, it is strongly recommended to connect one at the ODU grounding point and IDU grounding point (if applicable). The grounding point locations are shown below.
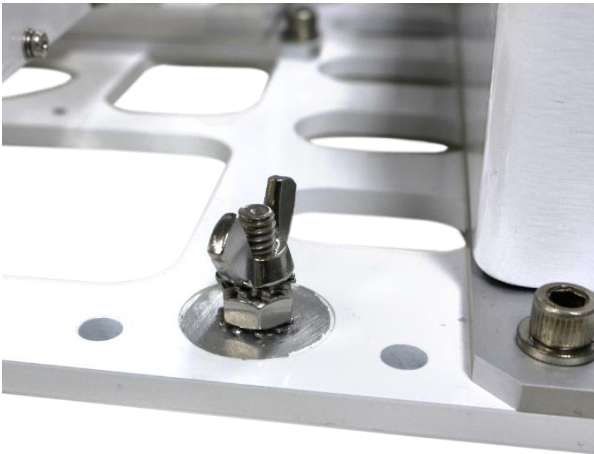
ODU Grounding Point   **IDU Grounding Point**

3. ODU Monitoring and Control

3.1 Fault Monitoring

The RSW monitors the current consumption of all LNBs. The system determines if a fault has occurred based on the current thresholds listed below. These limits are user configurable through the Web Interface, SNMP, or the optional IDU. **It is the user's responsibility to optimize these thresholds based on the application.**

Upper Limit: If the current rises above this value, an overcurrent fault will be triggered.

Upper Warning: If the current rises above this value, an overcurrent warning will be triggered.

Lower Warning: If the current falls below this value, an undercurrent warning will be triggered.

Lower Limit: If the current falls below this value, an undercurrent fault will be triggered.
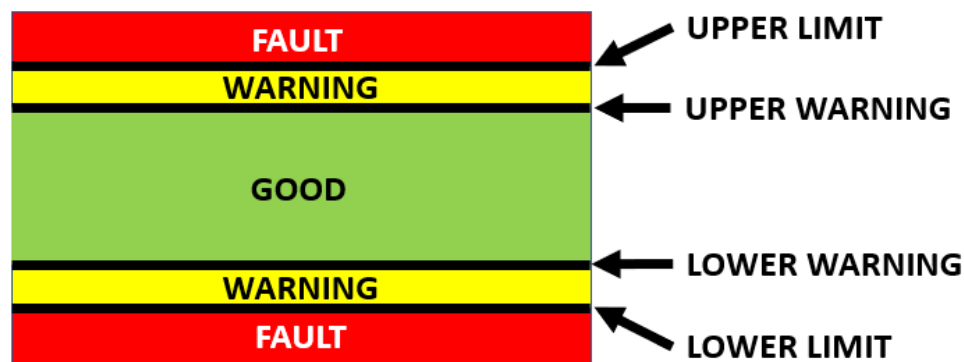
3.2 Operation Mode

3.2.1 Automatic Mode

While the Manual Override is disabled, the RSW will run in **Automatic Mode**. While in Automatic Mode, the RSW automatically switches from the Active LNB to the Standby LNB if there is a fault present on the Active LNB. The table below summarizes the RSW actions based on the fault status while in Automatic Mode.

STATE	ACTION
Fault on active device	RSW will automatically switch to standby if there are no faults present on the standby device
Fault on standby device	No action taken
Fault on both devices	No action taken
Manually Switching to standby device	RSW will switch will only allow switching if there are no faults on the standby device

3.2.2 Manual Override Mode

While the Manual Override is enabled, the RSW will run in **Manual Override Mode.** In this mode, the RSW does not take any action based on the fault state of the LNBs. This mode allows the user to select what LNB is active without restrictions. The table below summarizes the RSW actions based on the fault status while in Manual Override Mode.

STATE	ACTION
Fault on active device	No action taken
Fault on standby device	No action taken
Fault on both devices	No action taken
Switching to standby device	RSW will switch to the standby device

3.3 LNB Power

3.3.1 Integrated ULC

The RSW has an integrated Universal LNB Controller (ULC) which can be configured by the user. When the ULC setting is enabled, both the Active and Standby LNB receive power from the ULC. The table below outlines the output voltage and tone for each configurable band. In the case that a single band LNB is used, the system will be limited to BAND 1.

Parameter	VOLTAGE	22kHz TONE
BAND 1	13V	OFF
BAND 2	18V	OFF
BAND 3	13V	ON
BAND 4	18V	ON

3.3.2 Power over IF Cable

If the power to the LNB is being supplied by an external source, the ULC must be set to DISABLED. In this operating mode, the Active Device is supplied with the IF power and the Standby Device is provided with 18V.

3.4 Default Network Settings

The default network settings are listed below. The network settings can be configured using the Web Interface (see Section 3.6.4). To connect to either the Web Interface or over SNMP, an Ethernet capable computer is required. The RSW IP address is static and does not support DHCP.

Parameter	DESCRIPTION
IP Address	192.168.77.30
Net Mask	255.255.255.0
Gateway	192.168.77.1
SNMP Port	161
SNMP Trap Port	162

3.5 LNB Replacement

In the event of an LNB failure or routine maintenance, LNBs can be installed and removed while the system is powered on. To prevent any system downtime, it is recommended to switch the Active Device so that the unit being replaced is in the standby position.

3.6 Web Interface

3.6.1 Accessing the Web Interface

The RSW ODU web interface can be accessed through a web browser. **It is recommended to use Firefox for best performance.**

1. Locate the devices IP address (192.168.77.30 by default).
2. Go to the IP address using a web browser.
3. The Device Info Page will load if all settings are correct.

4. The "LOG OUTPUT" at the bottom of the page displays "Initialization complete" once all data is received from the ODU.

LOG OUTPUT:

```
Starting Web Interface for Norsat Redundant Switch V1.00
Initializing...
Initialization complete
```

Clear Log Output
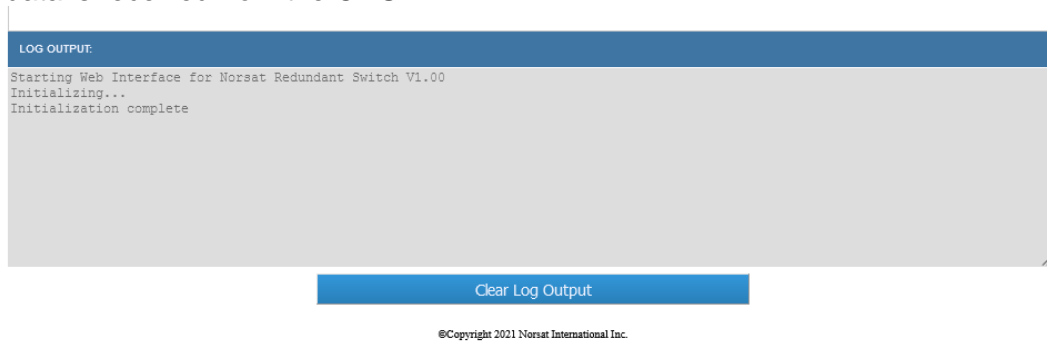
3.6.2 Device Info Page

The **device Info** page will show the current status of the RSW system.
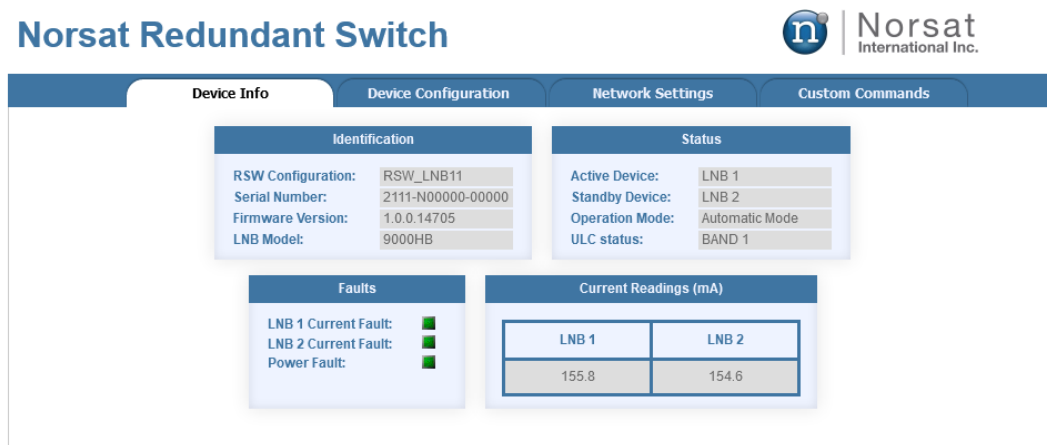
The **Identification** section will show the device configuration, serial number, firmware version, and LNB model. In the case that the LNB being used is not a Norsat LNB, the LNB Model will be set to "UNKNOWN".

The **Status** section will show the Active Device (LNB1/LNB2), the Standby Device (LNB1/LNB2), the Operation Mode (Automatic/Manual Override Mode), and the current ULC status (DISABLED, BAND1, BAND 2, BAND 3 or BAND 4).

Status	
Active Device:	LNB 1
Standby Device:	LNB 2
Operation Mode:	Automatic Mode
ULC status:	BAND 1

The **Current Readings** section will display realtime current consumption values in milliamps.

Current Readings (mA)	
LNB 1	**LNB 2**
155.7	154.7

The **Faults** section will display the status of all system faults.

Faults	
LNB 1 Current Fault:	🟩
LNB 2 Current Fault:	🟩
Power Fault:	🟩

The table below outlines the symbols used:

SYMBOL	DESCRIPTION
	Unknown, fault status has not yet been initialized
	No Faults, the value is currently within the expected range
	Warning, the value has exceeded the warning threshold
	Fault, there is a fault present

3.6.3 Device Configuration Page
The **Device Configuration Page** is used to update the configuration settings on the RSW ODU.

The **Redundancy Switch Configuration** section displays the current configured settings for Manual Override, the current Active Device, Integrated ULC, and Frequency Band.

To Update the RSW settings:

1. Select the desired value in the applicable drop-down menu.
2. Select the Set button on the right to change the applicable setting.
3. The system controls will be temporarily disabled as the system is updated.

The **Advanced Settings** section displays the number of LNB bands, Upper Limit, Lower Limit, Upper Warning, and Lower Warning. To change these settings, click the "Advanced Settings" checkbox in the "Redundancy Switch Configuration" section.

To update the Advanced Settings:

1. Update the setting value of interest.
2. Select the Set button on the right to change the applicable setting.
3. The system controls will be temporarily disabled as the system is updated.

3.6.4 Network Configuration Page
The **Network Configuration** page shows the current network settings of the ODU.

To update the network settings:

1. Change the IP address, Subnet, and Gateway to the desired values in the input boxes.
2. If you would like to save a text file backup of the Network settings, click the "Save Backup?" checkbox.

3. Click the "Update Network Settings" button.
4. The system will reinitialize with the updated network settings.
5. You will need to refresh the webpage using the updated IP address to access the Web interface.

*Note: Keep all network settings saved in a secure location, as the RSW can only be controlled and configured over the Ethernet. If you have lost the IP address of the device and can no longer connect, a hardware factory reset must be performed at the ODU (see Section 3.9.3).

3.6.5 Custom Commands Page

The **Custom Commands** page allows the user to send command strings to the RSW. **Note: This interface should not be used during normal operation.** This also allows the user to update the RSW firmware (see Section 3.6.6).

3.6.6 Firmware Update

To perform a firmware update on the RSW ODU, perform the following steps:

1. Obtain a valid RSW ODU firmware update file from Norsat.
2. Open the Web Interface in Firefox.
3. Select "Browse" and navigate to the firmware file.
4. Click "Update Firmware".
5. Update progress will be shown in the LOG OUTPUT. **Do not close the Web Interface or power off the RSW while the firmware update is in progress!**
6. Once the system update is complete, reload the Web Interface, and confirm that the Firmware Version listed in the Identification section has been updated.

3.7 SNMP

3.7.1 Default SNMP Configuration

The default SNMP settings are shown in the table below:

PARAMETER	DESCRIPTION	DEFAULT
SNMP Traps	Traps enabled or disabled	Enabled
Trap Cycles	Number of trap cycles	0
LNB 1 Trap on Fault	Sends trap if fault is present on LNB 1	Enabled
LNB 2 Trap on Fault	Sends trap if fault is present on LNB 2	Enabled
Power Trap on Fault	Sends trap if a system power fault is detected	Enabled
SNMP Version	Version of SNMP running on the RSW	V1/V2
Read Community String	Read Community String	Public
Write Community String	Write Community String	Public

3.7.2 SNMP parameters

To access the RSW SNMP parameters, download the latest MIB file from Norsat. A summary of all accessible parameters is shown below:

Product Configuration

PARAMETER	DESCRIPTION	ACCESS	Range
Product Configuration	Norsat RSW Product Configuration	Read-only	-
Serial Number	RSW Serial Number	Read-only	-
Firmware Version	Firmware Version	Read-only	-

Network Settings

PARAMETER	DESCRIPTION	ACCESS	Range
Ip Addr	IP Address	Read-only	-
Net Mask	Network Mask	Read-only	-
Gateway	Gateway Address	Read-only	-
Snmp Port	SNMP Port	Read-only	-
Snmp Trap Port	SNMP Trap Port	Read-only	-

SNMP Settings

PARAMETER	DESCRIPTION	ACCESS	Range
Trap Activated	Non-zero if traps should be generated when a condition occurs	Read-write	0 or 1
Trap Cycles	Approximate time between sending or repeating traps. Accepted values are either 0 or >=15. Value 0 means to send a trap only once per occurrence.	Read-write	0 or >=15
Trap On Device1 Fault	Non-zero for the device to send SNMP trap due to a Device 1 fault	Read-write	0 or 1
Trap On Device2 Fault	Non-zero for the device to send SNMP trap due to a Device 2 fault	Read-write	0 or 1
Trap On Power Fault	Non-zero for the device to send SNMP trap due to LNB Power fault	Read-write	0 or 1

Device Config

PARAMETER	DESCRIPTION	ACCESS	Range
Max Current	Maximum LNB current before an overcurrent fault is triggered	Read-write	0 to 500
Min Current	Minimum LNB current before an undercurrent fault is triggered	Read-write	0 to 500
Upper Warning	Upper warning threshold for LNB current. If LNB current is above this value, a warning will be triggered.	Read-write	0 to 500
Lower Warning	Lower warning threshold for LNB current. If LNB current is below this value, a warning will be triggered.	Read-write	0 to 500
Ulc Status	0 = ULC Disabled, 1 = ULC Enabled	Read-write	0 or 1
Lnb Bands	The number of supported multiband LNB bands (max 4). For single band LNBs, this value will be set to 1.	Read-write	1 to 4
Device Model	The model of the LNB model used. If this device is not a Norsat LNB, it shall be initialized to "UNKNOWN".	Read-only	-
Factory Reset	Factory Reset. Write 1 to trigger a factory reset of the Redundant Switch.	Read-write	1

Faults

PARAMETER	DESCRIPTION	ACCESS	Range
Power Fault	Non-zero if an LNB power fault has been detected	Read-only	0 or 1
Inb1 Overcurrent Fault	Non-zero if an LNB 1 overcurrent fault has been detected	Read-only	0 or 1
Inb1 Undercurrent Fault	Non-zero if an LNB 1 undercurrent fault has been detected	Read-only	0 or 1
Inb1 Overcurrent Warning	Non-zero if an LNB 1 overcurrent warning has been detected	Read-only	0 or 1
Inb1 Undercurrent Warning	Non-zero if an LNB 1 undercurrent warning has been detected	Read-only	0 or 1
Inb2 Overcurrent Fault	Non-zero if an LNB 2 overcurrent fault has been detected	Read-only	0 or 1
Inb2 Undercurrent Fault	Non-zero if an LNB 2 undercurrent fault has been detected	Read-only	0 or 1
Inb2 Overcurrent Warning	Non-zero if an LNB 2 overcurrent warning has been detected	Read-only	0 or 1
Inb2 Undercurrent Warning	Non-zero if an LNB 2 undercurrent warning has been detected	Read-only	0 or 1

Groups

PARAMETER	DESCRIPTION	ACCESS
Get Ident	Response format: : sn <serial no.> fwver <firmware version> pn <operational mode>	Read-only
Get Config	Response format: MODEL <device model number> LW <lower warning> UW <upper warning> LL <lower limit> UL <upper limit> ULC <1=enabled, 0 = disabled> BANDS <number LNB bands>	Read-only
Get Status	Response format: MO <manual override> A <active device> SB <standby device> BAND <current LNB band> D1_C <device 1 current> D2_C <device 2 current> D3_C <device 3 current> PWR_F <power fault> SYS_F <system faults> D1_F <device 1 faults> D2_F <device 2 faults> D3_F <device 3 faults>	Read-only

3.8 ODU Manual Override Switch

If the RSW state needs to be manually changed in the field, the manual override switch on the ODU can be used.

1. If the device being switched to is in a fault state, enable Manual Override Mode.
2. Remove the cover on the manual override switch.
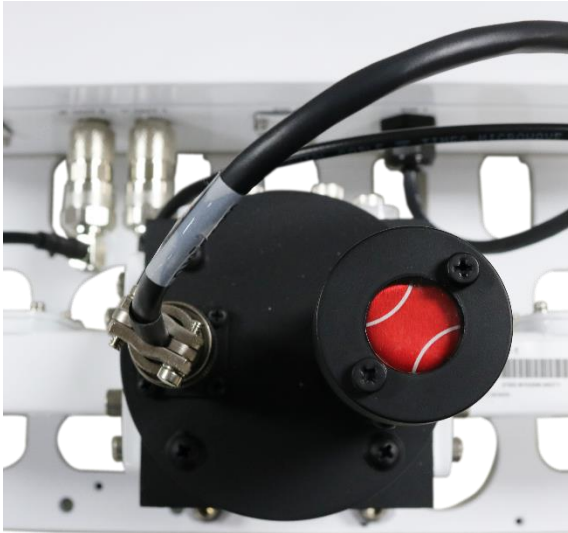
3. Turn the override switch to the desired position. The white lines on the switch indicate the current active path. **Do not hold the switch in the new position if the system is trying to switch back to the previous device. This may cause damage to the motor.**
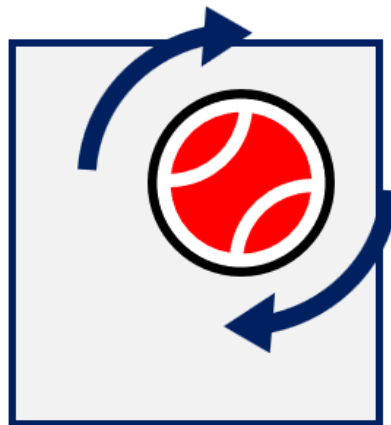
4. Replace the switch cover.

3.9 Factory Reset

Performing a factory reset on the ODU will reset all user configurable values including Network Settings, Current Limits, ULC settings, LNB bands, and SNMP settings.

3.9.1 Web Interface Factory Reset

To perform a factory reset of the ODU through the web interface:

1. Open the web interface and navigate to the **Custom Commands** Page

2. In the **Send Commands** section, type "`factoryreset`".
3. Click "Execute Commands".
4. A window pops up asking you to confirm. **Click OK.**
5. Factory reset is complete. If you have updated the network settings, they will return to default and the web interface will need to be refreshed.

3.9.2 SNMP Factory Reset

To perform a factory reset of the ODU over SNMP:

1. Open an SNMP client.
2. Write 1 to the factoryReset parameter.

3.9.3 Hardware Factory Reset

If it is not possible to connect to the ODU over Ethernet, it may be necessary to perform a hardware factory reset.

To perform a factory reset in hardware:

1. Remove the power cable from the ODU. **Power to the unit must be off for safety purposes!**

2. Open the ODU lid by unscrewing the four screws on the top of the controller box.
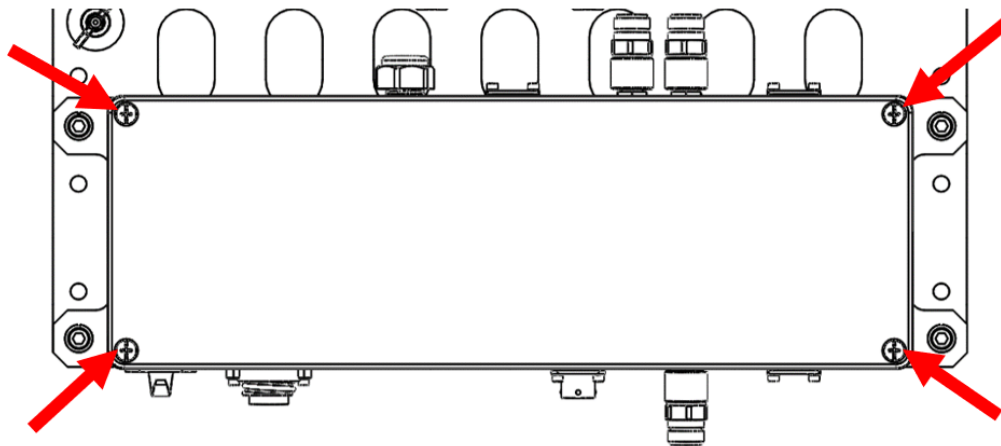
3. Locate the DIP switch on the circuit board shown below.
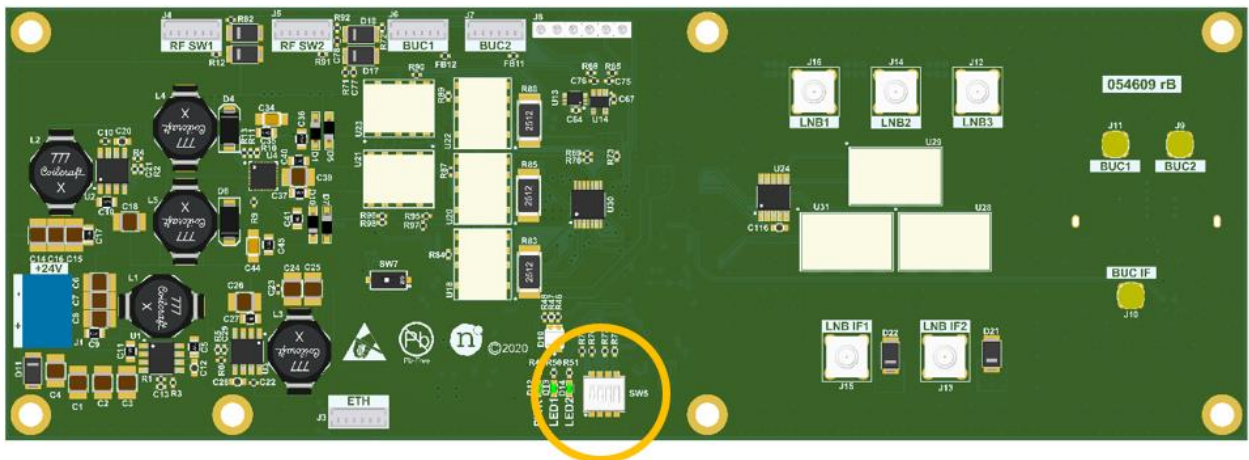
4. Toggle the position of switch 4.

5. Reinstall the controller box lid.

6. Power on the RSW. The factory reset will now occur.

4. IDU Operation

This section goes through how to use and configure the Optional IDU. The IDU is not required for RSW operation but allows for an additional M&C interface to the ODU.

4.1 Front Panel

All IDU functionality can be accessed through the front panel. The front panel contains:

1. A screen
2. Control Buttons
3. Device status LEDs
4. A manual override switch

4.1.1 Button Functions
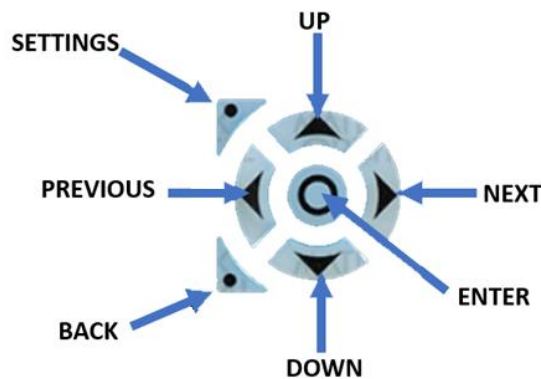
Parameter	DESCRIPTION
Settings	Takes the user to the main settings page
Up	Moves the indicator up if possible, or increases any digit by one if changing a setting
Next	Moves the indicator to the right if possible
Down	Moves the indicator down if possible, or decreases any digit by one if changing a setting
Back	Takes the user to the previous page
Previous	Moves the indicator to the left if possible
Enter	If selecting a subpage, displays that subpage. If changing a setting, saves the setting and moves to the previous page.

4.1.2 Status LEDs

The Status LEDs provide the status of each device at a quick glance. In the 1:1 RSW configuration, the DEVICE 3 LED will not be used.
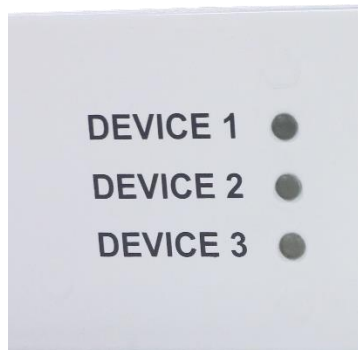
LED STATUS	DESCRIPTION
Solid Geen	Status is **GOOD**
Yellow Solid	Device is in **STANDBY**
Red Solid	Device is in a **WARNING** state
Red Flashing Slow	Device is in an **ALARM** state
Red Flashing Fast	Device **ERROR**
Off	Device is **NOT PRESENT**

4.1.3 Manual Override

The manual override switch on the IDU front panel allows the user to toggle the manual override status on the ODU (See Section 3.2 for details on operating mode). The LED ring on the manual override switch will be illuminated while the Manual Override is enabled.

MANUAL OVERRIDE

MANUAL OVERRIDE DISABLED

MANUAL OVERRIDE ENABLED

When manual override is pressed, the user is taken to the Device Selection page (See section 4.2.6.1.1). The Manual Override button will only have an effect if the IDU and ODU are connected. If there is a connection error, pressing the Manual Override button has no effect.

Note: It may take a few moments for the LED to illuminate after the button is pressed as the command is sent to the ODU.

4.2 LCD Screen

4.2.1 Menu Navigation

There are two main menus that are accessible through the IDU LCD display: the **Status Page**, and the **Settings Page**. The status page allows for monitoring of the RSW and device statuses. The Settings Page allows for the configuration of ODU and IDU settings. Pressing **Up** and **Down** moves the indicator, allowing the user to select the desired setting. Pressing **Enter** takes the user to that specific settings page. Pressing **Back** takes the user to the previous page. Menu flow charts are shown below:

Status Page   **Settings Page**
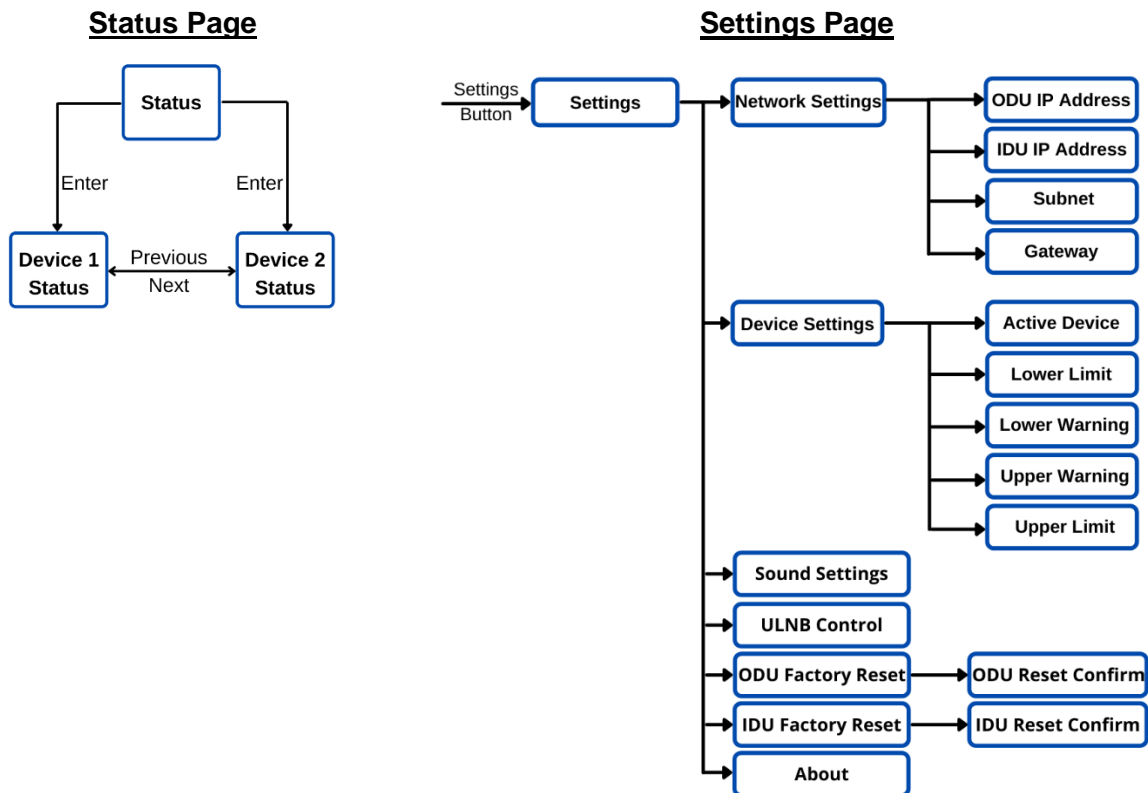
4.2.2 Status Page

```
    LNB 1 STATUS : OK
 -> LNB 2 STATUS : STANDBY
Manual Override : DISABLED
```

The **Status Page** is the default page that the LCD displays during normal operation. This page shows the fault status of all connected devices. It also displays the status of the manual override (ENABLED or DISABLED).

Note: This page is updated every few seconds, so some updates may take a few moments to change. After 20 seconds of inactivity on any other page, this page will automatically be shown. It can also be accessed by pressing the **Back** button.

Press **Enter** on the indicated device to go to the **Device Status page**.

If the IDU is unable to communicate with the ODU, the following error message will be displayed

```
ERROR: THERE IS NO CONNECTION
WITH THE ODU.
```

4.2.3 Device Status Page

```
-> Num Bands     : 2
   Current Band  : 2
   Band Switch   : ENABLED
   Actual Current : 155
   Lower Warning : 110
   Upper Warning : 190
   Lower Limit   : 100
   Upper Limit   : 200
```

The **Device Status Page** lists information about the specified device. Information about other devices can be seen by pressing the **Next** or **Previous** buttons.

PARAMETER	DESCRIPTION	ACCESS	Range
Num Bands	Number of LNB bands. This value is set to 1 for single band LNBs.	Read-write	1 to 4
Current Band	Current ULC band	Read-only	1 to 4
Band Switch	ENABLED if the LNB is multi-band. DISABLED if the LNB is single band.	Read-only	-
Actual Current	Current consumption in mA for the selected device	Read-only	-
Lower Warning	Lower warning threshold for LNB current. If LNB current is below this value, a warning will be triggered.	Read-write	0 to 500
Upper Warning	Upper warning threshold for LNB current. If LNB current is above this value, a warning will be triggered.	Read-write	0 to 500
Lower Limit	Minimum LNB current before an undercurrent fault is triggered	Read-write	0 to 500
Upper Limit	Maximum LNB current before an overcurrent fault is triggered	Read-write	0 to 500

4.2.4 Settings Page

```
-> Network_Settings
   Device_Settings
   Sound_Settings
   ULNB_Control
   ODU Factory Reset
   IDU Factory Reset
   About
```

The **Settings Page** can be accessed by pressing the **Settings** button on the keypad. This page allows the user to access pages for configuring ODU and IDU settings. A summary of the pages is listed below:

OPTION	DESCRIPTION
Network Settings	Go to the Network Settings Page (See Section 4.2.5)
Device Settings	Go to the Device Settings Page (See Section 4.2.6)
Sound Settings	Go to the Sound Settings Page (See Section 4.2.7)
ULNB Control	Go to the ULNB Control Page (See Section 4.2.8)
ODU Factory Reset	Go to the ODU Factory Reset Page (See Section 0)
IDU Factory Reset	Go to the IDU Factory Reset Page (See Section 4.2.10)
About	Go to the About Page (See Section 4.2.11)
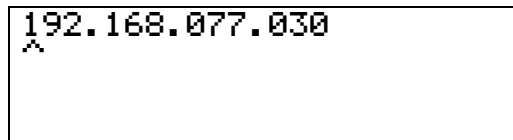
4.2.5 Network Settings Page

```
-> ODU IP : 192.168.077.030
   IDU IP : 192.168.077.031
   SUBNET : 255.255.255.255
   GATEWAY: 192.168.077.001
```

The **Network Settings Page** allows the user to view or change the current ODU and IDU network settings. Pressing **Enter** takes the user to the specified network IP page where these settings can be modified. If any of the IP Addresses are updated, the IDU may need to be power cycled.

Note: For communication between the ODU and IDU, the ODU IP on this page must be configured to match the ODU IP address on the unit. If the user wants to change the ODU's IP address, this must be performed through the ODU's Web Interface (see Section 3.6.4).

4.2.5.1.1 ODU IP Address Page
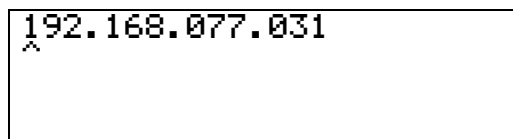
```
192.168.077.030
^
```

The **ODU IP Address Page** allows the user configure the ODU's IP address to match the IP address on the ODU. The **Next** and **Previous** buttons select which digit to change. The **Up** and **Down** buttons change the value of the selected digit by one. The maximum value for each section is 255.

Pressing **Enter** saves the new IP address and returns the user to the Network Settings page. Pressing **Back** takes the user to the Network Settings page without saving any values.

4.2.5.1.2 IDU IP Address Page
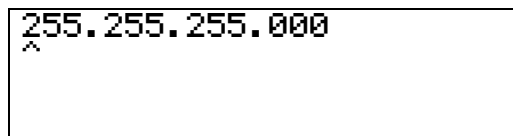
```
192.168.077.031
^
```

The **IDU IP Address Page** allows the user to change the IDU's IP address. The **Next** and **Previous** buttons select which digit to change. The **Up** and **Down** buttons change the value of the selected digit by 1. The maximum value for each section is 255.

Pressing **Enter** saves the new IP address and returns the user to the Network Settings page. Pressing **Back** takes the user to the Network Settings page without saving any values.

4.2.5.1.3 Subnet Page

```
255.255.255.000
^
```

The **Subnet Page** allows the user to change the subnet that the IDU-ODU network operates on. The **Next** and **Previous** buttons select which digit to change. The **Up** and **Down** buttons change the value of the selected digit by 1. The maximum value for each section is 255.

Pressing **Enter** saves the new IP address and returns the user to the Network Settings page. Pressing **Back** takes the user to the Network Settings page without saving any values.

4.2.5.1.4 Gateway Page

```
192.168.077.001
^
```

The **Gateway Page** allows the user to change the gateway that the IDU uses. The **Next** and **Previous** buttons select which digit to change. The **Up** and **Down** buttons change the value of the selected digit by 1. The maximum value for each section is 255.

Pressing **Enter** saves the new IP address and returns the user to the Network Settings page. Pressing **Back** takes the user to the Network Settings page without saving any values.

4.2.6 Device Settings Page

```
-> ACTIVE LNB     : LNB 1
   Lower Limit    : 100 mA
   Lower Warning  : 110 mA
   Upper Warning  : 190 mA
   Upper Limit    : 200 mA
```

The **Device Settings Page** allows the user to choose which device is active, as well as change the threshold values for the system. The following sections will outline the subpages.

4.2.6.1.1 Select Active Device Page

```
    SELECT ACTIVE DEVICE
->  LNB 1
    LNB 2
```

The **Select Active Device Page** allows the user to change which device is active. Pressing **Enter** updates the Active Device if allowed.

Note: Pressing the Manual Override switch brings the user to this screen, allowing them to change the Active Device.

4.2.6.1.2 Lower Limit Threshold Page

```
LNB CURRENT
LOWER LIMIT
100 mA
^
```

The **Lower Limit Threshold Page** allows the user to change the lower limit of the allowable current (measured in mA). Pressing **Previous** and **Next** allows the user to select which digit to change. Pressing **Up** and **Down** changes the value of the digit by 1. Pressing **Enter** saves the value and returns the user to the **Device Settings Page**.

4.2.6.1.3 Lower Warning Threshold Page

```
LNB CURRENT
LOWER WARNING
110 mA
^
```

The **Lower Warning Threshold Page** allows the user to change the lower warning threshold (measured in mA). Pressing **Previous** and **Next** allows the user to select which digit to change. Pressing **Up** and **Down** changes the value of the digit by 1. Pressing **Enter** saves the value and returns the user to the **Device Settings Page**.

4.2.6.1.4 Upper Warning Threshold Page

```
LNB CURRENT
UPPER WARNING
190 mA
^
```

The **Upper Warning Threshold Page** allows the user to change the upper warning threshold (measured in mA). Pressing **Previous** and **Next** allows the user to select which digit to change. Pressing **Up** and **Down** changes the value of the digit by 1. Pressing **Enter** saves the value and returns the user to the **Device Settings Page**.

4.2.6.1.5 **Upper Limit Threshold Page**

```
LNB CURRENT
UPPER LIMIT
210 mA
^
```

The **Upper Limit Threshold Page** allows the user to change the upper limit threshold (measured in mA). Pressing **Previous** and **Next** allows the user to select which digit to change. Pressing **Up** and **Down** changes the value of the digit by 1. Pressing **Enter** saves the value and returns the user to the **Device Settings Page**.

4.2.7 Sound Settings

```
-> ALARM SOUND  : DISABLED
   BUTTON SOUND : DISABLED
```

The **Sound Settings Page** allows the user to change the alarm and button sound settings. Pressing **Previous** disables the setting and pressing **Next** enables the setting. Pressing **Enter** saves the sound setting and returns the user to the **Settings Page**.

PARAMETER	DESCRIPTION
ALARM SOUND	If ENABLED, the Alarm Sound plays if the Active Device is in an alarm state. If the Standby Device is in an alarm state, the Alarm does not sound
BUTTON SOUND	If ENABLED, the Button Sound plays on any keypad button press

4.2.8 ULNB Control Page

```
   BAND 1
-> BAND 2
```

If Band Switching is allowed, ULNB Control can be selected from the **ULNB Control Page**. This allows the user to select which ULC band is active. Pressing **Enter** saves the selection and returns the user to the **Settings Page**. Pressing **Back** takes the user to the **Settings Page** without saving.

4.2.9 ODU Factory Reset Page

```
RESET ODU SETTINGS TO
FACTORY DEFAULTS?
-> NO
   YES
```

The **ODU Factory Reset Page** allows users to reset the ODU to factory settings. This factory reset is limited to the ODU and does not change any settings on the IDU.

Pressing **Enter** when NO is selected takes the user to the Settings Page. Pressing **Enter** when YES is selected takes the user to a confirmation page. If the factory reset is confirmed, it is recommended to power cycle the IDU.

4.2.10 IDU Factory Reset Page

```
RESET IDU SETTINGS TO
FACTORY DEFAULTS?
-> NO
   YES
```

The **IDU Factory Reset Page** allows users to reset the IDU to factory defaults. This includes the IP addresses in the IDU's memory, and the sound settings. This is only for the IDU and will not include the IP addresses in the ODU's memory. It will also not include the threshold values (limits and warnings), Active Device, or active band.

Pressing **Enter** when NO is selected takes the user to the **Settings Page**. Pressing **Enter** when the YES is selected takes the user to a confirmation page. If the factory reset is confirmed, it is recommended to power cycle the IDU.

4.2.11 About Page

```
IDU SN: 2111-N00000-00000
IDU Ver: 1.0.0.14712 A

ODU SN: 2111-N00001-00000
ODU Ver: 1.0.0.14705
```

The **About Page** displays the Serial Number (SN) and software version (Ver) of the IDU and the ODU.

The A after the IDU Software Version indicates that the software is running the normal application software. If any errors are detected in the software, it runs the Gold application software instead, indicated by a "G" after the Software Version.

4.3 IDU Web Interface

Norsat Redundant Switch - Indoor Unit

4.3.1 Accessing the Web Interface

The RSW IDU web interface can be accessed through a web browser. **It is recommended to use Firefox for best performance.**

1. Locate the devices IP address (192.168.77.31 by default).
2. Go to the IP address using a web browser.
3. The Log Output at the bottom of the page will display any system messages after loading the page.

4.3.2 IDU Identification

The **IDU Identification** section displays the Serial Number, Device Configuration (1:1 or 2:1, BUC or LNB), and Firmware Version of the IDU. These values are not user configurable.

4.3.3 IDU Network Configuration

The **IDU Network Configuration** section displays to the Network Settings for the IDU. The current values are on the left.

To change the network settings:

1. Input the updated network values in the inputs on the right.
2. Press the "Save Settings" button to implement the changes.
3. Power cycle the IDU after updating the network settings for the change to take effect. The web page will now be accessible through the updated IP address.

4.3.4 IDU Configuration

The **IDU Configuration** section displays the sound settings for the IDU, with the current values on the left.
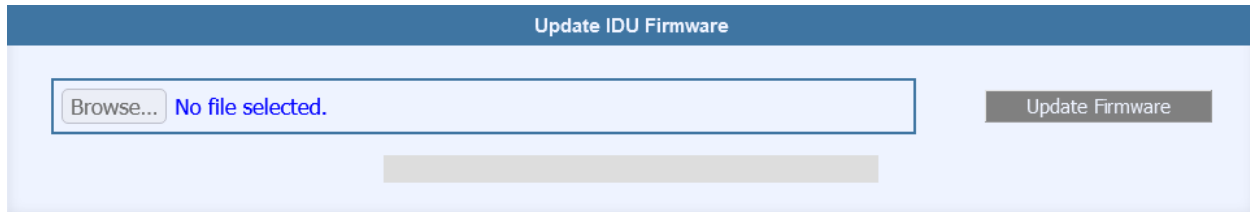

To update the sounds settings:

1. Select the desired sound settings using the radio buttons on the right
2. Press **Save Settings** to implement the changes.

4.3.5 Update IDU Firmware

The **Update IDU Firmware** section allows the user to update the firmware on the IDU.

To update the firmware:

1. Obtain a valid RSW IDU firmware update file from Norsat.
2. Open the Web Interface in Firefox.
3. Select "Browse" and navigate to the firmware file.
4. Click "Update Firmware".
5. A progress bar will indicate how much of the file has been transferred *to* the IDU. **Do not close the Web Interface or power off the RSW while the firmware update is in progress!**
6. Once the file has been successfully transferred, verify that the firmware version has been updated in either the About Page or the Web Interface.

4.3.6 Log Output

The **Log Output** section displays information about any changes that the user may have made from the Web Interface. Press **Clear Log Output** to erase all the messages.

5. System Troubleshooting

PROBLEM	TROUBLESHOTING STEPS
Can't connect to the ODU web interface	1. Verify that the ODU power connector is properly seated and threaded. 2. Verify that the Ethernet connector is connected and locked at both ends. 3. On a computer attached to the RSW network, open command line and ping the IP address (default is 192.168.77.30). a. if the IP address is reachable, try loading the web page using Firefox. 4. If the system includes the optional IDU, check the ODU IP settings in the network settings page and confirm that you are accessing the correct address. 5. Disconnect and reconnect the Ethernet connection on the client side. 6. Power cycle the ODU. 7. Use an IP Scanner to search the network for the devices MAC address. 8. If the IP address has been lost, a hardware factory reset may be required (see Section 3.9.3). 9. If the problem persists, contact Norsat customer support.
System Power Fault is present	1. If the LNBs are being powered by the on-board ULC, open the ODU Web Interface and confirm that the ULC is enabled. 2. If the LNBs are being powered by an external source, ensure that power is being applied to the system. 3. If the ULC is enabled, disable the ULC and then enable the ULC. 4. Power cycle the ODU. 5. If the problem persists, contact Norsat customer support.
One of the LNBs is not receiving power	1. Verify that the ODU power connector is properly seated and threaded. 2. Check that the LNB connectors are properly threaded at the ODU. 3. If the LNBs are being powered by the on-board ULC, open the ODU Web Interface and confirm that the ULC is enabled. 4. If the LNBs are being powered by an external source, ensure that power is being applied to the system.

6. System Maintenance

NO.	DESCRIPTION	FREQUENCY
1	Inspect all cables for damage	Once per month
2	Toggle the active LNB to standby to test that the system is working as expected	Once per month

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International Inc.
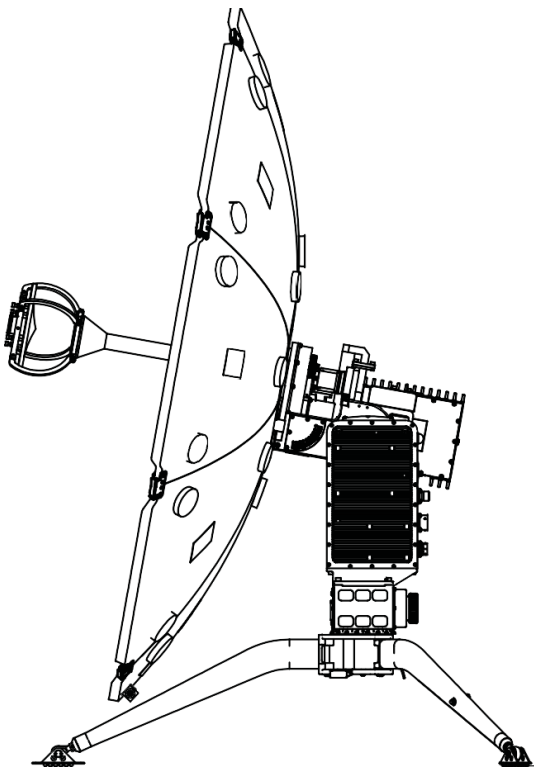
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