

**STC 8360 SERIES L-BAND
SYNTHESIZED FREQUENCY CONVERTER
MODEL - 83601U
OPERATION AND INSTALATION MANUAL**

IOM-093U Rev 3a

Errata Sheet

The information in this manual is subject to change without notice. Although Sotca Inc. is making every effort to accurately record and document all product improvements and enhancements but due to the fast pace of technological changes and constant product improvements Sotca Inc. can not make any commitments for timely updates to this material and therefore does not offer any warranty of any kind with regards to this material and does not accept any responsibility for accidental errors or omissions.

Num	Change description in Rev3
1	Extended description of 1:1 redundancy system installation and configuration, chapter 6.
2	Minor style improvements
3.	Errata sheet added
4.	Up-Down Frequency Converter specification removed Rev3a

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About this manual

This purpose of this manual is to describes installation and operation of the synthesized frequency converter, designed and manufactured by Sotca Inc., and it applies to STC 8360 series IF to L-Band stand-alone frequency upconverters and in 1:1 redundant system configuration. The manual is intended to be used by qualified technical personnel, responsible for the operation of this equipment.

Conventions



Indicates important consideration for the equipment proper operations.



Together with the word “Attention!” brings it to the operator attention that he should exercise an extreme caution to avoid potential minor hazard of even equipment damage.



Indicates a very likely hazardous situation if it is not corrected might result in equipment damage or even in injury.

WARRANTY

Sotca Inc. warrants all its products to be free from defects in materials and workmanship for a period of two (2) years. The period commences from the date of equipment shipment to the purchaser.

Warranty Terms and Conditions:

The purchaser should contact Sotca Inc. shortly upon finding out a problem. If it is determined that the product may be defective, the purchaser will be given an “Return Material Authorization Number (“RMA” number) and instructions for product return to Sotca Inc. Purchaser shall be responsible for all costs (including freight, duties and insurance) of delivering the product to Sotca Inc. manufacturing facilities and back to customer.

Sotca Inc. at its sole discretion make a decision whether to repair or replace a defective product and shall have a reasonable time after determining that a defective product exists to repair or replace it. Sotca Inc. will be not under any liability if defects are found to be the result of fair wear and tear, failure to follow written and/or oral seller’s instruction, alterations or unauthorized by Sotca Inc. repairs, improper use or handling, negligence, or accident.

Sotca Inc. under any circumstances should not be held liable for any loss or damage suffered by Buyer or its customer, resulted from resulted from incidental, special, indirect or consequential damages, including loss of profits or loss of operations.

Sotca Inc., its employees and affiliates should be indemnified and hold harmless from and against any liabilities, losses, claims, costs and expenses (including attorney’s fees and expenses), related to any claim or investigation, litigation or proceeding.

Sotca Inc. warranty applies to repaired or replaced products for the balance of the applicable period of the original warranty or ninety days from the date of shipment of a repaired or replaced product, whichever is longer.

Chapter 1. General information

1.1 Introduction

This manual provides installation, maintenance and operation instructions for STC 8360 series frequency converter, designed and manufactured by Sotca Inc, Markham, Ontario, CANADA. Information is organized into chapters. Within each chapter the pages, figures and tables are numbered by chapter and by order of appearance within the chapter, unless noted otherwise.

Disclaimer

Every effort had been made to assure the accuracy and reliability of the technical information contained in this manual. However the completeness and accuracy of the statements and technical data is not warranted or guaranteed. Sotca Inc. is constantly improving its products and documentation and it is not under any obligations to notify of any changes made, reserving the rights to modify all products and documentation at any time, without prior notice.

1.2 Functional Description

STC 8360 series synthesized upconverter module converts signal UP from IF $70\text{MHz} \pm 18\text{ MHz}$ (optionally $140\text{MHz} \pm 36\text{ MHz}$) to any of L-Band 950MHz to 1450 MHz , or optionally 950MHz to 1525MHz or 950MHz to 1550MHz frequencies. The upconverter features dual conversion design with non-inverted output spectrum, 1MHz or optional 125 KHz frequency resolution (synthesizer step size).

STC 83601U Upconverter is comprised of upconverter module, microcontroller module and power supply.

All control and monitor functions are accessible locally or remotely through the serial RS-232/422/485 or optionally an Ethernet interface. The STC 8360 series converter optionally can be used in redundancy systems with complimentary 1:1, 1:2 or 1: N Sotca Inc. redundancy switches or in 1:1 configuration with built-in redundancy switch module.

The user interface of the converter had been designed to be simple and easy to operate. All control and monitor function are equally accessible from the local control panel or remotely through serial RS-232/422/485 interface bus or optionally over Ethernet.

Features include but are not limited to automatic sense of external 10MHz reference, mute/normal mode for 10MHz reference out, remote interface choice by simple 2 position external switch and an automatic 2 fans cooling system.

1.3 Safety

In order to provide an uncompromised safety, all customers must comply with the following rules and regulations:

- The equipment **MUST BE OPERATED ONLY WITH ITS TOP LID ALWAYS ON.**
- To avoid electrical hazard, only the power cord supplied with the unit, or one of equivalent quality must be used.
- Connect RF cables only with **AC POWER TURNED OFF** to avoid electrical shock and not to destroy the device.

1.4 EMC

Every converter from the STC 8360 series is designed in compliance with the following FCC (USA), EN (European), and As/NZ (Australian/New Zealand) standards:

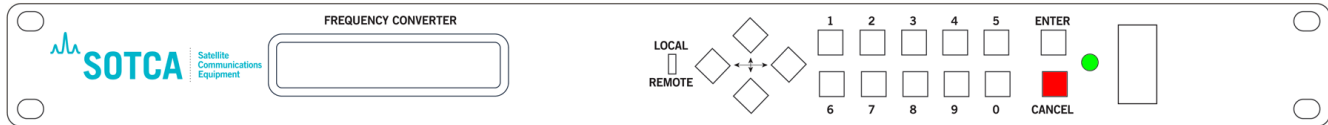
Emissions: EN 55022, As/NZ 3548 Class B: Limits and methods of measurement the radio interference characteristics of Information Technology Equipment.

Immunity: EN 50082 Part 1; Generic immunity standard, part 1: Domestic, commercial and light industrial environment.

1.5 Front panel operational controls and indicators

Most of the operating controls and indicators for the synthesized frequency converter are located on the front panel. Please refer to Chapter 3 for detailed instructions for operating the unit locally from the front panel. Figure 1 bellow shows the view of the front panel.

Figure 1 Front panel



1.5.1 LCD Display

LCD display is a bright, 20 x 2, green illuminated character display which provides status and configuration information of the device and prompt the user to enter new configuration parameters from the keypad.

1.5.2 Keypad

Keypad is comprised of 16 keys in total. Data entry numeric keys 0 – 9, “ENTER” and “CANCEL” keys to set or cancel entered values and 4 “ARROW” keys - "Up", "Down", "Left", "Right" to move the cursor horizontally and to scroll vertically up and down.

1.5.3 Local/Remote switch

The 2-positions “LOCAL-REMOTE” sliding switch is used to set the mode of interface operation to either local (from the front panel), or remote (via EIA Standard RS232/422/485 interface or optionally Ethernet interface).

1.5.4 LED indicators

There is a single 3-color LED indicator. It is RED when system is at fault, YELLOW while unit is powering on or in a transitional state, or GREEN if unit is functioning normally.

1.5.5 Power ON/OFF

The large AC power ON-OFF switch allows turning the unit on/off conveniently from the front panel. The AC power ON-OFF switch is RED in stand-by mode and continue to be illuminated when AC power switch in ON.

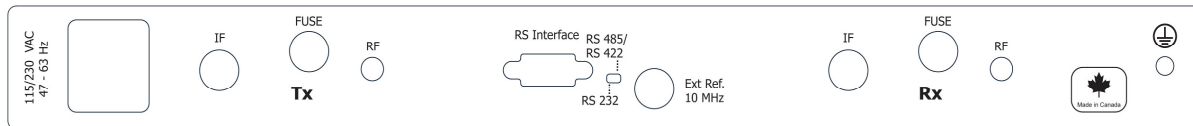
1.5.6 Standby mode indicator

When a unit is being connected to the AC power source the large AC power ON-OFF switch is illuminated RED. All other front panel indicators and LCD are NOT illuminated.

1.6 Rear Panel Connections

All interface connectors are located at the unit's rear panel. The following describes the rear panel connectors and its interface requirements. The typical rear panel view of STC 8360UD Up/Down Converter (combo unit) is depicted on Figure 2. Fuses for Tx and Rx are not applicable for all models. For STC83601U Upconverter only Tx part of the back panel will be present.

Figure 2 Rear Panel



1.6.1 Power supply and connection

The unit has a standard IEC 60320-C14 male AC inlet, and it is supplied with an appropriate power cable. The power cable has a mandatory separate safety earth ground, which must be provided from mains. The unit is manufactured with a Universal Power Supply(s) that will accept voltages of 90 or 264 VAC and 47 to 63 Hz. The appropriate voltage is selected automatically and does not require user intervention. The unit is provided with a short circuit fuse fitted into the mains inlet. The typical AC power consumption of the unit does not exceed 30VAC.

1.6.2 Grounding

To protect the unit against RF and transient currents, the chassis is equipped with a ground #10-32 lug on the back panel. This lug should be connected to the local system earth ground point.

1.6.3 Upconverter (Tx) Input

Upconverter (Transmitter, Tx) module input connector, marked "IF", is 50 Ohm BNC female. The mating male connector (not supplied with the unit) should be compatible with this coaxial connector. The input frequency should be within 52 to 88 MHz or 104 to 176 MHz depending on model.

1.6.4 Upconverter (Tx) Output

Upconverter (Transmitter, Tx) module output connector, marked "RF", is SMA female (N-Type female optional). The mating male connector should be compatible with the 50-ohm coax used to connect to the system. L-Band connections should be made by using double-shielded coaxial cables rated to operate up to 3GHz minimum.

1.6.5 External 10 MHz Reference Input

External 10MHz reference input connector is a 50 Ohm BNC female. The mating male connector (not supplied with the unit) should be compatible with this coaxial connector. The unit automatically senses an external 10 MHz reference and locks onto it. The external 10 MHz reference signal should have a

power level of 0dBm +/-3dBm, and phase noise the same or better than internal reference to obtain expected phase noise performance.

1.6.8 Remote Ethernet interface (optional)

Marked “Ethernet”, remote Ethernet interface is a standard RJ-45 Jack connector module with two LEDs. The left one is bi-color link LED and the right one is bi-color activity LED.

Table 1 Ethernet Interface Signals (Industry Standards)

Signal Name	DIR	Contact	Primary Function
TX+	Out	1	Differential Ethernet transmit data +
TX-	Out	2	Differential Ethernet transmit data -
RX+	In	3	Differential Ethernet receive data +
RX-	In	6	Differential Ethernet receive data -
Not used		4	Terminated
Not used		5	Terminated
Not used		7	Terminated
Not Used		8	Terminated
SHIELD			Chassis ground

1.6.10 Remote serial interface

Marked “RS INTERFACE”, remote serial interface is a 9-pin male miniature type “D” connector with a standard #4-40 female screw-lock hardware mounting. The electrical interface to this connector is for a standard EIA-422/485 bus. This connector can be used also for RS-232 interface by changing the position of the sliding switch located on the rear panel. The convention used for the signals is logic Hi for Mark (Rest), and a logic Lo for Space. The connector pin-out is in Table 2:

Table 2 Serial interface pin-out

1.6.10.1 RS-422/485 interface pin-out		1.6.10.2 RS-232 interface pin-out	
Pin 1	Rx –	Pin 1	Not Used
Pin 2	Rx +	Pin 2	Rx +
Pin 3	Tx +	Pin 3	Tx +
Pin 4	Tx -	Pin 4	Not Used
Pin 5	Ground	Pin 5	Ground
Pin 6	Alarm Relay: Common	Pin 6	Alarm Relay: Common
Pin 7	Alarm Relay: Normally Closed	Pin 7	Alarm Relay: Normally Closed
Pin 8	Not Used	Pin 8	Not Used
Pin 9	Alarm Relay: Normally Open	Pin 9	Alarm Relay: Normally Open

Chapter2. Installation

2.1 Introduction

This Chapter describes the STC 8360 series converter mechanical and electrical installation requirements and procedures.

2.2 Unpacking

The STC 8360 series converter is packed into the proprietary, custom designed cardboard box, with all the cables and accessories necessary to assemble a fully functional 1:1 redundant system (if ordered).

Inspect the shipping container externally. If there are any signs of damage, please contact the carrier immediately and follow the appropriate carrier's procedure to submit the damage report.

Remove the unit from the shipping box, and check the package content against the packing list. Inspect the equipment for any shipment damage. Report any damage to Sotca Inc. It is strongly advisable to take electronic pictures of the damage so they can be attached to an insurance claim. Please retain the original box and packaging materials in case of possible re-shipment of the unit, or its storage.

2.3 Storage

The product should be stored in a horizontal position and in its original packaging. In order to avoid the deformation of the top lid and consequent damage to product, the product should not be used to support the weight of more than 5kg spread evenly. Storage temperature is -10 to $+70^{\circ}\text{C}$ and exceeding these limits may cause damage. The product should not be exposed to extreme levels of humidity, moisture or temperature. In an event of such an exposure, the product must be kept at room temperature for at least 6 hours until it has dried naturally, before turning the unit on.

2.4 Mechanical installation

The STC 8360 series converter is designed for mounting in a standard EIA 19-inch rack. Cooling of the unit is achieved by forced air. The two fans located at the right side of the unit are pushing air out from the unit through the outlets. Sufficient care must be taken to allow a free air flow to avoid overheating the unit. The unit should be installed in an appropriate environment in accordance with the conditions described in Chapter 7. Primary power must be within the specific limits as well.

For installation into a rack the front panel is equipped with slots for retaining screws (to be provided by the customer). Inside the rack the unit must have sliding supports. Slides are not provided with the unit.



Do not install the unit by using only its front panel as it will cause extensive damage.

2.5 Electrical connection

All electrical connections are made at the rear panel of the unit.



ATTENTION! Interfaces to the STC 8360 series converter must be made with appropriated connectors and double-shielded input coaxial cables. Data cables must be double-screened as well. Failure to do so will result in unit performance degradation and affect EMC compliance.

2.5.1 Electrical Setup

You should set-up your converter following the steps bellow.

1. Connect earth lug to the local system ground point.
2. Connect the unit to prime power source using the power cord supplied with the unit, or use a power cord appropriate to local standard. Make sure that the AC switch is getting illuminated RED indicating a proper connection to the mains.
3. Use the power switch at the front of the unit to turn the unit ON. Upon power on, the LED on the front panel will become YELLOW and the unit will perform self-test. If there is not fault detected, the LED on the front panel should become green, LCD illuminated, and data displayed. The unit internal reference source will be stabilized in about 15 minutes.
4. Make sure that the Local/Remote switch on the front panel is set to Local. Configure the unit from the front panel (see chapter 3). Set the initial gain to minimum. Turn the unit OFF.
5. Connect the unit “IF” and “RF”. Recommended linear mode input power level is -45dBm for Rx and -30dBm for Tx.



WARNING! Exceeding the recommended linear mode input power levels may result in a deteriorating unit performance.

DANGER! Exceeding +20dBm at the unit input may damage the equipment!

Chapter3. Local Interface Operation

3.1 Introduction

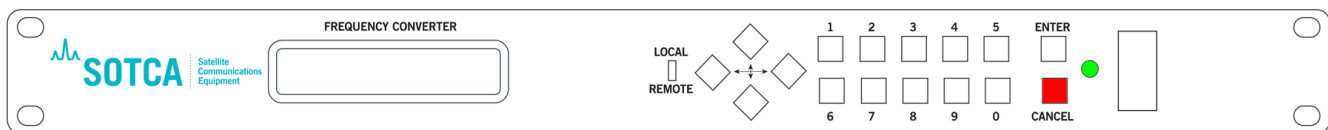
The STC 8360 series converter can be monitored and controlled by operator locally from the front panel.

To start Local Mode operations, set the Local/Remote switch to “Local”. When finished, set Local/Remote switch to “Remote” to prevent accidental changes to the set-up and allow remote operations.

The local user interface is designed to achieve maximum convenience and simplicity for the operator, yet allowing access and execution of all control and monitoring device commands from the front panel.

3.2 Operations

Front panel is equipped with 20x2 character LCD display and, 4 navigational and 10 alphanumerical buttons keypad, Local/Remote mode switch and Power ON/OFF switch as depicted bellow:



The informational and configurable parameters of the converter are combined on several pages (LCD screens), which can be browsed consequently by pressing Up and Down navigation arrows buttons. Use Left and Right navigational arrows to move horizontally between editable parameters on the same screen until the desired setting is displayed.

When during navigation a configurable parameter becomes activated, it starts flashing, signaling that it is in an edit mode. Use numerical keypad buttons to change numerical settings and “ENTER” button to save the change. Use “CANCEL” button while the setting is still flashing in order to cancel change. Any settings not completed with "ENTER" will be restored to the previous state.

The informational parameters are non-configurable and will never become active.

To toggle non-numerical editable parameter, such as control status (NORM/MUTE) use “ENTER” button.



ATTENTION! For local operations the LOCAL/REMOTE sliding switch on the front panel must be in the position “LOCAL”. When the switch is in REMOTE position all local operations are prohibited and keys are not active.

3.3 Menu screens and descriptions (125kHz step Basic)

3.3.1 Menu screen 1



U F = 0 9 5 0 . 0 0 0 M H z N O R M
G = 3 0 . 0 d B R I N T

F (frequency) in MHz; G (gain) in dB; Transmitter status: normal /mute/alarm. The minimum frequency step is 125 kHz. In case of imprecise setup, frequency value will be automatically corrected and set to the nearest step value. Gain format is xx.yy, where x=dB and y has a step of 0.5 dB or smaller on some models. Status information field at the first screen top right corner displays the current status mode of the converter. When operation normally, the string "NORM" is displayed. If a unit is being muted, "MUTE" string is displayed. If a major fault occurs, such as LO unlock, the "ALRM" string will be displayed.

When unit is locked on internal reference the "RINT" is displayed in the middle of the screen, when unit is locked on external reference source "REXT" is displayed.

3.3.2 Menu screen 3



R E F O F F S E T = 1 2 8

REF OFFSET (reference oscillator frequency offset) is presented as xxx, ranging from 0 to 255 in value, with 128 as the center of the range, which translates approximately 58.6 Hz step.

Downconverter spectrum sense: toggle the frequency sense by pressing the "ENTER" key.

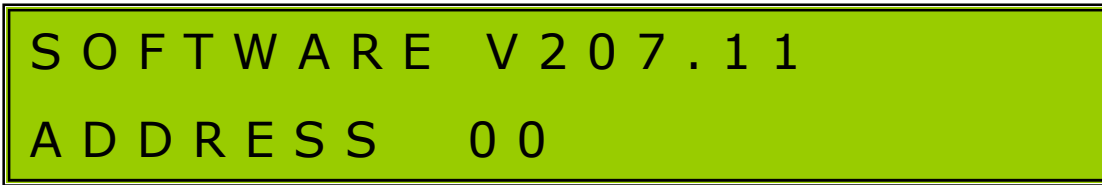
3.3.4 Menu screen 4



S E R I A L N U M 8 7 0 1
C A L I B R 2 0 1 8 / 1 0 / 2 5

Model, Serial number and calibration data menu: SERIAL NUM (serial number) is in xxxx format, and CALIBR (calibration) is in yyyy/mm/dd format. Fields are not editable.

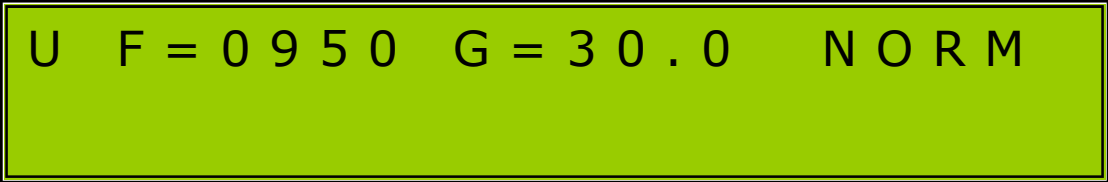
3.3.5 Menu screen 5



Software version and address menu: when address is set to 00 the unit is able to accept RS-232/422 protocol, for addresses 01-99 the serial interface will act as RS-485.

3.4 Menu screens and descriptions (1MHz step Basic)

3.4.1 Menu screen 1



U F = 0 9 5 0 G = 3 0 . 0 N O R M

F (frequency) in MHz; G (gain) in dB; Transmitter/Receiver status: normal /mute/alarm. The minimum frequency step is 1MHz. In case of imprecise setup, frequency value will be automatically corrected and set to the nearest step value. Gain format is xx.y, where x=dB and y has a step of 0.5dB. Status information field at the first screen top right corner displays the current status mode of the converter. When operation normally, the string "NORM" is displayed. If a unit is being muted, "MUTE" string is displayed. If a major fault occurs, such as LO unlock, the "ALRM" string will be displayed.

3.4.2 Menu screen 2



R E F O F F S E T = 1 2 8

REF OFFSET (reference oscillator frequency offset) is presented as xxx, ranging from 0 to 255 in value, with 128 as the center of the range, which translates approximately 58.6 Hz step.

Downconverter spectrum sense: toggle the frequency sense by pressing the "ENTER" key.

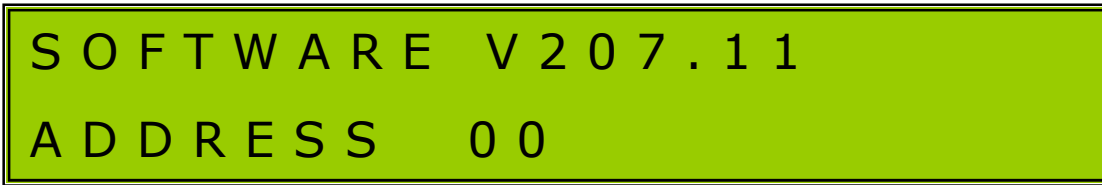
3.4.3 Menu screen 3



S E R I A L N U M 6 7 1 5
C A L I B R 2 0 1 6 / 1 0 / 2 5

Model, Serial number and calibration data menu: SERIAL NUM (serial number) is in xxxx format, and CALIBR (calibration) is in yyyy/mm/dd format. Fields are not editable.

3.4.4 Menu screen 4



Software version and address menu: when address is set to 00 the unit is able to accept RS-232/422 protocol, for addresses 01-99 the serial interface will act as RS-485.

Chapter4. Remote control

The STC 8360 series frequency converter can be controlled remotely via any of the following serial interfaces: RS-232, RS-485 and RS-422 or optionally via Ethernet interface.



ATTENTION! To start a remote communication mode the LOCAL/REMOTE switch on the unit front panel should be set to “REMOTE”.

4.1 Remote serial interface

The remote serial interface communication can be established between a converter and any computer or a hardware terminal equipped with serial interface software, capable of sending ASCII commands and getting ASCII response. The communication interface can be switched between RS-232 and RS-485/RS422 interface using hardware sliding switch located on the unit back panel (see 1.6.10). When using RS-232 serial interface, the unit address should be set to 00 (default). If the unit address is set to any other address between 01 and 99, the unit will communicate via RS-485 interface. The unit address should be unique on a network.



ATTENTION! For a converter ordered with “Redundancy Ready” option:

Use DB-9 connector or DB-9 adapter with only 3 pins: 2, 3 and 5 for connecting the unit’s RS-232 port to a computer serial port in order to assure an electrical compatibility. The Alarm relay voltages may cause serious equipment malfunctioning (page 11, pin-out).

4.1.1 Baud Rate

The serial port baud rate is 9600.

4.1.2 Format

Parity: None

Data Bits: Eight

Start Bits: One

Stop Bits: One

4.1.3 Response timeout

Response timeout should be minimum 500 milliseconds.

4.2 Protocol

4.2.1 Communication protocol

The communication protocol is implemented as Command/Response. This protocol requires an external monitoring device to initiate communications, sending ASCII messages to the device under control and receiving response.

4.2.5 Message structure

Each command or response message is an ASCII character string message. The string is case sensitive. The message general format is {aaCND...} for communication via RS-485 as it must include the physical address of the converter unit, in the range 01 to 99. For communication via RS-232 the message general structure should be {CND...}, where the address part is omitted and the unit physical address must be set to “00” (by default set to “00” at the factory).

General message structure:

{	Start character
aa	2 character address (01 to 99) for RS-485 only, omitted for RS-232
C	1 character (C-configuration command, S-status or information request)
N	1 number 0 to 9, A,B,C Command or Status Number
D	1 or more Data characters (depending on command)
}	Stop character

4.3 Commands

4.3.1 Set Frequency

This command allows to set a new frequency within the frequency boundaries, specific for the particular converter model. The default frequency value is the lowest frequency. The frequency resolution (step) can be 1MHz or 125kHz.. The decimal ‘.xxx’ portion is omitted for 1MHz frequency resolution (step).

Command Name	Message Format	Details
Set Transmit Frequency	{aaC1xxxx.xxx}	Frequency in MHz

4.3.2 Gain (attenuation)

This command allows to change gain (attenuation) of the converter within boundaries, specific for each particular converter model, in steps of 0.5dB. The default value is the lowest gain (max attenuation).

Command Name	Message Format	Details
Set Transmit Gain	{aaC3xx.x}	Gain in dB

4.3.3 Mute

Command Name	Message Format	Details
Mute Transmit	{aaCAx}	X: 0 for MUTE, 1 NORM

4.3.4 Reference oscillator adjustment

Default value is 128. Not applicable for all models.

Command Name	Message Format	Details
Set Reference Offset	{aaC5xxx}	XXX is between 0 to 255

4.3.5 Device address

This command sets device physical address when communicating over RS-485 or RS-232 interface.

For RS-232, the address should be set to 00. The command is not applicable for units equipped with Ethernet interface.

Command Name	Message Format	Details
Set Device Address	{aaSAxx}	XX is between 00 to 99

4.4 Monitoring and information commands

All monitoring and informational commands return status and unit current settings information.

4.4.1 Status request command

This command returns most important parameters of the converter. The string reflects response from the transceiver (Up/Down Converter). Only relevant fields of device response message string for particular converter model and configuration are filed, the rest are filled with “0”.

Command Name	Command Format	Device Response Format
Get status	{aaS1}	{aaS1bbbb.bbbdddfxx}

Response parameters:

bbbb.bbb	8-character transmit frequency, in MHz;
ddd	Transmit Gain, in dB, the string has no “.” character;
eee	Receive Gain, in dB, the string has no “.” character;
fff	Reference Oscillator Offset, values 0 to 255;
xx	Reserved

4.4.3 Mute and mode status request command

This command returns current mute status and local/remote status of the converter.

Command Name	Command Format	Device Response Format
Get Mute and Mode	{aaM1}	{aaM1bde}

Response Parameters

b	Transmitter (Tx) RF Status (1 = Normal, 0 = Muted)
d	Audio Alarm Mute (1 = Normal, 0 = Muted)
e	Local/Remote Status (1 = Normal, 0 = Muted)

4.4.5 Identification request command

Command Name	Command Format	Device Response Format
Get Mute and Mode	{aaID}	{aaIDYYMMDDxxxx}

Response Parameters:

YYMMDD	Calibration year, month and day;
xxxx	Unit serial number;

4.4.6 Firmware info request command

Command Name	Command Format	Device Response Format
Get firmware info	{aaV}	{aavR.xx}

Response parameters:

v	Version;
R	Revision
xx	Sub-version

4.4.7 Address request command

Command Name	Command Format	Device Response Format
--------------	----------------	------------------------

Get unit address	{aaRA}	{aaXX}
------------------	--------	--------

Response Parameters:

XX Device physical address, range 00 – 99

Chapter 5. Ethernet interface

This chapter covers the steps to set-up, configure and monitor and control Ethernet interface equipped frequency converters.

5.1 Introduction

The Ethernet equipped converter allows complete control and monitoring of all converter parameters via a 10BaseT or 100BaseT Ethernet connection. The converter auto-negotiates the Ethernet speed and duplex with the hardware end point it is connected to. It uses TCP/IP protocols for reliable network communication, HTTP for network configuration and Telnet protocol for monitoring and control of physical converter's parameters.

5.1.1 Protocols supported

For network configuration and management the supported protocols are ARP, UDP, ICMP, TCP, AutoIP, DHCP, HTTP.

For configuring and monitoring frequency converter physical parameters the supported protocol is Telnet and TCP.

5.1.2 Addresses and port numbers

A converter comes from the factory pre-configured with default static IP Address 192.168.2.100 and Telnet port 10001 for controlling and modifying converter physical parameters over TCP/IP.

5.2 Network configuration

The network parameters of the converter can be configured through a web interface, using web browser. Mozilla Firefox and IE. are the best supported web browsers. The following paragraphs describe set-up and configuration procedure.

5.2.1 Connection and testing the link

We recommend that the initial network settings configuration have to be done manually.

Connect the converter RG-45 port to a PC directly, using RG-45 to RG-45 10BaseT cross-over network cable, or via an Ethernet hub, using standard cable. Make sure your PC and the converter under test are on the same network segment. In this configuration the PC must be configured with a static IP address. For different operation system the procedure of configuring IP properties is different. Please consult your OS manual or help files for exact instructions.

5.2.1.1 PING utility

Use PING utility to verify that the converter is properly connected to a network. The PING utility is a system utility installed on every computer. The utility is using an ICMP protocol to verify that the

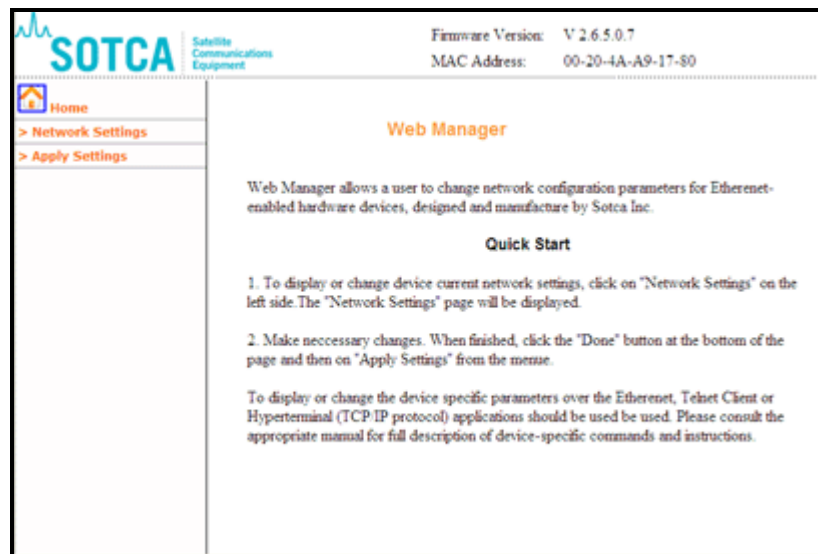
converter is reachable over the network. For the initial test the factory set default IP Address (see 5.1.2) must be used.

5.2.2 Web Interface

Open your web browser. Point the browser to the default IP Address (see 5.1.2). The prompt for user alert dialog for user name and passwords appears. Leave all fields blank and click OK.

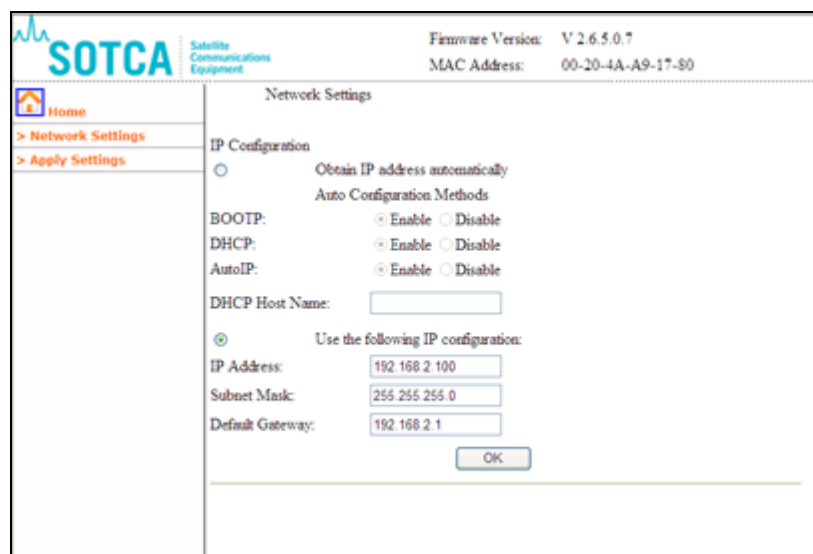
The first “Welcome” screen should be displayed, with the main menu on the left side, Figure 3.:

Figure 3. Network Settings Screen



To display network configuration parameters, choose “Network Setting” from the left configuration menu. The unit network values screen will display as on Figure 4 below:

Figure 4. Network Settings Screen



The following two sections explain network setting is details.

5.2.2.1 Automatic IP Address configuration

1. Select “Obtain IP Address automatically”;
2. To enable the Bootstrap server to assign IP Address automatically from the pool of addresses, choose BOOTP “Enable”.
3. To allow Dynamic Host Configuration Protocol (DHCP) server to automatically assign an IP address to a converter, choose DHCP “Enable”; Enter the DHCP Host name of the server providing and IP Address.
4. Choose Automatic Private IP Addressing AutoIP “Enable” to permit the converter server to generate automatically class “B” IP Addresses in the range 169.254.XXX.XXX.

Click “OK” button when you are finished configuration. Choose “Apply Settings” from the main menu. The settings will be checked for errors and invalid values. If none are found the screen on Figure 5 will appear.

5.2.2.2 Static IP Address Configuration

To set the static IP address manually, take the following easy steps:

1. Click "Network Settings" from the main menu on the left.
2. Choose "Use the following IP Address" configuration.
3. Enter values as required; the unit should have a unique IP Address on a network.
4. When finished, click "OK" button.

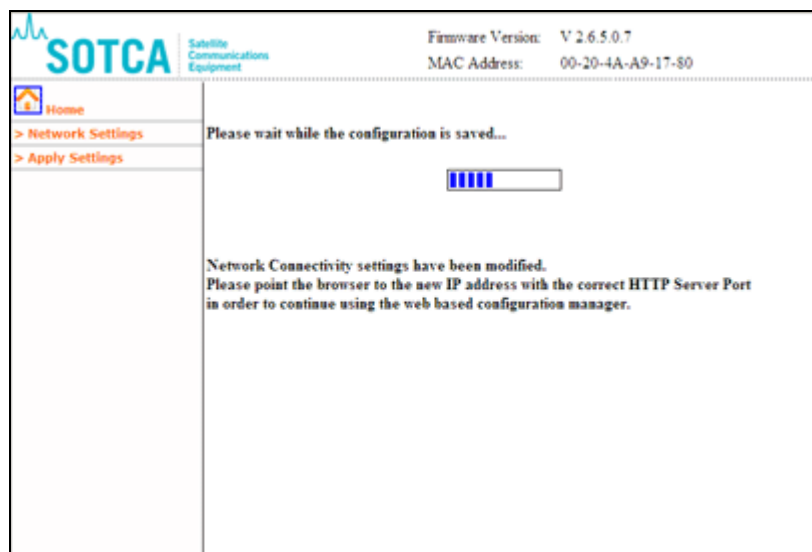
Click “OK” button when you are finished configuration. Choose “Apply Settings” from the main menu. The settings will be checked for errors and invalid values. If none are found the screen in Figure 5 will appear.

Figure 5. Apply Settings Screen



If all parameters had been set successfully the screen on Figure 6 will display. Go to the address bar of your web browser, set the IP address to the new value and click "Enter" to test that the new configuration is functional.

Figure 6. Network set-up complete screen



5.3 Monitoring and control

Converter Ethernet interface supports monitoring and control functionality via Telnet protocol, using pre-configured port 10001 to communicate with the converter over the network.

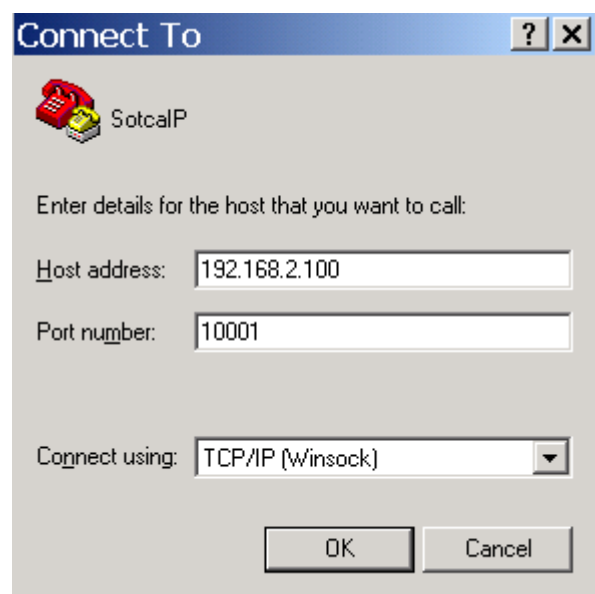
5.3.1 Hyper Terminal

Hyper Terminal is a communications application, which allows to connect to Internet via TCP/IP protocol or to computer serial port, depending on configuration. It comes free with Windows OS and can be also obtained from www.hilgraeve.com.

To use Hyper Terminal for remote control and monitoring of the converter unit over the Internet, you need to open a session, name it and configure as on the Figure 7. The IP Address depicted is a factory set default IP Address of a converter unit and should be substituted by the unique IP Address assigned to the unit when communicating over the network. Set the local echo ON for control of the Hyper Terminal window input.

Converter's monitoring and control commands and communication protocol is described in details in Chapter 4. All messages send from the terminal should not include the address part, see 4.2.5.

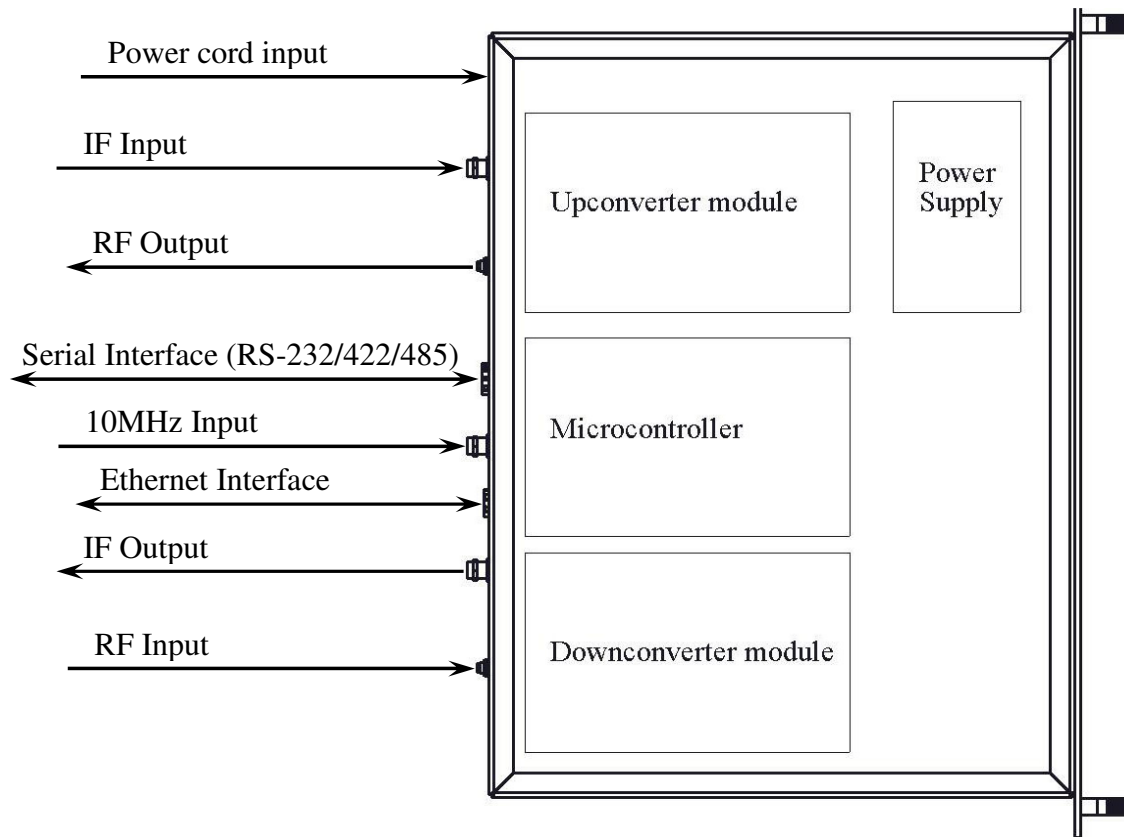
Figure 7 Configuring Hyper Terminal



Chapter6. Maintenance

6.1 Overview

The input and output signals, the interconnecting cables and modules layout are depicted below (STC 8360UD). For STC83601U upconverter only upconverter module is present; For STC 83601D Downconverter only Downconverter module is present.



6.2 Maintenance

STC 8360 series converter is designed as low maintenance equipment. Refer to instructions in Chapter 2 for installing the converter for operation and to instructions in Chapters 3, 4 and 5 for operating the converter.