
SyncServer S80 NTP Server

User Guide

Part Number 098-00777-000
Revision B





SyncServer S80 NTP Server

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1 – Overview

The Microsemi SyncServer S80 is a fully integrated GPS/GLONASS antenna, receiver, NTP server, and PoE interface that easily integrates into existing PoE infrastructure to immediately be the source of accurate, secure, and reliable time stamps for all network connected devices. Network isolated physical security systems benefit as the ruggedized Stratum 1 network time server is ideal for time-synchronizing IP security cameras, access control devices, and digital/ network video recorders. SyncServer S80 is also suitable for synchronizing the time on small enterprise networks.

Key Features

- Security-hardened Stratum 1 NTP server
- Fully ruggedized and integrated GPS/ GLONASS receiver, NTP server, and PoE network interface
- Secure Microsemi NTP Reflector technology
- 100-nanosecond time stamp accuracy
- 500 NTP requests per second standard, 1000 optional
- Hardware-based time stamps
- Modern GbE interface with IPv4/IPv6/ SNMP/DHCP support
- Stationary or moving platforms
- Mounting hardware included

Software Option

The SyncServer S80 includes built-in hardware features enabled via software license key.

- 1000 NTP requests per second.

Activation keys are associated with the serial number of the device on which the keys are stored and travel with that device. The user must enter key(s) with the `set license add` CLI command.

Functional Description

The S80 is based on an innovative and extremely sensitive GNSS receiver and patented Microsemi timing algorithms. A singular Ethernet connection is used for management, PoE to the S80 as well as NTP Stratum 1 time server operations..

The SyncServer S80 with integrated GNSS receiver and antenna solves the problem of delivering precise time for physical security networks isolated from the Internet that need accurate time stamps in challenging environments by placing the integrated unit on the roof.

Management of the SyncServer S80 can be achieved via CLI over SSH v2.

Physical Description

The SyncServer S80 consists of a fully integrated GPS/GLONASS receiver, NTP server, and PoE interface. All connections for the SyncServer S80 are through the RJ45 Ethernet jack via a cable on the

bottom of the unit. See [Figure 1-1](#).

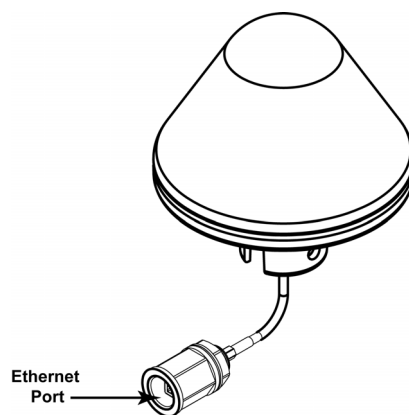


Figure 1-1 • RJ45 Port on SyncServer S80

2 – Installation of SyncServer S80

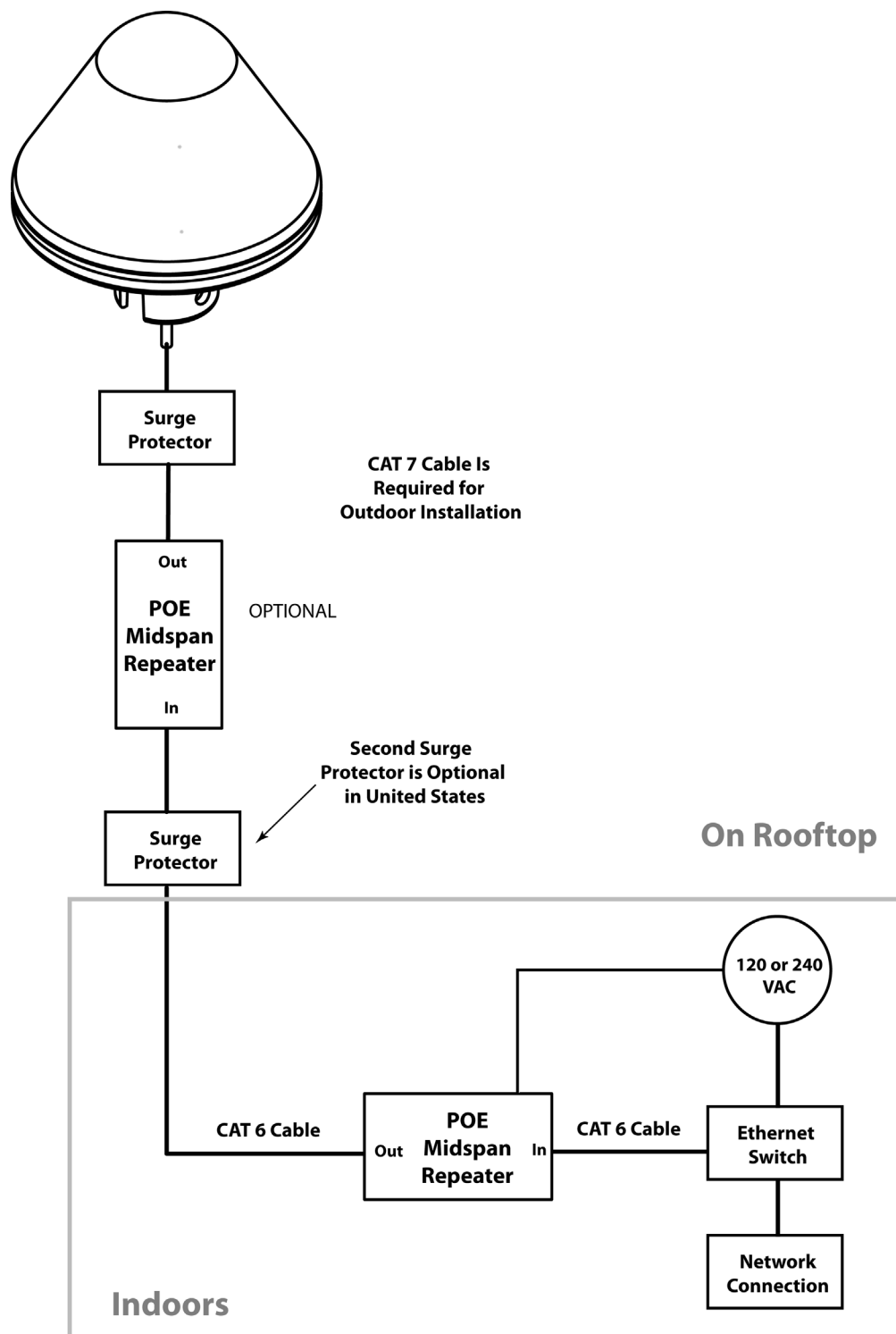
.This chapter details the installation of the SyncServer S80.

Requirements

The SyncServer S80 requires the following for proper installation and function:

- Mounting site outdoors with GNSS satellites visibility
- Network connection with 1 Gigabit Ethernet capacity
- Power through Power Over Ethernet (POE) device, such as midspan repeater or injector
- SSH CLI connection for manual configuration

Figure 2-1 • SyncServer S80 Connection Diagram



Installation Tools and Equipment

You will need the following tools and equipment to install the SyncServer S80:

- Standard tool kit
- Cat 7 waterproof cables (lengths depends on layout)

Unpacking the Unit

The SyncServer S80 (p/n 090-15200-080) is packaged to protect them from normal shock, vibration and handling damage. (Each unit is packaged separately.)

Unpack and inspect the unit as follows:

1. Wear a properly grounded protective wrist strap or other ESD device.
2. Inspect the container for signs of damage. If the container appears to be damaged, notify both the carrier and your Microsemi distributor. Retain the shipping container and packing material for the carrier to inspect.
3. Open the container, being careful to cut only the packaging tape.
4. Locate and set aside the printed information and paperwork that is included in the container.
5. Remove the unit from the container and place it on an anti-static surface.
6. Locate and set aside small parts which may be packed in the container.
7. Remove the accessories from the container.
8. Remove the anti-static packaging from the unit and accessories.
9. Verify that the model and item number shown on the shipping list agrees with the model and item number on the equipment. The item number can be found on a label affixed to the bottom of the unit. See [Figure 2-6](#) for the location of the label on the SyncServer S80. Contact your Microsemi distributor if the model or item number do not match.

The SyncServer S80 includes the Ethernet system (including sealant strip) shown in [Figure 2-10](#), which is used to attach to the customer's cable and provide a weatherproof seal. For a complete listing of items in the installation kit, see [Table 2-1](#). For a complete listing of items in the antenna cable bracket kit, see [Table 2-2](#).

Table 2-1 • SyncServer S80 Installation Kit - P/N 093-00741-000

Description	Quantity	Part Number
INSTALLATION SUPPORT, OUTDOOR ANTENNA	1	070-02006-000
LOCK NUT, CONDUIT FITTING, 1-1/4 NPT SIZE THREAD, 2.281" O.D., 0.17" THICK, STEEL, ROHS COMPLIANT	2	125-00434-000
SCREW, MACHINE, 1/4-20, 0.500" LONG, PAN HEAD, PHILLIPS, STEEL, ZINC PLATE	1	125-00016-000
WASHER FLAT, 1/4" SCREW SIZE, 0.281"ID, 0.625"OD, 0.043"-0.057" THICK, 316 SS, ROHS	1	2821367

Table 2-2 • SyncServer S80 Antenna Cable Bracket Kit - P/N 093-00001-01

Description	Quantity	Part Number
BRACKET ANTENNA MOUNT RA DUAL	1	070-00377-01-2
FORM V-BOLT M6 SS	2	070-00389-01-2
SCR MACH #10-32 PHILLIPS PH .125L SS	4	125-10034-02-1

Table 2-2 • SyncServer S80 Antenna Cable Bracket Kit - P/N 093-00001-01 (continued)

Description	Quantity	Part Number
SCR SHEET-METAL #12 PHILLIPS PAN-HEAD 3/4"-LNG SS	2	125-12054-12-2
NUT MACH HEX #M6 SS NYLON INSERT	4	126-24704-00-2
WASHER FLAT #M6 SS	4	126-14704-00-2

Mounting Site Location

Mount the antenna outside, preferably on the roof with an unobstructed view of the sky. Do not mount the antenna near a wall or other obstruction blocking part of the sky. Mount the antenna well above roads or parking lots. Proper cable, grounding techniques, and lightning arrestors should be used.

Warning: To avoid serious personal injury or death, exercise caution when working near high voltage lines. In particular:

- Use extreme caution when installing the antenna near, under, or around high voltage lines.
- Follow local building electrical codes for grounding the chassis. Surge Protection for Indoor PoE.

An indoor PoE should be isolated. It needs to be a single port injector, such as Microsemi's PD-9001G-40/SP Midspan. The Primary surge protection device needs to be as close as possible to inlet to the building and connected to earth ground. The Microsemi PD-OUT/SP11 is recommended. The single port PoE injector acts as secondary surge protection. See [Figure 2-2](#).

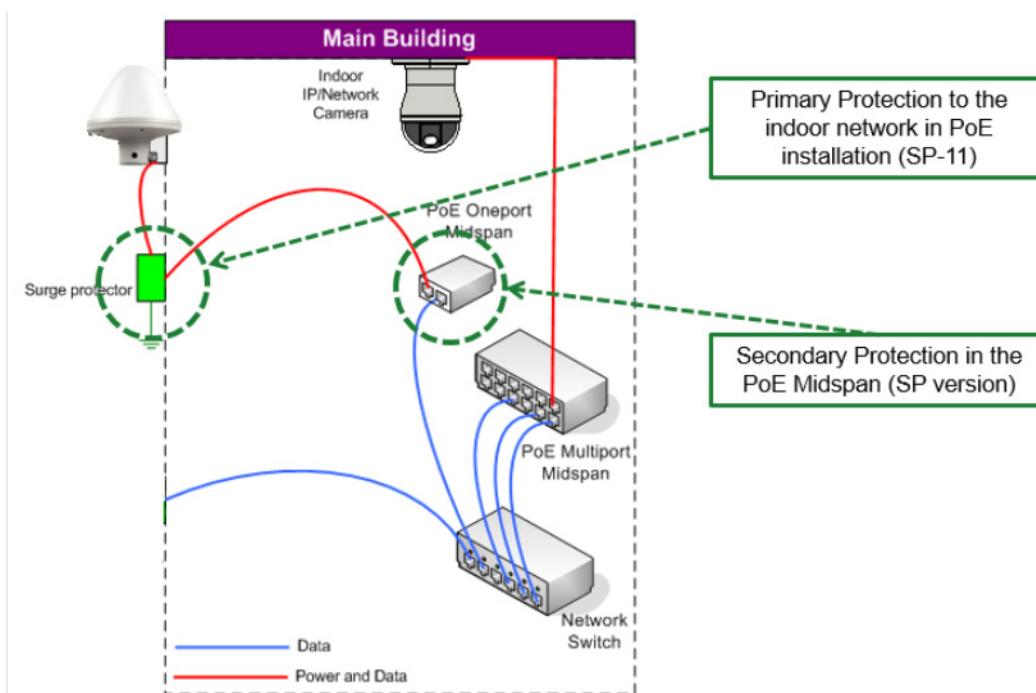


Figure 2-2 • Surge Protection with Indoor PoE

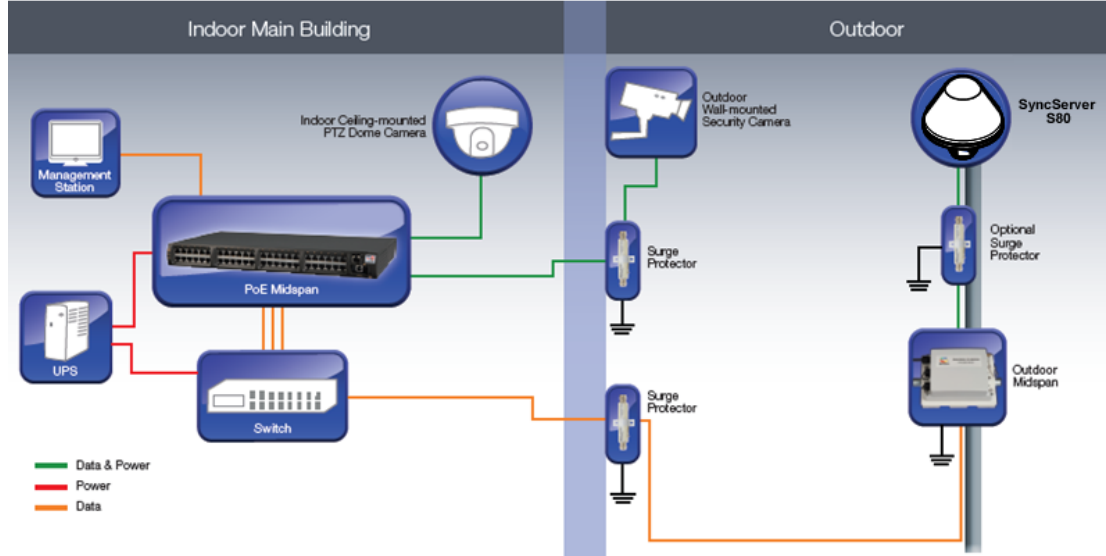
Surge Protection for Outdoor PoE

Using an outdoor PoE only makes sense for more than 1 outdoor device, for instance 1 SyncServer S80 and 1 outdoor security camera. Suggested Microsemi PoEs include the 2 port PDS-102GO or 4 port

PDS-104GO. See Figure 2-3.

The Sync Server S80 is compliant to ITU-K.20. A Lightning protector is required at both ends to be compliant to ITU-K.20 (protecting the Antenna and the Building). Use state and local practices to assure compliance measures are taken. The Microsemi PD-OUT/SP11 is recommended.

Figure 2-3 • Surge Protection with Outdoor PoE



Power Requirements

The SyncServer S80 receives power through Power Over Ethernet (PoE). The Power input to the unit needs to be PoE Class 3.

Network Connection

The Ethernet port available through the cable on the bottom of the SyncServer S80 unit accepts an RJ-45 connector, which links the unit to your 1 Gigabit Ethernet LAN. See Figure 2-4. The SyncServer S80 unit also receives power through the Ethernet cable from a POE power injector. The Ethernet MAC address is printed on the label on the bottom of the SyncServer S80 unit.

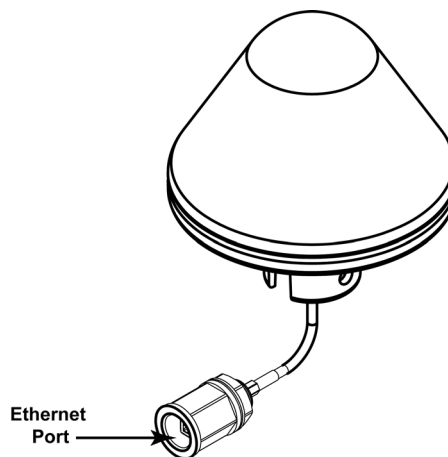


Figure 2-4 • RJ-45 Ethernet Port on SyncServer S80 Unit

Recommended Tasks

Microsemi recommends the user configure the SyncServer S80 before mounting it in its outdoor or rooftop location.

1. Make a temporary connection between the SyncServer S80 and the desired network. Refer to [Figure 2-1](#) for placement of the PoE midspan repeater.
2. Establish an SSH connection from your computer to the IP address assigned to the SyncServer S80.

Note: The S80 default IP address is 192.168.100.11, the subnet mask is 255.255.255.0, and the gateway address is 0.0.0.0 (no gateway).

Note: The Ethernet interface must be 1000 Base-T. Lower speed connections are not supported.

3. Type the default user name admin and press Enter.
4. Type default password Microsemi and press Enter. The system prompt will appear.

Note: Microsemi recommends using a static IP address. Whenever any IP address or mode is changed, the S80 must be rebooted. Users are not recommended to use DHCP for the SyncServer S80 because there is no convenient method for retrieving assigned DHCP address for the management port after reboot.

5. Set the desired IPv4 or IPv6 address using the `set ip` command.

IPv4 Example

To set the static IPv4 address for the Ethernet Interface to 192.168.2.11, the mask to 255.255.255.0, and the gateway 0.0.0.0:

```
S80> set ip ipv4 ip-address 192.168.2.11 netmask 255.255.255.0 and gateway 0.0.0.0:
S80> set ip ipv4 ip-address 192.168.2.11 mask 255.255.255.0 gateway 0.0.0.0
S80> set ip ipv4 state enable
S80> set ip ipv4 state restart
```

IPv6 Example

To set the static IPv6 address for the Ethernet Interface to 2201:db8:1234::11, the prefix to 64, and the gateway 2201:db8:1234::1:

```
S80> set ip ipv6 ip-address 2201:db8:1234::11 prefix 64 gateway 2201:db8:1234::11
S80> set ip ipv6 state enable
S80> set ip ipv6 state restart
```

Caution: Microsemi strongly recommends that you record the serial number, hostname and MAC of the SyncServer S80 before installing it.

Table 2-3 • Record Important System Settings and Values

Parameter	Value
IPv4 Address	
IPv4 Prefix	
IPv4 Default Router	
IPv6 Address	
IPv6 Prefix	
IPv6 Default Router	
MAC Address	
Serial Number	
Hostname	

Installing the SyncServer S80 Outdoors

Use the following procedure to install the SyncServer S80 outdoors. Typical installation requires mounting and grounding two surge protectors. The first surge protector should be mounted as close as possible to the SyncServer S80. The second surge protector should be mounted in the entrance to the indoor building.

1. Identify the outdoor location for mounting the SyncServer S80 unit.
2. Guide the customer-supplied waterproof 12-inch CAT7 Ethernet cable and RJ-45 connector of the SyncServer S80 through the bottom of the mounting pole (070-02006-000). As partially shown in [Figure 2-9](#), the cable must first pass through a pipe nut, then the mounting bracket, then through the second pipe nut.
3. Remove the nut on the Ethernet System and loosen the feed-thru seal, as shown in [Figure 2-10](#).
4. Guide the customer-supplied cable through the feed-thru seal and other components of the Ethernet system, as shown in [Figure 2-10](#).
5. Remove the plastic from both sides of the sealant. Place and mold the sealant around the customer-supplied cable, as shown in [Figure 2-10](#).
6. Plug the RJ45 connector of the customer-supplied CAT7 cable into the Ethernet port of the SyncServer S80, as shown in [Figure 2-10](#).
7. Screw the end of the Ethernet system into the Antenna connector housing, as shown in [Figure 2-10](#).
8. Reassemble the Ethernet system, and tighten the feed-thru seal, as shown in [Figure 2-10](#).
9. Gently pull the customer-supplied cable at the opposite end of the mounting pole to remove any slack, sliding the Ethernet system into the top of the mounting pole. Continue until the top of the mounting pole fits into the Antenna.
10. Attach the SyncServer S80 unit to the top of the mounting pole, and secure it using the screw and washer from the Installation Kit (093-00741-000).
11. Screw the first pipe nut onto the bottom of the mounting pole, as shown in [Figure 2-11](#).
12. Attach the mounting bracket (093-00001-01) to the bottom of the mounting pole, as shown in [Figure 2-12](#). Screw the second pipe nut onto the bottom of the mounting pole.
13. If mounting the SyncServer S80 to a mast, attach the mounting bracket to the pole with the included U-bolts, as shown in [Figure 2-13](#).
14. If mounting to a vertical surface, attach the mounting bracket with the included screws, as shown in [Figure 2-14](#). Adhere to local building codes to determine the type and number of fasteners, screws, bolts, etc. that may be required.
15. Mount the surge protector to the mast or vertical surface on which the SyncServer S80 is mounted., close to the unit. See [Figure 2-15](#) for surge protector dimensions.
16. If mounting to a mast, first remove the bracket by unscrewing both of its screws. Attach the surge protector to the mast using a worm gear clamp. See [Figure 2-17](#).
17. If mounting to a vertical surface use the attached bracket on the surge protector and mounting screw to attach to the unit to the surface. See [Figure 2-18](#) for an example of mounting the unit to a vertical surface with the bracket.
18. Plug the other end of the customer-supplied waterproof 12-inch CAT7 Ethernet cable into the "Line" end of the surge protector. See [Figure 2-16](#) for details about connecting to the surge protector.
19. Plug the second customer-supplied waterproof CAT7 Ethernet cable into the "Equip" end of the surge protector. See [Figure 2-16](#) for details about connecting to the surge protector.
20. Ground the surge protector unit using the GND screw and strap.
21. Mount the second surge protector at the point where the cable enters the building. See [Figure 2-18](#) for an example.
22. Plug the other end of the second customer-supplied waterproof CAT7 Ethernet cable into the "Line" end of the second surge protector. See [Figure 2-16](#) for details about connecting to the surge protector.

23. Plug the third customer-supplied Ethernet cable into the "Equip" end of the surge protector. See [Figure 2-16](#) for details about connecting to the surge protector.
24. Ground the surge protector unit using the GND screw and strap.
25. Plug the end of the third customer-supplied Ethernet cable to the Output end of the power injector or POE midspan repeater, as shown in [Figure 2-1](#).
26. Plug a second Ethernet cable into an unpowered Ethernet port on your network.
27. Plug the other end of the Ethernet cable into the Input port of the power injector or POE midspan repeater, as shown in [Figure 2-1](#).
28. Plug the Power Input of the power injector or POE midspan repeater into an approved 100- to 240-VAC outlet or other suitable power source.

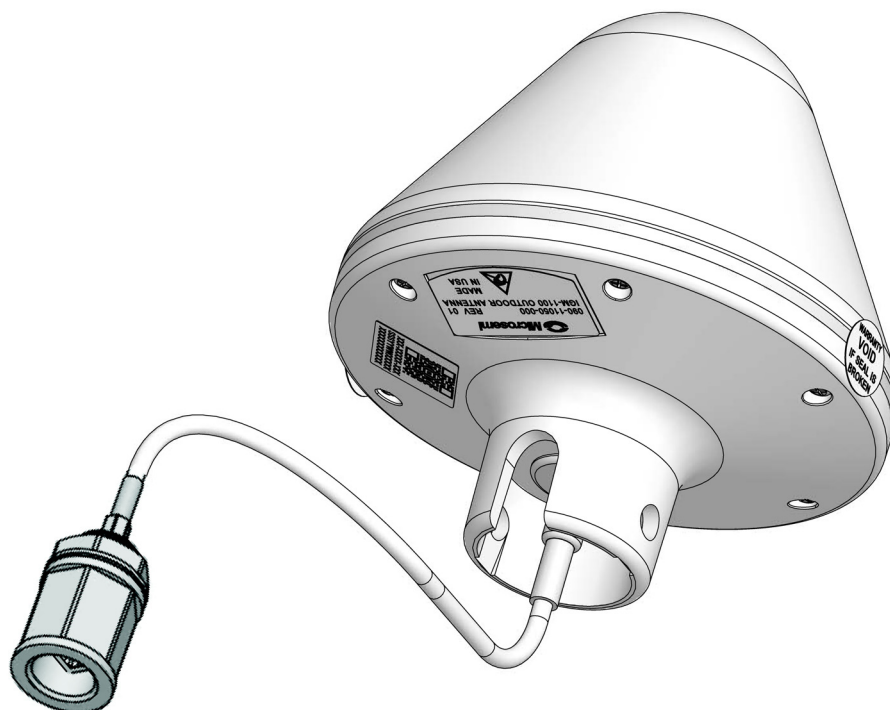


Figure 2-5 • SyncServer S80

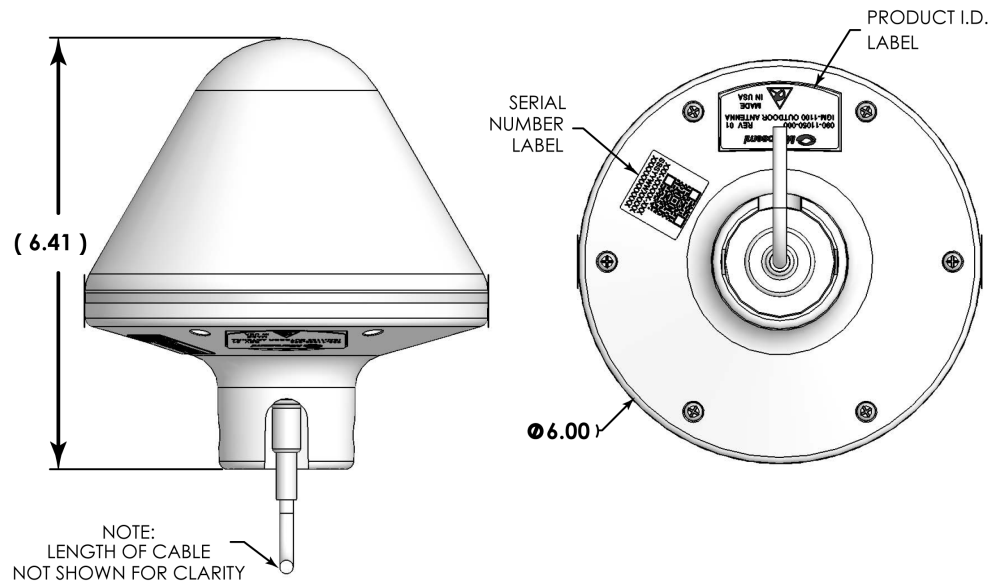


Figure 2-6 • SyncServer S80 Dimensions

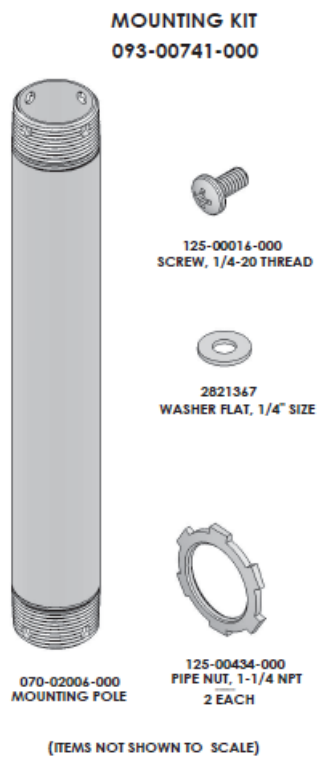


Figure 2-7 • Mounting Kit for SyncServer S80

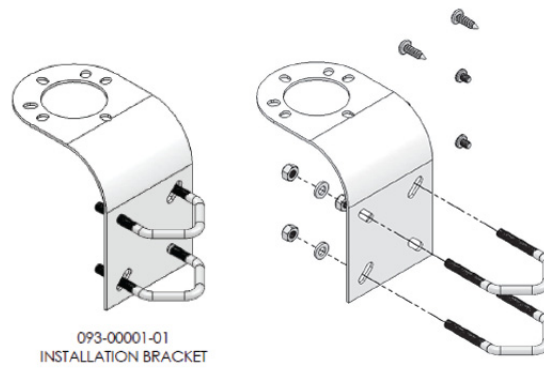


Figure 2-8 • Installation Bracket for SyncServer S80

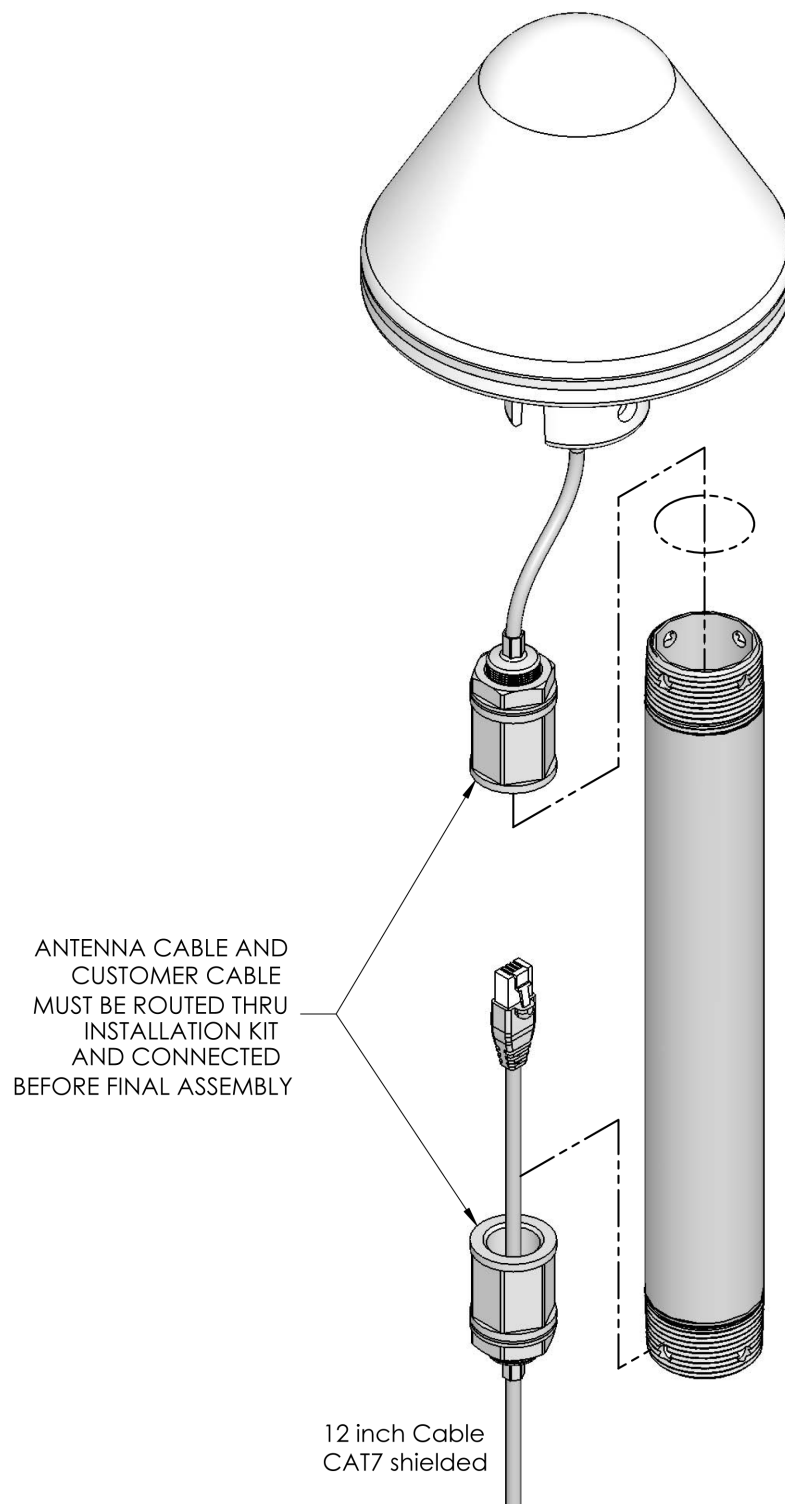


Figure 2-9 • Cable Routing Before Final Assembly

Remove Nut From
Ethernet System



Loosen End of
Feed-Thru Seal

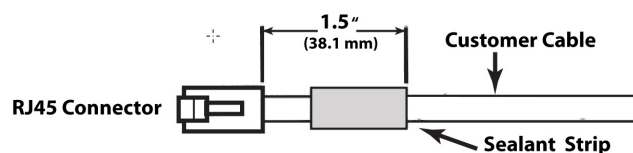
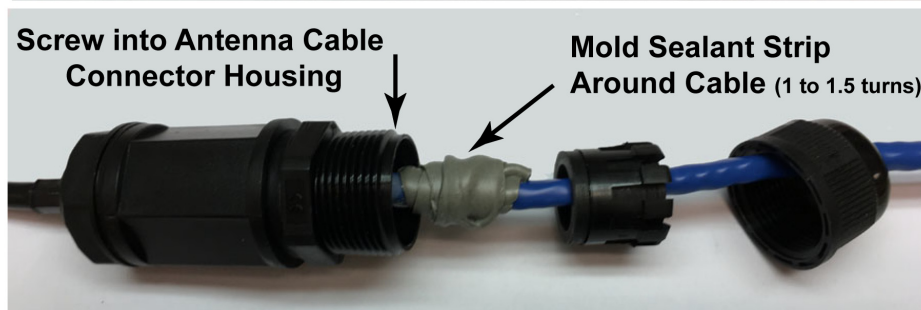
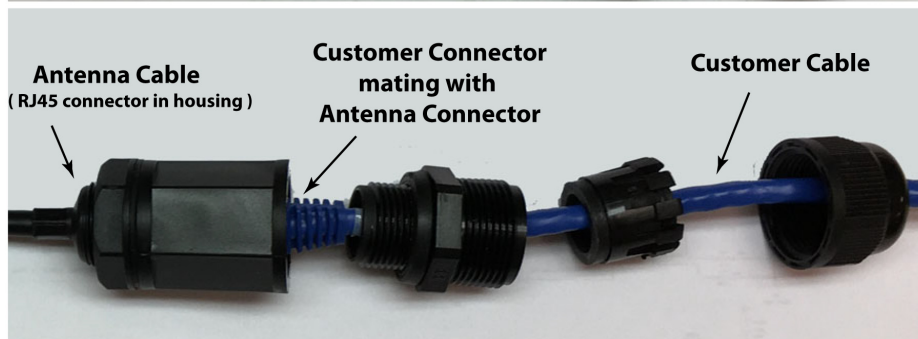
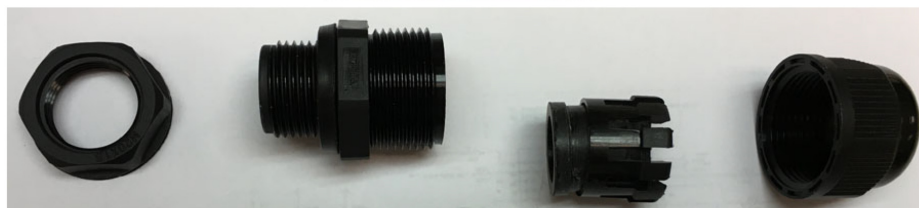


Figure 2-10 • Connecting Customer Cable to Antenna Detail - Sealant Strip

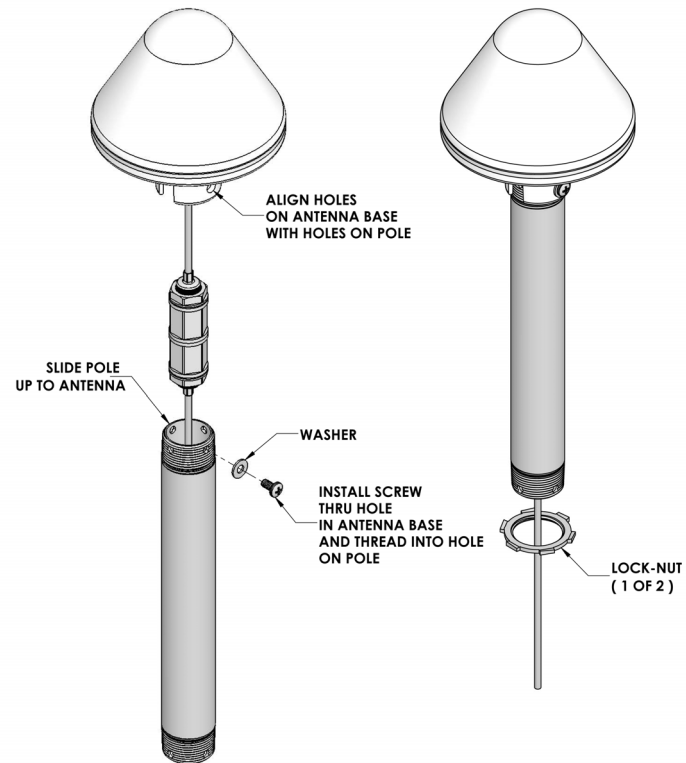


Figure 2-11 • Attaching SyncServer S80 to Pole

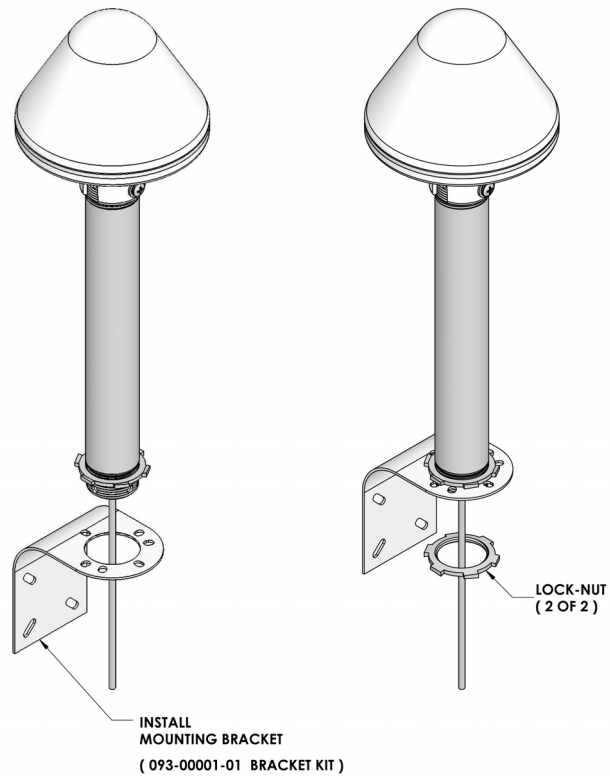


Figure 2-12 • Attaching SyncServer S80 and Pole to Bracket

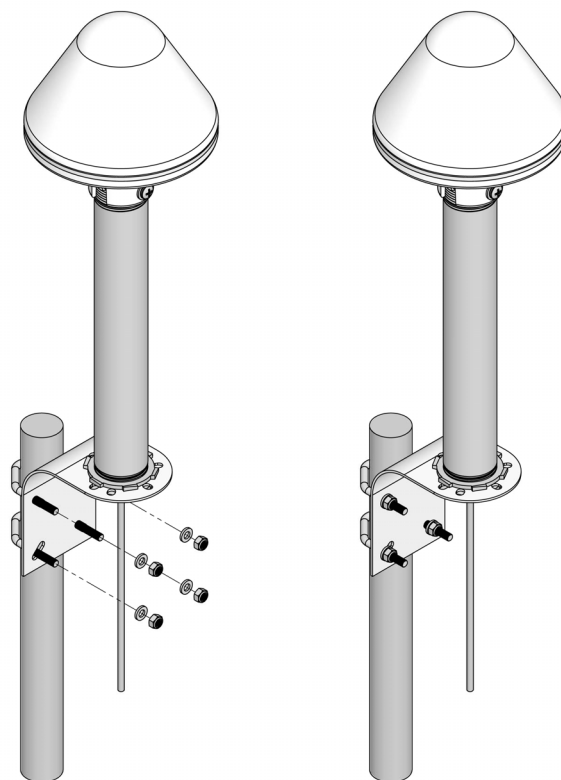


Figure 2-13 • Mounting SyncServer S80 to a Mast

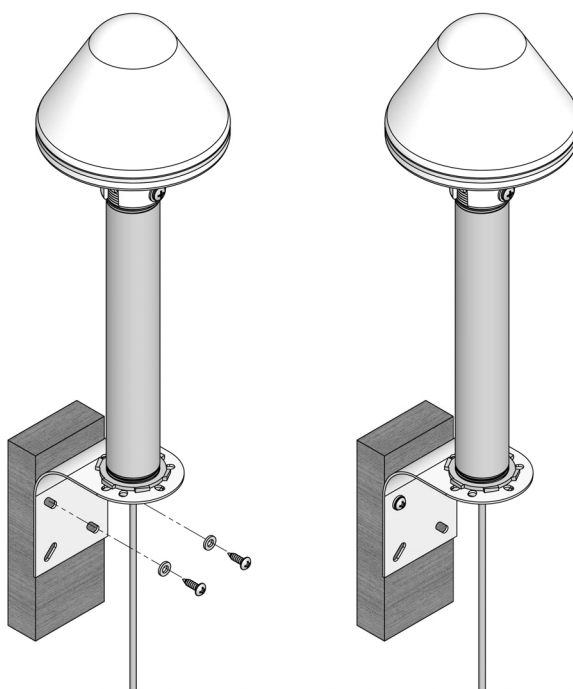


Figure 2-14 • Mounting SyncServer S80 to a Vertical Surface

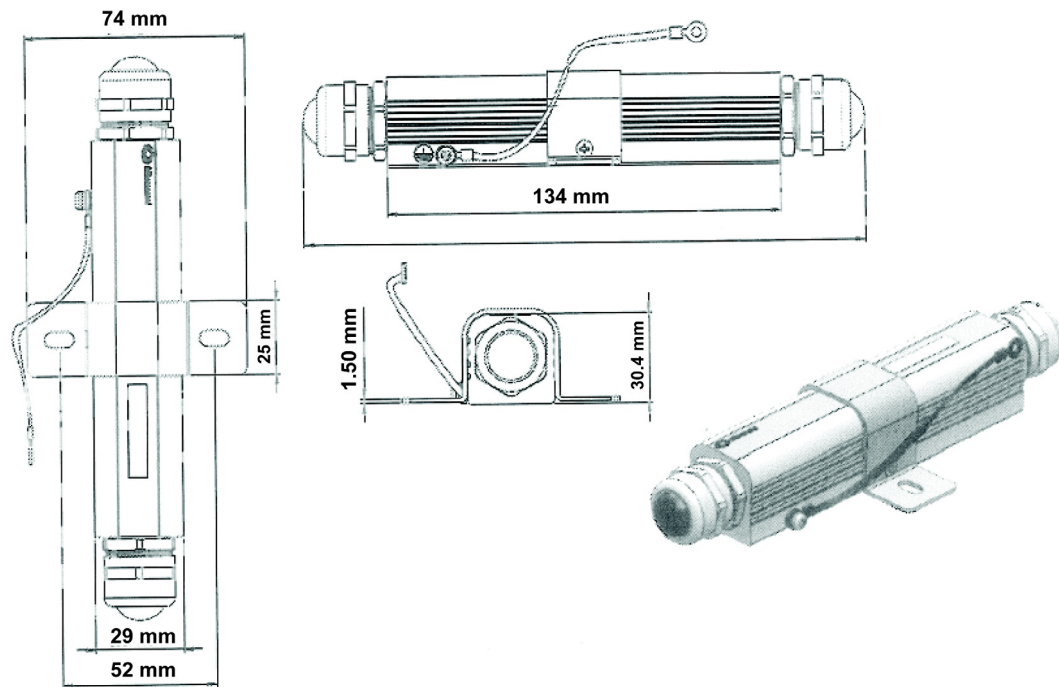
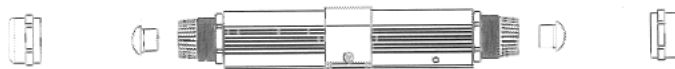


Figure 2-15 • Surge Protector Dimensions

Remove end caps from the surge protector. Remove and discard plug from the seal assembly.



Remove seal assembly and seal from each side of the surge protector.



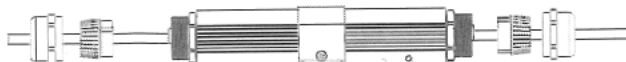
Insert RJ45 connectors through end cap, seal, and seal bracket for each side of surge protector.



Insert RJ45 connectors into surge protector ports.



Insert the seals into the seal brackets.



Insert seal assemblies into the ends of the surge protector.



Tighten the end caps of the surge protector to a torque of 7.5 N-m.

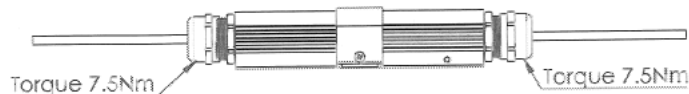


Figure 2-16 • Connecting Surge Protector

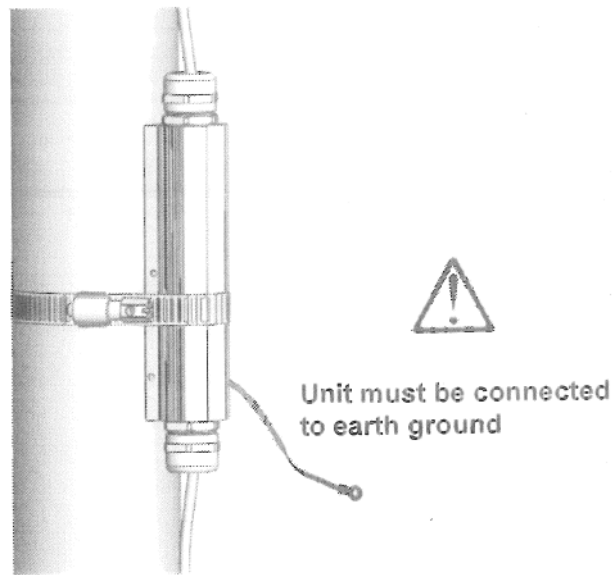


Figure 2-17 • Mounting Surge Protector on Pole

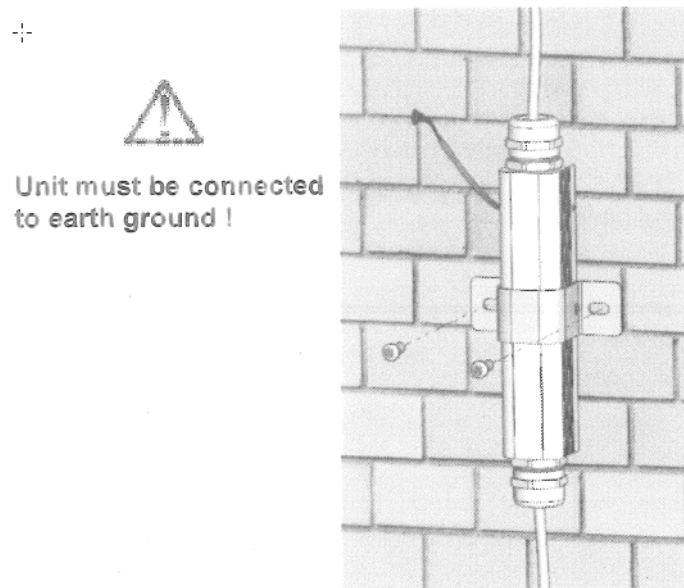


Figure 2-18 • Mounting Surge Protector on Outdoor Wall

3 – CLI Commands

This chapter describes how to use CLI commands to manage the SyncServer S80.

Using CLI Commands

The Command Line Interface (CLI), also called the ASCII command set, can be used to control the S80 from a terminal connected to the Ethernet port. See below for an overview of the command set.

S80 CLI Command Conventions

The following are conventions used for the S80 CLI command set:

- Commands are case sensitive
- **{ }** - Braces indicate more than one parameter data option. When entering options in the CLI command, enter one option from those available within the braces. Options within braces **{ }** are separated by a pipe (**|**).
- **[]** - Brackets provide information about the allowed range. The first value is the minimum, and the last value is the maximum.
- **< >** - Brackets indicate that a value must be entered.
- Bold highlights keywords in the command syntax
- Italics indicate variable options.

CLI Command Keyboard Usage

After entering a command, you may see **<enter>**. This is a prompt for you to press ENTER to execute the command that you entered.

The **?** (SHIFT+QUESTION MARK) accesses the CLI online help. It can be used at any time while typing a command (including at the prompt) to provide continuation options. These options include brief descriptions of commands, or data type, format, and range.

Command Line Format

The command line format is as follows:

`[Verb] Command [Parameter] [Data] EOL`

- Verb - the type of action to be taken with the command.
 - Set - enables you to provision a defined parameter.
 - Show - enables you to display the provisioned state of a parameter.
- Parameter - command input that defines the particular command element to be shown or modified.
- Data - the data input for the parameter.
- EOL - this parser responds only to **<CR Return>**. When the parser receives **<CR Return>**, the input is terminated, and the command line entry is processed.

Command User Levels

The S80 provides a user logon for each of three user levels, whose capabilities are described below. There is a single username for each level with usernames: "admin", "config", and "user". Factory preset passwords for each of these logons is "Microsemi".

The capability of each user level is as follows:

1. User class, with read-only permission, can change own password
2. Config class, with read-write rights, can change own password
3. Administrator class, with read-write rights, can change own password and can also change password for config and user login.

S80 Command Set

This section provides an alphabetical listing and details of all CLI commands that are available while in CLI mode. The list below provides a summary of all CLI commands .

- "show alarm"
- "show alarm-config:"
"set alarm-config:"
- "show bridge-time:"
"set bridge-time:"
- "show clock"
"set clock:"
- "set configuration:"
- "show gnss"
"set gnss"
- "show hostname"
"set hostname"
- "show inventory"
- "show ip"
"set ip"
- "show license"
"set license"
- "show lldp"
"set lldp"
- "show log"
"set log"
- "show log-config"
"set log-config"
- "logout"
- "show ntp"
"set ntp"
- "password"
- "ping"
- "reboot"
- "show snmp"
"set snmp"
- "show status"
- "upgrade"

show alarm

Use this command to display the system's standing (active) alarms and events.

Command Syntax:

```
show alarm
```

Level:

User, Config and Admin

Example:

```
S80> show alarm
```

Response:

Alarms:

```
Date-Time ID index Severity Descriptions
2017-04-17 11:48:55, 098, index = 000, ALARM SEVERITY: EVENT,GNSS PPS
failed
2017-04-17 11:48:50, 002, index = 000, ALARM SEVERITY: MINOR,Entered
time free-run state
2017-04-17 11:48:50, 002, index = 001, ALARM SEVERITY: MINOR,Entered
frequency free-run state
```

show alarm-config:

Displays the alarm configuration including alarm ID, severity, state, reporting delay and description for S80 alarms. This also displays if the alarm is transitory.

Command Syntax:

```
show alarm-config
```

Level:

User, Config and Admin

Example:

```
S80> show alarm-config
```

Response:

```
ID Severity State Delay Event/Alarm Descriptions
1 Minor enable 0 "Entered time/frequency warm-up state"
2 Minor enable 0 "Entered time/frequency free-run state"
3 Event enable 0 "Entered time/frequency fast-track state"
4 Event enable 0 "Entered time/frequency normal-track state"
5 Event enable 0 "Entered time/frequency bridging state"
6 Minor enable 0 "Entered time/frequency holdover state"
8 Minor enable 0 "Entered time/frequency holdover rec state"
21 Minor enable 0 "GNSS input assessing"
22 Event enable 0 "GNSS input time qualified"
23 Event enable 0 "GNSS input freq qualified"
24 Event enable 0 "GNSS input selected as time reference"
25 Event enable 0 "GNSS input sel as freq ref"
51 Minor enable 0 "Incompatible transport type"
91 Minor enable 0 "GNSS receiver communications failed"
92 Minor enable 0 "GNSS receiver not tracking satellite"
98 Event enable 0 "GNSS PPS failed"
99 Event enable 0 "GNSS Base Config failed"
111 Minor enable 0 "Ethernet port link down"
112 Minor enable 0 "Excessive traffic on port ETH"
137 Critical enable 0 "PLL synthesizer unlock"
139 Minor enable 0 "Temperature out of range"
152 Event enable 0 "Timeline has been changed"
153 Event enable 0 "Phase has been aligned"
155 Event enable 0 "System reboot"
156 Event enable 0 "Ethernet speed"
157 Event enable 0 "Gnss acquisition status"
179 Event enable 0 "NTP Stratum Change"
180 Event enable 0 "NTP Leap Change"
181 Event enable 0 "NTP Passive mode"
182 Event enable 0 "NTP Active mode"
183 Event enable 0 "NTP Service load limit"
```

set alarm-config:

Use this command to provision the alarm state, alarm level, and reporting delay time for the specified alarms. The reporting delay time is the amount of time from when the alarm occurred to when it is reported. The delay parameter will delay the reporting of an alarm by the configured amount.

Command Syntax:

- To provision the state of the specified alarm number:


```
set alarm-config state {alarm [1 to 183] | all} {enable | disable}
```
- To provision the level of the specified Alarm number:


```
set alarm-config level {alarm [1 to 183] | all} {2 | 3 | 4 | 5}
```

Where:

- 2 - Critical
- 3 - Major

- 4 - Minor
- 5 - Event
- To provision the reporting delay of the specified Alarm number in seconds:

```
set alarm-config delay {alarm [1 to 183] | all}value [0 to 500000]
```

Level:

Config and Admin

Example 1:

To Disable alarm:

```
S80> set alarm-config state alarm 5 disable
```

Example 2:

To set the severity level of alarm 5 to major (3):

```
S80> set alarm-config level alarm 5 3
```

Example 3:

To set the reporting delay of alarm 5 to 19 seconds:

```
S80>set alarm-config delay alarm 5 value 19
```

show bridge-time:

Use this command to display the bridging time that is used to allow the frequency servo to coast through short periods when the system does not have qualified GPS/GLONASS reference. The bridging time is in seconds.

Command Syntax:

```
show bridge-time
```

Level:

User, Config and Admin

Example:

```
S80> show bridge-time
```

Response:

```
  Bridging Time      : 300
```

Note: If the system has not qualified a time or frequency reference within the specified bridging time the system transitions into holdover mode of operation.

set bridge-time:

Provisions the amount of time, in seconds, the system remains in bridging mode before transitioning into the holdover mode of operation. The bridge-time applies to both clock-timing loop and clock-frequency. The range is 120 - 86400 seconds.

Command Syntax:

```
set bridge-time <time-value>
```

Level:

Config and Admin

Example:

```
S80> set bridge-time 300
```


show clock

This command displays the system date, time, and leapseconds in several formats.

- Current system date and time
- Accumulated leapseconds between TAI and UTC time
- Pending leapseconds

Command Syntax:

```
show clock
```

Level:

User, Config and Admin

Example:

```
S80> show clock
```

Response:

```
System time : Tue Apr 18 11:32:49 2017
Leap Seconds : 36
Leap pending : 0
```

set clock:

Provisions the user-assigned Date, Time, and accumulated leapseconds.

Command Syntax:

- To set the Date and Time:

```
set clock date-time <date-time>
```

Enter date and time in YYYY-MM-DD,HH:MM:SS format (UTC)

- To set the Accumulated leapseconds:

```
set clock leapseconds <value>
```

Level:

Config and Admin

Example 1:

```
S80> set clock date-time 2016-08-05,22:35:24
```

Example 2:

To set the accumulated leapseconds to 29 seconds (function is valid when the clock state is FREERUN):

```
S80> set clock leapseconds 29
S80> show clock
```

Response 2:

```
System time      : Mon Sep 25 10:25:22 2017
Leap Seconds     : 29
Leap pending     : 0
```

This function is not allowed when the clock state is Normal or locked.

set configuration:

Use this command to set the current configuration to factory settings. Factory removes all attributes. Use of this command results in reboot of the S80.

Command Syntax:

```
set configuration factory
```

Level:

Config and Admin

Example 1:

To set the factory configuration

```
S80> set configuration factory
```

show gnss

This command displays the GNSS port state and elevation mask value.

Command Syntax:

- To show antenna-current qualification:
`show gnss antenna-current qualification:`
- To show GNSS configuration:
`show gnss config`
- To show GNSS status:
`show gnss status`
- To show GNSS monitor info:
`show gnss monitor-info`

Level:

User, Config and Admin

Example 1:

```
S80>Show gnss config
```

Response 1a:

GNSS Configuration

```
GNSS Status : enable
elevation_mask : 7
Track-Mode : gps
Pos-Mode : auto
Antenna Delay : 0
```

```
GNSS manual position
Latitude : N37:22:43.425
Longitude : W121:55:34.815
Height : 13.7
```

Response 1b:

GNSS Configuration

```
GNSS Status      : enable
elevation_mask   : 5
Track-Mode       : gps+glonass
Pos-Mode         : Dynamic Model Automotive
Antenna Delay    : 313
```

```
GNSS manual position
Latitude      : N37:22:43.425
Longitude     : W121:55:34.815
Height       : 13.7
```

Example 2:

```
S80>Show gnss antenna-current qualification
```

Response 2:

```
Antenna-current qualification : enable
```

Example 3:

```
S80> show gnss status
```

Response 3:

```
used-sats : 0
acquisition-status : 1
no-sat-dur : 55
satellite-view : none
```

```
latitude : 0.000000
longitude : 0.000000
altitude : 0.000000
hdop : 0.000000
fix-quality : 0
pdop : 0.000000
op-mode : 1

GNSS Status :
Current Status : disqualified
Current Reference Status : fault
Current Position Status : surveying
```

```
Current Antenna Position :
Latitude : N00:00:00.00
Longitude : E000:00:00.00
Height : 0.00
```

Example 4:

```
S80> show gnss monitor-info
```

Response 4:

```
hw-aStatus: 1
hw-flags : 0x00
hw-jamInd: 83
io-rxBytes: 15140
io-txBytes: 8184404
io-parityErrs: 0
io-framingErrs: 0
io-overflowErrs: 0
survey-in-duration : 7754
survey-in-observation : 0
survey-in-position-valid : 0
survey-in-progress : 1
pdop : 99.989998
fixType : 0,NO-Fix
numSv : 0
```

set gnss

This command allows the user to set the cable delay and the elevation mask. the angle below which the satellites are not used by the system. It allows the user set the track mode for GPS only (disable) or GPS + GLONASS (enable).

This command also allows the user to set the position mode to auto (default) for stationary or dynamic. At startup, the S80 is in survey mode. For Auto position mode, the S80 fixes its position at the stationary location. For dynamic positioning mode, the S80 will "survey always" but the user can set for Automotive or Sea. (The "Air" setting is for future use and not currently supported.)

Command Syntax:

- To set the GNSS state:
`set gnss state {enable | disable}`

Note: If GNSS is disabled, the S80 still shows satellites tracked but doesn't provide valid time and freq.

- To set the GNSS elevation mask:
`set gnss elev {5 to 60}`
- To set the GNSS cable delay value:
`set gnss cable-delay {0 to 9999}`
- To set the GNSS position mode:
`set gnss posmode {auto | dynamic}`

- To set the GNSS dynamic position mode:
`set gnss posmode dynamic {0 | 1 | 2}`

where

0 = Automotive
1 = Sea
2 = Air (Not Valid Choice for S80)

- To set the GNSS track-mode state for GLONASS:
`set gnss track-mode glonass {enable | disable}`

Note: Default is enable which = GPS + GLONASS

Level:

Config and Admin

Example 1:

To enable GNSS -

```
S80> set gnss state enable
```

Example 2:

To set the GNSS elevation mask to a value of 30 -

```
S80> set gnss elev 30
```

Example 3:

To set the GNSS cable delay to a value of 200 ns

```
S80> set gnss cable-delay 200
```

Example 4

To set the position mode to auto -

```
S80> set gnss posmode auto
```

Example 5

To set the track mode to GPS only -

```
S80> set gnss track-mode glonass disable
```

show hostname

This command displays the current host name for the unit.

Command Syntax:

```
show hostname
```

Level

User, Config, and Admin

Example:

```
S80> show hostname
```

Response :

```
Host name      : S80
```

set hostname

This command sets the hostname for the unit. Hostname can contain up to 20 characters. Cli prompt, log messages, system name in LLDP frame will get changed based on hostname.

Microsemi recommends setting a hostname. In the event that IP address is lost, you will be able to identify the correct unit when retrieving the IP with LLDP utility. See "[Provisioning for LLDP](#)".

Command Syntax:

```
set hostname <hostname-string>
```

Level

User, Config, and Admin

Example 1:

To set the hostname to Sync_R52 -

```
S80> set hostname Sync_R52
```

show inventory

Use this command to display product information for the S80.

- Product Model
- Part Number
- Clei Number
- Serial Number
- Software ver
- Hardware Ver
- Fpga Ver
- Mac address
- Manufacturing status
- Pcba

Command Syntax:

```
show inventory
```

Level

User, Config, and Admin

Example:

```
S80> show inventory
```

Response:

```
product model   : SYNCSERVER-S80
paet number     : 090-15200-080
clei number     : NA
serial number   : SHZ152900027
software ver    : 1.0.0
hardware ver    : A
fpga version    : 22
mac address     : 00:b0:ae:03:e3:76
mfg status      : FT-P,ST-P
pcba            : LF17715260007,40350303628
```

show ip

Use this command to display the status and current IP settings for the Ethernet interface.

Command Syntax:

- To view configuration of the specified network interface:

```
show ip config
```

- To view status of the specified network interface

```
show ip status
```

Level:

User, Config, and Admin

Example 1:

```
S80> show ip status
```

Response 1:

```
Link encap:Ethernet HWaddr 00:50:56:b6:66:0c
inet addr:192.168.1.100 Bcast:192.168.1.1
Mask:255.255.255.0
inet6 addr: fe80::250:56ff:feb6:660c/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:38885460 errors:0 dropped:105037 overruns:0 frame:0
TX packets:23369349 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:35465171789 (35.4 GB) TX bytes:19857282436 (19.8GB)
```

Example 2:

```
S80>show ip config
```

Response 2:

```
In IPv4 mode:
IP mode : dhcp
IP state : enable

Static mode Parameters
IP address : 192.168.1.111
IP mask : 255.255.255.0
IP gateway : 0.0.0.0

IPv6 mode : static
IPv6 state : enable

Static mode Parameters
IPv6 address : 2001:db8:1234::2
IPv6 prefix : 64
IPv6 gateway : 2001:db8::1
```

set ip

Use this command to set the address mode to DHCP (IPv4 or IPv6). Use this command to provision the Host, Mask, and Gateway for IPv4 static addresses. Use this command to provision the Host, Prefix, and Gateway for IPv6 static addresses..

Note: The 128 bits of an IPv6 address are represented in 8 groups of 16 bits each. Each group is written as 4 hexadecimal digits and the groups are separated by colons (:).

For convenience, an IPv6 address may be abbreviated to shorter notations by application of the following rules, where possible.

Remove one or more leading zeroes from any groups of hexadecimal digits to either all or none of the leading zeroes. For example, the group 0042 is converted to 42.

Replace consecutive sections of zeroes with a double colon (::). The double colon may only be used once in an address, since multiple use would render the address indeterminate. RFC 5952 recommends that a double colon must not be used to denote an omitted single section of zeroes.

An example of application of these rules:

Initial address: 2001:0db8:0000:0000:ff00:0042:8329

After removing all leading zeroes in each group: 2001:db8:0:0:ff00:42:8329

After omitting consecutive sections of zeroes: 2001:db8::ff00:42:8329

Command Syntax:

- To set the IPv4 address, mask and gateway of the Ethernet interfaces

```
set ip ipv4 ip-address <addr_value> netmask <mask_value>  
gateway <gateway_value>
```

- To set the IPv6 address, prefix and gateway of the Ethernet interfaces:

```
set ip ipv6 ip-address <addr_value> prefix <prefix_value> gateway <gateway_value>
```

- To set the IP address mode to DHCP or static:

```
set ip {ipv4|ipv6} address-mode {dhcp | static}
```

- To set the IP state of the port for IPv4 or IPv6 or to restart

```
set ip {ipv4|ipv6} state {enable | disable | restart}
```

Level:

Config and Admin

Example 1:

```
S80>set ip ipv4 address-mode dhcp  
S80>Set ip ipv6 address-mode dhcp
```

Example 2:

```
S80> set ip ipv4 ip-address 192.168.1.100 mask 255.255.255.0 gateway 192.168.1.1  
S80> set ip ipv6 ip-address 2201:db8:1234::2 prefix 64 gateway 2201:db8:1234::1
```

Example 3:

```
S80> set ip ipv4 state enable  
S80> set ip ipv6 state enable
```


show license

Use this command to display the current feature-level licenses.

Command Syntax:

```
show license
```

Level:

Config and Admin

Example:

```
S80>show license
```

Response:

```
ntp-packets-capacity-500, NTP with capacity of 500 packets  
per second
```

If no license is installed, the S80 unit shows NTP packet capacity of 500 (default).

If the NTP license is installed, the S80 will indicate NTP packet capacity of 1000.

set license

Use this command to enter the 40-character license key for new features, and to delete features. The license is associated with the serial number of the system.

Command Syntax:

- To enter a license key for new features:

```
set license add <40-character license key>
```
- To delete a license key:

```
set license delete
```

The S80 will respond with all installed features that can be deleted.

Level:

Admin

Example 1:

To add a license with the 40-digit key 1234567890abcdefghij09875654321klmnopqrst:

```
S80>set license add 1234567890abcdefghij09875654321klmnopqrst
```

Note: After three unsuccessful attempts user can't add license for a block out period of 15mins. So, in that block out period even the valid license will not be accepted. After 15 min. user can add valid license successfully.

show lldp

This command displays the current LLDP state. When the LLDP state is enabled, LLDP frames are sent out by S80 every minute and no frames are sent out when the state is disabled. Any computer connected in LAN or back-to-back can know the details of S80 by capturing the LLDP frames sent by S80. The LLDP frames sent by S80 consists information about Management port IP address, MAC address, System name, System description, and Ethernet port number. This feature, which is enabled by default, provides a way for the user to discover the management port IP address of the unit as there is no serial port connection available. See [Figure 5-1](#) for an example of a LLDP frame.

Command Syntax:

```
show lldp config
```

Level

User, Config, and Admin

Example:

```
S80> show lldp config
```

Response :

LLDP State : enable

set lldp

This command sets the lldp state to enable or disable. When the LLDP state is set to enabled, LLDP frames are sent out by the S80 every minute and no frames are sent out when the state is disabled. Any computer connected in LAN or back-to-back can know the details of the S80 by capturing the LLDP frames sent by the S80. The LLDP frames sent by the S80 consist of information about Management port IP address, MAC address, System name, System description, and Ethernet port number. This feature enables the user to know the management port IP address of the unit as there is no serial port connection available.

Caution:Microsemi does not recommend disabling LLDP, because you will lose access to the method of retrieving a lost IP address. See ["Recovering Lost IP Address with LLDP Utility" on page 64](#)

Command Syntax:

```
set lldp {enable | disable}
```

Level

Config, and Admin

Example 1:

To set the LLDP state to disable -

```
S80> set lldp disable
```

Example 2:

To set the LLDP state to enable -

```
S80> set lldp enable
```

show log

This command displays the specified log file (content) from the local storage. When showing the log content, the Index parameter selects one of the seven rotated log files. The Head parameter, along with the count value, displays the specified number of events from the beginning of the file. The Tail parameter, along with the count value, displays the specified number of events from the end of the file. If the Index is zero, the current log file is displayed. In order to get the latest x entries use file-index 0 and tail x. To get the oldest x entries use file-index 6 and head x (assuming file 6 has been created and is full).

Command Syntax:

- To display the log content for a specified number of events -

```
show log {alarm-event | command | security } file-index <index-value> {head | tail}  
<number-of-lines>
```

where:

head : <1 - 1000> Show first n number of lines from the log file

tail : <1 - 1000> Show last n number of lines from the log file

file-index: <0 - 6>

- To display the diagnostics logging state -

```
show log diag state
```

Level

User, Config, and Admin

Example 1:

To display the first 10 entries of alarm log (10 lines from the head of current log)

```
S80> show log alarm-event file-index 0 head 10
```

Response 1:

```
Apr 17 11:48:55 S80 local4.notice syslog: 098, index = 000, ALARM SEVERITY: EVENT,GNSS  
PPS failed
```

```
Apr 17 11:56:52 S80 local4.notice syslog: 181, index = 000, ALARM SEVERITY: EVENT,NTP  
Passive mode  
Apr 17 12:27:52 S80 local4.notice syslog: 181, index = 000, ALARM SEVERITY: EVENT,NTP  
Passive mode  
Apr 17 12:45:55 S80 local4.notice syslog: 157, index = 002, ALARM SEVERITY:  
EVENT,NO_SATS_GT60  
Apr 17 21:54:53 S80 local4.notice syslog: 181, index = 000, ALARM SEVERITY: EVENT,NTP  
Passive mode  
.....
```

Example 2:

```
S80> show log command file-index 0 tail 10
```

Response 2:

```
Apr 18 11:32:50 S80 local5.info syslog: [user: root]: show clock  
Apr 18 11:33:44 S80 local5.info syslog: [user: root]: show alarm  
Apr 18 11:35:02 S80 local5.info syslog: [user: root]: show status  
Apr 18 11:39:05 S80 local5.info syslog: [user: root]: show snmp trapuser  
Apr 18 11:39:08 S80 local5.info syslog: [user: root]: show snmp user  
Apr 18 11:40:11 S80 local5.info syslog: [user: root]: show alarm-config  
Apr 18 11:45:02 S80 local5.info syslog: [user: root]: show log alarm-event file-index 0  
head 10  
.....
```

Example 3:

```
S80> show log diag state
```

Response 3:

```
Diagnostics Logging State      : Enable
```

set log

Use this command to provision the state of debug message sent out to the debug log.

Command Syntax:

```
set log diag state <enable|disable>
```

Level

Config, and Admin

Example:

```
set log diag state enable
```

show log-config

This command displays the configuration for log size.

Command Syntax:

```
show log-config size {alarm-event | command | security}
```

Level

User, Config, and Admin

Example 1:

```
S80> show log-config size alarm-event
```

Response 1:

```
Log size of alarm-event is : 100 kilobytes
```

Example 2:

```
S80> show log-config size command
```

Response 2:

```
Log size of command is : 100 kilobytes
```

set log-config

Use this command to provision the specified log file buffer size, the maximum number of kilobytes to be stored in the file before it is rotated. The range is 1 to 100 kilobytes, with a default of 100 kilobytes.

Command Syntax:

```
set log-config size {alarm-event | command | security} <size-value>
```

Level

Config, and Admin

Example 1:

To set the alarm-event log size to 30 kilobytes -

```
S80> set log-config size alarm-event 30
```

Example 2:

To set the command log size to 50 kilobytes -

```
S80> set log-config size command 50
```

logout

This command terminates the current user connection.

Command Syntax:

```
Logout
```

Level:

User, Config, and Admin

Example:

```
S80>logout
```

show ntp

This command displays the current configuration and status of NTP for the unit.

Command Syntax:

```
show ntp {config | status }
```

Example 1:

```
S80> show ntp config
```

Response 1:

```
NTP status: Enabled
IP version: IPv4
TTL : 64
DSCP : 46
Max Packets: 500
Alarm Threshold: 100
```

Example 2:

```
S80> show ntp status
```

Response 2:

```
NTP STATUS
Port enabled: yes
IP version: 4
Mode : server
Reference ID: GNSS
Leap status: no warning
Stratum level: 16
Root dispersion: 4294.967296 sec
Packet load: 0%
```

set ntp

Use this command to set the DSCP, TTL, alarm threshold , IP version, state parameters of NTP for the unit. The alarm threshold indicates the NTP service load (percentage of capacity) at which a system message (#183) about the event will be generated.

Command Syntax:

- To set the DSCP value -

```
set ntp dscp <value>
```

- To set the TTL value -
`set ntp ttl <value>`
- To set the Alarm Threshold value -
`set ntp alarmthresh [1-100]`
- To set the IP version to IPv4 or IPv6 -
`set ntp ipver {4 | 6}`
- To enable or disable NTPset
`ntp state {enable | disable}`

Level : Config, and Admin

Example 1:

To set the NTP DSCP value to 45 -:

```
S80>set ntp dscp 45
```

Example 2:

To set the NTP TTL value to 65 -:

```
S80>set ntp dscp 65
```

password

Use this command to modify the password of the admin, config and user.

Command Syntax:

```
Password [admin | config | user]
```

Level :

User, Config, and Admin

Note: Each user level can change its own password. Additionally, "admin" user can modify "config" and "user" passwords.

Example:

```
S80> password user
```

Response:

```
Changing password for user
New password:
Retype password
Password for user changed by user
S80>
```

ping

Use this command to ping the host specified by the address (xxx.xxx.xxx.xxx) and display ping statistics from Ethernet.

Command Syntax:

- To ping an IPv4 address:
`ping ipv4 <ipv4 address>`
- To ping an IPv6 address:
`ping ipv6 <ipv6 address>`

Level:

User, Config, and Admin

Example 1:

```
S80> ping ipv4 address 192.168.201.11
```

Response 1:

```
Ping 192.168.201.11 SUCCESS
```

Example 2:

```
S80> ping ipv6 address 2000:2222:2222:2222:0:0:1:1
```

Response 2:

```
ping 2000:2222:2222:2222:0:0:1:1 SUCCESS
```

Example 3:

```
S80> ping ipv4 10.60.132.71
```

Response 3:

```
Ping 10.60.132.71 FAILED
```

reboot

This command restarts the S80 system. Using this command can cause a loss of outputs.

Command Syntax:

reboot

Level : Admin only

Example:

Reboot

Response :

```
S80> reboot
System is going to reboot
The system is going down NOW!
Sent SIGTERM to all processes
TERM
Sent SIGKILL to all processes
Requesting systRestarting system.
U-Boot 2010.03-00002-gb955030 (May 26 2015 - 08:55:58)
CPU : SmartFusion2 SoC (Cortex-M3 Hard IP)
Freqs: CORTEX-M3=166MHz,PCLK0=83MHz,PCLK1=83MHz
Board: Falcon Rev 1A, www.microsemi.com
SW : Rev 1.2.8
DRAM: 128 MB
In: serial
Out: serial
Err: serial
Net: RWI_MAC
Hit any key to stop autoboot: 0
```

show snmp

Use these commands to display the SNMP Manager assigned to the agent, all assigned users (username only), and the SNMP trap version and SNMP trap user.

Command Syntax:

- To show SNMP Manager assignment:
`show snmp manager`
- To show SNMPv3 User Configuration:
`show snmp user`
- To show SNMP trap user information:
`show snmp trapuser`
- To show SNMP v2-community information:
`show snmp v2-community`
- To show SNMP trap version information:
`show snmp trapversion`
- To show SNMP v2 state:
`show snmp state-v2`

Example 1:

```
S80> show snmp manager
```

Response 1:

```
SNMP engineID      : 0x80001f880300b0ae03e376
Trap-IP            : 192.168.1.100
```

Example 2:

```
S80> show snmp trapuser or user
```

Response 2:

```
SNMPv3 trap user name : testteam
security level         : auth
Authentication Type    : MD5
Authentication Key     : *****
```

Example 3:

```
S80> show snmp trapversion
```

Response 3:

```
Trap version          : SNMPv3
SNMP engineID         : 0x80001f880300b0ae03e376
Trap-IP               : 192.168.1.100
```

Example 4:

```
S80> show snmp state-v2
```

Response 4:

```
SNMP v2 state        : enable
```

Example 5:

```
S80> show snmp v2-community
```

Response 5:

```
SNMPv2c trap community : test
```

set snmp

Use the `set snmp` command to configure the parameters for SNMP. The "?" help can be used to display these parameters, brief descriptions, and value ranges.

Command Syntax:

- To set the SNMP trap version to v2c or v3.
`set snmp trapversion {2 | 3}`
- To add an SNMP trap user or user:
`set snmp add trapuser <name> securelvl {noauth | auth | priv}`
- To enable or disable the SNMP v2 trap:
`set snmp state-v2 {enable | disable}`
- To add an SNMP manager:
`set snmp add manager <ip-address>`

Note: A single snmp manager can be configured

- To add v2-community
`set snmp add v2-community <string>`
- To delete an SNMP trapuser:
`set snmp delete trapuser <name>`
- To delete an SNMP manager:
`set snmp delete manager <ip-address>`

Example 1:

```
S80> set snmp trapversion 3
```

Example 2:

```
S80> set snmp add manager 192.168.1.100
```

Example 3:

```
S80> set snmp add v2-community testteam
```

Example 4:

```
S80> set snmp add trapuser microsemi securelvl priv
```

Response 4:

```
Enter SNMPv3 user security details :
```

```
minlevel          : noauth or auth or priv
authentication     : MD5 or SHA
authentication key : [Only chars {a-z, A-Z, 0-9, ! ( ) - _ . ? ~ * @ ^ + = : / %} are
accepted]
privacy protocol   : DES or AES
privacy key        : [Only chars {a-z, A-Z, 0-9, ! ( ) - _ . ? ~ * @ ^ + = : / %} are
accepted]
```

```
Enter securitylevel: auth
user=microsemi, level=auth
Authentication protocol (MD5 or SHA) : MD5
Authentication key : 12345678
```

Example 5:

```
S80> set snmp delete trapuser microsemi
```


show status

Use this command to display the following system status information:

- Assigned System Name
- System Date And Time
- System Uptime
- Time Traceable
- Clock Frequency Status
- Clock Timing Status
- Frequency State Duration in Minutes
- Time State Duration in Minutes
- Currently Selected Timing reference Input
- Currently Selected Frequency reference Input
- Frequency Offset
- Phase Offset Value (Valid in fast-lock and normal states)
- System Frequency PQL

Command Syntax:

```
show status
```

Level:

User, Config and Admin

Example:

```
S80> show status
```

Response:

```
System name : S80
System Date and time : 2017-04-18,11:35:01
Time Traceable : NO
System uptime (sec) : 13342
Clock Frequency Status : FREERUN
Frequency State Duration (min) : 216
Clock Time Status : FREERUN
Time State Duration (min) : 216
Currently Selected Frequency reference : NONE
Currently Selected Timing reference : NONE
Frequency Offset (MDEV ppb) : UNKNOWN
Phase Offset (TDEV ns) : UNKNOWN
Active Alarms : 3
System Frequency PQL : 11
Last Config time : 2017-04-17,12:45:46
```

upgrade

Use this command to upgrade S80 firmware with the specified filename. The user must provide the path where the firmware file is stored. The upgrade will take approximately 7 minutes to complete.

Command Syntax:

```
S80> upgrade image <Path of firmware file>:<Server IP>:<User Name>
/XXX/file.tar.gz:192.168.1.2:S80
```

Example:

To upgrade the S80 with a firmware file /XXX/file.tar.gz at Server IP 192.168.1.2, User Name = "S80 -

```
S80> upgrade image /XXX/file.tar.gz:192.168.1.2:s80
```

WARNING: Do not remove the POE cable during the firmware upgrade. Doing so can lead to FPGA corruption.

4 – Configuration

This chapter describes how to configure the SyncServer S80 with CLI via SSH. It also describes how to test the S80 unit before deployment.

Overview

- "Establishing a Connection to the S80"
- "Configuring the IP Address"
 - "DHCP Mode"
 - "Static IP Mode"
- "Managing the User Access List"
- "Setting GNSS Parameters"
- "Provisioning NTP Parameters"
- "Setting the System Date and Time"
- "Configuring Alarms"
- "Provisioning for SNMP"
- "Provisioning for LLDP"

Establishing a Connection to the S80

To set up and manage the S80 with a terminal or a computer with terminal emulation, you must establish an SSH connection.

Note: The S80 default IP address is 192.168.100.11, the subnet mask is 255.255.255.0, and the gateway address is 0.0.0.0 (no gateway).

1. Establish an SSH connection from your computer to the IP address assigned to the S80.
2. Type your user name and press Enter.
3. Type your assigned password and press Enter. The system prompt appears.

Configuring the IP Address

The S80 supports static as well as dynamically allocated IP addresses on the Ethernet port. The dynamically allocated address requires a connection to a DHCP server. When provisioning the unit for static IP address, you can set the Host address, Mask address, and Gateway address, or you can set the addresses to the factory default.

DHCP Mode

You can either enable or disable DHCP mode. Use the following procedure to configure the S80 to enable DHCP on the MGMT port.

Example

1. Login at the Admin or Config-user level (see ["Logging In" on page 53](#)).
2. Type `set ip ipv4 address-mode dhcp` and press **Enter**.

Caution: If you set the mode to DHCP you should have a way to find out the assigned IP address. There is no way to get it from the S80 unit unless you're using LLDP.

Static IP Mode

Use the following procedures to configure the S80 Ethernet parameters (IP Address, Subnet Mask or Prefix, and Gateway Address). The IT department or site administrator for your location can recommend specific addresses for these parameters. Use the dotted decimal format xxx.xxx.xxx.xxx to enter an IPv4 address parameters with the following commands:

Example - IPv4

1. Type `set ip ipv4 address-mode static` and press Enter.
2. Type `set ip ipv4 ip-address address 192.168.0.10 netmask 255.255.255.0 gateway 192.168.0.254` and press Enter.
3. Type `set ip ipv4 state restart` and press Enter.

Example - IPv6

1. Type `set ip ipv6 address-mode static` and press Enter.
2. Type `set ip ipv6 ip-address address 2001:db8:1234::2 prefix 64 gateway 2001:db8::1` and press Enter.
3. Type `set ip ipv6 state restart` and press Enter.

Managing the User Access List

The S80 supports three users. See [Table 4-1](#) for these user names, security levels and descriptions. Each CLI command includes a description of which security levels are allowed to use that particular command.

Table 4-1 • User Names, Levels and Access

User Name	Security Level	Description
user	User	Users can edit the "user" password, use the "show" commands to display information, or access any command at the User security level.
config	Config	Users can edit the "config" password. Users are allowed to change configuration and issue User-level commands.
admin	Admin	Users are allowed to download firmware and issue commands at any level. The admin user can modify own password as well as the config and user password.

Caution: If the admin password is changed from the "Microsemi" factory default, and subsequently forgotten, contact Microsemi support for password recovery.

Logging In

Use the following procedure to log in to the system with the Admin name/level.

1. Ensure that the S80 is connected to a LAN.
2. SSH from your computer to the assigned IP address.
3. Type your user name and press Enter. The system prompts for a password.
4. Type your password and press Enter. The system prompt appears.

Note: The default user name is "admin" and the default password is "Microsemi". To avoid unauthorized access, you should change from the default password.

Changing a User's Password

Use the following procedure to change a user's password.

For a description of user access levels, see [Table 4-1](#).

1. Login with the Admin name/level (see Logging In, on page 215).
2. For admin, type `password admin` and press Enter.
For config, type `password config` and press Enter.
For user, type `password user` and press Enter.
3. Follow the prompts. Change the password when prompted.

Note: User passwords can consist of alphanumeric characters, "~", "*", "(", ")", "!", "?", "-", "_", and "." with a minimum of 6 characters and a maximum of 8 characters.

Setting GNSS Parameters

For GNSS reference, you can specify the cable delay and the elevation mask. the angle below which the satellites are not used by the system. You can set the track mode for GPS only (disable) or GPS + GLONASS (enable).

Note: It is important the cable delay be configured with the proper value. This can be determined from the cable length.

Example

To provision the S80 for a GNSS reference with a cable delay of 315 ns, mask value of 30, with GLONASS track-mode enabled (GPS + GLONASS), and dynamic position mode set to 0 (automotive), perform the following steps:

1. Login at the Admin or Config-user level.
2. Type `set gnss cable-delay 315` and press Enter.
3. Type `set gnss mask 30` and press Enter.
4. Type `set gnss track-mode glonass enable` and press Enter.
5. Type `set gnss posmode dynamic model 0` and press Enter.
6. Type `show gnss status` and press Enter to verify that GNSS is enabled.

Provisioning NTP Parameters

Example

To enable NTP for IPv4, with a TTL value of 70, a DSCP value of 45, and an alarm threshold of 90:

1. Login at the Admin or Config-user level.
2. Type `set ntp state enable` and press Enter
3. Type `set ntp ipver 4` and press Enter
4. Type `set ntp ttl enable 70` and press Enter
5. Type `set ntp dscp 45` and press Enter
6. Type `set ntp alarmthresh 90` and press Enter.

Setting the System Date and Time

The S80 Time of Day can be set either by an external source, or manually with the “set clock” command. You can only set the time and date if the S80 is not obtaining time from an external source of time (GNSS) or if the time has never been obtained from a time reference.

Example

Enter date and time in YYYY-MM-DD,HH:MM:SS format (UTC).

1. Login at the Admin or Config-user level.
2. Type `set clock date-time <date-time>` and press Enter. Enter the value in format yyyy-mm-dd,hh:mm:ss.

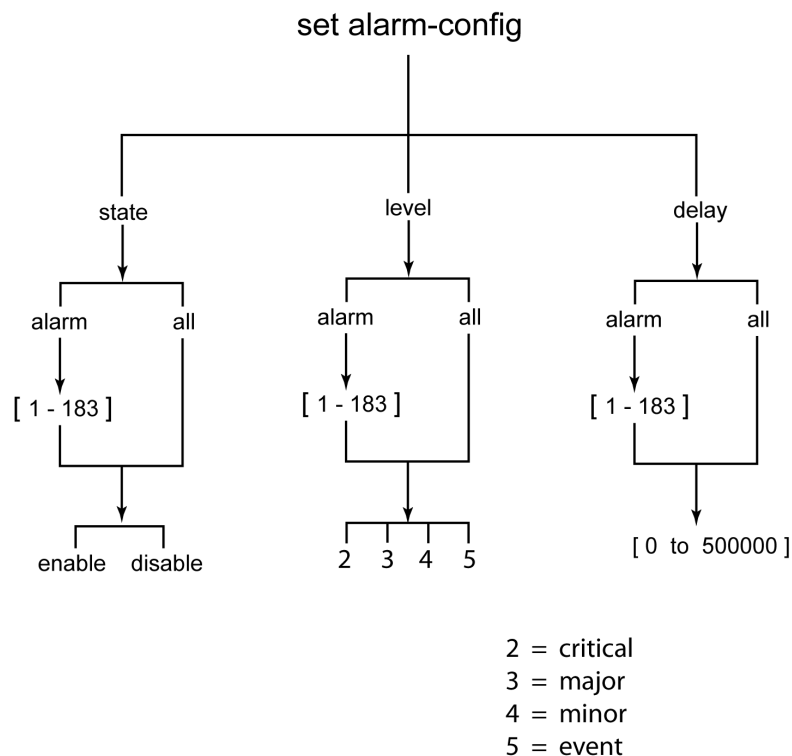
Configuring Alarms

This section describes the commands used to provision and manage alarms in the S80. The user can provision the alarms to be enabled or disabled and set thresholds to turn the alarms on and off, as shown in [Figure 4-1](#). For a list of all alarms, “[System Messages](#)” on [page 61](#).

Software commands allow you to perform the following:

- Provision the severity level
- Provision the alarm (enable or disable)
- Show current alarm settings
- Show current alarms
- Display alarm status

Figure 4-1 • Set Alarm-Config Command Hierarchy



Disabling Specific Alarms

The Set Alarm-Config command allows you to enable or disable specified alarms.

Example

To disable the GNSS antenna open-circuit alarm (alarm #33), enter the following:

1. Login at the Admin or Config-user level (see Logging In, on page 215).
2. Type `set alarm-config state alarm 33 disable` and press Enter.

Showing Current Alarm Settings

The Show Alarm-Config command displays the set and clear alarm thresholds for every alarm type.

Example

To display the configuration for all alarm types, enter the following:

- Type `show alarm-config` and press Enter.

Showing Current Alarms

The Show Alarm command displays all current alarms.

Example

To display a list of all current alarms enter the following:

- Type `show alarm` and press Enter.

Provisioning for SNMP

The Simple Network Management Protocol (SNMP) is an application layer protocol that allows you to manage network devices. SNMP is based on a client-server query-response mode that requires an Ethernet connection. A manager application (software installed on a computer) is the client generating the queries, and an agent (software on the S80) is the server generating responses. The S80 SNMP supports traps and the MIB-II system MIB.

S80 supports SNMPv2c and SNMPv3. SNMPv3 provides additional security features not available in SNMPv2c. In addition to the functions of SNMPv2c, SNMPv3 allows user and trapuser levels that are based on authentication and privacy settings. The authentication algorithm is either HMAC-SHA-1-96 or MD5, with a 20-character key. The privacy settings are based on either the CBC-DES or AES encryption standard, with a 16-character key. All keys are uppercase.

Port 161 is the port of standard SNMP interactive communications and port 162 is the trap port.

SNMP functionality is provisioned on the S80 using the CLI command “set snmp” (see Figure 4-30).

Each alarm trap OID from the S80 represents a unique alarm.

Each container contains the following sub-info in its own OID:

- Alarm/Event ID
- Date&Time
- Severity
- Alarm/Event Description
- Index
- Alarm Action
- Sequence Number

The alarm OIDs are under 1.3.6.1.4.1.9070.1.2.5.7.3.1.2.

The Alarm/Event ID element should be used to determine which alarm or event was generated. Alarm and Event IDs are listed in Appendix A, System Messages.

Adding or Deleting a Manager IP Address

Use the “set snmp add manager” command to add a manager IP address. Use the “set snmp delete manager” command to delete a manager IP address. The S80 will support a single manager IP address.

Example:

To add the SNMP manager IP address 192.100.100.100:

- Type `set snmp add manager 192.100.100.100` then press Enter.

Provisioning to Generate v2 Traps

Use the `set snmp trapversion` command to provision the trap version to v2.

By default, the S80 will generate v2 traps.

Example:

- Type `set snmp trapversion 2` then press Enter.

Provisioning to Generate v3 Traps

Use the `set snmp trapversion` command to provision the trap version to v3.

Example

- Type `set snmp trapversion 3` then press Enter.

Adding and Removing v2 Communities

Use the `set snmp add v2-community` command to add a SNMP v2 community. Use the `set snmp delete v2-community` command to remove an existing SNMP v2 community. The S80 will support a maximum of ten v2 communities.

Note: To use v2 communities, the v2 state must be set to Enable using the command `set snmp state-v2 enable`.

SNMP communities "public" and "private" are included by default and cannot be removed. If including these communities is undesirable then using SNMPv3 alone and disabling SNMPv2 is required.

Example

To add a v2 community named "tech27", with a security level of "read-only" and remove an existing v2 community named "bob321":

1. Type `set snmp add v2-community tech27 securelvl read-only` then press Enter.
2. Type `set snmp delete v2-community bob321` then press Enter.

Adding and Removing SNMP v3 Users

SNMPv3 provides additional security features not available in SNMPv2c. In addition to the functions of SNMPv2c, SNMPv3 allows user and trapuser levels that are based on authentication and privacy settings. The authentication algorithm is either HMAC-SHA-1-96 or MD5, with a key of up to 32 characters in length. The privacy settings are based on either the CBC-DES or AES encryption standard, with a key of up to 32 characters in length. All keys are uppercase.

Use the `set snmp add user` command to add a v3 user. Use the `set snmp delete user` command to remove an existing v3 user. The S80 will support a maximum of ten v3 users.

Example - Add User

To add a user named "test12", with a security level of "priv", with a 20-character MD5 authentication key "123456789ABCDEFGHJK" and a 16-character DES privacy key "ABCDEFG123456789":

1. Type `set snmp add user test12 securelvl priv` then press Enter.
2. Enter MD5 at the authentication protocol prompt.
3. Enter 123456789ABCDEFGHJK at the authentication key prompt.
4. Enter DES at the privacy protocol prompt.
5. Enter ABCDEFG123456789 at the privacy key prompt.

Note: Do not use spaces within keys.

Only characters {a-z,A-Z,0-9,! () - _ . ? ~ * @ ^ + = : / %} are accepted for SNMP authentication or privacy keys.

Example - Remove User

To remove an existing user named "dave123", type `set snmp delete user dave123` then press Enter.

Adding and Removing SNMP v3 Trap Users

Use the `set snmp add trapuser` command to add a v3 trap user. Use the `set snmp delete trapuser` command to remove an existing v3 trap user. The S80 will support a maximum of 3 v3 trap users.

Note: In order to access trap information, a trap user must also be added as a user. The same name, authentication protocol, authentication key, privacy protocol, and privacy key must be used for both the user and trap user.

Example - Add Trap User

To add a trap user named "test12" with a security level of "priv", with the 20-character MD5 authentication key "123456789ABCDEFGHJK" and 16-character DES privacy key "ABCDEFG123456789":

1. Type `set snmp add trapuser test12 securelvl priv` then press Enter.
Enter SNMPv3 user security details :

```
minlevel      : noauth or auth or priv
authentication : MD5 or SHA
authentication key : [Only chars {a-z, A-Z, 0-9, ! ( ) - _ . ? ~ * @ ^ + = : / %} are
accepted]
privacy protocol : DES or AES
privacy key      : [Only chars {a-z, A-Z, 0-9, ! ( ) - _ . ? ~ * @ ^ + = : / %} are
accepted]
```

```
Enter securitylevel: priv
user=test12, level=priv
```

2. Enter **MD5** at the authentication protocol prompt.
Authentication protocol (MD5 or SHA) : MD5
3. Enter **123456789ABCDEFGHIJK** at the authentication key prompt.
Authentication key : 123456789ABCDEFGHIJK
4. Enter **DES** at the privacy protocol prompt.
5. Enter **ABCDEFGHI123456789** at the privacy key prompt.

Example - Remove Trap User

To remove an existing trapuser named "dave123", type set snmp delete trapuser dave123 then press Enter.

Provisioning for LLDP

The Link Layer Discovery Protocol (LLDP) is a vendor-neutral link layer protocol in the Internet Protocol Suite used by network devices for advertising their identity, capabilities, and neighbours on an IEEE 802 local area network, principally wired Ethernet.

LLDP information is sent by devices from each of their interfaces at a fixed interval, in the form of an Ethernet frame. Each frame contains one LLDP Data Unit (LLDPDU). Each LLDPDU is a sequence of type-length-value (TLV) structures.

The Ethernet frame used in LLDP has its destination MAC address typically set to a special multicast address that 802.1D-compliant bridges do not forward. Other multicast and unicast destination addresses are permitted. The EtherType field is set to 0x88cc.

Each LLDP frame starts with the following mandatory TLVs: Chassis ID, Port ID, and Time-to-Live. The mandatory TLVs are followed by any number of optional TLVs. The frame ends with a special TLV, named end of LLDPDU in which both the type and length fields are 0.

LLDP Implementation in S80

A module in the S80 sends LLDP frames every minute so that any computer connected to the LAN can view the information of S80. This feature is useful for outdoor units where no serial connection exists to find out IP address. The LLDP frames sent by S80 consist of following information:

- IP address
- MAC address
- System name
- System description
- Ethernet port number

A CLI command is provided to enable or disable sending LLDP frames, as shown in Examples 1 and 2 below. Another command is provided to view the current status of the LLDP module (enabled/disabled), as shown in Example 3 below.

Example 1:

To set the LLDP state to disable -

```
S80> set lldp disable
```

Example 2:

To set the LLDP state to enable -

```
S80> set lldp enable
```

Example 3:

```
S80> show lldp config
```

Response 3:

```
LLDP State      : enable
```

Below is a screenshot from Wire Shark which shows typical LLDP frames and the information contained in the frames..

```
Link Layer Discovery Protocol
  ▷ Chassis Subtype = Network address, Id: 10.60.132.135
  ▷ Port Subtype = MAC address, Id: 00:b4:a5:33:e3:a6
  ▷ Time To Live = 240 sec
  ▷ Port Description = eth0
  ▷ System Name = S80
  ▲ System Description = ProductModel=S80      SerialNumber=SHZ152900031
    0000 110. .... .... = TLV Type: System Description (6)
    .... ...0 0011 0000 = TLV Length: 48
    System Description: ProductModel=IGM-1100i SerialNumber=SHZ152900031
  ▲ Management Address
    0001 000. .... .... = TLV Type: Management Address (8)
    .... ...0 0000 1100 = TLV Length: 12
    Address String Length: 5
    Address Subtype: IPv4 (1)
    Management Address: 10.60.132.135
    Interface Subtype: ifIndex (2)
    Interface Number: 2
    OID String Length: 0
  ▷ End of LLDPDU
```


5 – Troubleshooting

This chapter provides troubleshooting information for the SyncServer S80.

Status of the S80 can be determined by the CLI "show status" command and SNMP trap messages. The SNMP trap manager IP address and associated settings must be configured with the "set snmp" command before SNMP traps are available.

System Messages

Table 5-1 • S80 System Messages

Description	Event ID	Default Severity	Transient	Message Text	Corrective Action
Entered time/frequency warm-up state	001	Minor	No	Entered time/frequency warm-up state	No action required
				Transitioned out of warm-up state	No action required
Entered time/frequency free-run state	002	Minor	No	Entered time/frequency free-run state	No action required
				Transitioned out of free-run state	No action required
Entered time/frequency fast-track state	003	Event	No	Entered time/frequency fast-track state	No action required
				Transitioned out of fast-track state	No action required
Entered time/frequency normal-track state	004	Event	No	Entered time/frequency normal-track state	No action required
				Transitioned out of normal-track state	No action required
Entered time/frequency bridging state	005	Event	No	Entered time/frequency bridging state	No action required
				Transitioned out of bridging state	No action required

Table 5-1 • S80 System Messages (continued)

Description	Event ID	Default Severity	Transient	Message Text	Corrective Action
Entered time/frequency holdover state	006	Minor	No	Entered time/frequency holdover state Transitioned out of holdover state	<ul style="list-style-type: none"> Check input references Check configuration for correct reference selection Check reference status Check ref configuration for Priority values. No action required
Entered time/frequency holdover recovery state	008	Minor	No	Entered time/frequency holdover recovery state Transitioned out of holdover recovery state	No action required No action required
GNSS input assessing	021	Minor	No	GNSS input assessing	<ul style="list-style-type: none"> If this persists for > 1hr check input reference. For GNSS check signal quality.
GNSS input time qualified	022	Event	No	GNSS input time qualified	No action required
GNSS input frequency qualified	023	Event	No	GNSS input frequency qualified Input frequency qualified	No action required
GNSS input selected as time reference	024	Event	Yes	GNSS input selected as time reference n/a	No action required
GNSS input selected as frequency reference	025	Event	Yes	GNSS input sel as frequency reference	No action required
Incompatible transport type	051	Minor	No	Incompatible transport type	

Table 5-1 • S80 System Messages (continued)

Description	Event ID	Default Severity	Transient	Message Text	Corrective Action
GNSS receiver communications failed	091	Minor	No	GNSS receiver communications failed GNSS receiver communications failure cleared	<ul style="list-style-type: none"> Reboot If problem persists call SGS for support. No action required
GNSS receiver not tracking satellite	092	Minor	No	GNSS receiver not tracking satellite GNSS receiver not tracking satellite cleared	<ul style="list-style-type: none"> Check Antenna installation Check if Antenna cable is connected properly. Installation should conform to the guidelines as described in Ch. 2.. No action required
GNSS PPS failed	98	Event	No	GNSS PPS failed	
GNSS Base Config failed	99	Event	No	GNSS Base Config failed	
Ethernet port link down	111	Minor	No	Ethernet port link down Ethernet port link down cleared	
Excessive traffic on port	112	Minor	No	Excessive traffic on port Excessive traffic cleared on Ethernet port	<ul style="list-style-type: none"> Check traffic level on network Check for intrusion attempts. Check broadcast traffic. No action required

Table 5-1 • S80 System Messages (continued)

Description	Event ID	Default Severity	Transient	Message Text	Corrective Action
PLL synthesizer unlock	137	Critical	No	PLL synthesizer unlock PLL unlock cleared	<ul style="list-style-type: none"> If alarm persists power cycle/reboot Call SGS support if it persists after reboot/power cycle. No action required
Temperature out of range	139	Minor	No	Temperature out of range Temperature out of range cleared	Check your operating environment. No action required
Time Line has been Changed	152	Event	Yes	Time Line has been Changed n/a	n/a n/a
Phase Has Been Aligned	153	Event	Yes	Phase Has Been Aligned n/a	n/a n/a
System reboot	155	Event	No	System reboot	n/a
Ethernet Speed	156	Event	No	Ethernet Speed	
GNSS Acquisition status Changed	157	Event	No	GNSS Acquisition status Changed	
NTP Stratum Change	179	Event	No	NTP Stratum Change	
NTP Leap Change	180	Event	No	NTP Leap Change	
NTP Passive Mode	181	Event		NTP Passive Mode	
NTP Active Mode	182	Event		NTP Active Mode	
NTP Service Load Limit	183	Event		NTP Service Load Limit	

Recovering Lost IP Address with LLDP Utility

The LLDP feature, which is enabled by default, provides a way for the user to discover the management port IP address of the unit since there is no serial port connection available. When the LLDP state is enabled, LLDP frames are sent out by the S80 every minute. The LLDP frames sent by S80 consist of information about Management port IP address, MAC address, System name, System description, and Ethernet port number. Any computer connected in LAN or back-to-back can know these details of the S80 by capturing these LLDP frames using network packet analyzer software, such as Wireshark.

Figure 5-1 show a typical captured LLDP frame, from which the IP address can be recovered.

Figure 5-1 • LLDP Frame Captured by Network Pack Analyzer..

```

Link Layer Discovery Protocol
  > Chassis Subtype = Network address, Id: 10.60.132.135
  > Port Subtype = MAC address, Id: 00:b4:a5:33:e3:a6
  > Time To Live = 240 sec
  > Port Description = eth0
  > System Name = S80
  ▲ System Description = ProductModel=S80      SerialNumber=SHZ152900031
    0000 110. .... = TLV Type: System Description (6)
    .... ...0 0011 0000 = TLV Length: 48
    System Description: ProductModel=IGM-1100i SerialNumber=SHZ152900031
  ▲ Management Address
    0001 000. .... = TLV Type: Management Address (8)
    .... ...0 0000 1100 = TLV Length: 12
    Address String Length: 5
    Address Subtype: IPv4 (1)
    Management Address: 10.60.132.135
    Interface Subtype: ifIndex (2)
    Interface Number: 2
    OID String Length: 0
  > End of LLDPDU
  
```

Returning the SyncServer S80

You should return the equipment to Microsemi only after you have exhausted the troubleshooting procedures described earlier in this chapter and Microsemi FTD Services and Support has advised you to return the unit.

Note: Please retain the original packaging for re-shipping the product. If the original packaging is not available, contact Microsemi FTD Services and Support for assistance.

Repacking the Unit

Return all units in the original packaging. If the original packaging is not available, contact Microsemi FTD Services and Support. Use standard packing procedures for products being returned for repair to protect the equipment during shipment. Connectors should be protected with connector covers or the equipment should be wrapped in plastic before packaging.

Equipment Return Procedure

To return equipment to Microsemi for repair:

1. Call Microsemi FTD Services and Support at 888-367-7966 (toll-free in USA only), 408-428-7907, or +49 700 3288 6435 in Europe, Middle East,

or Africa to obtain a return material authorization number (RMA) before returning the product for service.

You can request an RMA on the internet at
www.microsemi.com/ftdsupport

Retain the assigned RMA number for future reference.

2. Provide a description of the problem, product item number, serial number, and warranty expiration date.
3. Provide the return shipping information (customer field contact, address, telephone number, and so forth.)
4. Ship the product to Microsemi, transportation prepaid and insured, with the Return Material Authorization (RMA) number and item numbers or part numbers clearly marked on the outside of the container to the address given with the RMA.

Repaired equipment is returned to you with shipping costs prepaid by Microsemi.

User's Guide Updates

When this manual is updated the updated version will be available for downloading from Microsemi's internet web site. Manuals are provided in PDF format for ease of use. After downloading, you can view the manual on a computer or print it using Adobe Acrobat Reader.

Manual updates are available at:

www.microsemi.com/ftdsupport

Note: If you are downloading a product manual for the first time, you will need to register with Microsemi for a username and password. If you are currently registered, login and download the manual update.

Contacting Technical Support

See "Product Support" on page 73 for details about contact information.

Appendix A – Specifications and Factory Defaults

This chapter describes the specifications and factory defaults for the SyncServer S80.

Specifications

Mechanical

Table A-1 • Mechanical Specifications

Parameter	Specification
Mounting	Roof
Diameter	6.0 inches (15.24 cm)
Height	6.0 inches (15.24 cm)
Weight	1.5 lbs. (0.68 kg)

Environmental

Table A-2 • Environmental Specification

Parameter	Specification
Operating Temperature	-40° to 70° C
Storage Temperature	-40° to 85° C
Transportation Temperature	-40° to 85° C
Operating Humidity	5 to 100%, with condensation

Power

Table A-3 • Power Specification

Parameter	Specification
Input Class	PoE Class 3 input
Power Consumption	< 12.5 Watts

Compliance & Certifications

Table A-4 • Compliance Specifications and Certifications

Parameter	Specification
Safety Certifications	UL60950-1,-22/CSA C22.2, IEC60950- 1:2005(2nded)/AM 1:2009/AM 2:2013, EN60950-1: 2ed. 2006/A11:2009/A1:2010/A12:2011/A2:2013
EMC Compliance	<ul style="list-style-type: none"> • EN 300386 v1.6.1; • CISPR 32: 2102, Class B limits; • CISPR 24: 2010; • EN 55032: 2012/AC2013, Class B limits; • EN 55024: 2010; • FCC Title 47 Part 15, ICES-003, AS/NZS, Class B limits; • VCCI V-3/2015.04/V-4/2012.04, Class B limits; • KN 55032/35, Class B limits • ITU-K.20¹
EMC Certifications	<ul style="list-style-type: none"> • EMC Directive 2014/30/EU Class B, • Red Directive 2014/53/EU pending • VCCI, • AS/NZS • BSMI pending
Environmental	<ul style="list-style-type: none"> • ETSI 300 019-2-1 Storage Tests Class T1.2 • ETSI 300 019-2-2 Transportation Tests Class T2.3 • ETSI 300 019-2-4 Operational Tests Class T4.1E • 6.1 Salt Fog Exposure • 6.2.2 Seismic under GR-63 and ANSI T1-329 • RoHS 2 Directive 2011/65/EU • WEEE Directive 2012/19/EU • IEC 60529 Ed. 2.2 2013, IP66 Compliant

1. Non-Compliant K.20 table 4b test #4.3.1 under 160 ohm test. All seven other resistor values pass.

Clock Performance

The S80 clock system is compatible with a Type I Clock as defined in G.812.

Table A-5 • Clock Performance Specification

Parameter	Specification
Oscillator Type	DOCXO (Double Ovenized OCXO)
Temperature Stability	<2 ppb
Steady State Aging Rate	0.2 ppb per day
Accuracy	<100 ns to UTC (locked GPS with full sky view)
Holdover	400 microseconds per day

Inputs

Table A-6 • Input Specification

Parameter	Specification
GNSS	<ul style="list-style-type: none"> • 72-channel GPS/GLONASS receiver, time traceable to UTC • <100 nanoseconds RMS to UTC (USNO) • Operational modes <ul style="list-style-type: none"> – Static: Fixed location, non-moving – Dynamic: <ul style="list-style-type: none"> Automotive (altitude 6000 m, speed 60 miles/hour) Sea (altitude 500 m, speed 45 miles/hour)

Outputs

Table A-7 • Output Specification

Parameter	Specification
NTP	<ul style="list-style-type: none"> • NTP v3/v4 mode 3 NTP client time requests • 500 NTP requests per second, optionally 1000 NTP requests per second. • Stratum 1 through GPS: Overall server time stamp accuracy of <100 nanoseconds RMS to UTC (USNO). • All NTP time stamps are hardware-based and have real-time hardware compensation for internal asymmetric delays. The accuracy is measured at the network interface. NTP is UTC timescale by definition. • All non-NTP packets are provided to the CPU on a filtered, bandwidth-limited basis.

Factory Defaults

Management IP Parameters

Table A-8 • Management IP Parameters

Parameter	Value Default	Value Range
IPv4 State	enable	enable disable restart
IPv6 State	enable	enable disable restart
Address Mode		Static DHCP
IPv4 Network Address	192.168.2.100	Valid IPv4 address
IPv4 Network Mask	255.255.255.0	Valid IPv4 mask
IPv4 Network Gateway	192.168.2.1	Valid IPv4 Address, where value of 0.0.0.0 is used for no gateway
IPv6 Network Address		Valid IPv6 address
IPv6 Network Mask (Prefix)	64	
IPv6 Network Gateway		Valid IPv6 Address

GNSS Parameters

Table A-9 • GNSS Parameters

Parameter	Value Default	Value Range
State	enable	enable disable
Cable Delay	0	0 - 9999 (ns)
Elevation Mask	5	5 - 60

Clock Parameters

Table A-10 • Clock Parameters

Parameter	Value Default	Value Range
Leapseconds	36	20 - 255

NTP Parameters

Table A-11 • SNMP Parameters

Parameter	Value Default	Value Range
State	enable	enable disable
NTPr IP Mode	IPv4	IPv4 IPv6
TTL	64	1 to 255
DSCP	46	0 to 63
Alarm Threshold (percentage)	100	1 to 100

SNMP Parameters

Table A-12 • SNMP Parameters

Parameter	Value Default	Value Range
Trap Manager IPv4	0.0.0.0	Up to 15 character IPV4 address string
Trap Version	2	2 3
V2 Trap Community	public	Up to 19 character string
V3 Secure Level	noauth	0 1 2 0=noauth 1=auth 2=priv
V3 Auth Pass	password	8 to 31 characters string
V3 Auth Algorithm	MD5	1 2 1=MD5 2=SHA
V3 Priv Pass	password	8 to 31 characters string
V3 Priv Algorithm	DES	1 2 1=DES 2=AES
Network Address	0.0.0.0	Valid IPv4 address
Network Mask	255.255.255.0	Valid IPv4 mask
Network Gateway	0.0.0.0	Valid IPv4 Address, where value of 0.0.0.0 is used for no gateway

Log Configuration Parameters

Table A-13 • Log Configuration Parameters

Parameter	Value Default	Value Range
Size for Alarm-Event Log (kb)	100	1 to 100
Size for Command Log (kb)	100	1 to 100
Size for Security Log (kb)	100	1 to 100

Appendix B – Product Support

Microsemi Timing & Frequency Services backs its products with various support services, including Customer Service and Technical Support through the Customer Assistance Center, a website, electronic mail, and worldwide sales offices. This appendix contains information about contacting Microsemi Timing & Frequency Services and using these support services.

Customer Service

Contact Customer Service for non-technical product support, such as product pricing, product upgrades, update information, order status, and authorization.

- Worldwide (Main Number): 1-408-428-7907
- USA toll-free: 1-888-367-7966
- USA, Canada, Latin America including Caribbean, Pacific Rim including Asia, Australia and New Zealand: 1-408-428-7907
- Europe, Middle East & Africa: 49 700 3288 6435 or 49 8102 896 1535

Customer Assistance Center

Microsemi Timing & Frequency Services staffs its Customer Assistance Center with highly skilled engineers who can help answer your hardware, software, and design questions about Microsemi Timing & Frequency Services products. The Customer Assistance Center spends a great deal of time creating application notes, answers to common design cycle questions, documentation of known issues, and various FAQs. So, before you contact us, please visit our online resources. It is very likely we have already answered your questions.

Technical Support

Visit the Customer Support website (www.microsemi.com/ftdsupport) for more information and support. Many answers available on the searchable web resource include diagrams, illustrations, and links to other resources on the website.

Website

You can browse a variety of technical and non-technical information on the Microsemi Timing & Frequency Services home page, at www.microsemi.com/ftdsupport.

Contacting the Customer Assistance Center

Highly skilled engineers staff the Customer Assistance Center. The Customer Assistance Center can be contacted by email or through the Microsemi Timing & Frequency Services website.

Email

You can communicate your technical questions to our email address and receive answers back by email, fax, or phone. Also, if you have design problems, you can email your design files to receive assistance. We constantly monitor the email account throughout the day. When sending your request to us, please be sure to include your full name, company name, and your contact information for efficient processing of your request.

The technical support email address is ftd.support@microsemi.com.

Outside the U.S.

Customers needing assistance in Europe, the Middle East, or Africa (EMEA) can either contact technical support via email (ftd.emeasupport@microsemi.com) or contact a local sales office. Sales office listings can be found at <http://www.microsemi.com/salescontacts>.



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Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for communications, defense and security, aerospace, and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs, and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; security technologies and scalable anti-tamper products; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, Calif. and has approximately 3,400 employees globally. Learn more at www.microsemi.com.

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