

MNS-300EM

Command Manual



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1. Introduction

Thank you for purchasing the Intelligent Module MNS-300EM.

1-1. Introduction

MNS-300EM User's Manuals

MNS-300EM has the following user's manuals:

MNS-300EM Command Manual (this document)

This document describes the console commands that can be used on MNS-300EM.

MNS-300EM Setting Manual

This document explains the functions and configuration methods of MNS-300EM.

MNS-300EM Embedded Manual

This document describes the specifications and procedures for embedding MNS-300EM into the customer's device (hereinafter "target device").

Before using MNS-300EM, please read **1-2. Safety Instructions** at "MNS-300EM Setting Manual" or "MNS-300EM Embedded Manual".

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1-2. Product Information and Customer Services

Product Information

The services below are available from the Silex Technology website. For details, please visit the Silex Technology website.

Silex Technology website

URL: <https://www.silextechnology.com/>

- Latest firmware download
- Latest software download
- Latest manual download
- Support information (FAQ)

Customer Support Center

Customer Support is available for any problems that you may encounter. If you cannot find the relevant problem in this manual or on our website, or if the corrective procedure does not resolve the problem, please contact Silex Technology Customer Support.

Contact Information	
USA	support@silexamerica.com
Europe	support@silexeurope.com



Note

- Refer to the Silex Technology website (<https://www.silextechnology.com/>) for the latest FAQ and product information.

2. How to Access Command Console

MNS-300EM settings can be updated and managed using the command console. Some function can be configured by the command console only.

Use one of the following ways to access the command console:

- MNS-300EM's serial data port
- Configuration console port
- Linux console port

In addition to the above, the Web console function can be used from MNS-300EM's Web page. Whichever method is used to access the command console, the setting method is the same unless otherwise noted.

Capital letters in the following command explanations are minimum essential command tokens. These characters must be entered for commands to be recognized and cannot be omitted.



Note

- The following commands can be substituted for each other:
SEt, DEFine, CHange Updating a setting value
DEI, CLear, PUrge Deleting a setting value
- Characters except for command tokens can be omitted.
- The following two commands have the same meaning:
- SET NW PEAPMSchap ENable
- SET NW PEAPMS EN

(Blank page)

3. Network Commands

This chapter describes the network parameter commands.

3-1. SET NW WIRED

Sets the wired LAN link mode.

SET NW WIRED <mode>

Choose one of the followings for <mode>.

AUTO	: Auto mode
FD100BASE	: 100Base FULL
100BASE	: 100Base Half
FD10BASE	: 10Base FULL
10BASE	: 10Base Half

3-2. SH NW

Shows the current network information.

SH NW

Sample output:

```
Local> SH NW
WiFi Mode = STATION
WiFi SSID: server
Regulatory Domain = JP
Authentication type= OPEN SYSTEM
Encryption is Disabled
AP MAC Address = 84 25 3F 00 11 22
Signal Quality = Excellent (100%)
Connected to SSID SQRT on channel 3
```

3-3. SET NW MOde

Sets the wireless LAN mode.

SET NW MOde [STation | MESH | AUto]

Choose one of the followings for the wireless LAN mode:

- STation : Operates in Station (wireless client) mode.
- MESH : Operates in Mesh Point mode.
- AUto : Operates in either Station mode or Mesh Point mode depending on the wireless environment.

SH NW MOde can show the wireless LAN mode in use.

3-4. SH NW RATE

Shows the current wireless connection rate.

SH NW RATE

Sample output:

```
Local> SH NW RATE  
Current rate = 72.2 Mbps
```

The above value is an example and is different from the actual value.

3-5. SH NW SQ

Shows the radio quality of the wireless LAN link.

SH NW SQ

Signal Quality is a number (0-100) to show the relative quality of the wireless link.

Signal Strength shows RSSI value [dBm] calculated for the current connection.

When the Station mode is on and the communication from the Access Point is lost, signal quality will turn to 0 in 1.5 seconds.

When the Mesh mode is on, signal quality is 100 when the Mesh device is connected, and is 0 when the Mesh device is not connected.

Sample output:

```
Local> SH NW SQ
Signal Quality = 97
Signal Strength = -57
Noise Level = -96
```

3-6. SH NW MAC

Shows MAC addresses of the wired and wireless LAN.

SH NW MAC

Sample output:

```
Local> SH NW MAC
WLAN MAC address: 84:25:3F:00:00:00
Ethernet MAC address: 84:25:3F:00:00:01
```

4. Station Commands

This chapter describes the commands to use for the Station mode settings.

4-1. Wireless LAN Commands

The following describes the general wireless configuration commands for Station mode.

4-1-1. SET NW RADIo

Changes the wireless standard.

SET NW RADIo [802.11A-N-ac | 802.11B-G-N | 802.11A-B-G-N-ac]

Choose one of the followings for the wireless standard:

802.11A-N-ac	: Uses 5 GHz frequency bands only.
802.11B-G-N	: Uses 2.4 GHz frequency bands only.
802.11A-B-G-N-ac	: Uses 5 GHz and 2.4 GHz frequency bands.

The factory default value is **802.11A-B-G-N-ac**.

SH NW RADIo can show the wireless standard in use.

4-1-2. SET NW RTS

Specifies the WLAN RTS threshold value.

SET NW RTS <n>

Enter the following value for <n>.

1-1500	: 802.11RTS handshake runs when a packet larger than the defined size is sent.
0	: 802.11RTS handshake is disabled.

The factory default value is **0**.

SH NW RTS can show the current setting value.

4-1-3. SET NW SSid

Sets the SSID of the wireless LAN.

SET NW SSid <name>

Enter the SSID (1-32 characters) for <name>.

For the SSID, alphanumeric character, hyphen (-) and underscore (_) can be used.

The factory default value is **serserv**.

Example:

```
Local> SET NW SSid SX-ACCESSPOINT_01
```

4-1-4. SET NW STARTdelay

Changes the length of time to wait for a wired LAN link before wireless LAN starts (in seconds).

SET NW STARTdelay <n>

Enter the following value for <n>.

1-255 : Changes the wait time to the specified value (sec).

0 : Sets the waiting time to 3 seconds (factory default value).

The factory default value is **3** seconds.

SH NW STARTdelay can show the current setting value.

4-1-5. SH NW WLLIST

Shows the wireless LAN networks nearby.

This displays only the Access Points which broadcast their SSIDs. When a stealth function is enabled on the Access Point, such Access Point will not be detected.

SH NW WLLIST

Sample output:

```
Local> SH NW WLLIST
"OFFICE-2F" 00:80:92:01:02:03 -40 1 11ng AP WPA2-PSK AES
"MeetingRoom1" 00:80:92:04:05:06 -82 13 11ng AP WPA-EAP TKIP
"DiningHall" 00:80:92:0A:0B:0C -63 11 11g AP WPA2-PSK TKIP/AES
```

4-1-6. SH NW PROFILE

Shows the wireless profile in use.

SH NW PROFILE

Sample output:

```
Local> SH NW PROFILE
Current profile=1 Active profile=1
SSID serserv
WiFi Mode INFRASTRUCTURE
Encryption type Disabled
Authentication type OPEN SYSTEM
EAP user ID anonymous
Remote CA certificate *not loaded*
Local certificate *not loaded*
Local private key *not loaded*
Private key passphrase *not loaded*
```

By using the console command, up to four wireless profiles can be saved.

4-1-7. SET NW PROFCFG

Chooses the wireless profile to save when the wireless settings such as SSID is updated.

SET NW PROFCFG <n>

For <n>, enter the number of wireless profile (1-4) to save the setting into.

When an unused wireless profile is chosen, the previous wireless settings will be inherited. Since this setting is not saved, a value set by PROFACT will be applied after MNS-300EM restarts.

The factory default value is **1**.

4-1-8. SET NW PROFACT

Chooses the wireless profile to use after settings are saved and MNS-300EM is restarted.

SET NW PROFACT <n>

For <n>, enter the number of wireless profile (1-4) to use after MNS-300EM restarts.

The factory default value is **1**.

4-1-9. SET NW TXWDOG

Enables/Disables the Communication Recovery Function.

SET NW TXWDOG [ENable | DISable]

ENable : Enables the Communication Recovery Function.

DISable : Disables the Communication Recovery Function.

The factory default value is **DISable**.

4-1-10. SET NW TXWDOG PERiod

Sets the communication idle period that triggers the Communication Recovery Function (msec).

SET NW TXWDOG PERiod <msecs>

The communication idle period can be specified by entering a numerical value (500-3600000) for <msec>. The factory default value is 500 (msec).

4-2. Wireless LAN Security Commands

The following describes the commands that change the wireless LAN security.

4-2-1. SET NW AUTHtype

Changes the wireless LAN authentication method.

SET NW AUTHtype [**OPEN** | **TLS** | **TTLS** | **LEAP** | **PEAP** | **EAP-FAST** | **PSK**]

Choose one of the followings for the wireless LAN authentication method.

OPEN	: Does not perform authentication.
TLS	: Uses EAP-TLS for EAP authentication mode.
TTLS	: Uses EAP-TTLS for EAP authentication mode.
LEAP	: Uses LEAP for EAP authentication mode.
PEAP	: Uses PEAP for EAP authentication mode.
EAP-FAST	: Uses EAP-FAST for EAP authentication mode.
PSK	: Uses PSK (Pre-Shared Key) for authentication.

The factory default value is **OPEN**.

SH NW AUTHtype can show the current setting value.

4-2-2. DEL NW CERTS

Deletes all certificates from MNS-300EM.

DEL NW CERTS

This command deletes host certificates, client certificates, and private key information of the profiles stored in MNS-300EM as well as PAC files dynamically provided by EAP-FAST authentication server. The actual deletion process is performed when settings are saved. Certificate settings will be the same as the factory default status then.

4-2-3. SET NW ENC

Changes the encryption mode of wireless LAN.

SET NW ENC [DISable | 128 | WPA | WPA2 | WPA2-WPA]

The supported modes are **DISable (none)**, **128 (WEP 128bit)**, **WPA (TKIP)**, and **WPA2 (AES)**. **WPA2-WPA** supports AES or TKIP encryption for WPA system.

Choose one of the followings for the encryption mode.

DISable	: Does not perform encryption.
128	: Performs encryption with WEP (128-bit).
WPA (TKIP)	: Performs encryption with TKIP.
WPA2 (AES)	: Performs encryption with AES.
WPA2-WPA	: Recognizes AES and TKIP automatically and performs encryption.

The factory default value is **DISable**.

SH NW ENC shows the encryption mode in use.

4-2-4. SET NW KEY#

Chooses the key index of WEP key for the wireless LAN.

SET NW KEY# <n>

For <n>, specify the key index number of WEP key to use (1 to 4).
The factory default value is **1**.

4-2-5. SET NW KEYNUM

Chooses the key index of WEP key for the wireless LAN.
(Performs the same configuration as **SET NW KEY#**)

SET NW KEYNUM <n>

For <n>, specify the key index number of WEP key to use (1 to 4).
The factory default value is **1**.

4-2-6. SET NW KEYVAL

Sets the WEP key of the key index in use.

SET NW KEYVAL <key>

Enter 26 hexadecimal digits for <key>.
The factory default value is a NULL string.

Example:

```
Local> SET NW KEYVAL 112233445566778899aabbccdd
```

4-2-7. SET NW WPAPSK

Sets the Pre-Shared Key of WPA.

SET NW WPAPSK <key>

For <key>, enter a passphrase with 8-63 characters, or 64 hexadecimal digits (256-bit PSK value).

The value is used when the wireless LAN authentication method is **PSK**.
The factory default value is **Device Server**.

Example:

```
Local> SET NW WPAPSK silexpsk01
```

4-2-8. SET NW ID

Changes the user ID for authentication.

SET NW ID <user id>

For <user id>, enter a string with 1-63 alphanumeric characters.
When the string includes "@", characters before @ will be used.

The factory default value is **anonymous**.

SH NW ID shows the current setting value.

Example:

```
Local> SET NW ID eapuser01@japan
```


4-2-9. SET NW PW

Sets the password to be used for 802.1x EAP authentication.

SET NW PW <password>

For <password>, enter a string with 1-32 alphanumeric characters.
The factory default value is **anonymous**.

Example:

```
Local> SET NW PW eappassword
```

4-2-10. SET NW PEAPGTC

This is a test command to force GTC to be used on phase 2 of the PEAP authentication handshake.

SET NW PEAPGTC [ENable | DISable]

Enable/Disable mandatory use of GTC.

ENable	: Enables mandatory use of GTC.
DISable	: Disables mandatory use of GTC.

This command can be enabled when the wireless LAN authentication method is PEAP, and is implemented for protocol tests. Usually, **DISable** is selected for a normal operation.

The factory default value is **DISable**.

SH NW PEAPGTC can show the current setting.

4-2-11. SET NW PEAPMSchap

This is a test command to force MSCHAP to be used on phase 2 of the PEAP authentication handshake.

SET NW PEAPMSchap [ENable | DISable]

Enable/Disable mandatory use of MSCHAP.

- ENable : Enables mandatory use of MSCHAP.
- DISable : Disables mandatory use of MSCHAP.

This command can be enabled when the wireless LAN authentication method is PEAP, and is implemented for protocol tests. Usually, **DISable** is selected for a normal operation.

The factory default value is **DISable**.

SH NW PEAPMSchap can show the current setting.

4-2-12. SET NW PEAPV0

This is a test command to force the version 0 protocol to be used for the PEAP authentication.

SET NW PEAPV0 [ENable | DISable]

Enable/Disable mandatory use of the version 0 protocol.

ENable : Enables mandatory use of the version 0 protocol.

DISable : Disables mandatory use of the version 0 protocol.

This command can be enabled when the wireless LAN authentication method is PEAP, and is implemented for protocol tests. Usually, **DISable** is selected for a normal operation.

The factory default value is **DISable**.

SH NW PEAPV0 can show the current setting

4-2-13. SET NW PKPASS

Changes the password of private key file to be registered to MNS-300EM.

SET NW PKPASS <passphrase>

For <passphrase>, enter a string with 8-63 alphanumeric characters.

The value has to be set before the key file is registered, otherwise the file cannot be decoded properly.

The factory default value is a NULL string.

Example:

```
Local> SET NW PKPASS keypassword
```

4-2-14. SET NW CACERT

Starts updating the CA certificate file by using XModem protocol.

When this command is executed, the mode is changed to XMODEM mode.

SET NW CACERT



- Please create the client certificate and the CA certificate separately. MNS-300EM does not support the certificate composed of multiple certificate files.

4-2-15. SET NW CLCERT

Starts updating the client certificate file by using XModem protocol.

When this command is executed, the mode is changed to XMODEM mode.

SET NW CLCERT



- Please create the client certificate and the CA certificate separately. MNS-300EM does not support the certificate composed of multiple certificate files.

4-2-16. SET NW CLKEY

Starts updating the secret key file of the client certificate by using XModem protocol.

When this command is executed, the mode is changed to XMODEM mode.

SET NW CLKEY

4-2-17. SET NW SSCCITY

Changes the city name of the self-signed certificate to be issued.

SET NW SSCCITY <"city string">

The factory default value is **Orange County**.

Example:

```
Local> SET NW SSCCITY "Kyoto City"
```



- The value will be deleted when MNS-300EM restarts.

4-2-18. SET NW SSCCOMNAME

Changes the common name of the self-signed certificate to be issued.

SET NW SSCCOMNAME <"common name string">

The factory default value is **MACaabbccddeeff**.

aabbccddeeff represents the MAC address of MNS-300EM.

Example:

```
Local> SET NW SSCCOMNAME "common01"
```



- The value will be deleted when MNS-300EM restarts.

4-2-19. SET NW SSCOUNTRY

Changes the country name of the self-signed certificate to be issued.

SET NW SSCOUNTRY <country string>

Enter 2 alphanumeric characters for <country string>.

The factory default value is **US**.

Example:

```
Local> SET NW SSCOUNTRY JP
```



- The value will be deleted when MNS-300EM restarts.

4-2-20. SET NW SSCKEYSIZE

Changes the key size (bit) of the self-signed certificate to be issued.

SET NW SSCKEYSIZE [1024 | 2048]

Choose one of the following values for the key size.

1024 : Sets the key size to 1024 bits.

2048 : Sets the key size to 2048 bits.

The factory default value is **1024**.



- The value will be deleted when MNS-300EM restarts.

4-2-21. SET NW SSCORGNAM

Changes the organization name of the self-signed certificate to be issued.

SET NW SSCORGNAM <"organization name string">

The factory default value is **silex technology america**.

Example:

```
Local> SET NW SSCORGNAM "silex technology japan"
```



- The value will be deleted when MNS-300EM restarts.

4-2-22. SET NW SSCORGUNIT

Changes the organization unit name of the self-signed certificate to be issued.

SET NW SSCORGUNIT <"organizational unit string">

The factory default value is **silex**.

Example:

```
Local> SET NW SSCORGUNIT "silex RD center"
```



- The value will be deleted when MNS-300EM restarts.

4-2-23. SET NW SSCSTATE

Changes the state name of the self-signed certificate to be issued.

SET NW SSCSTATE <"state string">

The factory default value is **CA**.

Example:

```
Local> SET NW SSCSTATE "Kyoto"
```



- The value will be deleted when MNS-300EM restarts.

4-2-24. SET NW SSCGEN

Issues the self-signed certificate configured with the commands starting with **SET NW SSC**.

SET NW SSCGEN

The private key associated with the certificate will be saved as a client key or certificate of MNS-300EM.



- When this command is executed, the pre-configured private key and the self-signed certificate will be deleted.

4-3. Wireless LAN Roaming Control

The following describes the commands that change the roaming function settings.

4-3-1. SET NW BGSCAN

Changes the interval of wireless background scans.

SET NW BGSCAN <seconds>

For <seconds>, enter the number of seconds (1-60) to specify the interval for scans.
The factory default value is **60** (sec).

SH NW BGSCAN can show the current interval of background scans.

4-3-2. SET RM

Enables/Disables the customized roaming control.

SET RM [ENable | DISable]

	: Enables the customized roaming control.
ENable	SET RM THResh CRITical can change the threshold value to start scanning for roaming.
DISable	: Disables the customized roaming control.

The factory default value is **DISable**.

SH RM can show the customized roaming control setting in use.

4-3-3. SET RM SCAN NORM

Changes the interval of normal wireless background scans.

SET RM SCAN NORM <seconds>

For <seconds>, enter the number of seconds (1-60) to specify the interval of background scans to run when the reception quality exceeds the roaming scan threshold value which represents the wireless link quality.

The value is enabled only when the customized roaming is set.

The factory default value is **60** (sec).

4-3-4. SET RM THResh CRITical

Changes the RSSI threshold value for roaming.

SET RM THResh CRITical <RSSI>

Enter the RSSI threshold value to run a scan for roaming.

The value is enabled only when the customized roaming control is enabled.

The factory default value is **-60**.

4-4. Wireless/Wired Bridge Setting

The following describes the commands that configure the wireless/wired LAN bridge setting.

4-4-1. SET NW BRIDGE

Enables/Disables the wireless/wired bridge mode.

SET NW BRIDGE [ENable | DISable]

ENable : Enables the bridge mode.
DISable : Disables the bridge mode.

The factory default value is **DISable**.

4-4-2. SH NW BRIDGE

Shows the current bridge setting.

SH NW BRIDGE

Sample output:

```
Local> SH NW BRIDGE
```

```
Bridge mode is disabled.
```

4-4-3. SET NW BRACCess

Accepts/Denies an access to the configuration function of MNS-300EM via a wired LAN port, when the bridge mode is on.

SET NW BRACCess [ENable | DISable]

- ENable : Accepts an access to the configuration function.
A client device connected to the wired LAN port of MNS-300EM can access the configuration function including the Web interface.
- DISable : Denies an access to the configuration function.

The factory default value is **ENable**.

4-4-4. SET NW BRCLADDR

Sets the MAC address to be used for the static MAC address mode.

SET NW BRCLADDR <MAC address>

When the static MAC address mode is on, the specified address is used as the MAC address for the wireless LAN interface. The value is ignored when the auto mode is on.

For <MAC address>, enter the address in the form of **aa:bb:cc:dd:ee:ff** or **aa-bb-cc-dd-ee-ff**.
The factory default value is **00-00-00-00-00-00**.

SH NW BRCLADDR can show the MAC address in use for the static MAC address mode.

4-4-5. SET NW BRSTATIC

Enables/Disables the static MAC address mode.

SET NW BRSTATIC [ENable | DISable]

ENable : Enables the static MAC address mode.
The wireless LAN interface uses the MAC address specified by **SET NW BRCLADDR**.

DISable : Disables the static MAC address mode.
MNS-300EM waits a packet on the wired LAN interface and uses the source address of that packet as the MAC address of wireless LAN interface.

The factory default value is **ENable**.

4-5. Smart Wireless Setup

The following describes the commands for the smart wireless setup.

4-5-1. SET NW SWSPINCODE

Issues the PIN code value.

SET NW SWSPINCODE

A random value is automatically generated for the PIN code value.

SH NW SWSPINCODE can show the current setting.

4-5-2. SET NW SWSPBC

Executes the smart wireless setup using the PBC method.

SET NW SWSPBC

4-5-3. SET NW SWSPBC NOWAIT

Executes the smart wireless setup using the PBC method.

SET NW SWSPBC NOWAIT

When this command is executed, MNS-300EM does not wait for completion of the smart wireless setup.

4-5-4. SET NW SWSPIN

Executes the smart wireless setup using the PIN method.

SET NW SWSPIN

4-6. TCP/IP Settings in Station Mode

The following describes the commands for TCP/IP setting for Station mode.

4-6-1. SET IP MMethod

Changes the IP address configuration method for Station mode.

SET IP MMethod [AUTO | DHCP | STATIC]

Choose one of the following configuration methods.

- AUTO : Tries to get an IP address using the DHCP protocol.
When it fails, a static IP address of MNS-300EM is used.
- DHCP : Tries to get an IP address using the DHCP protocol.
When it fails, a link-local address is used.
- STATIC : A static IP address of MNS-300EM is used.

The factory default value is **AUTO**.

4-6-2. SET IP ADdress

Specifies the IP address to use for Station mode.

To assign a static IP address to MNS-300EM, use this command to specify the IP address.

SET IP ADdress <aa.bb.cc.dd>

Enter the IP address for <aa.bb.cc.dd>.

The factory default value is **169.254.111.111**.

4-6-3. SET IP SUBnet

Specifies the subnet mask to use for Station mode.

SET IP SUBnet <aa.bb.cc.dd>

Enter the subnet mask for <aa.bb.cc.dd>.

The factory default value is **0.0.0.0**.

4-6-4. SET IP ROuter

Specifies the default gateway to use for Station mode.

SET IP ROuter <aa.bb.cc.dd>

Enter the default gateway for <aa.bb.cc.dd>.

SET IP GAteway is the option command with the same function.

The factory default value is **0.0.0.0**.

4-6-5. SET IP BOut

Changes the number of attempts for automatic IP address configuration using DHCP when Station mode is on.

SET IP BOut <n>

When the IP address acquisition method is AUTO, the DHCP client function attempts to get the IP address for the number of times specified in <n>. When the IP address cannot be obtained for <n> times, MNS-300EM will operate with the static IP address configured by **SET IP Address**. The factory default value is **3**.

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5. Mesh Commands

This chapter describes the commands that change Mesh parameters.
MNS-300EM can configure and save up to 5 Mesh profiles.

5-1. SH MESH PROFILE [profile_num]

Shows the Mesh profile settings of the specified number [profile_num].

SH MESH PROFILE [profile_num]

Sample output:

```
Local> SH MESH PROFILE 1
```

Mesh configuration list

Mesh profile: Enabled

Wlan mode: 11NG

Channel width: HT20

Channel: 11

Mesh group: SX-MESH-NET

Maximum hops: No Limit

Mesh route refresh: Enabled

Mesh route refresh method: LIGHT

Mesh route refresh Interval: 3600

Mesh power save: Enabled

Boot method: DHCP

IP address: 192.168.0.2 (0.0.0.0)

Subnet Mask: 255.255.0.0 (0.0.0.0)

IP gateway: 0.0.0.0 (0.0.0.0)

Primary DNS server: 0.0.0.0

Secondary DNS server: 0.0.0.0

Mesh route switching mode: STABLE

Mesh transmission control: Enabled

5-2. SET MESH PROFSElect [profile_num]

Changes the Mesh profile number to use when the Mesh mode is on.

SET MESH PROFSElect [profile_num]

The factory default value is **1**.

SH MESH PROFSElect can show the current setting.

5-3. SET MESH [profile_num] PROFILE

Enables/Disables the Mesh profile of the specified number [profile_num] when Auto mode is on.

SET MESH [profile_num] PROFILE [ENable | DISable]

ENable : Enables the specified Mesh profile.

DISable : Disables the specified Mesh profile.

The factory default value is **ENable**.

SH MESH [profile_num] PROFILE can show the current value.

5-4. SET MESH [profile_num] MDe

Sets the wireless LAN mode to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] MDe [11G | 11NG | 11A | 11NA | 11AC]

Choose one of the following wireless LAN modes.

- 11G : Changes the wireless LAN mode to 802.11b/g.
- 11NG : Changes the wireless LAN mode to 802.11n/b/g.
- 11A : Changes the wireless LAN mode to 802.11a.
- 11NA : Changes the wireless LAN mode to 802.11n/a.
- 11AC : Changes the wireless LAN mode to 802.11ac.

The factory default value is **11NG**.

SH MESH [profile_num] MDe show the current setting.

5-5. SET MESH [profile_num] CHWidth

Sets the channel bandwidth to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] CHWidth [HT20 | HT40 | VHT20 | VHT40 | VHT80]

Choose one of the followings.

- HT20 : Changes the channel bandwidth to HT20.
- HT40 : Changes the channel bandwidth to HT40.
- VHT20 : Changes the channel bandwidth to VHT20.
- VHT40 : Changes the channel bandwidth to VHT40.
- VHT80 : Changes the channel bandwidth to VHT80.

The factory default value is **HT20**.

SH MESH [profile_num] CHWidth can show the current value.

5-6. SET MESH [profile_num] CHANNEL

Sets the communication channel to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] CHANNEL <n>

Specify the communication channel for <n>.

The factory default value is **11**.

SH MESH [profile_num] CHANNEL can show the current value.

5-7. SET MESH [profile_num] GROUP

Sets the Mesh group name to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] GROUP <name>

Specify the Mesh group name for <name>.

The factory default value is **SX-MESH-NET**.

SH MESH [profile_num] GROUP can show the current value.

Example:

```
Local> SET MESH 1 GROUP MESH-NET01
```

5-8. SET MESH [profile_num] KEY

Sets the Mesh encryption key to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] KEY <key>

Specify the Mesh encryption key for <key>.

The factory default value is **silex technology, Inc.**

SH MESH [profile_num] KEY can show the current value.

Example:

```
Local> SET MESH 1 KEY mesh-key01
```

5-9. SET MESH [profile_num] HOP

Sets the maximum number of hops to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] HOP <n>

Enter the following value for <n>.

- 1-5 : Changes the hop limit to the specified amount.
- NOLimit : Removes the upper hop limit.

The factory default value is **NOLimit**.

SH MESH [profile_num] HOP can show the current value.

5-10. SET MESH [profile_num] REFRESH

Enables/Disables the route refresh function for Mesh profile of the specified number [profile_num].

SET MESH [profile_num] REFRESH [ENable | DISable]

ENable : Enables the route refresh function.

DISable : Disables the route refresh function.

The factory default value is **ENable**.

SH MESH [profile_num] REFRESH can show the current value.

5-11. SET MESH [profile_num] REFMETHOD

Sets the route refresh method for Mesh profile of the specified number [profile_num].

SET MESH [profile_num] REFMETHOD [LIGHT | FULL]

LIGHT : Rebuilds the route only to MNS-300EM.

FULL : Rebuilds the route to and from MNS-300EM.

The factory default value is **LIGHT**.

SH MESH [profile_num] REFMETHOD can show the current value.

5-12. SET MESH [profile_num] REFInterval

Specifies the route refresh interval in seconds for Mesh profile of the specified number [profile_num].

SET MESH [profile_num] REFInterval <n>

For <n>, enter the number of seconds to specify the route refresh interval (1-86400).
The factory default value is **3600** (sec).

SH MESH [profile_num] REFInterval can show the current value.

5-13. SET MESH [profile_num] POWER

Enables/Disables the power saving function for Mesh profile of the specified number [profile_num].

SET MESH [profile_num] POWER [ENable | DISable]

ENable : Enables the power saving function.

DISable : Disables the power saving function.

The factory default value is **DISable**.

SH MESH [profile_num] POWER can show the current value.

5-14. SET MESH [profile_num] IPMethod

Sets the IP acquisition method for Mesh profile of the specified number [profile_num].

SET MESH [profile_num] IPMethod [DHCP | STATIC]

DHCP : Waits until the IP address is obtained by DHCP protocol.

STATIC : Starts the IP stack using a static IP address of MNS-300EM.

The factory default value is **DHCP**.

5-15. SET MESH [profile_num] IPADDRESS

Sets the IP address to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] IPADDRESS <aa.bb.cc.dd>

Enter the IP address for <aa.bb.cc.dd>.

To assign a static IP address to MNS-300EM, use this command to specify the IP address.

The factory default value is **0.0.0.0**.

5-16. SET MESH [profile_num] IPSUBNET

Sets the subnet mask to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] IPSUBNET <aa.bb.cc.dd>

Enter the subnet mask for <aa.bb.cc.dd>.

The factory default value is **0.0.0.0**.

5-17. SET MESH [profile_num] IPROuter

Sets the default gateway to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] IPROuter <aa.bb.cc.dd>

Enter the default gateway for <aa.bb.cc.dd>.

The factory default value is **0.0.0.0**.

5-18. SET MESH [profile_num] DNSPRimary

Sets the primary DNS server's address to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] DNSPRimary <aa.bb.cc.dd>

Enter the primary DNS server's IP address for <aa.bb.cc.dd>.

The factory default value is **0.0.0.0**.

5-19. SET MESH [profile_num] DNSSECondary

Sets the secondary DNS server's address to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] DNSSECondary <aa.bb.cc.dd>

Enter the secondary DNS server's IP address for <aa.bb.cc.dd>.

The factory default value is **0.0.0.0**.

5-20. SET MESH [profile_num] RTMOde

Sets the route switching mode to Mesh profile of the specified number [profile_num].

SET MESH [profile_num] RTMOde [RESponsive | STABLE]

RESponsive : Set the responsive type for the route switching mode.

STABLE : Set the stable type for the route switching mode.

The factory default value is **STABLE**.

5-21. SET MESH [profile_num] TXCTL

Enables/Disables the transmission control function for Mesh profile of the specified number [profile_num].

SET MESH [profile_num] TXCTL [ENable | DISable]

ENable : Enable the transmission control function.

DISable : Disable the transmission control function.

The factory default value is **ENable**.

6. Port Commands

This chapter describes the commands for serial port settings and Ecable mode.

6-1. Serial Port Commands

The following examples of command execution use S1 as a serial port. When S2 is enabled as a data port, S2 can be used instead. When there are the commands which cannot be used for that port, such note is described.

6-1-1. SH PORT

Shows the serial port setting.

SH PORT

Sample output:

```
Local> SH PORT
```

Port	Q-Size	Type	Attributes
*S1	0	serial	115200 N 8 1 XON/XOFF RS232

6-1-2. SET PORT S1 CHarsize

Changes the character size of the serial port.

SET PORT S1 CHarsize [7 | 8]

Enter 7 or 8 as the character size. The factory default value is **8**.

6-1-3. SET PORT S2 CONsole

Enables/Disables the console mode for the serial port 2.

SET PORT S2 CONsole [ENable | DISable]

ENable : Enables the console mode.
DISable : Disables the console mode.

This command can be used only for the serial port 2.
The factory default value is **ENable**.

6-1-4. SET PORT S1 CONSTR

Sets a character string to switch on the console mode for a serial port.

SET PORT S1 CONSTR <string>

For <string>, enter the character string to switch on the console mode.

When the serial port is in the trap mode and the string defined by this command is entered on the serial port, the serial port will enter into the console mode.

In the console mode, the MNS-300EM's settings can be configured from the serial port. When no string is defined, this function is disabled and the configuration cannot be changed via the serial port. The maximum length of the string is 31 bytes.

When non-printable characters are desired in the string, then the value should be prefixed with `\x` and each byte should be defined with two hex characters. The binary equivalent of the two hex characters will be used when scanning the input for a match.

To enable the specified value, MNS-300EM needs to restart.

The factory default value is `+++`.

Example:

SET PORT S1 CONSTR

Deletes the defined string.

SET PORT S1 CONSTR +++

Sets the console mode string to +++ .

SET PORT S1 CONSTR \x1B1B

Sets the console mode string to two successive escape characters.

6-1-5. SH PORT S1 CONSTR

Shows the console mode string of MNS-300EM.

SH PORT S1 CONSTR

When non-printable characters are contained in the string, **\x** is added at the beginning of the string and each byte is displayed in 2-digit hexadecimal.

When nothing is shown, the console mode string is not correctly defined.

Sample output:

```
Local> SH PORT S1 CONSTR
```

```
+++
```

```
Local> SH PORT S1 CONSTR
```

```
\x1B1B
```

6-1-6. SET PORT S1 DTR

Sets the DTR mode for a serial port 1.

SET PORT S1 DTR [CONN | HI | LOW]

When GPIO2 is set for a special function, the serial port 1 processes DTR signals. This command can change the pin operation.

CONN : The pin is set HI when there is an active network link, and Low when the network link finishes.
HI : The DTR signal is set HI.
LOW : The DTR signal is set Low.

When GPIO2 is not set for a special function, this value will be invalidated. This command can be used only for the serial port 1.

6-1-7. SET PORT S1 FLOW

Sets the flow control for a serial port.

SET PORT S1 FLOW <flow>

Choose one of the followings for <flow>.

None, XOn-xoff, CTS

The factory default value is **None**.

6-1-8. CL PORT S1 JOB

Stops the ongoing job of the specified port.

CL PORT S1 JOB

When a remote host is connected and the data is sent after the command is executed, such data will be deleted.

6-1-9. SET PORT S1 LATency

Sets the latency of the serial port (msec).

SET PORT S1 LATency <ms>

Enter the latency for <ms>.

When a number other than 0 is entered, the driver will wait for the specified period of time when the serial port receives a character, in order to see if there is reception of another character.

The factory default value is **25** (msec).

SH PORT S1 LATency can show the current value.

6-1-10. SET PORT S1 PArity

Sets the parity of the serial port.

SET PORT S1 PArity <parity>

Choose one of the followings for <parity>.

NOne, EVen, ODd

The factory default value is **NOne**.

6-1-11. SET PORT S1 SPeed

Sets the baud rate of the serial port.

SET PORT S1 SPeed <baudrate>

Choose one of the followings for < baudrate>.

**300, 600, 1200, 2400, 4800,
9600, 19200, 38400, 57600, 115200,
230400, 460800, 921600, 3000000**

The factory default value is **115200**.

6-1-12. SH PORT S1 STATus

Shows the serial port status.

SH PORT S1 STATus

Sample output:

```
Local> SH PORT S1 STATus
```

```
Port S1 status = On-line
```

```
Serial Device
```

```
3 bytes transmitted, 0 bytes received
```

```
0 framing errors, 0 parity errors, 0 overrun errors, 0 buffer overruns, 0 breaks
```

6-1-13. SET PORT S1 STOP

Sets the stop bit of the serial port.

SET PORT S1 STOP [1 | 2]

Enter 1 or 2 as the stop bit.

The factory default value is **1**.

6-2. Ecable Port Command

The following describes the commands for communication of Silex Technology's E-Cable application.

6-2-1. SET PORT S1 ECABLE

Enables/Disables E-Cable.

SET PORT S1 ECABLE [ENable | DISable]

ENable : Enables E-Cable

DISable : Disables E-Cable

The factory default value is **DISable**.

6-2-2. SH PORT S1 ECABLE

Shows the current E-Cable setting.

SH PORT S1 ECABLE

Sample output:

```
Local> SH PORT S1 ECABLE
```

```
E-Cable mode TCP
```

```
E-Cable destination 192.168.5.28:3000
```

```
Attempt connection every 5 seconds
```

```
E-Cable TCP connection is Down
```

6-2-3. SET PORT S1 ECADDR

Sets the primary destination address for E-Cable connection.

SET PORT S1 ECADDR <dest-addr>

For <dest-addr>, enter the primary address (IP address) of the host device to which the I/O port data is sent. When DNS is enabled only for the TCP mode, a host name can be used to enter the command.

When 0.0.0.0 is entered, no data can be sent.

The factory default value is **0.0.0.0**.

6-2-4. SET PORT S1 ECCONN

Sets the interval for connection retry in case TCP connection is lost or cannot be established. This setting is valid for TCP mode only.

SET PORT S1 ECCONN <n>

Specify the interval of connection retry for <n>.

The configurable time unit and interval will vary depending on the ECTMMSEC setting that is enabled/disabled by **SET PORT S1 ECTMMSEC**.

When ECTMMSEC is enabled	: The valid range is 20-2550. (Unit: Millisecond).
When ECTMMSEC is disabled	: The valid range is 1-255. (Unit: Second).

When a value out of the valid range is specified, the upper or lower limit of the range will be applied. The factory default value is **30** (seconds).

When 0 is given for <n>, the default value (30) will be applied.

6-2-5. SET PORT S1 ECLPORT

Specifies the UDP port number for the remote host to use MNS-300EM's I/O port. This setting is enabled for UDP mode only.

SET PORT S1 ECLPORT <port>

Specify the UDP port number for <port>.

Only data from the host whose IP address is configured as the primary or secondary addresses will be accepted and passed to the I/O port. When the primary and all secondary addresses are 0.0.0.0, data from any host will be accepted.

When 0 is set to the port number, data reception will be disabled.

The factory default value is **0**.

6-2-6. SET PORT S1 ECNHOST

Specifies the maximum number of remote hosts that send/receive data. This setting is enabled for UDP mode only.

SET PORT S1 ECNHOST <n>

Specify the maximum number (1-255) for <n>.

If this value is changed, all of current secondary host information will be erased.

The factory default value is **1**.

6-2-7. SET PORT S1 ECPORT

Specifies the port number for remote connection to use when E-Cable is enabled.

SET PORT S1 ECPORT <port>

Specify the port number for <port>.
When 0 is given, no data will be sent.

The factory default value is **0**.

6-2-8. SET PORT S1 ECRADDR

Sets the primary/secondary IP address of E-Cable destination.
This setting is valid for UDP mode only.

SET PORT S1 ECRADDR <index> <aa.bb.cc.dd>

index	: When the index value is set to 0, the primary address is set. When not 0, the valid range is 1 to (n-1), where "n" is the value configured by SET PORT S1 ECNHOST . When "n" is 1, only the primary address can be set.
aa.bb.cc.dd	: Specifies the IP address of E-Cable destination. When 0.0.0.0 or 0 is given, no data will be sent.

The factory default value is **0.0.0.0**.

6-2-9. SET PORT S1 ECRPORT

Specifies the UDP port number for the primary/secondary E-Cable destination.
This setting is enabled for UDP mode only.

SET PORT S1 ECRPORT <index> <port>

index	: When the index value is set to 0, the primary port is set. When not 0, the valid range is 1 to (n-1), where "n" is the value configured by SET PORT S1 ECNHOST . When "n" is 1, only the primary port can be set.
port	: Specifies the UDP port number for E-Cable destination. When 0 is given, no data will be sent.

The factory default value is **0**.

6-2-10. SET PORT S1 ECTMMSEC

This setting is enabled for TCP mode only.
It specifies the unit for the connection timer set with ECCONN.

SET PORT S1 ECTMMSEC [ENable | DISable]

ENable	: Enables ECTMMSEC. The unit of timer is milliseconds (20 - 2550).
DISable	: Disables ECTMMSEC. The unit of timer is seconds (1 - 255).

The factory default value is **DISable**.

6-2-11. SET PORT S1 ECUDP

Enables/Disables the UDP mode.

SET PORT S1 ECUDP [ENable | DISable]

ENable : Enables the UDP mode.
DISable : Disables the UDP mode.

The factory default value is **DISable**.

7. Server Commands

This chapter describes the commands for the server information of MNS-300EM.

7.1. SH SERIAL

Shows the serial number of MNS-300EM.

SH SERIAL

Sample output:

```
Local> SH SERIAL
```

```
Serial number is 9047595
```

7-2. SH SERVER

Shows the server information.

SH SERVER

Sample output:

```
Local> SH SERVER
```

```
Silex MNS-300EM Serial # 2000560
```

```
Address: 84-25-3F-01-29-F3 Name: SDS1E86B0 Number: 0
```

```
Identification: Network Serial Server
```

```
Enabled Characteristics:
```

```
Ethernet link Down
```

7-3. SH SERVER CO

Shows the network statistics for the server.

SH SERVER CO

Sample output:

Local > SH SERVER CO

Seconds Since Zeroed:	28	Frames Sent, 1 Collision:	N/A
Bytes Received:	0	Frames Sent, 2+ Collision:	N/A
Bytes Sent:	0	Send Failures:	0
Frames Received:	0	Send Failure Reasons:	N/A
Frames Sent:	0	Receive Failures:	0
Multicast Bytes Rcv'd:	N/A	Receive Failure Reasons:	N/A
Multicast Bytes Sent:	N/A	Unrecognized Destination:	N/A
Multicast Frames Rcv'd:	N/A	Data Overrun:	N/A
Multicast Frames Sent:	N/A	User Buffer Unavailable:	N/A
Frames Sent, Deferred:	N/A	System Buffer Unavailable:	N/A

Unsupported parameters show N/A.

7-4. SET SERVER DESCRIPTION

Sets the server description string.

SET SERVER DESCRIPTION <description-string>

Enter the description for <description-string>.

The factory default value is **Silex MNS-300EM**.

7-5. SH SERVER FWVER

Shows the MNS-300EM's firmware version.

SH SERVER FWVER

Sample output:

```
Local> SH SERVER FWVER
```

```
1.00 (20xx.xx.xx)
```

This command only shows the firmware version string that does not include the information shown by **SH VERSION**.

7-6. SH SERVER MODEL

Shows the server model name.

SH SERVER MODEL

Sample output:

```
Local> SH SERVER MODEL
```

```
MNS-300EM
```

This command shows the server model name that does not include the information shown by **SH SERVER**.

7-7. SET SERVER NAME

Specifies the server node name.

SET SERVER NAME <name>

The factory default value is **SDSxxxxxx**.
xxxxxx is the last 6 digits of the MAC address.

7-8. SH SERVER STATISTICS

Shows information of the received print job.

SH SERVER STATISTICS

Sample output:

```
Local> SH SERVER STATISTICS
```

LPD Statistics:

```
Currently 0 jobs are waiting for the peripheral  
0 connections have been made  
0 data files have been printed  
0 data bytes have been printed  
0 control files have been received  
0 print job commands have been received
```

7-9. SH SERVER QUEUE

Shows the I/O job queue for each serial port.

SH SERVER QUEUE

Sample output:

```
Local> SH SERVER QUE
```

```
Port S1 status = On-line
```

```
# Type      Source
```

```
The queue is empty
```

7-10. SH SNMP

Shows the SNMP protocol setting (enabled/disabled).

SH SNMP

Sample output:

```
Local> SH SNMP
```

```
SNMP is Enabled
```

```
Enabled      : SNMP protocol setting is enabled.
```

```
DISabled     : SNMP protocol setting is disabled.
```

7-11. SET SNMP CONTACT

Specifies the sysContact string for SNMP.

SET SNMP CONTACT <string>

Enter the character string of the contact for <string>.

The factory default value is a NULL string.

7-12. SET SNMP GETCOMM

Specifies the community name for GET command processing of SNMP.

SET SNMP GETCOMM <string>

Enter the community name for <string>.

The factory default value is **public**.

7-13. SET SNMP LOCATION

Specifies the string of location for SNMP (sysLocation).

SET SNMP LOCATION <string>

Enter the character string of the location for <string>.

The factory default value is a NULL string.

7-14. SET SNMP SETCOMM2

Specifies the community name for SET command processing of SNMP.

SET SNMP SETCOMM2 <string>

Enter the community name for <string>.

The factory default value is **public**.

7-15. SH VErSION

Shows the MNS-300EM's firmware version.

SH VErSION

Sample output:

```
Local> SH VErSION
```

```
Silex MNS-300EM
```

```
Firmware Ver. 1.00 (20xx.xx.xx)
```

```
Boot Ver. 1.2
```

```
64Mbit Flash
```

```
Protocols supported:
```

```
SNMP TCP/IP
```

```
DHCP
```

8. Service Commands

MNS-300EM's serial port is associated with the logical I/O service. This chapter describes commands for the I/O service.

8-1. SH SERVI

Shows the service settings.

SH SERVI

Sample output:

```
Local> SH SERVI
```

# Service	Port	FIL	BOT	EOT	DEL	OPT	PROT
* 1 SDS1E86B0_S1_A		S1	0	1	1	0	B IP
2 SDS1E86B0_S1_B		S1	0	1	1	0	B IP

"*" shows the factory default service of I/O port.

8-2. SET SERVI <service name> BOT

Sets the index number of the beginning of transmission (BOT) string for the specified service.

SET SERVI <service name> BOT <n>

service name	: Specifies the service name.
n	: Specifies the index number. The string of the index number will be the BOT string.

The string of the specified index number is sent at the beginning of output.

The factory default value is a NULL string.

8-3. SET SERVI <service name> EOT

Sets the index number of the end of transmission (EOT) string for the specified service.

SET SERVI <service name> EOT <n>

service name	: Specifies the service name.
n	: Specifies the index number. The string of the index number will be the EOT string.

The string of the specified index number is sent at the end of output.

The factory default value is a NULL string.

8-4. SH SERVI STRings [string_num]

Shows the BOT and EOT strings to use for the service.

SH SERVI STRings [string_num]

When string_num is specified	: Shows the string definition of the specified number and the extended information.
When string_num is not specified	: Shows all string definitions without the extended information.

Sample output:

```
Local> SH SERVI STRings 10
```

```
10: \FF\04\FF\05\FF\06\FF\08
```

8-5. SET SERVI <service name> FILTER

Sets the filter index of the service.

SET SERVI <service name> FILTER <n>

service name : Specifies the service name.
n : Specifies the index number. The filter of the index number will be set.

SH FILTER can show available filters of MNS-300EM.

8-6. SH SERVI FILTERS

Shows a list of the service filter settings.

SH SERVI FILTERS

Sample output:

```
Local> SH SERVI FILTERS
```

#	Service Name	Filter
1	SDS1E86B0_S1_A	0: No Filter
2	SDS1E86B0_S1_B	0: No Filter

8-7. SET SERVI <service name> FMS

Specifies the index number of match string for Filter 1 (string replacement filter).

SET SERVI <service name> FMS <n>

- service name : Specifies the service name.
- n : Specifies the index number. When the string of the specified index is found in output, it will be replaced with the replacement string configured by **SET SERVI <service name> FRS**.
When 0 is provided, the filter default value <LF> (line feed) will be set.

The factory default value is **0**.

8-8. SET SERVI <service name> FRS

Specifies the index number of replacement string for Filter 1 (string replacement filter).

SET SERVI <service name> FRS <n>

- service name : Specifies the service name.
- n : Specifies the index number. When the output includes the match string configured by **SET SERVI <service name> FMS**, it will be replaced with the string of the specified index number. When 0 is provided, the filter default value <CRLF> (carriage return/line feed) will be set.

The factory default value is **0**.

8-9. SET SERVI <service name> IP

Enables/Disables the IP-distributed jobs (LPD, Raw TCP, etc.).

SET SERVI <service name> IP [ENable | DISable]

service name	: Specifies the service name.
ENable	: Enables jobs distributed via IP.
DISable	: Disables jobs distributed via IP.

The following setting is the factory default value.

Service 1 & 2: **ENable**



- Service 1 & 2 are the two services shown by **SH SERVI**.

Note

8-10. SET SERVI <service name> NAmE

Changes the service name.

SET SERVI <service name> NAmE <newname>

service name	: Specifies the service name to change.
newname	: Specifies the new name.

8-11. SET SERVI <service name> POrt

Sets the association between the service and output port.

SET SERVI <service name> POrt <portname>

service name : Specifies the service name.

portname : Specifies the output port name to be associated.

The factory default value is **S1**.

8-12. SET SERVI <service name> PRiority

Specifies the priority for services when multiple services send data at the same time.

The higher priority data is sent first.

SET SERVI <service name> PRiority <n>

service name : Specifies the service name.

n : Specifies the priority.

The factory default value is **10**.

8-13. SH SERVI PRI [service_num]

Shows the priority for the specified services.

SH SERVI PRI [service_num]

For [service_num], enter the number of the service to show the priority.

When no value is given, priority for all services will be shown.

Sample output:

```
Local> SH SERVI PRI
# Service          Priority
1 SDS40CB90_S1_A   10
2 SDS40CB90_S1_B   10
3 SDS40CB90_S2_A   10
4 SDS40CB90_S2_B   10
```

8-14. SET SERVI <service name> QUEue

Specifies the operation to take when a Raw TCP port is defined and the server is busy with the other jobs.

SET SERVI <service name> QUEue [ENable | DISable]

service name : Specifies the service name.
ENable : The server queues the job that is to be sent to the port.
DISable : The job is denied.

The factory default value is **DISable**.

8-15. SET SERVI <service name> RECeive

Enables the receive-only mode for the specified service.

This command is used only when the host application does not operate properly when data is received from the serial device and is sent to the host application.

SET SERVI <service name> RECeive [ENable | DISable]

service name	: Specifies the service name.
ENable	: Enables the receive-only mode.
DISable	: Disables the receive-only mode.

The factory default value is **DISable**.

8-16. SET SERVI <service name> TCP

Specifies the TCP port number for Raw TCP port of the service.

SET SERVI <service name> TCP <n>

service name	: Specifies the service name.
n	: Specifies the TCP port number for Raw TCP port communication. When 0 is provided, the Raw TCP function will be disabled for this service.

The following settings are the factory default values.

Service 1: **9100**

Service 2: **3001**



Note

- Service 1 & 2 are the two services shown by **SH SERVI**.

8-17. SH SERVI SUMmary [service_num]

Shows the setting of the specified service.

SH SERVI SUMmary [service_num]

For [service_num], enter the number of the service to show the setting.

When no number is provided, settings of all services will be shown.

Sample output:

```
Local> SH SERVI SUMmary 2
# Service          Port FIL BOT EOT DEL OPT  PROT
2 SDS40CB90_S1_B  S1  0  1  1  0  B  IP
```



- When **service_num** is not specified, the output will be the same as what **SH SERVI** shows.

9. String Commands

This chapter describes the commands that can set the strings to use for services and service filters.

9-1. SET STRing

Registers the string to use for services.

SET STRing <string_num> <"value">

string_num : Specifies the number where the string is registered.
value : Specifies the string to register. The string has to be double-quoted.

When / is added to the beginning of the string, two hexadecimal digits can be specified. When /FF is added to the beginning of string, the registered index number of the string can be specified. The string of the specified index number will be used for the service.

Example:

SET STRing 12 "/AE"

Registers hexadecimal "AE" at 12th.

SET STRing 13 "/FF/04/FF/05"

Registers the 4th and 5th strings to 13th.



- Strings from 1st to 11th cannot be changed.

9-2. CL STRing

Deletes the string that is used for services.

CL STRing <string_num>

For <string_num>, enter the number of the string to delete.

9-3. SH STRing

Shows the BOT and EOT string definitions to use for services.

SH STRing <string_num>

The output will be changed depending on the existence of <string_num>.

When <string_num> is provided	: Shows the string of <string_num> and the extended information.
When <string_num> is not provided	: Shows all the strings without the extended information.

Sample output:

```
Local> SH STRing
```

```
1:
2: \1BE
3: \04
4: \1B%-12345X
5: @PJL
6: ENTER LANGUAGE=
7: PCL\0A
8: POSTSCRIPT\0A
9: \FF\04\FF\05\FF\06\FF\07
10: \FF\04\FF\05\FF\06\FF\08
11: \0C
```

9-4. SH FILters

Shows the filter that can be used to modify the job stream.

SH FILters

Sample output:

```
Local> SH FILters
```

```
# Filter
0 No Filter
1 Text Substitution
3 Text to PostScript
4 PostScript Tagged Binary
```

10. TCP/IP Commands

This chapter describes the commands for TCP/IP function settings.

10-1. SH IP

Shows the current TCP/IP settings.

SH IP

Sample output:

```
Local> SH IP
```

```
IP is enabled
```

```
Boot method DHCP
```

```
IP address 192.168.5.40 (192.168.5.235)
```

```
Subnet Mask 255.255.255.0 (255.255.255.0)
```

```
IP gateway 192.168.5.1 (0.0.0.0)
```

```
Boot tries 3
```

```
Timeout 1 min
```

```
Keepalive 1 min
```

Service	Port	TCP port
SDS1E86B0_S1_A	S1	9100
SDS1E86B0_S1_B	S1	3001

10-2. SET IP ACcess

Allows/Denies access from the specified IP address range.

SET IP ACcess [ENable | DISable | ALL] <aa.bb.cc.dd> <ee.ff.gg.hh>

This command updates the list of IP addresses that can access MNS-300EM.

ENable	: Adds an IP address range to the IP address list. Only the hosts with the registered IP address are allowed to access MNS-300EM.
DISable	: Removes an IP address range from the IP address list when it is found on the list.
ALL	: Clears the IP address list and allows access of all hosts.
aa.bb.cc.dd and ee.ff.gg.hh	: Specifies the IP address range. The IP addresses in the range of aa.bb.cc.dd to ee.ff.gg.hh will be the target of operation.

SH IP ACcess or **SH IP RANge** can show the settings of IP address list.

10-3. SET IP KEepalive

Specifies the interval to send Gratuitous ARP packets (minutes).

SET IP KEepalive <n>

Enter the transmission interval for <n>.
The factory default value is **5** (minutes).

10-4. SET IP HTTP

Enables/Disables the HTTP protocol.

SET IP HTTP [ENable | DISable]

ENable : Enables the HTTP protocol.

DISable : Disables the HTTP protocol.

The factory default value is **ENable**.

10-5. SET IP TFTP

Enables/Disables the TFTP protocol.

SET IP TFTP [ENable | DISable]

ENable : Enables the TFTP protocol.

DISable : Disables the TFTP protocol.

The factory default value is **DISable**.

10-6. SET IP NTP

Enables/Disables the NTP protocol.

SET IP NTP [ENable | DISable]

ENable : Enables the NTP protocol.

DISable : Disables the NTP protocol.

The factory default value is **ENable**.

10-7. SET IP TCP

Enables/Disables the Raw TCP (9100) protocol.

SET IP TCP [ENable | DISable]

ENable : Enables the Raw TCP (9100) protocol.

DISable : Disables the Raw TCP (9100) protocol.

The factory default value is **ENable**.

10-8. SET IP LPD

Enables/Disables the LPD protocol.

SET IP LPD [ENable | DISable]

ENable : Enables the LPD protocol.

DISable : Disables the LPD protocol.

The factory default value is **ENable**.

10-9. SET IP SX_INTERN

Enables/Disables the Silex Technology's proprietary protocol.

SET IP SX_INTERN [ENable | DISable]

ENable : Enables the Silex Technology's proprietary protocol.

DISable : Disables the Silex Technology's proprietary protocol.

The factory default value is **ENable**.

10-10. SET IP PRObe

Enables/Disables the TCP connection check (TCP Keepalive packet transmission).

SET IP PRObe [ENable | DISable]

ENable : Enables transmission of the TCP Keepalive packet.
DISable : Disables transmission of the TCP Keepalive packet.

The factory default value is **DISable**.

10-11. SET IP Tlmeout

Specifies the TCP idle timeout.

SET IP Tlmeout <n>

Enter the idle timeout value for <n>.

This command specifies the idle timeout for an I/O port of the IP stack which transfers data via Raw TCP, RFC2217 and LPD protocols.

When no data is received during the specified time, the connection will be closed and the port will be released for new connections.

When **SET IP FTime** is **ENable**, the value will be configured in the unit of seconds. Otherwise, the unit of minutes will be applied.

The factory default value is **1** (minute).

10-12. SET IP FTIme

Specifies the unit of IP timeout.

SET IP FTIme [ENable | DISable]

ENable : The IP timeout is measured in seconds.

DISable : The IP timeout is measured in minutes.

The factory default value is **DISable**.

10-13. SET IP REtry

Enables/Disables reprinting an uncompleted print job over LPD protocol.

SET IP REtry [ENable | DISable]

ENable : Enables reprinting an uncompleted print job.

DISable : Disables reprinting an uncompleted print job.

The factory default value is **DISable**.

10-14. SET IP STATUs

Specifies the user defined IP status string.

SET IP STATUs <status-string>

This command can define any string.

If a string is defined, it will be returned for the LPD status request.

SH IP STATUs can show the current status string.

Example:

```
Local> SET IP STATUs lpd-status
```



- This value will be deleted when MNS-300EM restarts.

10-15. SET IP WIndow

Specifies the maximum TCP window size in bytes.

SET IP WIndow <n>

Enter the maximum TCP window size for <n>.

The factory default value is **10240** (bytes).

SH IP WIndow can show the current setting value.

10-16. SET IP BAnner

Enables/Disables the banner printing on LPD.

SET IP BAnner [ENable | DISable]

ENable : Enables the banner printing.

DISable : Disables the banner printing.

The factory default value is **DISable**.

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11. DNS Commands

This chapter describes the commands for DNS function settings.

11-1. SH DNS

Shows the current DNS settings.

SH DNS

Sample output:

```
Local> SH DNS
```

```
DNS is Enabled
```

```
Domain name:
```

```
Primary DNS server: 0.0.0.0
```

```
Secondary DNS server: 0.0.0.0
```

11-2. SET DNS DOMain

Specifies the domain name required by the DNS function.

SET DNS DOMain <domain-name>

Enter 1-32 alphanumeric characters for <domain-name>.

The factory default value is a Null string.

Example:

```
Local> SET DNS DOMain mns300dns
```

11-3. SET DNS PRImary

Specifies the IP address of primary DNS server.

SET DNS PRImary <aa.bb.cc.dd>

Enter the IP address of primary DNS server for <aa.bb.cc.dd>.

The factory default value is **0.0.0.0**.

11-4. SET DNS SECondary

Specifies the IP address of secondary DNS server.

SET DNS SECondary <aa.bb.cc.dd>

Enter the IP address of secondary DNS server for <aa.bb.cc.dd>.

The factory default value is **0.0.0.0**.

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12. NTP Commands

This chapter describes the commands for NTP settings.

12-1. SET NTP SERVER

Specifies the NTP server to retrieve the time information from.

SET NTP SERVER <server>

For <server>, enter an alphanumeric string (up to 48 characters).

When no value is given to <server>, the factory default value is used.

The factory default value is **pool.ntp.org**.

SH NTP SERVER can show the current value.

Example:

```
Local> SET NTP SERVER server.ntp01.jp
```

12-2. SH NTP DATE

Shows the current system time.

SH NTP DATE

Sample output:

```
Local> SH NTP DATE  
Thu, 01 Jan 1970 02:13:36 +0000
```

13. GPIO Control Commands

This chapter describes the commands for GPIO signal settings.

MNS-300EM has 11 GPIO signals, and number 0-10 is assigned for each. For details on the GPIO signal definitions and functions, refer to **MNS-300EM Setting Manual**.

13-1. SET GPIO DIR

Specifies the GPIO signal direction (IN or OUT).

SET GPIO DIR [IN | OUT] <gpio-number>

IN : Sets the direction to input.
OUT : Sets the direction to output.
gpio-number : Specifies the number of GPIO signal to set (0-10) .

This command specifies the direction (input/output) for each GPIO signal.

When the special function mode is on, this setting is ignored and the direction is fixed as specified for that function.



- This setting will remain even after the configuration is initialized.

TIP

13-2. SH GPIO DIR

Shows the GPIO signal direction settings.

SH GPIO DIR

Sample output:

```
Local> SH GPIO DIR
```

```
GPIO Direction
```

```
-----
```

```
0 [SPCL]
```

```
1 [SPCL]
```

```
2 [OUT]
```

```
3 [OUT]
```

```
4 [OUT]
```

```
5 [OUT]
```

```
6 [OUT]
```

```
7 [OUT]
```

```
8 [OUT]
```

```
9 [OUT]
```

```
10 [OUT]
```

13-3. SET GPIO DIRM

Sets the direction (in/out) for all 11 GPIO signals with a bitmask value.

SET GPIO DIRM <bit-mask>

<bit-mask> is an 11 bit mask expressed as 3 hex digits.

The value range must be 000-7FF.

The following table shows the definition of each bit for <bit-mask>.

10	9	8	7	6	5	4	3	2	1	0
GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO
10	9	8	7	6	5	4	3	2	1	0

When 1 is given for each bit of <bit-mask>, the GPIO signals are set to be an output, and when 0 is given, they are set to be an input.

For example, when 080 (hex) is entered for <bit-mask>, GPIO7 is set to be an output and other signals are set to be an input. This setting is not applied for the GPIO signals assigned for a special function.



- This setting will remain even after the configuration is initialized.

TIP

13-4. SH GPIO DIRM

Shows the direction setting of all 11 GPIO signals as a bitmask value.

SH GPIO DIRM

Sample output:

```
Local> SH GPIO DIRM
```

```
GPIO direction mask=7fc
```

13-5. SET GPIO SPECial

Enables/Disables the special function of GPIO signals.

SET GPIO SPECial [ENable | DISable] <gpio-numbr>

ENable	: Enables the special function.
DISable	: Disables the special function.
gpio-number	: Specifies the number of GPIO signal to set (0-10).

This command enables or disables the special function defined for individual GPIO signal. For details on the special function assigned for each GPIO signal, refer to **8-1. GPIO Special Functions** in **MNS-300EM Setting Manual**.



- This setting will remain even after the configuration is initialized.

TIP

13-6. SH GPIO SPECial

Shows the current setting of special function for GPIO signals.

SH GPIO SPECial

Sample output:

```
Local> SH GPIO SPECial
```

```
GPIO Special Functions
```

```
-----
```

```
GPIO #0 is special
```

```
GPIO #1 is special
```

```
GPIO #2 is normal
```

```
GPIO #3 is normal
```

```
GPIO #4 is normal
```

```
GPIO #5 is normal
```

```
GPIO #6 is normal
```

```
GPIO #7 is normal
```

```
GPIO #8 is normal
```

```
GPIO #9 is normal
```

```
GPIO #10 is normal
```


13-7. SET GPIO SPECM

Sets the special function for all 11 GPIO signals with a bitmask value.

SET GPIO SPECM <bit-mask>

<bit-mask> is an 11 bit mask expressed as 3 hex digits.

The value range must be 000-7FF.

The following table shows the definition of each bit for <bit-mask>.

10	9	8	7	6	5	4	3	2	1	0
GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO
10	9	8	7	6	5	4	3	2	1	0

When 1 is given for each bit of <bit-mask>, the special function of GPIO signals is enabled, and when 0 is given, it is disabled.

For example, when 080 (hex) is entered for <bit-mask>, the special function of GPIO7 is enabled, and the special function of other signals is disabled (they can be used for general purpose).



- This setting will remain even after the configuration is initialized.

13-8. SH GPIO SPECM

Shows the special function setting of GPIO signals as a bitmask value.

SH GPIO SPECM

Sample output:

```
Local> SH GPIO SPECM
GPIO special function mask = 03
```

13-9. SET GPIO DATA

Sets the output value of all 11 GPIO signals with a bitmask value.

SET GPIO DATA <bit-mask>

<bit-mask> is an 11 bit mask expressed as 3 hex digits.

The value range must be 000-7FF.

The following table shows the definition of each bit for <bit-mask>.

10	9	8	7	6	5	4	3	2	1	0
GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO	GPIO
10	9	8	7	6	5	4	3	2	1	0

When the GPIO signal is set to be an output, the value specified by <bit-mask> is applied, and when it is set to be an input, the value is not applied. Also, when the special function of GPIO signal is enabled, the value is not applied.

For example, when 080 (hex) is entered for <bit-mask>, 1 (high) is set for GPIO7, and 0 (low) is set for all other GPIO signals except for the ones whose special function is enabled.



- For all GPIO signals whose direction is an output, 0 (Low) is applied when MNS-300EM is powered on or restarts.

13-10. SH GPIO DATA

Shows the current input/output values of GPIO signals.

SH GPIO DATA

Sample output:

```
Local> SH GPIO DATA
```

```
GPIO Data In
```

```
-----
```

```
GPIO #0 [1]
```

```
GPIO #1 [0]
```

```
GPIO Data Out
```

```
-----
```

```
GPIO #2 [0]
```

```
GPIO #3 [0]
```

```
GPIO #4 [0]
```

```
GPIO #5 [0]
```

```
GPIO #6 [0]
```

```
GPIO #7 [0]
```

```
GPIO #8 [0]
```

```
GPIO #9 [0]
```

```
GPIO #10 [0]
```

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14. Bluetooth Commands

This chapter describes the commands for Bluetooth functions.

14-1. SH BT

Shows the current Bluetooth function settings.

SH BT

Sample output:

```
Local> SH BT
BT configuration list
Bluetooth: Enabled
Passkey: 000000
```

14-2. SET BT

Enables/Disables the Bluetooth function.

SET BT [ENable | DISable]

ENable : Enables the Bluetooth function.
DISable : Disables the Bluetooth function.

The factory default value is **DISable**.

14-3. SET BT PASSkey

Specifies the pass key used for Bluetooth pairing.

SET BT PASSkey <n>

Enter the following value in <n>:

0 - 999999 : Specifies the pass key for Bluetooth pairing.

The factory default value is **0**.

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15. Firmware Update Commands

This chapter describes the command for firmware update.

15-1. SET LOAd XModem

Starts updating the firmware on the serial console by using XModem protocol.

SET LOAd XModem

Sample output:

```
Local> SET LOAd XModem
```

```
You may begin your XModem transfer now.
```

The firmware update file (MNS-300EM.bin) is sent to MNS-300EM after the above message is shown. When the file is received, MNS-300EM starts a firmware update process and restarts itself automatically.

16. Power Management Commands

This chapter describes the commands for the wireless module's power operation.

16-1. SET NW WLIF

Enables/Disables the wireless LAN network interface.

SET NW WLIF [UP | DOWN]

- UP : Enables the wireless LAN network interface and emits radio waves.
- DOWN : Disables the wireless LAN network interface and stops emitting radio waves.

The factory default value is **UP**.

16-2. SET POWER LEVEL

Changes the power level of MNS-300EM.

SET POWER LEVEL <n>

Enter one of the following values for <port>.

- 0 : High power level
The wireless module operates with the maximum output power.
- 1 : Low power level
The wireless module operates in a power save mode.

The factory default value is **0**.

SH POWER can show the current setting value.

17. Other Commands

This chapter describes other commands.

17-1. SET DEFAULT

Restores MNS-300EM to the factory default settings.

SET DEFAULT

17-2. EXIT

Terminates the configuration console session.

EXIT

17-3. HElp <command>

Shows the help information of the console command.

Enter only "HElp" or enter a command after "HElp" to see the information.

Sample output:

```
Local> HElp
```

EXIT/^D	Exit program
HElp	Information on available commands
INitialize	Reset unit
CLear/PUrge/DElete	Remove configuration item
SAVE	Save configuration to NV memory
SET/DEFine/CHange	Modify unit parameters
SHow	Display unit parameters
ZErO	Zero statistical counts

Type 'HElp <cmd>' for more information

17-4. INIT

Starts a soft reset when the EXIT command is executed.

INIT

17-5. SET PAssword

Changes the password to access MNS-300EM.

SET PAssword <password>

Enter 1-8 alphanumeric characters for <password>.
By default, no password is configured to MNS-300EM.

17-6. SAVE

Saves the current settings to the non-volatile memory.

SAVE

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