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Product Technical Support Bulletin

Command Strings for the MXW System

The most recent version of this document can be found at:
http://shure.custhelp.com/app/answers/detail/a_id/5207

The MXW System is connected via Ethernet to a control system, such as AMX or Crestron.

Connection: Ethernet (TCP/IP; select “Client” in the AMX/Crestron program)
Port: 2202

If using static IP addresses, make certain that the “Control” and the “Network Audio” settings are both set to static in the APT (Access Point) GUI. It is necessary to set the Charger IP address before setting the APT IP address. See the MXW User Guide for instructions.

The MXW System has 4 types of strings, as follows:

1. GET – The GET command is used to find the status of a parameter. After the AMX/Crestron sends a GET command, the MXW System responds with a REPORT string.
2. SET – The SET command is used to change the status of a parameter. After the AMX/Crestron sends a SET command, the MXW System will respond with a REPORT string to indicate the new value of the parameter.
3. REP – When the MXW receives a GET or SET command, it will reply with a REPORT command to indicate the status of the parameter. REPORT is also sent by the MXW System when a parameter is changed via the front panel or via the GUI.
4. SAMPLE – Used for metering RF levels and audio levels.

All messages sent and received are ASCII. Note that the level indicators and gain indicators are also in ASCII.

Most parameters will send a REPORT command then they change. Thus, it is not necessary to constantly query battery or button status parameters. The APT will send a REPORT command when any of these parameters change.

Almost all commands are sent back and forth to the APT. The APT then relays these commands to the microphones. Thus, for control, simply send commands to the IP address associated with the APT.

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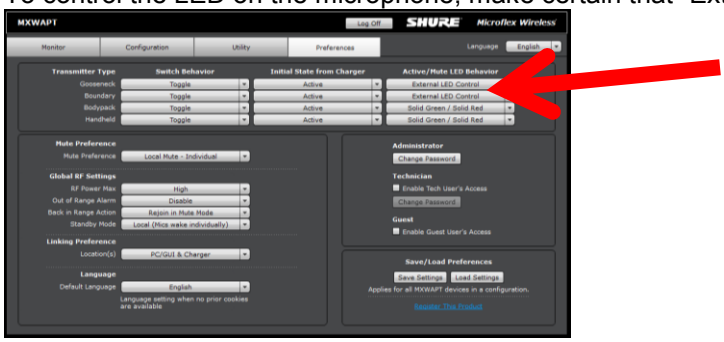
NOTE 1
When a microphone is not available (TX_AVAILABLE = NO), its parameters can change. Therefore, the best practice is to monitor TX_AVAILABLE. When TX_AVAILABLE changes from NO to YES, send GET commands for these parameters for the appropriate channel.

Example:

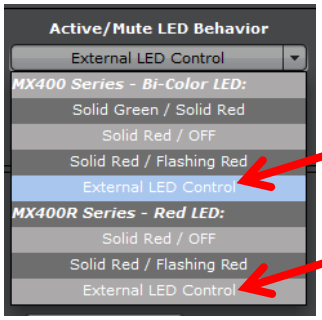
User removes mic #1 from charger
APT Sends: < REP 1 TX_AVAILABLE NO >
APT Sends: < REP 1 TX_AVAILABLE YES >
Control System Sends: < GET 1 TX_STATUS >
< GET 1 AUDIO_GAIN >
< GET 1 BATT_RUN_TIME >
< GET 1 BATT_CHARGE >
< GET 1 BATT_HEALTH >
< GET 1 BUTTON_STS >
< GET 1 LED_STATUS >
< GET 1 TX_TYPE >
APT Replies: < REP 1 TX_STATUS ACTIVE >
< REP 1 AUDIO_GAIN 034 >
< REP 1 BATT_RUN_TIME 00317 >
< REP 1 BUTTON_STS OFF >
< REP 1 LED_STATUS ON OFF >
< REP 1 TX_TYPE MXW6 >

LED Control

To control the LED on the microphone, make certain that “External LED Control” is selected in the MXW GUI.



Note that for the Gooseneck Mics there is a separate selection depending which type of gooseneck you have, MX400 Series Bi-color LED or MX400R Series Red LED.



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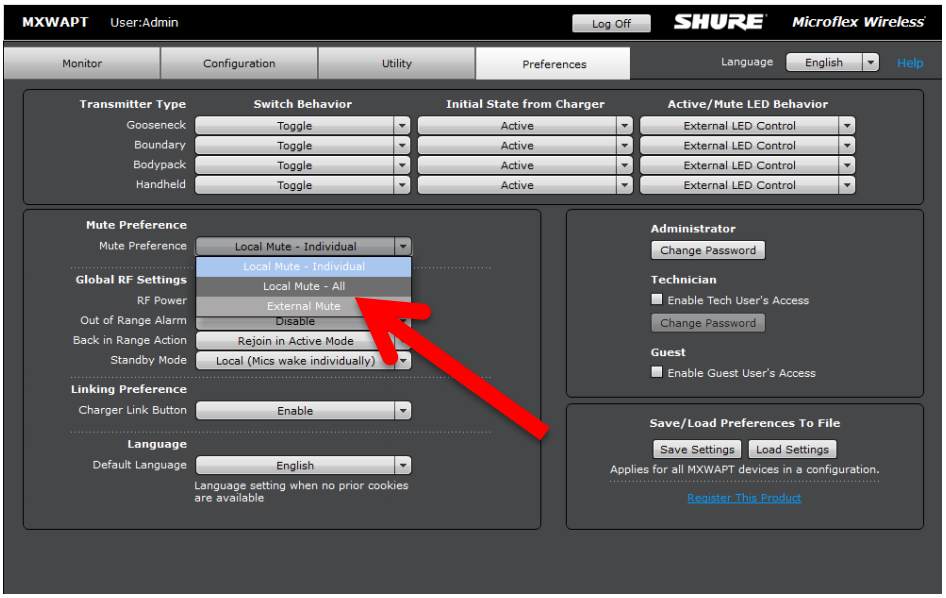
Echo Cancellers

The MXW wireless system is an excellent choice for teleconferencing applications. The echo cancellers/mixers used in these applications require that:

1. The microphone always supplies audio. The echo canceller/mixer requires a constant audio signal to properly process the audio signal paths.
2. A separate mute command be supplied for muting the microphone signal. This muting occurs inside the echo canceller/mixer, not locally at the microphone.

To provide this functionality with the MXW system, simply follow these instructions.

1. In the MXWAPT GUI, select the “Preferences” tab. Change the “Mute Preference” to “External Mute”. *Note: When using the External Mute, the Switch Behavior (toggle vs latching) is determined by the Crestron/AMX code.*



2. Example #1 (momentary push to talk button):
    a. User pushes button on Mic #1
    b. APT sends: < REP 1 BUTTON_STS ON >
    c. Control System sends command to Mixer to unmute channel 1
    d. Mixer sends command to Control System to confirm that channel 1 is unmuted
    e. Control System sends to APT: < SET 1 LED_STATUS OF ON >
        (Turns off RED LED, turns on Green LED for Mic #1)
    f. User releases button on Mic #1
    g. APT sends: < REP 1 BUTTON_STS OFF >
    h. Control System sends command to Mixer to mute channel 1
    i. Mixer sends command to Control System to confirm that channel 1 is muted
    j. Control System sends to APT: < SET 1 LED_STATUS ON OF >
        (Turns on RED LED, turns off Green LED for Mic #1)

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3. Example #2 (latching mute switch):
    a. User pushes and releases button on Mic #1
    b. APT sends: < REP 1 BUTTON_STS ON >
    c. APT sends: < REP 1 BUTTON_STS OFF >
    d. Control System sends command to Mixer to mute channel 1
    e. Mixer sends command to Control System to confirm that channel 1 is muted
    f. Control System sends to APT: < SET 1 LED_STATUS ON OF >
        (Turns on RED LED, turns off Green LED for Mic #1)
    k. User pushes and releases button on Mic #1
    l. APT sends: < REP 1 BUTTON_STS ON >
    m. APT sends: < REP 1 BUTTON_STS OFF >
    n. Control System sends command to Mixer to unmute channel 1
    o. Mixer sends command to Control System to confirm that channel 1 is unmuted
    p. Control System sends to APT: < SET 1 LED_STATUS OF ON >
        (Turns off RED LED, turns on Green LED for Mic #1)

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The character "x" in all of the following strings represents the channel of that particular receiver and can be ASCII numbers 0, 1, 2, 3, 4, 5, 6, 7 or 8. Using the number 0 will report all channels.

APT Commands

View Channel Name	Command String:	< GET x CHAN_NAME >	*Where x is ASCII channel number: 1, 2, 3, 4, 5, 6, 7 or 8.*
	APT Response:	< REP x CHAN_NAME {yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy} >	*Where yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy is 31 characters of the user name. The APT always responds with a 31 character name.*
Set Channel Name	Command String:	< SET x CHAN_NAME {yyyyyyyy} >	*Where yyyyyyyy is 31 characters of the channel name. The channel name can be 1 to 31 characters long. Each channel must have a unique name.*
	APT Response:	< REP x CHAN_NAME {yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy} >	*Where yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy is 31 characters of the channel name. The APT receiver always responds with a 31 character name.*
View Device ID	Command String:	< GET DEVICE_ID >	*The Device ID command does not contain the x channel character, as it is for the entire device.*
	APT Response:	< REP DEVICE_ID {yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy} >	*Where yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy is 31 characters of the device ID. The APT always responds with a 31 character device ID.*
Set Device ID	Command String:	< SET DEVICE_ID {yyyyyyyy} >	*Where yyyyyyyy is 31 characters of the device ID. The device ID can be 1 to 31 characters long.*
	APT Response:	< REP DEVICE_ID {yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy} >	*Where yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy is 31 characters of the device ID. The APT always responds with a 31 character device ID.*

Flash Lights on APT	Command String:	< SET FLASH ON > < SET FLASH OFF >	*Send one of these commands to the APT. The flash automatically turns off after 60 seconds.*
	APT Response:	< REP FLASH ON > < REP FLASH OFF >	*The APT will respond with one of these strings.*
Turn Metering On	Command String:	< SET x METER_RATE sssss >	*Where sssss is the metering speed in milliseconds. Setting sssss=0 turns metering off. Minimum setting is 100 milliseconds. Metering is off by default.*
	APT Response:	< REP x METER_RATE sssss > < SAMPLE x aaa eee >	*Where aaa is the value of the RF level received and is 000-096. Under peak conditions, the RF level might go above 096. Where eee is the audio level and is 000-098.*
Stop Metering	Command String:	< SET x METER_RATE 0 >	*A value of 00000 is also acceptable.*
	APT Response:	< REP x METER_RATE 00000 >	

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Transmitter Commands

These commands are to be sent to the APT IP address.

Get Transmitter Available	Command String:	< GET x TX_AVAILABLE >	*Indicates when a microphone is available for communication. A microphone is not available when it is off, unlinked, or is still trying to establish communication after being turned on or undocked. Read NOTE 1 at the beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x TX_AVAILABLE YES > < REP x TX_AVAILABLE NO >	*The APT will respond with one of these strings.*
Get Transmitter Status	Command String:	< GET x TX_STATUS >	
	APT Response:	< REP x TX_STATUS ACTIVE > < REP x TX_STATUS MUTE > < REP x TX_STATUS STANDBY > < REP x TX_STATUS ON_CHARGER > < REP x TX_STATUS UNKNOWN >	*The APT will respond with one of these strings.* *ACTIVE: linked TX is undocked, powered on, unmuted.* *MUTE: linked TX is undocked, powered on, muted. When using External Mute, the mic will not report MUTE, as the muting is done in the mixer.* *STANDBY: linked TX is undocked, in standby, muted.* *ON_CHARGER: linked TX is docked.* *Will report error message if no transmitter is linked or transmitter is off.* *Read NOTE 1 at beginning of document concerning TX_STATUS.*
Set Transmitter Status	Command String:	< SET x TX_STATUS ACTIVE > < SET x TX_STATUS MUTE > < SET x TX_STATUS STANDBY > < SET x TX_STATUS OFF >	*Send one of these commands to the APT.*
	APT Response:	< REP x TX_STATUS ACTIVE > < REP x TX_STATUS MUTE > < REP x TX_STATUS STANDBY > < REP x TX_STATUS ON_CHARGER > < REP x TX_STATUS UNKNOWN >	*The APT will respond with one of these strings.*
Get Audio Gain	Command String:	< GET x AUDIO_GAIN >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x AUDIO_GAIN yyy >	*Where yyy takes on the ASCII values of 000 to 040. yyy minus 25 equals the value in the GUI.*
Set Audio Gain	Command String:	< SET x AUDIO_GAIN yyy >	*Where yyy takes on the ASCII values of 000 to 040.*
	APT Response:	< REP x AUDIO_GAIN yyy >	*Where yyy takes on the ASCII values of 000 to 040.*
Increase Audio Gain by n dB	Command String:	< SET x AUDIO_GAIN INC n >	*Where n is the amount in dB to increase the gain. Valid n values are 1 through 40.*
	APT Response:	< REP x AUDIO_GAIN yyy >	*Where yyy takes on the ASCII values of 000 to 040.*
Decrease Audio Gain by n dB	Command String:	< SET x AUDIO_GAIN DEC n >	*Where n is the amount in dB to decrease the gain. Valid n values are 1 through 40.*
	APT Response:	< REP x AUDIO_GAIN yyy >	*Where yyy takes on the ASCII values of 000 to 040.*
Microphone Button Status	Command String:	< GET x BUTTON_STS >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x BUTTON_STS ON > < REP x BUTTON_STS OFF >	*Sent when the user pushes the button on the microphone. On=pressed, Off=released. The APT will always send this Report when the button status changes. There is no need to continually send the GET command.*

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Get Microphone LED Status	Command String:	< GET x LED_STATUS >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x LED_STATUS rr gg >	*Where rr is the setting for the red LED and gg is the setting for the green LED.* *rr and gg can take on the following 2 digit values:* *ON = On* *OF = Off* *ST = Strobe* *FL = Flash* *PU = Pulse* *NC = No Change*
Set Microphone LED Status	Command String:	< SET x LED_STATUS rr gg >	*This is only applicable when the GUI has been set to "External LED Control". Where rr is the setting for the red LED and gg is the setting for the green LED.* *rr and gg can take on the following 2 digit values:* *ON = On* *OF = Off* *ST = Strobe* *FL = Flash* *PU = Pulse* *NC = No Change*
	APT Response:	< REP x LED_STATUS rr gg >	
Get Microphone Type	Command String:	< GET x TX_TYPE >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x TX_TYPE MXW1 > < REP x TX_TYPE MXW2 > < REP x TX_TYPE MXW6 > < REP x TX_TYPE MXW8 >	*The APT will respond with one of these strings.*
Get Battery Charge Status (Percent Full)	Command String:	< GET x BATT_CHARGE >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x BATT_CHARGE yyy >	*Where yyy is the remaining battery life as a percentage. When microphone is off, yyy=255.*
Get Battery Run Time	Command String:	< GET x BATT_RUN_TIME >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x BATT_RUN_TIME yyyyy >	*Where yyyyy is the minutes until the microphone turns itself off. When microphone is powered by a wall wart charger, yyyyy=65532. When microphone is on the charger, yyyyy=65533. When the run time is still being calculated, yyyyy=65534. When microphone is off, yyyyy=65535.*
Get Battery Health	Command String:	< GET x BATT_HEALTH >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x BATT_HEALTH yyy >	*Where yyy is the percentage of capacity the battery currently has relative to the factory defined original capacity. When transmitter is off, yyy=255.*
Get Battery Time To Full	Command String:	< GET x BATT_TIME_TO_FULL >	*Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x BATT_TIME_TO_FULL yyyyy >	*Where yyyyy is the minutes until the microphone is fully charged. When transmitter is off, yyy=65535. When transmitter is on and not on the charger, yyyyy=65533. When transmitter is on the charger and fully charged, yyyyy=65534.*
Flash Lights on Microphone	Command String:	< SET x FLASH ON > < SET x FLASH OFF >	*Send one of these commands to the APT. The flash automatically turns off after 60 seconds. Read NOTE 1 at beginning of document concerning TX_AVAILABLE.*
	APT Response:	< REP x FLASH ON > < REP x FLASH OFF >	*The APT will respond with one of these strings.*

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MXWNCS Charger Commands

This should be sent to the MXWNCS IP Address.

Flash Lights on Charger	Command String:	< SET FLASH ON > < SET FLASH OFF >	*Send one of these commands to the MXWNCS Charger. The flash automatically turns off after 60 seconds.* ***Make certain to send this to the MXWNCS Charger IP address.***
	Charger Response:	< REP FLASH ON > < REP FLASH OFF >	*The MXWNCS Charger will respond with one of these strings.*
View Device ID	Command String:	< GET DEVICE_ID >	*The Device ID command does not contain the x channel character, as it is for the entire device.*
	Charger Response:	< REP DEVICE_ID {yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy} >	*Where yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy is 31 characters of the device ID. The Charger always responds with a 31 character device ID.*
Set Device ID	Command String:	< SET DEVICE_ID {yyyyyyyy} >	*Where yyyyyyyy is 31 characters of the device ID. The device ID can be 1 to 31 characters long.*
	Charger Response:	< REP DEVICE_ID {yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy} >	*Where yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy is 31 characters of the device ID. The Charger always responds with a 31 character device ID.*
Additional Charger commands are available to query the status of an unlinked microphone that is being charged. Please contact Shure Support (support@shure.com) for assistance.			

Codes

All commands adhere to a common set of extra codes. The codes are at the upper ends of the binary numbers. Thus 255, 254, 253, 252 are codes for three digit numbers. 65535, 65534, 65533, 65532 are codes for 5 digit numbers. These codes indicate that the device you are trying to control is not available. The meaning of the codes can be found in the above tables with the appropriate commands.

There is also an < REP ERR > error string that indicates the command is not able to be implemented. This is usually due to a typo or a command that does not exist.