

CLOUD MA40E

Serial Control Protocol

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UPDATES

V1.1

- Correct the example for the source selection command, which was using '.' Instead of ','

INTRODUCTION

This document describes the serial protocol used to communicate with the Cloud MA40E mixer-amplifier.

Details for configuring the Serial Interface are in the MA40E installation guide.

This protocol may be used for sending commands to the RS232 interface or to the Ethernet interface on the port dedicated to the MA40E.

Features of the MA40E may be accessed through the web interface to set the RS232 baud rate and network settings. Access to this interface is password protected and the MA40E comes with DHCP enabled by default. It is advisable to either reserve an IP address for the unit by setting up the DHCP server to do so or to set the unit for operation on a static IP address.

Throughout this document all message text is shown in a `mono spaced font`.

TABLE OF COMMANDS

N.B. Destination n is always 1 for the MA40E.

Level and Source		
Command	Description	N.B.
<Bn.Lx,E/>	Destination n level x enable	x = 1, or 2
<Bn.Lx,D/>	Destination n level x disable	
<Bn.Lx,Q/>	Destination n level x enable query	
<Bn.Lx,L8/>	Destination n Level x to -8dB.	
<Bn.Lx,LU6/>	Destination n Level x Up 6dB.	
<Bn.Lx,LD3/>	Destination n Level x Down 3dB.	
<Bn.Lx,LQ/>	Destination n Level x Query.	
<Bn.IS,E/>	Destination n Input Source Enabled	
<Bn.IS,D/>	Destination n Input Source Disabled	
<Bn.IS,Q/>	Destination n Input Source Query	
<Bn,Sx/>	Destination n Source to x.	S0=Off, S1=Line 1, S2= Line 2, S3=Mixed
<Bn,SQ/>	Destination n Source Query.	
Room EQ		
Command	Description	N.B.
<Bn.RE,E/>	Destination n Room EQ Enabled.	Bypass or enable the entire Room EQ.
<Bn.RE,D/>	Destination n Room EQ Disabled (Bypassed).	
<Bn.RE,Q/>	Destination n Room EQ Query Bypass state.	
<Bn.RL,F100/>	Destination n Room EQ low shelf Frequency to 100.	High Shelf and Low shelf can also be set as parametric on bands 1 and 7.
<Bn.RH,F15000/>	Destination n Room EQ high shelf Frequency to 15000.	
<Bn.RL,C3/>	Destination n Room EQ low shelf, Cut by 3dB.	
<Bn.RH,B5/>	Destination n Room EQ High Shelf, Boost by 5dB.	
<Bn.RL,Q/>	Destination n Room EQ Low shelf Query.	
<Bn.RH,Q/>	Destination n Room EQ High shelf Query.	
<Bn.R2,F1200/>	Destination n Room EQ band 2, Frequency set to 1200Hz.	Parametric bands 1 to 7.
<Bn.R3,Q1.3/>	Destination n Room EQ band 3, Q set to 1.3.	
<Bn.R6,C3/>	Destination n Room EQ band 6, Cut by 3dB.	
<Bn.R5,B5/>	Destination n Room EQ band 5, Boost by 5dB.	
<Bn.R6,Q/>	Destination n Room EQ band 6 Query.	

Front Panel EQ		
Command	Description	N.B.
<Bn.FE,E/>	Destination n Front panel EQ Enabled	
<Bn.FE,D/>	Destination n Front panel EQ Disabled	
<Bn.FE,Q/>	Destination n Front panel EQ Query	
<Bn.PE,F70/>	Destination n Protect EQ Frequency to 70Hz.	
<Bn.PE,Q/>	Destination n Protect EQ Query.	
Protect High pass filter		
Command	Description	N.B.
<Bn.PE,D/>	Destination n Protect EQ Disable.	
<Bn.PE,E/>	Destination n Protect EQ Enable.	
<Bn.PE,F70/>	Destination n Protect EQ Frequency to 70Hz.	
<Bn.PE,Q/>	Destination n Protect EQ Query.	
Speaker EQ		
Command	Description	N.B.
<Bn.SE,D/>	Destination n Speaker EQ Disable.	Speaker EQ is a 5 band parametric.
<Bn.SE,E/>	Destination n Speaker EQ Enable.	
<Bn,SE,Q/>	Destination Speaker EQ Enable state Query	
<Bn.S1,F100/>	Destination n Speaker EQ band 1 Frequency to 100Hz.	
<Bn.S2,Q1.1/>	Destination n Speaker EQ band 2 Q to 1.1.	
<Bn.S3,C3/>	Destination n Speaker EQ band 3 Cut by 3dB.	
<Bn.S4,B5/>	Destination n Speaker EQ band 4 Boost by 5dB.	
<Bn.S3,Q/>	Destination n Speaker EQ band 3 Query.	
<Bn.SE,P=None:Flat/>	Destination n Set Speaker Preset to "None:Flat"	
<Bn.SE,PQ/>	Destination n Query Speaker Preset	

Output		
Command	Description	N.B.
<Bn.OL,E/>	Destination n Output level enable	
<Bn.OL,D/>	Destination n Output level disable	
<Bn.OL,Q/>	Destination n Output level query	
<Bn,L8/>	Destination n Level to -8dB.	
<Bn,LU6/>	Destination n Level Up 6dB.	
<Bn,LD3/>	Destination n Level Down 3dB.	
<Bn,LQ/>	Destination n Level Query.	
<Bn,M/>	Destination n Mute	
<Bn,O/>	Destination n Open	
<Bn,Q/>	Destination n Query	
<Bn.TL,L6/>	Destination n Left Trim to -6dB.	
<Bn.TL,LU6/>	Destination n Left Trim Up 6dB.	
<Bn.TL,LD3/>	Destination n Left Trim Down 3dB.	
<Bn.TL,LQ/>	Destination n Left Trim Query.	
<Bn.TR,L6/>	Destination n Right Trim to -6dB.	
<Bn.TR,LU6/>	Destination n Right Trim Up 6dB.	
<Bn.TR,LD3/>	Destination n Right Trim Down 3dB.	
<Bn.TR,LQ/>	Destination n Right Trim Query.	
<Bn.ST,E/>	Destination n Stereo Enable	
<Bn.ST,D/>	Destination n Stereo Disable (Mono mode)	
<Bn.ST,Q/>	Destination n Stereo Query	
Labels		
Command	Description	N.B.
<SY.Bn,L=.../>	Destination Block n Label Set	
<SY.Bn,LQ/>	Destination Block n Label Query	
<SY.Ln,L=.../>	Destination Line n Label Set	
<SY.Ln,LQ/>	Destination Line n Label Query	
System		
Command	Description	N.B.
<SY,IF/>	Initialisation set to Factory.	Changes are effective after the next reset.
<SY,IP/>	Initialisation set to Previous.	
<SY,ID/>	Initialisation set to saved Defaults	
<SY,IQ/>	Query Initialisation state.	
<SY,SD/>	Save defaults from current settings	
<SY,RD/>	Reset saved defaults to factory	
<SY,R/>	System Reset.	
<SY.RS,B9600/>	System set RS232 at 9600 Baud.	
<SY.RS,BQ/>	System Query RS232 Baud rate.	

<SY, PU/>	System Power Up.	
<SY, PD/>	System Power Down.	
<SY, PQ/>	System Power Down socket Query	
<SY.TX, S=xyz/>	System Set Text Field to "xyz".	
<SY.TX, Q/>	System Query Text Field.	
<SY, ?/>	System Ping.	
<SY, K12345678/>	System change password from "1234" to "5678".	
<SY, BD/>	Boot load Disable.	
<SY, BE/>	Boot load Enable.	
<SY, BL/>	Boot load Lock.	
<SY, BQ/>	Boot load Query.	
<SY, BU1234/>	Boot load Unlock. NB Pin required.	
<SY, BR/>	Boot load Reset.	
<SY.SV, Q/>	Get Software Version.	
<SY.HV, Q/>	Get Hardware Version.	

EXAMPLES

Level and Source

Enable

<B1.L1,E/><b1.l1,e/> (* Enable Line 1 level control
 <B1.L2,D/><b1.l2,d/> (* Disable Line 2 level control
 <B1.L2,Q/><b1.l2,d/> (* Query Line 2 level state

Level

<B1.L1,L10/><b1.l1,l10/> (* Set Line 1 level to -10 dB
 <B1.L1,LU2/><b1.l1,l8/> (* Increase Line 1 level by 2 dB
 <B1.L1,LD6/><b1.l1,l14/> (* Decrease Line 1 level by 6 dB
 <B1.L2,Q/><b1.l2,l90/> (* Query Line 2 level attenuation

Source

<B1.IS,E/><b1.is,e/> (* Enable Input source select
 <B1.IS,D/><b1.is,d/> (* Disable Input source select
 <B1.IS,Q/><b1.is,d/> (* Query Input source select state
 <B1,S0/><b1,s0/> (* Set Input source select to OFF
 <B1,S1/><b1,s1/> (* Set Input source select to LINE 1
 <B1,S2/><b1,s2/> (* Set Input source select to LINE 2
 <B1,S3/><b1,s3/> (* Set Input source select to MIXED
 <B1,SQ/><b1,s3/> (* Query Input source selection

Room EQ

Enable

<B1.RE,E/><b1.re,e/> (* Enable Room EQ
 <B1.RE,D/><b1.re,d/> (* Disable Room EQ
 <B1.RE,Q/><b1.re,d/> (* Query Room EQ state

Low/High Shelf settings

Parametric bands 1 & 7 can be set as Low & High Shelf

<B1.RL,F100/><b1.rl,f100/> (* Set Low Shelf frequency to 100 Hz
 <B1.RL,C3/><b1.rl,c3/> (* Set Low Shelf to -3 dB (Cut)
 <B1.RL,Q/><b1.rl,=100, -3, e/> (* Query Low Shelf parameters (freq, gain, enable)
 <B1.RH,F15000/><b1.rh,f15000/> (* Set High Shelf frequency to 15 kHz
 <B1.RH,B5/><b1.rh,b5/> (* Set High Shelf to 5 dB (Boost)
 <B1.RH,Q/><b1.rh,=15000, 5, e/> (* Query High Shelf parameters (freq, gain, enable)

Parametric settings

<B1.R1,F150/><b1.r1,f150/> (* Set Band 1 frequency to 150 Hz
 <B1.R2,Q1.35/><b1.r2,q1.35/> (* Set Band 2 Q to 1.35
 <B1.R3,C5/><b1.r3,c5/> (* Set Band 3 gain to -5 dB(Cut)
 <B1.R7,B12/><b1.r7,b12/> (* Set Band 7 gain to +12 dB (Boost)
 <B1.R6,Q/><b1.r6,=8000, 0.70, 0, e/> (* Query Band 6 settings
 (* freq, Q, gain, enable

Front Panel EQ

<B1.FE,D/><b1.fe,d/> (* Disable Front panel EQ
 <B1.FE,E/><b1.fe,e/> (* Enable Front panel EQ
 <B1.FE,Q/><b1.fe,e/> (* Query State of Front panel EQ

Protect High Pass Filter

<B1.PE,D/><b1.pe,d/> (* Disable Protect EQ
 <B1.PE,E/><b1.pe,e/> (* Enable Protect EQ
 <B1.PE,F65/><b1.pe,f65/> (* Set Cutoff frequency to 65 Hz
 <B1.PE,Q/><b1.pe,=65, e/> (* Query Protect EQ state

Speaker EQ**Enable**

<B1.SE,D/><b1.se,d/> (* Disable Speaker EQ
 <B1.SE,E/><b1.se,e/> (* Enable Speaker EQ
 <B1.SE,Q/><b1.se,e/> (* Query state of Speaker EQ

Parametric settings

<B1.S1,F100/><b1.s1,f100/> (* Set the Frequency of Band 1 to 100 Hz
 <B1.S2,Q1.1/><b1.s2,q1.10/> (* Set the Q of Band 2 to 1.10
 <B1.S3,C3/><b1.s3,c3/> (* Set the Gain of Band 3 to -3 dB (Cut)
 <B1.S4,B5/><b1.s4,b5/> (* Set the Gain of Band 4 to +5 dB (Boost)
 <B1.S5,Q/><b1.s5,=16000, 0.70, 0, e/> (* Query Band 5 parameters
 (* freq, Q, gain, enable

Presets

<B1.SE,P=None:Flat/><b1.se,p=None:Flat/> (* Set Speaker EQ to Flat preset
 <B1.SE,PQ/><b1.se,p=None:Flat/> (* Query preset settings

Output**Enable**

<B1.OL,E/><b1.ol,e/> (* Enable output level
 <B1.OL,D/><b1.ol,d/> (* Disable output level. Defaults to 0dB attenuation
 <B1.OL,Q/><b1.ol,d/> (* Query output level state

Level

<B1,L6/><b1,l6/> (* Set output level to -6 dB
 <B1,LU3/><b1,l3/> (* Increase output level by 3 dB
 <B1,LD3/><b1,l6/> (* Decrease output level by 3 dB
 <B1,LQ/><b1,l6/> (* Query output level attenuation

Left Trim

<B1.TL,L3/><b1.tl,l3/> (* Set left trim to -3 dB
 <B1.TL,LU1/><b1.tl,l2/> (* Increase left trim by 1 dB
 <B1.TL,LD1/><b1.tl,l3/> (* Decrease left trim by 1 dB
 <B1.TL,LQ/><b1.tl,l3/> (* Query left trim attenuation

Right Trim

<B1.TR,L3/><b1.tr,l3/>	(* Set right trim to -3 dB
<B1.TR,LU1/><b1.tr,l2/>	(* Increase right trim by 1 dB
<B1.TR,LD1/><b1.tr,l3/>	(* Decrease right trim by 1 dB
<B1.TR,LQ/><b1.tr,l3/>	(* Query right trim attenuation

Stereo/Mono

<B1.ST,E/><b1.st,e/>	(* Enable Stereo operation
<B1.ST,D/><b1.st,d/>	(* Disable Stereo operation (Mono mode)
<B1.ST,Q/><b1.st,d/>	(* Query Stereo state

Labels

<SY.B1,L=ABC><sy.b1,l=ABC/>	(* Set Zone label to "ABC"
<SY.B1,LQ/><sy.b1,l=ABC/>	(* Query Zone label
<SY.L1,L=LINE1/><sy.l1,l=LINE 1/>	(* Set Line Input 1 label to "LINE 1"
<SY.L1,LQ/><sy.l1,l=LINE 1/>	(* Query Line Input 1 label

System commands**Initialisation**

<SY,IF/><sy,if/>	(* Set Initialisation mode to Factory
<SY,IP/><sy,ip/>	(* Set Initialisation mode to Previous
<SY,ID/><sy,id/>	(* Set Initialisation mode to Saved Defaults
<SY,IQ/><sy,i=d/>	(* Query Initialisation mode
<SY,SD/><sy,sd/>	(* Save defaults from current settings
<SY,RD/><sy,rd/>	(* Reset saved defaults to factory

Reset

<SY,R/><sy,r/>	(* Reset the system to factory settings
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Baud

<SY.RS,B9600/><sy.rs,b/>	(* Set RS232 Baud rate to 9600
<SY.RS,BQ/><sy.rs,b=9600/>	(* Query RS232 Baud rate

Power control

<SY,PD/><sy,pd/>	(* Force the unit into power down mode
<SY,PU/><sy,pu/>	(* Release the unit from forced power down mode
<SY,PQ/><sy,pd/>	(* Query state of forced power down

Text Field

<SY.TX,S=XYZ/><sy.tx,s=xyz/>	(* Set text field to "XYZ"
<SY.TX,Q/><sy.tx,q=xyz/>	(* Query text field

Ping

<SY,?/><sy,?/>	(* No effect. Trigger a response message
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Password

<SY,K12345678/> <sy,k12345678/>	(* Set password. Old password = 1234
	(* New password = 5678

Boot load

<SY,BU1234/><sy,bu=ud/>	(* Unlock the boot loader, PIN required)
<SY,BE/><sy,be=ue/>	(* Enable boot loader)
<SY,BR/><sy,br/>	(* Reset the unit into boot loader)
<SY,BD/><sy,bu=ud/>	(* Disable the boot loader)
<SY,BL/><sy,bl=ld/>	(* Lock the boot loader.
<SY,BQ/><sy,bq=ld/>	(* Query state of boot loader)

Version Number

<SY.SV,Q/><sy.sv,q=V1.3/>	(* Query Software version)
<SY.SV,Q/><sy.hv,q=V1.1/>	(* Query Hardware version)

NVM NOT READY ERROR

This error is generated if a control message is sent before the start up parameters have been read from Non Volatile Memory. It is identified by the sequence ("!N NVM not ready, please wait"). This error will clear shortly after power on; it is provided to acknowledge a message has been received but not acted upon.

OVERRUN ERROR

This error is identified by the sequence ("!A"). This indicates a fault condition within the software and should not be encountered during normal operation.

PARSE ERROR

This error is generated when a message is correctly formatted but the destination or command field cannot be decoded as valid. It is identified by the sequence ("!P"). Its return message is an upper case copy of the sent message.

Example

```
<B2.SE,E/><!P B2.SE,E Parse error/>
```

NB "B2" is not a valid destination.

TOKEN ERROR

This error is generated when there is a problem with the format of the message so that it cannot be decoded into its destination and command tokens. It is identified by the sequence ("!T"). Its return message is an upper case copy of the sent message up to the point of the detected error.

Example

```
<B1;OL,E/><!T B1; Token error/>
```

NB The semicolon is not a valid separator.

TABLE OF ERRORS

Error Type	ID	Fault Condition	Example Message	
			Faulty Message	Response
Buffer Full	B	Message too long.	<GGGGGGGGG...>	<!B Message Buffer Full/>
Execution	E	The execute function fails.	<SY.RS,B2345/>	<!E SY.RS,B2345 Execution error/>
Interrupted	I	Message interrupted before complete.	<Z1.MU<	<!I Message Interrupted/>
NVM	N	Waiting to finish reading Non Volatile Memory.	Any	<(!N NVM not ready, please wait/>
Overrun	A	Internal fault.	Any	<!A/>
Parser	P	Error decoding message.	<Z1.MU,K89/>	<!P Z1.MU,K89 Parse error/>
Token	T	Error in message format.	<Z1M/>	<!T Z1M Token error/>