

# CLOUD MA80E

## 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 MA80E mixer-amplifier.

Details for configuring the Serial Interface are in the MA80E 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 MA80E.

Features of the MA80E 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 MA80E 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 MA80E.

<b>Line level and Source</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</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.	
<Bn.OL,E/>	Destination n Master line level enable	
<Bn.OL,D/>	Destination n Master line level disable	
<Bn.OL,Q/>	Destination n Master line level query	
<Bn,L8/>	Destination n Master line level set to -8dB.	
<Bn,LU6/>	Destination n Master line level Up 6dB.	
<Bn,LD3/>	Destination n Master line level Down 3dB.	
<Bn,LQ/>	Destination n Master line level Query.	
<b>Microphone</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</b>
<Bn.ML,E/>	Destination n Mic level enable	
<Bn.ML,D/>	Destination n Mic level disable	
<Bn.ML,Q/>	Destination n Mic level query	
<Bn.ML,L8/>	Destination n Mic level to -8dB.	
<Bn.ML,LU6/>	Destination n Mic level Up 6dB.	
<Bn.ML,LD3/>	Destination n Mic level Down 3dB.	
<Bn.ML,LQ/>	Destination n Mic level Query.	

<b>Room EQ</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</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.	
<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.	
<b>Music EQ</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</b>
<Bn.FE,E/>	Destination n Music EQ Enabled	
<Bn.FE,D/>	Destination n Music EQ Disabled	
<Bn.FE,Q/>	Destination n Music EQ Query	
<b>Protect High pass filter</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</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.	

<b>Speaker EQ</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</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	
<b>Auxiliary Output</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</b>
<Bn.AL,L8/>	Destination n Aux level to -8dB.	
<Bn.AL,LU6/>	Destination n Aux level Up 6dB.	
<Bn.AL,LD3/>	Destination n Aux level Down 3dB.	
<Bn.AL,LQ/>	Destination n Aux level Query.	
<Bn.AE,E/>	Destination n Aux uses Music EQ Enabled	
<Bn.AE,D/>	Destination n Aux uses Music EQ Disabled (Flat)	
<Bn.AE,Q/>	Destination n Aux uses Music EQ Query	
<b>Master</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</b>
<Bn,M/>	Destination n Mute	
<Bn,O/>	Destination n Open	
<Bn,Q/>	Destination n Query	
<b>Labels</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</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	

<b>System</b>		
<b>Command</b>	<b>Description</b>	<b>N.B.</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.	
<SY, WU/>	Force wake from APD state	

## 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

#### Master Line Level Enable

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

#### Master Line Level

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

### Microphone

#### Enable

<B1.ML,E/><b1.ml,e/> (\* Enable Microphone level control  
 <B1.ML,D/><b1.ml,d/> (\* Disable Microphone level control  
 <B1.ML,Q/><b1.ml,d/> (\* Query Microphone level enable status

#### Level

<B1.ML,L8/><b1.ml,l8/> (\* Set Microphone level to -8dB  
 <B1.ML,LU6/><b1.ml,l2/> (\* Increase Microphone level by 6dB  
 <B1.ML,LD3/><b1.ml,l5/> (\* Decrease Microphone level by 3dB  
 <B1.ML,LQ/><b1.ml,l5/> (\* Query current Microphone level

**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)

**Music EQ**

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

**Protect High Pass Filter**

<B1.PE,D/><b1.pe,d/> (\* Disable Protect EQ)  
 <B1.PE,E/><b1.pe,d/> (\* 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)

**Auxiliary****EQ Control**

<B1.AE,E/><b1.ae,e/> (\* Enable Music EQ controls on Auxiliary out  
 <B1.AE,D/><b1.ae,d/> (\* Disable Music EQ controls on Auxiliary out  
 <B1.AE,Q/><b1.ae,d/> (\* Query current state of Music EQ on Auxiliary out)

**Level**

<B1.AL,L8/><b1.al,18/> (\* Set Auxiliary out level to -8dB  
 <B1.AL,LU6/><b1.al,12/> (\* Increase Auxiliary out level by 6dB  
 <B1.AL,LD3/><b1.al,15/> (\* Decrease Auxiliary out level by 3dB  
 <B1.AL,LQ/><b1.al,15/> (\* Query current state of Auxiliary out level)

**Master**

<B1,M/><b1,m/> (\* Mute Main and Auxiliary outputs  
 <B1,O/><b1,o/> (\* Unmute Main and Auxiliary outputs  
 <B1,Q/><b1,q=0/> (\* Query current Mute status of Main and  
 Auxiliary outputs)

**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)

**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)

**Wake**

<SY,WU/><sy,wu/> (\* Force wake from APD mode)

**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=V1.0/> (\* Query Software version  
 <SY.HV,Q/><sy.hv,q=V1.0/> (\* 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/>