

# CLOUD DCM1

## Serial Control Protocol

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## UPDATES

### V1.40 to V1.50

This document supersedes version 1.40. It includes details of the DCM1's default RS232 settings and default Ethernet port.

### V1.30 to V1.40

This document supersedes version 1.30. It has been updated to document the changes from version 1.05 to version 1.07 of the DCM1 software and from version 1.04 to V1.05 of the DCM1 hardware.

V1.06 Software was never released in production.

V1.07 Software has the following changes:-

- Control by Ethernet (V1.05 Hardware and Ethernet Card required).
- Commands to allow control of devices external to the DCM1 connected to the RS232 port (Only available from the Ethernet interface).
- Command to make a connected Cloud PM-SA play a message.
- New status modifier of the trigger command to determine if a priority trigger is asserted.
- New sub destination for the access contact to determine assertions.
- New commands to control the access contacts as GPIO.
- New sub destinations of the extension port and the microphone port to determine if accessories are fitted.
- New usage command to determine accessories fitted to microphone and extension ports.
- Commands to enter the boot loader mode.
- New mask command to return a list of enabled states.

### V1.20 to V1.30

V1.30 documented the changes from version 1.04 to version 1.05 of the DCM1 software.

V1.05 Software has the following changes:-

- New functions to set and query microphone gates by RS232.
- Line priority function now applies to groups.
- Label query functions not documented.
- Correction to Label query functions. They now return the label.
- Correction of a fault where numeric values with mid digits of '0' were not returned by the DCM1 correctly. E.g. a value of 104 is returned as 14.
- Corrected the page microphone query function which had been returning values of 255 for attenuation, hold, and release.

## INTRODUCTION

The rear panel RS232 SERIAL INTERFACE provides serial control of almost every DCM1 function, parameter and setting.

The optional Ethernet Interface card allows the same commands to be used over Ethernet.

The serial control protocol can not be used to change settings to the serial communications.

The Serial interface is set to 8 data bits, one stop bit, no parity; default baud rate is 9600. Details for configuring the Serial Interface baud rate are in the DCM1 installation and user guide.

Default Ethernet port is 4999. Details for configuring the Ethernet Interface are in the DCM1 Ethernet Interface installation and user guide.

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

## MESSAGE STRUCTURE

There are three types of messages in the DCM1 control protocol;

- Control messages.
- Response messages.
- Error messages.

Control messages are sent to the DCM1. Response and error messages are transmitted from the DCM1 in reply to a control message.

All control messages use upper case letters, all response messages are in lower case with two exceptions; a response to a system reset command returns "`<DCM-1 RESET/>`", and a response to a label query returns the string of the label which may have upper or lower case characters. Error messages may be a mixture of upper or lower case.

The message body is enclosed within a header character ("`<`") and a terminator sequence ("`/>`"). The DCM1 will reset its message decoding software upon reception of a header character, discarding any previously un-decoded partial messages. The DCM1 will start to decode a message upon reception of the terminator sequence. If the decoded message is valid it is executed and a response message returned. An error message is returned if the message cannot be decoded or if the command cannot be executed.

## THE CONTROL MESSAGE

Control messages are sent to the DCM1 in order to perform a function. The control message has two fields separated by a comma. They are called the destination field and the command field.

`<DESTINATION,COMMAND/>`

## DESTINATION FIELD

The destination field is an abbreviated description of the mixer section the command is intended to affect. The field consists of a two character **main destination** and an optional two character **sub destination**. The sub destination is separated from the main destination by a full stop (period).

### MAIN DESTINATION.

The DCM1 has eight possible main destinations;

1. Line inputs.
2. Microphone.
3. Paging microphone.
4. Zones.
5. Groups.
6. CDR-1 system.
7. DCM1 system.
8. External devices.

### SUB DESTINATION.

The sub destination is used to address the message to a particular part of a main destination. Group, Zone, System and External destinations have sub destinations.

#### Examples

- <PM,PR/> PM is the main destination.
- <Z1.MU,L23/> Z1 is the main destination, MU is the sub destination.

There are two types of destination and sub destination identifiers; **absolute** and **indexed**.

- **ABSOLUTE DESTINATION IDENTIFIER.**

This is used when the destination has only one member such as the paging microphone, or when the destination has members but the message is for all members. EG the microphone section is an absolute destination for changing global parameters such as hold time; however individual microphones are not absolute destinations. An absolute destination's identifier is two alphabetic characters.

- **INDEXED DESTINATION IDENTIFIER.**

This is used when the destination has multiple members and the message is intended for an individual member. Zones, groups and line inputs are destinations which have multiple members. Indexing allows addressing members such as zone 1 or zone 2. An indexed destination identifier consists of an alphabetic character to identify the destination type and a numeric index for the member. Indexes out of range are not allowed, EG Z9, G5 and L0 are invalid.

#### Examples

- <PM,PR/> PM is an absolute destination identifier for the paging microphone.
- <Z1.MU,L23/> Z1 is an indexed destination identifier for zone 1. MU is an absolute destination identifier for the music sub destination in zone 1.

## COMMAND FIELD

A command field identifies the command to be performed on the destination. The command field may have up to three parts; the **command identifier**, the **command modifier** and the **command value**. No white space is permitted between these parts.

- **COMMAND IDENTIFIER.**  
This part is always required. It has a single alphabetic character to identify the command type.
- **COMMAND MODIFIER.**  
This part is optional depending on the command type. Some commands take no modifier, some commands always take a modifier and some commands can have the option of a modifier or none. The modifier is a single alphabetic character.
- **COMMAND VALUE.**  
This part is optional depending on the command type and modifier. The value part can be any sequence of characters as required by the command type. In cases where a value can contain alphabetic characters it is preceded by an equals character ("=") to prevent the first character of the value being confused with a command modifier.

## DESTINATIONS IN DETAIL

### MAIN DESTINATIONS

#### EXTERNAL

##### (DCM1 Software V1.07 and above)

External is used to command equipment connected to the DCM1. External requires a sub destination. There are two sub destinations: a Cloud PM-SA and the RS232 port.

The identifier is: EX.

#### GROUP

Group has all the functionality of zone destination with the additional functions of editing group member assignments and enabling and disabling groups. Software V1.07 onwards allows the use of the mask query command to return a bit field list of each zones membership of the group.

Valid identifiers are: GR, G1, G2, G3 and G4.

#### LINE INPUT

Line input does not take a sub destination. Its use is to set the gain and change line input labels. Line inputs are available as a sub destination of zones and groups in order that they can be enabled or disabled within that zone or group. Valid main destination identifiers are: LI, L1, L2, L3, L4, L5, L6, L7, and L8.

## **MICROPHONE**

Microphone does not take a sub destination. The microphone main destination is used to change the microphone system's global parameters. It is not possible to address individual microphones as a main destination. Individual microphones are addressed as sub destinations of zones, groups or system.

The identifier is: MI.

## **PAGING MICROPHONE**

Paging microphone does not take a sub destination. It is used to open and close the paging microphone, set global priority parameters and, in software V1.07 onwards, query access status (both access contacts and digital) of zones. Paging microphone is available as a sub destination of zones and groups to allow setting of the priority trigger type in that zone or group.

The identifier is: PM.

## **REMOTES**

The remotes destination's only use is to set the remote (CDR-1) offset in a DCM1.

The identifier is: RM.

## **SYSTEM**

System is used to set system wide parameters of the DCM1. It has the option of five possible sub destinations; zones 1 and 2's stereo mono switching, the emergency mute, and in software version 1.07 onwards, access contact assertions, microphone socket usage and extension socket usage.

The identifier is: SY.

## **ZONE**

As a main destination zone allows access to the labels of the zones. Zone can take sub destinations of music, microphone, line and paging microphone in order to access all functions of a zone.

Valid identifiers are: Z1, Z2, Z3, Z4, Z5, Z6, Z7 and Z8.

## **SUB DESTINATIONS**

There are three types of sub destinations; those that are sub destinations of the system, those that are sub destinations of the external destination and those that are sub destinations of zone and group destinations.

## **ACCESS CONTACTS (DCM1 Software V1.07 and above)**

This is a sub destination of the system destination. It is used to query the assertion states of the access contacts.

The only valid main destination and sub destination identifier combination is SY.AC.

## **EMERGENCY MUTE**

This is a sub destination of the system destination. It allows commands to be performed on the emergency mute system. V1.07 software allows querying of the emergency mutes trigger status.

Its only valid main destination and sub destination identifier combination is SY.EM.

## **EXTENSION PORT**

**(DCM1 Software V1.07 and above)**

This is a sub destination of the system destination. It is used to query which of the extension ports have accessories connected to them.

The only valid main destination and sub destination identifier combination is SY.ET.

## **LINE INPUTS**

This sub destination is available to zone and group destinations. It allows access to the line input enables on each group or zone. In software V1.07 onwards line input can be used as an absolute sub destination to return a bit field list of each inputs enable status in a zone or group.

Example valid main destination and sub destination identifier combinations are Z1.L1, G2.L3, Z1.LI.

## **MICROPHONES**

This sub destination is available to zone, group and system destinations. It can be indexed to select individual microphones and absolute to select all mics. When used as indexed it allows access to individual microphone enables in each group or zone destination or to the system destination to access each microphone's gate.

In software V1.07 onwards microphone can be used as an absolute sub destination to query the trigger status or return a bit field list of each microphones enable status in a zone or group. As a sub destination of system it is possible to query which of the microphone inputs have hardware connected

Example valid main destination and sub destination identifier combinations are Z1.M1, G3.M2, SY.M2, Z2.MI, and SY.MI.

## **MUSIC**

This sub destination is available to zone and group destinations. It allows access to all the parameters that control the music section of a zone. Note that the EQ section, the limit minimum and the limit maximum parameters are not available to groups.

Valid main destination and sub destination identifier combinations are Z1.MU, Z2.MU, Z3.MU, Z4.MU, Z5.MU, Z6.MU, Z7.MU, Z8.MU, G1.MU, G2.MU, G3.MU and G4.MU.

## **PAGING MICROPHONE**

This sub destination is available to zone and group destinations. It is used to access the paging microphone priority trigger in each group or zone.

Example valid main destination and sub destination identifier combinations are Z1.PM, G2.PM.

**RS232****(DCM1 Software V1.07 and above)**

This is a sub destination of the external destination. It is used to send data out of the RS232 port enabling the DCM1 to control a wide range of equipment including a second DCM1.

It is only possible to send commands for this sub destination through the Ethernet Interface. If the DCM1 receives a command for this sub destination via RS232 it will return an execution error.

The only valid main destination and sub destination identifier combination is EX.RS.

**SPOT ANNOUNCER****(DCM1 Software V1.07 and above)**

This is a sub destination of the external destination. It is used to trigger a Cloud PM-SA to play a message announcement.

The only valid main destination and sub destination identifier combination is EX.SA.

**ZONES 1 AND 2 STEREO SWITCH**

This is a sub destination of the system destination. It accesses the stereo/mono switches of zones 1 and 2.

Its only valid main destination and sub destination identifier combinations are SY.Z1 and SY.Z2.

## COMMANDS IN DETAIL

Please see the examples table.

### COMMAND "C"

#### (DCM1 Software V1.07 and above, Ethernet interface only)

This command is used with the RS232 ("RS") sub destination of the external destination ("EX"). The command is followed by an equals character ("=") and the value which is an alphanumeric sequence of up to 17 characters. The alphanumeric sequence can contain any sequence of characters except "/>" which would be interpreted as the message's terminator. The value is transmitted out of the RS232 port preceded by a message start char "<" and followed by a message terminate sequence "/>". This allows the value to be transmitted as a command to other Cloud equipment connected to the RS232 port. The response message of this command is a lower case copy of the control message before the value followed by an equals character ("=") and then the value character sequence.

NB See commands HEX "H" and TEXT "T" .

### DISABLE "D"

### ENABLE "E"

These two commands are used to either enable/ disable the groups or to enable/ disable routing of line inputs or microphones to a zone or group. The commands take no modifiers or values. To query the enable/ disable state issue the query command.

#### GROUP

When used to enable/ disable a group the command is sent to a group destination. When enabled the group member zones act together. When disabled the group members zones act independently. The response message is a lower case version of the control message, an equals character ("=") followed by a comma separated list of the member zones and a character for the enable/ disable state ("e" OR "d"). If the group is empty the list will be replaced by the word "empty" and no character for the enable/ disable state.

#### LINE INPUT

When used to enable/ disable a line input the command is sent to the line input sub destination of the group or zone destination. A line input that is disabled in a zone or group will not be selectable by that zone or group. The response message is a lower case version of the control message, an equals character ("=") followed by a character for the enable/ disable state ("e" OR "d"), a comma the text "pri = " followed by text to show the priority type ("off" OR "vox") for that line input in that zone or group.

#### MICROPHONE

When used to enable/ disable a microphone the command is sent to the microphone sub destination of the group or zone destination. A microphone enabled in a zone or group is routed to that zone or group. The response message is a lower case version of the control message, an equals character ("=") followed by a character for the enable/ disable state ("e" OR "d"), a

comma the text `"pri = "` followed by text to show the priority type (`"off"` OR `"vox"`) for microphones in that zone or group.

### **EMERGENCY MUTE LEVEL "L"**

This version of the level command has limited functionality and is only applied to the emergency mute sub destination of system. The command only sets the level of the emergency mute if a line input is used as the emergency mute source. The emergency mute level command takes no modifier; it takes a numeric value which is the absolute value to be set; values can be in the range 0 to 255 however the actual value set will limit at 79. The response message is a lower case version of the control message, followed by the set of values for the emergency mute. The set comprises of an equals character (`"="`) followed by the normal mode (`"no"` OR `"nc"`), a comma and the source character (`"s"`) followed by the source value, a comma and the level character (`"l"`) followed by the level value. NB the level will read 0 if a line input is not selected as the source. The value represents the attenuation in dB.

### **EMERGENCY MUTE NORMAL "N"**

This command is only available to the emergency mute sub destination of system. It sets the emergency mute contacts behaviour as "normally open" or "normally closed". The command always takes a modifier. Modifiers are closed (`"c"`) and open (`"o"`). The response message is a lower case version of the control message, followed by the set of values for the emergency mute. The set comprises of an equals character (`"="`) followed by the normal mode (`"no"` OR `"nc"`), a comma and the source character (`"s"`) followed by the source value, a comma and the level character (`"l"`) followed by the level value. NB the level will read 0 if a line input is not selected as the source.

### **EMERGENCY MUTE SOURCE "S"**

This version of source command has limited functionality and is only applied to the emergency mute sub destination of system. The command sets the source of the emergency mute as a microphone input, line input or off. The emergency mute level command always takes a modifier. The modifiers are off (`"o"`), line (`"l"`) and microphone (`"m"`). The microphone modifier and line modifier take a numeric value for the microphone or line to use. The line modifier's value can be in the range 1 to 8; the microphone modifier's value can be in the range 1 to 4. The response message is a lower case version of the control message, followed by the set of values for the emergency mute. The set comprises of an equals character (`"="`) followed by the normal mode (`"no"` OR `"nc"`), a comma and the source character (`"s"`) followed by the source value, a comma and the level character (`"l"`) followed by the level value. NB the level will read 0 if a line input is not selected as the source.

**EQ BASS "B"****EQ MID "M"****EQ TREBLE "T"**

These three commands are used to set one of three bands of the EQ of a zone; they can only be applied to the music sub destination of a zone. EQ does not affect microphone or paging microphone signals. The command can take up ("U"), down ("D"), positive (boost) ("+") and negative (cut) ("-") modifiers. The command with positive or negative modifiers takes a value in the range 2 to 14 in steps of 2dB to represent a cut/ boost range of -14dB to +14dB; odd values will be rounded down. NB no modifier is used when the value is 0; setting the EQ band's cut/ boost at 0dB is the only use of the unmodified command. Up and down modifiers do not require a value as the step size is set at 2dB. The response message is a lower case version of the control message before any value, an equals character ("=") followed by the current (modified) value of the EQ. The value represents the EQ band's cut/ boost in dB.

There is no query modifier with this command. Use the EQ query command to return information about the EQ settings.

**EQ QUERY "EQ"**

This command is used to query the EQ settings of a zone. It is applied to the music sub destination of a zone. The response message is a lower case version of the control message followed by a comma separated list of the cut/ boost values for the treble, mid and bass bands for that zone.

**GAIN "G"**

This command is only available to a line input destination. Its purpose is to set the input gain. The command can take up ("U"), down ("D"), positive ("+") negative ("-") and query ("Q") modifiers. The command with positive or negative modifiers takes a value in the range 1 to 12 to represent a gain range of -12dB to +12dB. NB no modifier is used when the value is 0; setting gain at 0dB is the only use of the unmodified command. Up and down modifiers do not require a value as the step size is set at 1dB. The response message is a lower case version of the control message before any value, an equals character ("=") followed by the current (modified) value of the input gain. The value represents the gain value in dB.

**GROUP MEMBER "Z"**

This command is only available to group destinations. It adds or removes zones as members of a group. The command always takes a modifier, either add ("A") or remove ("R"). The value is a sequence of 1 to 8 numeric characters as a list of zones added or removed from the group. Characters of 0 and 9 are not allowed. The response message is a lower case version of the control message before the modifier followed by an equals character ("=") then either a comma separated list of members zones followed by the enable state ("e" OR "d") or if the group has no members the text "empty". There is no query modifier. Performing the query command ("Q") on the group destination will return the group details.

**HEX "H"****(DCM1 Software V1.07 and above, Ethernet interface only)**

This command is used with the RS232 ("RS") sub destination of the external destination ("EX"). The command is followed by an equals character ("=") and the value which is a sequence of up to 8 pairs of hex characters ("0" - "9", "a" - "f", "A" - "F"). Each hex pair is converted to its binary value and is transmitted out of the RS232 port. This allows the value to be transmitted as a message containing non-text characters to other equipment connected to the RS232 port. The response message of this command is a lower case copy of the control message before the value followed by an equals character ("=") and then the value hex pair sequence.

NB See commands COMMAND "C" and TEXT "T" .

**TEXT "T"****(DCM1 Software V1.07 and above, Ethernet interface only)**

This command is used with the RS232 ("RS") sub destination of the external destination ("EX"). The command is followed by an equals character ("=") and the value which is an alphanumeric sequence of up to 17 characters. The alphanumeric sequence can contain any sequence of characters except "/>" which would be interpreted as the terminator. The value is transmitted out of the RS232 port. This allows the value to be transmitted as a text message to other equipment connected to the RS232 port. The response message of this command is a lower case copy of the control message before the value followed by an equals character ("=") and then the value character sequence.

NB See commands HEX "H" and COMMAND "C" .

**LABEL "L"**

This command is used to set the label on line input, zone and group destinations. The command can take the query modifier. Only DCM1 software V1.05 and above will return a value to a query. The unmodified command is followed by an equals character ("=") and an alphanumeric sequence. The alphanumeric sequence can contain any sequence of characters except "/>" which is interpreted as the terminator. Only the first sixteen characters are used to generate the label. The response message of this command is a lower case copy of the control message before the value followed by an equals character ("=") and then the character sequence set as the label.

**LEVEL "L"**

This command is only available to the music sub destinations of zone and group destinations and to the emergency mute sub destination of the system destination. The command has limitations when used with emergency mute and so this version of the command is listed separately as the emergency mute level command.

The command is used to set the level of the line input selection (music) of a zone or group.

The standard level command as applied to music destinations can take a modifier for up ("U"), down ("D") or query ("Q"). All forms except for query take a numeric value. With no modifier the value is the absolute value of attenuation to be set in dB; values can be in the range 0 to 255. Any attempt to set a value greater than the maximum attenuation of 61dB will set the mute state. If a

minimum level has been set any attempt to set attenuation greater than this will limit at the minimum. With up or down modifiers the value is the increment or decrement step in dB; values can be in the range 1 to 12. For the purpose of calculation of increment, mute is considered to have the numeric value of 62 though the actual attenuation is considerably higher. The response message is a lower case version of the control message before any value, an equals character ("=") followed by the current (modified) value of the level or the word "mute" if the value of attenuation is below 61dB. The value represents the attenuation in dB.

### **LIMIT "M"**

This command can only be applied to the music sub destination of a zone. It sets the minimum and maximum attenuation of the music level in the zone. The command always takes a modifier (this distinguishes it from the mute command which has no modifier). Valid modifiers are minimum ("N"), maximum ("X") and query ("Q"). The minimum and maximum modified also take a value to set the minimum and maximum values. Values are in the range 0 to 255 however note that a value higher than 61 is considered mute so setting the minimum above 61 is effectively turning the minimum off. It is not possible to set the maximum limit at a greater attenuation than the minimum limit. It is not possible to set the minimum limit to a lower attenuation than the maximum limit. The response message is a lower case version of the control message before the modifier, the lower case maximum modifier ("x") an equals character ("=") followed by the current value of the maximum limit, the lower case minimum modifier ("n") an equals character ("=") followed by the current value of the minimum limit.

### **MASK QUERY "KQ"**

#### **(DCM1 Software V1.07 and above)**

This command is used to return a list of enabled states; an "x" represents enabled, an "o" represents disabled. It can be applied to the absolute line input sub destination ("LI") of a zone or group, the absolute microphone sub destination ("MI") of a zone or group, or to a group to return the status of each zone in that group.

### **MESSAGE "M"**

#### **(DCM1 Software V1.07 and above)**

This command is used with the PM-SA ("SA") sub destination of external ("EX"). It has no modifier; it must take a value between 1 and 8. It is used to trigger a Cloud PM-SA spot announcer to play a message. The PM-SA must be connected by the CDPM interface (CAT5/ RJ45). The response message is a lower case copy of the control message.

### **MICROPHONE GATE "N"**

This command is only available to microphone as sub destinations of system, e.g. "SY.M1". The command always takes one of three modifiers; enable ("E") to set the gate on, disable ("D") to set the gate off, or query ("Q") to query the gate setting. The response message of this command or query is a lower case copy of the control message followed by an equals character ("=") sign and the text ("off") or ("on") to indicate the state of that microphone's gate.

**MONO "M"**

This command is only available to zone 1 or 2 as sub destinations of system, e.g. "SY.Z1". The command sets the zone to mono. The command takes no modifiers. The query command sent to zone 1 or 2 as a sub destination of system will return the mono or stereo state of that zone. The response message of this command or query is a lower case copy of the control message followed by an equals character ("=") sign and a character to indicate the mono or stereo state of the zone ("m" or "s").

NB See command STEREO "S" .

**MUTE "M"**

This command is only available to the music sub destinations of zones and groups. The command takes no modifier or value (which distinguishes it from the limit command, see below). The response message is a lower case version of the control message with the mute command character expanded to say "mute".

NB this command has the same effect as setting the level to its lowest value, there is no corresponding Open command to restore level.

**OFFSET "Z"**

This command is only available for the paging microphone ("PM") and CDR-1 ("RM") destinations. It is used to offset addressing of zones in the DCM1 from the paging microphones or CDR-1s. The command takes a numeric value of the offset or the query modifier ("Q"). Valid values are 0 to 15 for the paging microphone and 0 to 120 in increments of 8 for the CDR-1s. The response message of this command is a lower case copy of the control message followed by an equals character ("=") and the numeric value of the offset.

**PAGE MICROPHONE ACCESS "P"**

This command is only available to the paging microphone destination. It is used to set the access state of zones. The command always takes a modifier. Modifiers are access ("A"), release ("R") and query ("Q"). The release modifier releases all accessed zones, no value is required. The access modifier can access or release zones. The access modifier requires a value in the form of a character list. The list is 1 to 8 characters long. The position of each character represents the zone that the character is acting on. IE the first character represents zone 1, the second character represents zone 2 etc. An "X" character sets the zone as accessed; an "O" character sets the zone as released. Note that the list can be truncated after the highest value zone asserted; any subsequent zones are considered released. IE if only zone 2 is to be accessed then the list can be "OX", zones 3 to 8 are considered released regardless of their state before the command. The response message is a lower case version of the control message before any modifier, an equals character ("=") followed by a list of access states of the zones.

**PAGE MICROPHONE INPUT "I"****PAGE MICROPHONE OUTPUT "O"**

These commands are only available to the paging microphone destination. They are used to set the access contacts as all inputs or all outputs. If either command is followed by the query modifier ("Q") the input or output state of access contacts will not be modified. The response message is a lower case version of the control message followed by the text "acc = " followed by either the text "in" or "out".

**PRIORITY ATTENUATION "A"**

This command is sent to the microphone or paging microphone destination. It sets the attenuation level of the music when priority is triggered. NB the attenuation level is global to all zones. The command takes no modifiers but always takes a value in the range 0 to 46 representing the attenuation level in dB. To request the attenuation level in the microphone or paging microphone perform the query command on the destination; this will return the set of attenuation, hold and release for the destination, The response message is a lower case copy of the control message before the value followed by the set of attenuation, hold and release. Note that there are minor differences in the text of the response message from the microphone destination and paging microphone destination.

**PRIORITY HOLD "H"**

This command is sent to the microphone, paging microphone or line input destination. It sets the hold time of attenuation of the music after priority has stopped being triggered. NB the hold time is global to all zones. The command takes no modifiers but always takes a value in the range 1 to 12 representing the hold time in seconds. To request the hold time in the microphone, paging microphone or line input perform the query command on the destination; this will return the set of attenuation (not for line input), hold and release for the destination, The response message is a lower case copy of the control message before the value followed by the set of attenuation (not for line input), hold and release. Note that there are minor differences in the text of the response message from the microphone destination and paging microphone destination.

**PRIORITY RELEASE "R"**

This command is sent to the microphone, paging microphone or line input destination. It sets the release time of attenuation of the music after the priority hold has ended. NB the release time is global to all zones. The command takes no modifiers but always takes a value in the range 1 to 12 representing the release time in seconds. To request the release time in the microphone, paging microphone or line input perform the query command on the destination; this will return the set of attenuation (not for line input), hold and release for the destination, The response message is a lower case copy of the control message before the value followed by the set of attenuation (not for line input), hold and release. Note that there are minor differences in the text of the response message from the microphone destination and paging microphone destination.

**PRIORITY TRIGGER "T"**

This command affects the priority trigger type in each zone or group for microphones, line input and the paging microphone. The command always takes a modifier; it never takes a value. The command's form and behaviour is slightly different for each type of device.

DCM1 Software V1.07 and above has a new modifier for the trigger command; Status ("S"). Status allows querying if a trigger has been asserted.

**LINE INPUT**

The trigger command applied to a line input sub destination of a zone or group can take two modifiers; vox ("V") and off ("O"). To query the trigger status of a line input in a zone issue the query command. When a trigger vox command is issued to a line input in a group or zone then that line input has priority on in that group or zone; any previous line input with its priority on in that group or zone is set to off. IE only one line input can be set to priority on in a group or zone. A group or zone with a line input set to priority on will switch source to that line input when a signal is detected and restore the original source after the signal as ended on the priority line input. The response message is a lower case copy of the control message followed by an equals character ("=") then a character to indicate if the line input is enabled or disabled in this group or zone ("e" OR "d") a comma, the text "pri = " then text to indicate "on" or "off".

NB Due to a bug it is not possible to set or query Line Input priority from a group using DCM1 software V1.04 or below.

DCM1 Software V1.07 and above allows the trigger command with the status modifier ('S') to be applied to the all line inputs ("LI") main destination. It returns details of line input priority assertions in all the zones and groups. The response message is a lower case copy of the control message without modifier followed by an equals character ("t=") then twelve characters; eight for zones 1 to 8 and four for groups 1 to 4. The character for inactive priority in a zone or group is "I", if priority is active in a zone or group the character is replaced by the index number of the line input that has triggered priority. E.g. the sequence "II2IIIII5II" indicates line input 2 has triggered priority in zone 3 and line input 5 has triggered priority in group 2, all other zones and groups are not triggered.

**MICROPHONE**

The trigger command applied to a microphone sub destination of a group or zone takes the modifiers vox ("V"), off ("O") and query ("Q"). When a trigger vox command is issued to a microphone in a group or zone then that microphone has its priority turned on in that group or zone; any combination of the four microphones can have priority on in a group or zone. The response message is a lower case copy of the control message followed by an equals character ("=") then a character to indicate if the line input is enabled or disabled in this group or zone ("e" OR "d") a comma, the text "pri = " then text to indicate "on" or "off".

DCM1 Software V1.07 and above allows the trigger command with the status modifier ("S") to be applied to the all microphones ("MI") sub destination of a group or zone. It returns details of any microphone priorities triggered in that zone or group and any attenuation applied to the music caused by microphone priority. The response message is a lower case copy of the control message without modifier followed by an equals character ("t=") then four characters to show if the triggers of microphones 1 to 4 are active or inactive ("A" OR "I"), a comma, the text " attn = " then the value of any attenuation applied to the zone due to microphone priority.

### **PAGING MICROPHONE**

The trigger command applied to the paging microphone sub destination of a zone takes the modifiers access ("A"), vox ("V"), off ("O") and query ("Q"). The modifiers access and vox turn on priority for paging microphone in a zone. Access priority is activated when the zone is accessed for paging; vox priority is activated when the zone is accessed and an audio signal is detected. There is no priority trigger for the paging microphone available in groups. The response message is a lower case copy of the control message followed by an equals character ("=") then text to indicate "access", "vox" or "off".

DCM1 Software V1.07 and above allows the trigger command with the status modifier ('S') to be applied to the paging microphone as a main destination. The command returns details of any zones with their access asserted and any attenuation applied caused by paging microphone priority. NB The details of access returned are the logical OR of zones asserted digitally by the CDPM bus and zones asserted by shorting the access contacts. The message "<SY.AC,TS/>" should be used to only query the access contacts.

The response message is a lower case copy of the control message without modifier followed by an equals character ("t=") then eight characters to show if paging access is active or inactive ("A" OR "I") within the zones, a comma, the text " attn = " then the value of any attenuation applied to the accessed zones due to paging microphone priority.

### **EMERGENCY MUTE (DCM1 Software V1.07 and above)**

Trigger command with the status modifier ("S") can be applied to the emergency mute sub destination of system. It provides details of whether the emergency mute is active or not active and the affect of the level of music caused by emergency mute. The response message is a lower case copy of the control message without modifier followed by an equals character ("t=") then a characters to show if the emergency mute is active or inactive ("A" OR "I"), a comma, the text " attn = " then the value of the line level. If emergency mute is inactive the level value will read "normal" indicating that line level is unaffected. If the emergency mute is active the level value will read "mute" if no line input has been selected as the emergency mute audio source or, if a line input has been selected, a numeric value of the line level during emergency mute.

**ACCESS CONTACTS****(DCM1 Software V1.07 and above)**

Trigger command with the status ("S") modifier can be applied to the access contact sub destination of system. It provides details of which access contacts are asserted. An access contact shorted to ground is asserted. The response message is a lower case copy of the control message without modifier followed by an equals character ("t=") then eight characters to show if an access contact is asserted or inactive ("A" OR "I").

NB Paging microphone access can also be asserted digitally by the CDPM bus. To get details of paging access use the message "<PM, TS/>".

**QUERY "Q"**

This command allows the querying of the status of a set of values of a destination. E.g. the microphone priority hold, release and level values are a set.

Valid destinations are MICROPHONE, PAGING MICROPHONE and LINE INPUT to obtain priority information, and GROUP to obtain member information.

It takes no command modifiers. Its only valid form is ("Q").

The response message varies according to the destination being queried but general is a lower case version of the control message followed by a comma separated list of the destination's parameters,

Note that query is available as a command modifier for most commands.

**SOURCE "S"**

This command is only available to the music sub destinations of zones and groups and to the emergency mute sub destination of system. The command has different behaviour when used with emergency mute and so this version of the command is fully detailed as the emergency mute source command.

The standard source command as applied to music destinations can take a modifier for up ("U"), down ("D") or query ("Q"). Only the form with no modifier takes a numeric value which is the line number to select; values can be in the range 1 to 8. With up or down modifiers the no value is required; the increment or decrement step is always 1. The response message is a lower case version of the control message before any value, an equals character ("=") followed by the current (modified) value of the line source selection.

**STEREO "S"**

This command is only available to zone 1 or 2 as sub destinations of system, e.g. "SY.Z2". The command sets the zone to stereo. The command takes no modifiers. The query command sent to zone 1 or 2 as a sub destination of system will return the mono or stereo state of that zone. The response message of this command or query is a lower case copy of the control message followed by an equals sign ("=") and a character to indicate the mono or stereo state of the zone ("m" or "s").

NB See command MONO "M".

**SYSTEM BOOT MODE "I"**

This command is only available to the system destination ("SY"). The command is used to set the boot mode (Initialisation) of the DCM1.

The command must have a modifier to either set the boot mode or to query the boot mode. Valid modifiers are; default mode ("D"), factory mode ("F") or last configuration mode ("P" for previous). The response message is a lower case version of the control message followed by an equals character ("=") and the lower case version of the modifier that is set.

**SYSTEM BOOTLOAD MODE "B"**

This command is only available to the system destination ("SY"). The command is used to access the boot loader mode of the DCM1.

When bootloader is enabled the DCM1 will enter boot loader at next power on or when reset. When disabled the DCM1 will enter the application mode (normal running) at power on or reset.

The command must have a modifier. The modifier can be used to lock or unlock modifications to the boot loader mode or to enable, disable or query the bootloader mode.

As a safety feature enabling or disabling is only available when unlocked. As an extra safeguard the unlock modifier requires the installer key as a value.

The unlock modifier is the only modifier that has a value. The only valid modifiers are; lock mode ("L"), unlock ("U"), enable ("E"), disable ("D") and query ("Q").

The response message is a lower case version of the control message followed by an equals character ("=") and the lower case version of the lock or unlocked state followed by the lower case version of its enabled or disabled state.

**SYSTEM KEY "K"**

This command is only available to the system destination ("SY"). The command is used to set the key that is used when entering install mode from the DCM1's front panel. It has no modifiers. The value has a fixed format of eight numeric characters. The characters 0 and 9 are not allowed as these are not available from the buttons on the DCM1's front panel. The first four characters are the existing key. The second four characters are the new key. The response message is a lower case version of the control message before the value, an equals character ("=") followed by the four digit value of the new key.

**SYSTEM RESET "R"**

This command is only available to the system destination ("SY"). It has no modifiers and takes no value. The command causes the DCM1 to reset. The DCM1 will reboot according to the boot mode. The response message is always "<DCM-1 RESET/>."

**SYSTEM SAVE DEFAULT "SD"**

This command is only available to the system destination ("SY"). The command is used to save the current parameter set of the DCM1 as the default i.e. the parameters to use when boot mode is set to default. The command is comprised of the save command with the default modifier. NB the default modifier is the only allowable use of the save command. The response message is a lower case version of the control message.

**SYSTEM VERSION "vQ"**

This command is only available to the system destination ("SY"). The command is used to query the software and hardware versions of the DCM1. The command is unable to set a value so it always has the query modifier. The response message is a lower case version of the control message followed by the character sequence "sw" for software, an equals character and the value of the software version, the character sequence "hw" for hardware, an equals character and the value of the hardware version.

**USAGE "U"****(DCM1 Software V1.07 and above)**

This command is used with the extension port and microphone sub destinations of system. It has no modifier and takes no value. It is used to query which of the extension ports and microphone ports have accessories attached. The response message is a lower case copy of the control message followed by an equals character ("=") then four characters to show which of the extension or microphone ports are in use. An unused port is indicated by "O", an in use port by "X".

## THE RESPONSE MESSAGE

The response message is the DCM1's reply to a valid message. The message body contains a lower case version of the destination field and the command identifier followed by an equals character ("=") and then one or more values.

### Examples

- `<Z1.MU,L12/>`                      Set the music level in zone 1 to 12.
- `<z1.mu,l=12/>`                      Response returns the new value of level in zone 1.
- `<Z1.MU,LU3/>`                      Increment the music level in zone 1 by 3.
- `<z1.mu,l=9/>`                      Response returns the new value of level in zone 1.

## THE ERROR MESSAGE

The error message is the DCM1's reply to an invalid message. The error message can have two parts, the **error identifier** and the **returned message**.

- **ERROR IDENTIFIER.** The error identifier has two characters; the first is an exclamation mark ("!"), the second is an upper case alphabetic character to identify the type of error.
- **RETURNED MESSAGE.** Not all error types use a returned message. When present the returned message is a copy of the sent message, either upper or lower case depending on how far the message has been decoded before the error is detected. A caret character ("^") may be used to indicate the position the error has been detected.

## ERRORS IN DETAIL

There are six error types.

### BUFFER OVERFLOW ERROR

This error is generated when a message has overflowed the DCM1's receive buffer. It is identified by the sequence ("!B"). It is used to indicate that the current message has been abandoned. It has no return message. All characters received by the DCM1 are ignored until it receives a header character("<") to start a new message.

#### Example

```
<Z1 ,L=AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<!B/>
```

### EXECUTION ERROR

This error is generated when a command has failed to execute. IE the message looks valid but has tried to perform a command that is not available on the destination. It is identified by the sequence ("!E"). Its return message is a lower case copy of the sent message.

#### Example

```
<Z1 ,M/><!Ez1 ,m/> NB M is a valid command but not allowed on Z1.
```

## INTERRUPTED ERROR

This error is generated when a header character ("`<`") is detected in the middle of a message. It is identified by the sequence ("`! I`"). It is used to indicate that the interrupted message has been abandoned and that the DCM1 has started to receive a new message. It has no return message, however it returns a header character ("`<`") to indicate that it is waiting for the first character of the destination field and to make the message stream easier to read.

### Example

```
<Z1.MU<<! I /><
```

## OVERRUN ERROR

This error is generated when an unexpected end of message is detected whilst decoding. This should not occur in normal operation. It is identified by the sequence ("`! A`"). It has no return message.

## PARSE ERROR

This error is generated when a 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. A caret character ("`^`") is used to indicate where the parse error occurred.

### Example

```
<Z2.MK,L3/><! PZ2.^MK,L3/> NB MK is not a valid sub destination.
```

## TOKENISE ERROR

This error is generated when the message format is wrong. EG the destination field is too short or the command field is not separated by a comma. It is identified by the sequence ("`! T`"). Its return message is an upper case copy of the sent message. A caret character ("`^`") is used to indicate where the tokenisation error occurred. NB the return message may be omitted if the sent message was abnormally short.

### Example

```
<Z1MU,L23/><! TZ1^MU,L23/> NB no period between the main destination and the sub destination.
```

## EXAMPLES

Each example has a typical DCM1 reply in red.

### Zone/ Group Level

Set the music level in a zone or group.

NB the command structure is identical for groups and zones.

```
<Z1.MU,L12/><z1.mu,l=12/> (* Zone 1 music level to 12.
<Z1.MU,LU7/><z1.mu,l=5/> (* Zone 1 music level up by 7.
<Z1.MU,LD3/><z1.mu,l=8/> (* Zone 1 music level down by 3.
<Z1.MU,LQ/><z1.mu,l=8/> (* Zone 1 music level query.
<Z1.MU,M/><z1.mu,mute/> (* Zone 1 music level mute.
<G1.MU,L12/><g1.mu,l=12/> (* Group 1 music level to 12.
```

### Zone/ Group Source

Set the music source of a zone or group.

NB the command structure is identical for groups and zones.

```
<Z1.MU,S2/><z1.mu,s=2/> (* Zone 1 source to 2.
<Z1.MU,SD/><z1.mu,s=1/> (* Zone 1 source down.
<Z1.MU,SU/><z1.mu,s=2/> (* Zone 1 source up.
<Z1.MU,SQ/><z1.mu,s=2/> (* Zone 1 source query.
<G1.MU,S2/><g1.mu,s=2/> (* Group 1 source to 2.
```

### EQ

Set the EQ treble, mid and bass for a zone.

NB full examples are only shown for treble but they can apply to mid and bass.

#### Treble

```
<Z1.MU,T0/><z1.mu,t=0/> (* Zone 1 music treble to 0dB.
<Z1.MU,T+8/><z1.mu,t=+8/> (* Zone 1 music treble to +8dB.
<Z1.MU,T-6/><z1.mu,t=-6/> (* Zone 1 music treble to -6dB.
<Z1.MU,TD/><z1.mu,t=-8/> (* Zone 1 music treble down (2dB step).
<Z1.MU,TU/><z1.mu,t=-6/> (* Zone 1 music treble up (2dB step).
```

#### Mid

```
<Z1.MU,M+6/><z1.mu,m=+6/> (* Zone 1 music mid to +6dB.
```

...

#### Bass

```
<Z1.MU,B+2/><z1.mu,b=+2/> (* Zone 1 music bass to +2dB.
```

...

**Query** NB it is only possible to query the full EQ set of a zone (treble, mid, and bass)

```
<Z1.MU,EQ/><z1.mu,eq,t=-6,m=+6,b=-2/> (* Zone 1 music EQ query.
```

### Gain

Set the gain of a line input.

```
<L1,G+2/><l1,g=+2/> (* Line input 1 gain to +2dB.
<L1,G0/><l1,g=0/> (* Line input 1 gain to 0dB.
<L1,G-7/><l1,g=-7/> (* Line input 1 gain to -7dB.
<L1,GD/><l1,g=-8/> (* Line input 1 gain down.
<L1,GU/><l1,g=-7/> (* Line input 1 gain up.
<L1,GQ/><l1,g=-7/> (* Line input 1 gain query.
```

### Minimum and Maximum

Set the minimum and maximum music level on a zone.

```
<Z1.MU,MX12/><z1.mu,mx=12,n=mute/> (* Zone 1 music level max to -12 db.
<Z1.MU,MN56/><z1.mu,mx=12,n=56/> (* Zone 1 music level min to -56 db.
<Z1.MU,MQ/><z1.mu,mx=12,n=56/> (* Query max and min music level in zone 1.
```

## Groups

Set up group members, enable and disable a group.

```
<G1,ZA34/><g1,z=3,4d/> (* Add zones 3 and 4 to group 1.
<G1,ZA8/><g1,z=3,4,8d/> (* Add zone 8 to group 1.
<G1,ZR4/><g1,z=3,8d/> (* Remove zone 4 from group 1.
<G1,E/><g1,e=3,8e/> (* Group 1 enable.
<G1,D/><g1,d=3,8d/> (* Group 1 disable.
<G1,Q/><g1,q=3,8d/> (* Group 1 query.
```

## Microphone Enables

Enable and disable a microphone in a zone or group.

NB response message returns enable/ disable state followed by priority state.

```
<Z1.M1,E/><z1.m1,e=e, pri = on/> (* Zone 1 enable microphone 1.
<Z1.M2,D/><z1.m2,d=d, pri = off/> (* Zone 1 disable microphone 2.
<Z1.M4,Q/><z1.m4,q=d, pri = off/> (* Zone 1 query enabled state of microphone 4.
<G1.M3,E/><g1.m3,e=e, pri = off/> (* Group 1 enable microphone 3.
```

## Input Locks

Enable or disable a line input to a zone or a group.

NB response message returns enable/ disable state followed by priority state.

```
<Z1.L1,D/><z1.l1,d=d, pri = off/> (* Zone 1 disable line input 1.
<Z1.L1,E/><z1.l1,e=e, pri = off/> (* Zone 1 enable line input 1.
<Z1.L1,Q/><z1.l1,q=e, pri = off/> (* Zone 1 query enabled state of line input 1.
<G1.L1,E/><g1.l1,e=e, pri = off/> (* Group 1 enable line input 1.
```

## Paging Microphone

Set or release the paging microphone access.

```
<PM,PAOXOXO/><pm,p=OXOXO000/> (* Set paging access to zones 2 and 4.
<PM,PQ/><pm,p=OXOXO000/> (* Query paging access.
<PM,PR/><pm,p=00000000/> (* Release paging access.
```

Set access contacts as input or output.

```
<PM,O/><pm,o acc = out/> (* Set paging access contacts as outputs.
<PM,I/><pm,i acc = in/> (* Set paging access contacts as inputs.
```

Query access input or output status NB both commands give the same result.

```
<PM,OQ/><pm,oq acc = in/> (* Query paging access contacts.
<PM,IQ/><pm,iq acc = in/> (* Query paging access contacts.
```

Set the offset of the DCM1's paging zones.

```
<PM,Z3/><pm,z offset = 3/> (* Set paging offset to 3. NB DCM1, zone 1.
(* becomes CDPM zone 4 (1+3).
<PM,ZQ/><pm,zq offset = 3/> (* Query paging microphone offset.
```

Set the priority trigger for the paging microphone.

```
<Z1.PM,TV/><z1.pm,tv= vox/> (* Zone 1 paging priority trigger to vox.
<Z1.PM,TO/><z1.pm,to= off/> (* Zone 1 paging priority trigger to off.
<Z1.PM,TA/><z1.pm,ta= access/> (* Zone 1 paging priority trigger to access.
<Z1.PM,TQ/><z1.pm,tq= access/> (* Zone 1 paging priority trigger query.
```

Set the priority parameters for the paging microphone.

```
<PM,A23/><pm,a att = 23, hold = 7, rel = 12/> (* Paging priority attenuation -23dB.
<PM,H8/><pm,h att = 23, hold = 8, rel = 12/> (* Paging priority hold to 8s.
<PM,R10/><pm,r att = 23, hold = 8, rel = 10/> (* Paging priority release to 10s.
<PM,Q/><pm,q att = 23, hold = 8, rel = 10/> (* Paging priority query.
(* Due to a bug DCM1 software
(* version 1.04 returns 255 for all
(* values.
```

## Microphone Inputs

Set the priority trigger for a microphone input.

NB response message returns enable/ disable state followed by priority state.

```
<Z1.M1,TV/><z1.m1,tv=e, pri = on/> (* Zone 1 microphone 1 priority trigger on.
(* NB "v" for VOX.
<Z1.M1,TO/><z1.m1,to=e, pri = off/> (* Zone 1 microphone 1 priority trigger off.
<Z1.M1,TQ/><z1.m1,tq=e, pri = off/> (* Zone 1 microphone 1 priority trigger query.

<Z1.MI,TS/><z1.mi,t=IIII, attn = 0/>(* Zone 1 all mics' triggers inactive, no attenuation.
```

Set the system wide priority parameters for a microphone input.

NB response message returns the values of attenuation level, hold time, and release time.

```
<MI,A34/><mi,a attn = 34dB, hold = 3s, rel = 1s/> (* Microphone priority
(* attenuation 34dB.
<MI,H4/><mi,h attn = 34dB, hold = 4s, rel = 1s/> (* Microphone priority
(* hold time 4s.
<MI,R12/><mi,r attn = 34dB, hold = 4s, rel = 12s/> (* Microphone priority
(* release time 12s.
<MI,Q/><mi,q attn = 34dB, hold = 4s, rel = 12s/> (* Microphone priority query.
```

## Line priority

Set or unset a line input as a priority trigger in a zone or group.

```
<Z1.L1,TV/><z1.l1,tv=e, pri = on/> (* Zone 1 line 1 priority trigger on.
<Z1.L2,TV/><z1.l2,tv=e, pri = on/> (* Zone 1 line 2 priority trigger on.
<Z1.L1,Q/><z1.l1,q=e, pri = off/> (* Zone 1 line 1 priority trigger query.
(* NB line1 priority is off because line 2 priority is on.
<Z1.L2,TO/><z1.l2,to=e, pri = off/> (* Zone 1 line 2 priority trigger off.
<G1.L1,TV/><g1.l1,tv=e, pri = on/> (* Group 1 line 1 priority trigger on.
(* DCM1 Software V1.05 only.
```

Set the system wide line priority settings

```
<LI,H5/><li,h hold = 5s, rel = 1s/> (* Line priority hold 5s.
<LI,R12/><li,r hold = 5s, rel = 12s/> (* Line priority release 12s.
<LI,Q/><li,q hold = 5s, rel = 12s/> (* Line priority query.
```

## Mask query

(DCM1 Software V1.07 and above)

```
<Z1.LI,KQ/><z1.li,kqxxxxxxxx/> (* Get line input enables for zone 1.
<Z2.MI,KQ/><z2.mi,k=OXOX/> (* Get microphone enables for zone 2.
<G1,KQ/><g1,kqoxoxoxoo/> (* Get zone members of group 1.
```

## CDR-1

```
<RM,Z16/><rm,z, offset = 16/> (* Set CDR-1 offset to 16.
<RM,ZQ/><rm,zq, offset = 16/> (* Query CDR-1 offset.
```

## Stereo Mono

Set stereo/ mono state NB only zones 1 and 2 can be set to stereo.

```
<SY.Z1,S/><sy.z1,s=s/> (* Zone 1 set to stereo.
<SY.Z2,M/><sy.z2,m=m/> (* Zone 2 set to mono.
<SY.Z1,Q/><sy.z1,q=s/> (* Query zone 1's mono/ stereo state.
```

## Edit Labels

```
<L1,L=DVD/><l1,l=DVD/> (* Set line 1's label to DVD.
<Z1,L=JAZZBAR/><z1,l=JAZZBAR/> (* Set zone 1's label to JAZZBAR.
<G1,L=FUNCTION ROOM A/><g1,l=FUNCTION ROOM A/> (* Set group 1's label to FUNCTION
(* ROOM A.
<L1,LQ/><l1,lqDVD/> (* Query line 1's label. NB only
(* V1.05 SW and above.
```

**Trigger Status**

(DCM1 Software V1.07 and above)

|                                       |  |
|---------------------------------------|--|
| <LI,TS/><li,t=IIIIIIIIIIII/>          | (* Line priority trigger status.<br>(* None active.  |
| <LI,TS/><li,t=32IIIIIIIIII3/>         | (* Line priority trigger status.<br>(* Line 3 in zone 1 and Group 4.<br>(* Line 2 in zone 2. |
| <Z1.MI,TS/><z1.mi,t=IIII, attn = 0/>  | (* Zone 1 microphone trigger status.<br>(* None active.                                      |
| <Z1.MI,TS/><z1.mi,t=IAII, attn = 30/> | (* Zone 1 microphone trigger status.<br>(* Microphone 2 active.                              |
| <PM,TS/><pm,t=IIIIIIII, attn = 0/>    | (* Page microphone trigger status.<br>(* All zones inactive.                                 |
| <PM,TS/><pm,t=IIIIIIAA, attn = 30/>   | (* Page microphone trigger status.<br>(* Zones 7 and 8 asserted.                             |
| <SY.AC,TS/><sy.ac,t=IIIIIIII/>        | (* Access contact trigger status.<br>(* None asserted.                                       |
| <SY.AC,TS/><sy.ac,t=AIIIIIII/>        | (* Access contact trigger status.<br>(* Zone 1 asserted.                                     |

**System Messages****Installer Key**

Change the installer key.

NB first four digits are the existing key; the second four digits are the new key.

Due to limitations of the DCM1 front panel controls only digits 1 to 8 are valid.

|                             |   |
|-----------------------------|---|
| <SY,K12345678/><sy,k=5678/> | (* Set installer key from 1234 to 5678. |
| <SY,K56784567/><sy,k=4567/> | (* Set installer key from 5678 to 4567. |

**Power up Mode (initialisation)**

|                    |  |
|--------------------|--|
| <SY,ID/><sy,id=d/> | (* Set power up mode to default.                       |
| <SY,IF/><sy,if=f/> | (* Set power up mode to factory.                       |
| <SY,IP/><sy,ip=p/> | (* Set power up mode to last (previous hence the 'P'). |
| <SY,IQ/><sy,iq=p/> | (* Query power up mode.                                |

**Save Defaults**

|                  |  |
|------------------|--|
| <SY,SD/><sy,sd/> | (* Save the current settings as the default set. |
|------------------|--|

**Reset**

|                       |           |
|-----------------------|-----------|
| <SY,R/><DCM-1 RESET/> | (* Reset. |
|-----------------------|-----------|

**Version**

|                                  |  |
|----------------------------------|--|
| <SY,VQ/><sy,vq sw=1.07 hw=1.05/> |  |
|----------------------------------|--|

**Microphone Gates**

(DCM1 software V1.05 and above)

|                             |                             |
|-----------------------------|-----------------------------|
| <SY.M1,ND/><sy.m1,nd= off/> | (* Microphone 1 gate off.   |
| <SY.M3,NE/><sy.m3,ne= on/>  | (* Microphone 3 gate on.    |
| <SY.M1,NQ/><sy.m1,nq= off/> | (* Microphone 1 gate query. |

## Emergency Mute

Set emergency mute parameters

```
<SY.EM,SO/><sy.em,so=no, s=off, l=0/> (* Emergency mute source off.
<SY.EM,SL3/><sy.em,sl=no, s=l3, l=2/> (* Emergency mute source line 3.
<SY.EM,L12/><sy.em,l=no, s=l3, l=12/> (* Emergency mute level -12dB.
<SY.EM,SM3/><sy.em,sm=no, s=m3, l=0/> (* Emergency mute source microphone 3.
(* NB level switches to 0dB.
<SY.EM,SO/><sy.em,so=no, s=off, l=0/> (* Emergency mute source off.
<SY.EM,Q/><sy.em,q=no, s=off, l=0/> (* Emergency mute query.
<SY.EM,NO/><sy.em,no=no, s=off, l=0/> (* Emergency mute (Music mute) set to
(* Normally Open.
<SY.EM,NC/><sy.em,nc=nc, s=off, l=0/> (* Emergency mute (Music mute) set to
(* Normally closed.
```

(DCM1 Software V1.07 and above)

```
<SY.EM,TS/><sy.em,ts=i, level = normal/> (* Emergency mute trigger status
(* inactive.
<SY.EM,TS/><sy.em,ts=a, level = mute/> (* Emergency mute trigger status active.
(* Line muted.
<SY.EM,TS/><sy.em,ts=a, level = 10/> (* Emergency mute trigger status active.
(* Line set to -10.
```

## Usage

(DCM1 Software V1.07 and above)

Get details of fitted accessories.

```
<SY.ET,U/><sy.et,u=0000/> (* Extension port usage, nothing fitted.
<SY.ET,U/><sy.et,u=X00X/> (* Extension port usage,
(* LE1 or BE1 fitted to inputs 1 and 4.
<SY.MI,U/><sy.mi,u=0X00/> (* Microphone port usage.
(* ME1 fitted to microphone 2.
```

## Boot loader

(DCM1 Software V1.07 and above)

Query and modify the boot loader switch

```
<SY,BU1234/><sy,bu=ue/> (* Unlock access to boot loader.
(* NB requires installer key.
<SY,BE/><sy,be=ue/> (* Enable boot loader.
<SY,BQ/><sy,bq=ue/> (* Query boot loader. NB unlocked.
<SY,BD/><sy,bd=ud/> (* Disable boot loader.
<SY,BL/><sy,bl=ld/> (* Lock boot loader.
<SY,BQ/><sy,bq=ld/> (* Query boot loader. NB locked.
<SY,BE/><!Esy,be/> (* Enable boot loader attempt,
(* Error, access is locked.
<SY,BD/><!Esy,bd/> (* Disable boot loader attempt.
(* Error, access is locked.
```

## GPIO, PM Access setup.

(DCM1 Software V1.07 and above)

NB Paging access contacts can be set to paging in, paging out or GPIO.

```
<SY.AC,DQ/><sy.ac,d=II000000/> (* Contact directions query, GPIO.
<PM,OQ/><pm,oq acc = gpio/> (* Page access function query.
<PM,O/><pm,o acc = out/> (* Set Page access function to Output.
<SY.AC,DQ/><sy.ac,dq pm out/> (* Contact direction query, PM Output.
<SY.AC,DO4/><sy.ac,d=IIII0000/> (* Contact set GPIO four Output.
<SY.AC,DI4/><sy.ac,d=IIII0000/> (* Contact set GPIO four Input.
<SY.AC,BP00XX00XX/><sy.ac,b=000000XX/> (* Bit Put 1, 2, 5, 6 – 1, 2.
<SY.AC,BS00XX0X0X/><sy.ac,b=00000XXX/> (* Bit Set 1, 3, 5, 6 – 1, 2, 3.
<SY.AC,BC0XX0X00X/><sy.ac,b=00000XX0/> (* Bit Clear 1,4,6,7 – 2, 3.
<SY.AC,BQ/><sy.ac,b=00000XX0/> (* Bit Query – 2, 3.
```

## External Messages

(DCM1 Software V1.07 and above)

### PM-SA Message.

<EX.SA,M8/><ex.sa,m8/>

(\* Command PM-SA to play message 8.

### RS232 (NB these messages are only available via the Ethernet interface)

Set emergency mute parameters.

<EX.RS,T=ABC/><ex.rs,t=ABC/>

(\* Transmit text "ABC" from RS232 port.

<EX.RS,C=Z1.MU,S3/><ex.rs,c=Z1.MU,S3/>

(\* Transmit DCM1 command <Z1.MU,S3/>

(\* from RS232 port.

<EX.RS,H=404142/><ex.rs,h=404142/>

(\* Transmit Hex, NB sends "@BC" from

(\* RS232 port.