

vI.0



416-AXB DMX512 FAQs

13-Aug-20

Frequently Asked Questions

I. The transmit LED on the AXB-DMX512 is always on. Is this a failure?

Unlike most serial protocols, DMX512 transmits a constant stream of data. The LED on the AXB-DMX512 box reflects this. This also means that if the AXB-DMX512 is receiving DMX512 data, then it's receive LED should always be on also.

2. Some channels will not ramp below a certain level. They can be ramped above this level but not below it.

The AXB-DMX512 box contains three internal buffers (Direct, Patch, and Group) for sending DMX, each with its own use. The actual DMX output is the highest value for that channel from amongst the three groups. If, for example, a programmer is ramping channel I down in the Direct buffer, but this channel is at 50% in the Group buffer, the programmer cannot ramp the actual DMX output below 50%. To avoid this situation, each of the buffers should be cleared out before doing any programming. The send commands that will do this are as follows:

To clear the Direct buffer:	DZ
To clear the Patch buffer:	PZ
To clear the Group buffer:	GZ
To reset everything:	MZ (Warning: This also deletes all presets)

3. The AXB-DMX512 is connected between a lighting console and the dimmers. If I bypass the AXB-DMX512 box, I have control of the dimmers, but when I put the box back in the system, I have no control.

The AXB-DMX512 box needs to have a patch created to connect the inputs to the outputs. After issuing the above commands to clear out any preexisting patches or groups, send the command PA to connect all inputs to all outputs one-to-one.

4. The AXB-DMX512 is connected between a lighting console and the dimmers. I am using the DS command to store snapshots of the DMX outputs. When I send a DL command to recall these snapshots, I am affecting dimmers that I do not want to be recalled in this scene. Is there any way to leave certain channels out of the scene?

The DS and DL commands store a snapshot of all DMX channels. To store and recall scenes, the GP command must be used to proportionally add a group in the Group buffer. The programmer will select which channels are included in the group. For example, GPIDI-100 adds DMX outputs I through 100 to group I. The scene can then be recalled by sending the group to 100% using the command GRIL100%. Channels above 100 will not be affected by this command.



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General Note: All Send Commands are limited to 64 characters. This information is all based on firmware version 1.10.

Direct Control Buffer Send_Commands

DS: Stores a snapshot of the current DMX output. This is the final output of the DMX box, and therefore is also affected by the values in the Patch and Group buffers.

Note that this command stores all 512 DMX channels, even channels that are not currently being transmitted through use of the **ML** command (see Miscellaneous commands). To exclude (undefine) channels, the Group Buffer commands must be used, **not** the Direct Buffer commands.

Examples: **DS1** stores preset I.

DS72 stores preset 72 (max. 72 presets with version 1.10)

DL: Recalls a snapshot. Time is not optional. This will affect all 512 DMX channels. Use groups and the group ramp (**GR**) command to store and recall scenes with specific channels. Any other snapshot recall or direct ramp in progress is halted, and the ramp to the new level starts from the current level.

Examples: **DL1T0** recalls preset I instantly (zero seconds)

DL72T15 recalls preset 72 in 1.5 seconds.

DR: Sends all specified DMX outputs to the same level.. Time is not optional. . Any other snapshot recall or direct ramp in progress for the specified channels is halted, and the ramp to the new level starts from the current level.

Examples: DR1-512L50%T10 sends all channels to 50% in 1 second.

DR1-512L127T25 sends all channels to 50% in 2.5 seconds.

DR10,20-30,35L0T0 sends channels 10, 20 through 30, and 35 to 0%.

DZ: Sends all outputs in the Direct Control buffer immediately to zero. Any ramp in progress is terminated.

Patch Buffer Send_Commands

PA: Patch inputs 1-512 one-to-one, with outputs 1-512. This is typically the second step (after clearing the memory), when setting up the box to sit between a lighting console and its dimmers. The outputs immediately change to reflect the inputs and will track any input changes.

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PC: Patch an input to one or more outputs. If the output is currently already patched to another input, then it is automatically disconnected from that input.

Examples: PC1D1-512 connects input I to all outputs.

PC2D10-20,25 patches input 2 to outputs 10 through 20, and 25.

PX: Unpatch one or more DMX outputs. These outputs immediately go to zero in the Patch buffer.

Examples: **PX1-512** unpatches all DMX outputs, same as PZ command (below).

PX15,20-25 unpatches DMX outputs 15, and 20 through 25.

PZ: Unpatch all DMX inputs from all DMX outputs. All DMX outputs in the Patch buffer immediately go to zero.

Group Buffer Send_Commands

Note: There is a maximum of 96 groups in software version 1.10.

WARNING: Adding outputs to a group while the group is still connected to an Axcess level or DMX output, can cause the value of outputs which are already a member of the group to change.

GA: Adds one or more DMX outputs to a group. Any of these outputs, which are currently members of another group, are automatically removed from that group. Adding an output to the group does not change the current DMX value for that output in the Group buffer. This means that it is possible to have different DMX values for the channels in this group at the time the channels are added, but this command is intended for control of a group of outputs that will have the same value at all times. If this group is direct ramped (**GR**) to a level, then the offset between channels will be lost. If this group is ramped up (**GU**) or down (**GD**), then the channels will maintain their relative values until these channels hit zero or full, effectively 'clipping' the channels and eliminating the offsets between the values.

Examples: **GA1D1-5** adds DMX outputs I through 5 to group I.

GA96D6,10 adds DMX outputs 6 and 10 to group 96.

GP: Works like the **GA** command, except the DMX outputs are added, so that they will remain proportional to the value they had at the time they were added. The outputs will not ramp to a value above that which they had at the time they were added. This is the command typically used to store scenes that were created on a DMX console, which is providing the DMX inputs to the AXB-DMX512 box. When the group is ramped, the outputs retain their same proportional level to each other. Rounding errors are common. If an output is added to an existing group, then its proportional value is determined by its value when compared to the maximum values for each channel in a group; not by its value compared to the current values for each channel in the group. As with the **GA** command, this can cause things to be a bit out of sync at the time of adding. When any channel is added, its output value in the Group buffer does not change, regardless of what level other outputs in the group might currently be at. When ramping up (**GU**) or down (**GD**), the other levels will reach their maximum or minimum before the currently added level does. Once all levels have reached maximum or minimum, they will ramp together from then on.

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GF: Works like the **GP** command, except the maximum value for each output is specified in the Send Command. This is useful for creating "blind" presets, meaning that it is not necessary to drive the actual DMX outputs to these levels in order to store the preset. All other rules of use are identical to those for the **GP** command.

Examples: **GF1D1@100%, 2@50%,8@75%** adds channels 1,2, and 8 to group 1 at levels of 100%, 50%, and 75%, respectively.

GF10D5-10@255,20@50% adds channels 5 through 10 at 100%(255) and Channel 20 at 50% to group 10.

GC: Connects one or more groups to an Axcess level or to a DMX input. There are four possible scenarios with this command, as follows:

I. Connecting a single group to an Axcess level:

The Axcess level changes immediately to reflect the current level of the group for normal groups. The group level immediately changes to reflect the Axcess level for proportional groups and fixed groups. The group can now be ramped up and down via the Axcess level ramp commands (AU, AD, AS). It is no longer possible to use the group ramp up (GU) or down (GD) commands, but the direct ramp command (GR) and Axcess channels still work, and affects the Axcess level as well. If the group is disconnected using the GX command, the group ramp up and down will work again.

Example: GC1L2 connects group I to Axcess level 2.

2. Connecting multiple groups to an Axcess level:

The group levels change immediately to reflect the current Axcess level. The group can now be ramped up and down via the Axcess level. It is no longer possible to use the group ramp up (GU) or down (GD) commands. The direct ramp command (GR) and Axcess channels still work, but now controls all groups connected to this Axcess level, as well as the Axcess level itself.

Example: GC1,2L3 connects groups I and 2 to Axcess level 3.

3. Connecting a single group to a DMX level:

The group level changes immediately to reflect the current DMX input level. The group can now be ramped up and down by the DMX input level. There are no other means of affecting the group output.

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Example: **GC4D5** connects group 4 to DMX input 5.

4. Connecting multiple groups to a DMX level:

All group levels change immediately to reflect the current DMX input level, and behaves the same as connecting a single group to the DMX input.

Example: GC1-3,5D8 connects groups I through 3 and 5 to DMX input 8.

GU: Ramps up one or more groups at the current ramp rate (set by the GT command). The group stop (GS), group ramp down (GD), or group direct ramp command (GR) will interrupt this command. It is not possible to use this command on groups that are connected to an Axcess level or DMX input. If this command is sent for multiple groups, only those which are not connected to an Axcess level or DMX input will ramp.

Example: **GU1,3-4** starts a ramp up on groups 1,3, and 4.

GD: Ramps down one or more groups at the current ramp rate (set by the **GT** command). The group stop (**GS**), group ramp up (**GU**), or group direct ramp command (**GR**) will interrupt this command. It is not possible to use this command on groups that are connected to an Axcess level or DMX input. If this command is sent for multiple groups, only those which are not connected to an Axcess level or DMX input will ramp.

Example: **GD1,3-4** starts a ramp down on groups 1,3, and 4.

GS: Stops any ramping that was started by the group up (**GU**), group down (**GD**) or group direct ramp (**GR**) commands. DMX outputs freeze at their current level.

Example: **GS1,3-4** stops a ramp on groups 1,3, and 4.

GR: Ramps a single group to a level. Time is optional. If no time is specified, the group time (set by the **GT**) command is used. Can be interrupted by the group up (**GU**), group down (**GD**) or group stop (**GS**) commands. Inaccuracies in the value as a result of rounding, are common with fixed and proportional groups. Frequently, even if the group is sent to 100%, some of the channels will still not be at their stored levels. The group up (**GU**) command can be issued to take the groups to their true 100% level.

Examples: GRIL50%T20 ramps group I to 50% in 2 seconds.

GR2L255 ramps group 2 to 100% using the group time.

GT: Sets the ramp rate for one or more groups in tenths of a second. This will affect any future group up (**GU**), group down (**GD**) or group direct ramp (**GR**) commands. Optionally, separate up (**U**) or down (**D**) times may be specified. Ramp rates determine how long the group will take to ramp from 0% to 100% (and 100% to 0%). So, for example, if there is a ramp time of 10 seconds, and the level is currently at 50%, it will take only 5 seconds to ramp to either 0% or

100%. 100% for proportional (GP) and fixed (GF) groups is the max. level in the group for each channel, which is not necessarily fully 100% (255).

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Examples: **GT1-2R50** sets the up and down ramp times for groups I and 2 to 5 seconds.

GT3,5-8R35U sets the up ramp time for groups 3 and 5 through 8 to 3.5 seconds.

GT10R5D sets the down ramp time for group 10 to 0.5 seconds.

GO: Copy the actual output levels for the AXB-DMX512 box to the group buffer for one or more groups. This is useful in the event a programmer wishes to add a group and then ramp it down from its current level. To do this, take the following steps:

I. Use the Direct or Patch buffer to set the DMX outputs, as needed.

2. Add one or more proportional groups (GP).

- 3. Use group copy (GO) to copy the box outputs to the group buffer for these groups.
- 4. Disconnect the Patch buffer (PZ) or send the Direct buffer to 0% (DZ).
- Examples: **GO1** copies outputs for all channels in group 1 to the Group buffer.

G05-8 copies outputs for all channels in groups 5 through 8 to the Group buffer.

WARNING: The **GO** command only works intermittently. To work around this, use the direct ramp (**DR**) command to send each group to full, instead of using the **GO** command.

GE: Removes all output channels from one or more groups. These outputs go immediately to 0% in the Group buffer, and does not disconnect an Axcess level or DMX input from the group, if currently connected. So, if a programmer later adds channels back to the group, they will be immediately connected to the Axcess level or DMX input.

Examples: **GE1** removes all output channels from group 1.

GE5,8-10 removes all output channels from groups 5, and 8 through 10.

GL: Removes one or more output channels from the group to which they are connected. These outputs go immediately to 0% in the Group buffer. **Do not** specify which group these are to be removed from, as a channel can only be a member of one group at a time.

Examples: **GL1-50** removes DMX channels I through 50 from any group.

GL5,10,20-25 removes DMX channels 5, 10, and 20 through 25 from any group.

GX: Disconnects one or more groups from Axcess levels or DMX inputs to which they may be connected.

Examples: **GX1** disconnects group.

GX5,10-15 disconnects groups 5, and 10 through 15.

GZ: Removes all outputs from all groups and disconnects these groups from Axcess levels or DMX inputs to which they may be connected.

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Note: The manual's description of this function is incorrect. It does remove all outputs, in addition to disconnecting any levels or inputs.

Axcess Level Send_Commands

AC: Connects one DMX input to one Axcess level. The Axcess level value will then only be affected by a change in the DMX input value. If any groups are also connected to this Axcess level, they can be ramped via the DMX input (from an external DMX controller).

Example: AC1D2 connects Axcess level 1 to DMX input 2.

AU: Ramp up one Axcess level at the ramp rate set by the AT command. Note: It is not possible to ramp an Axcess level if it has been connected to a DMX input (AC).

Example: AU1 ramps up Axcess level I.

AD: Ramp down one Axcess level at the ramp rate set by the AT command. **Note**: It is not possible to ramp an Axcess level if it has been connected to a DMX input (**AC**).

Example: **AD1** ramps down Axcess level I.

AR: Ramps a single Axcess level to a chosen value. Time is optional. If no time is specified, the level ramp time (set by the AT) command is used and can be interrupted by the level up (AU), level down (AD) or level stop (AS) commands.

Examples: **AR1L50%T20** ramps level 1 to 50% in 2 seconds.

AR2L255 ramps level 2 to 100% using the group time.

AS: Stops any ramp that was initiated using the Axcess level up (AU), Axcess level down (AD), or Axcess level direct ramp (AR) commands on one Axcess level. The Axcess level and any connected groups freeze at their current levels.

Example: AS1 stops any ramp on Axcess level I.



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Examples: **AT1R50** sets the up and down ramp times for Axcess level 1 to 5 seconds.

AT3R35U sets the up ramp time for Axcess level 3 to 3.5 seconds.

AT8R5D sets the down ramp time for Axcess level 8 to 0.5 seconds.

AX: Disconnects a single Axcess level from the single DMX input to which it is connected.

Example: **AX1** disconnects Axcess level 1 from any DMX input.

AZ: Disconnects all Axcess levels from any DMX inputs to which they may be connected.

Miscellaneous Send_Commands

Note: The following 5 commands need to be adjusted *only* if the receiving device is found to operate within a certain range of DMX 'Flavors'. The default settings in the AXB-DMX512 box are fully within the USITT specifications for DMX transmission.

MB: Sets break time. Range is 88 to 10,000 microseconds.

Example: MB88 sets break to 88 microseconds (default).

MD: Sets idle time after DMX packet in 10 microsecond increments. Range is 1 to 10,000 x 10 microseconds.

Example: MDI sets idle time after packet to 10 microseconds (default).

MM: Sets the length of the mark-after-break. Range is 8 to 10,000 microseconds.

Example: MM8 sets mark-after-break to 8 microseconds (default).

ML: Limits number of channels in transmitted DMX packet. The number of packets sent per second will increase accordingly, which can cause the break-to-break time to drop below the official minimum time of 1,196 microseconds. This takes place downstream from the AXB-DMX512's output buffer, and therefore has no effect on any other commands. The DMX box still keeps track of its DMX output values internally, even though these are no longer a part of the transmitted packet. Always transmit at least one channel (ML0 is not allowed).

Example: ML512 sends 512 channels per packet at 44 packets per second.

ML256 sends 256 channels per packet at 88 packets per second.

MR: Macro command which sets above 5 parameters to send either 44 packets per second or 22 packets per second with 512 channels of DMX in either case.

Examples: MR0 sets parameters for 44 packets per second, 512 channels per packet.

MR1 sets parameters for 22 packets per second, 512 channels per packet.

MI: Request that AXB-DMX512 return a string indicating current 8-bit value of an input channel.

Examples: MI1? sent to AXB-DMX512 box. Box replies "MI1@255',13,10" indicating that DMX input 1 is at 100% (255).

MI2? sent to AXB-DMX512 box. Box replies "MI2@127',13,10" indicating that DMX input 2 is at 50% (127).

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MO: Request that AXB-DMX512 return a string indicating current 8-bit value of an output channel.

Examples: M01? sent to AXB-DMX512 box. Box replies "M01@255',13,10" indicating that DMX input 1 is at 100% (255).

M02? sent to AXB-DMX512 box. Box replies "'**M02@127**',13,10" indicating that DMX input 2 is at 50% (127).

MG: Request that AXB-DMX512 return a string indicating current average of all outputs in a single group.

Examples: MG1? sent to AXB-DMX512 box. Box replies "MG1@255',13,10" indicating that all DMX outputs in group 1 are at full (255).

MG2? sent to AXB-DMX512 box. Box replies "MG2@127',13,10" indicating that the average of all outputs in group 2 is 50% (127).

MP: Request that AXB-DMX512 return a string indicating the maximum number of presets available, including those that are already in use. This is currently fixed at 72.

Examples: MP sent to AXB-DMX512 box. Box replies MP72, indicating that are a total of 72 presets are available with this software version.

MZ: Total memory clear. Resets everything to factory state. Deletes all presets, groups, patches, etc.



Channel Trigger Send_Commands

CA: Sets up a trigger that will cause an Axcess channel to be on whenever a single specified DMX input is within a range of values. The minimum value must be specified. The maximum value is optional; if not specified, the maximum value is assumed to be 100% (255). Only Axcess channels 209 through 248 are available for use as triggers.

Examples: CA209D1L100H200 sets up Axcess channel 209 to be on whenever DMX input I is greater than / equal to 100 & less than / equal to 200.

CA248D5L127 sets up Axcess channel 248 to be on whenever DMX input 5 is greater than / equal to 127.

CL: Deletes a single channel trigger.

Example: CL209 deletes Axcess channel trigger 209.

CZ: Deletes all Axcess channel triggers.

Channel Commands

1-8 Ramp Axcess level 1-8 up.

9-16 Ramp Axcess level I-8 down. Ramp time is set by the AT command. Any groups that are connected to the Axcess level will ramp also. It is not possible to ramp a level that is connected to a DMX input.

17-112 Ramp group 1-96 up.

113-208 Ramp group I-96 down. Ramp time is set by the GT command, unless group has been connected to a level using the GC command; in which case, ramp time is set by the AT command. The group can still be ramped using these Axcess channels even if it has been connected to an Axcess level. Groups that are connected through an Axcess level will ramp together. It is not possible to use these channels to ramp groups which have been connect to a DMX input through an Axcess channel.



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