
Allen & Heath Sys-Net Control Protocol

Version 1.50, 25/04/2005

1. Introduction

This protocol is for use with iDR units loaded with Version 3.50 software (i.e.V3.50) and later.

The Remote Controllers will be able to control the following functions:

- Channel Levels
- Channel Mutes
- Routing Matrix Cross-point Levels
- Routing Matrix Cross-point Mutes
- Preset Recalls
- Bank Selects
- Switches
- Indicators
- Group Levels

2. Physical Interface

The Sys-Net protocol uses the 9-way female D-Type connector on the rear of the iDR Unit. The physical interface uses the RS232 standard for RX/TX & GND – no handshake lines are required.

Pin	Function
2	TX
3	RX
5	Ground

2.1. Serial Port Settings

Baud rate is 19200, 8-bit data with no parity, 1 stop bit.

3. Control Protocol

3.1. Preset Change

To recall Presets...

0xC0, <Preset Number>

For Bank 1 <Preset Number> is in the range 0x00 to 0x7F (i.e. 0 to 127 decimal, referencing Presets 1 to 128)

For Bank 2 <Preset Number> is in the range 0x00 to 0x78 (i.e. 0 to 120 decimal, referencing Presets 129 to 250)

When a Preset is recall via another method (e.g. Soft-Key, Remote Key) the following is transmitted from the Sys-Net...

0xB0, 0x00, <Bank Number>
0xC0, <Preset Number>

Where <Bank Number> is in the range 0x00 to 0x01 (i.e. 0 to 1 decimal, referencing banks 1 and 2)

And where <Preset Number> is in the range 0x00 to 0x7F (i.e. 0 to 127 decimal, referencing Presets 1 to 128) for Bank 1

And where <Preset Number> is in the range 0x00 to 0x78 (i.e. 0 to 120 decimal, referencing Presets 129 to 250) for Bank 2.

3.2. Bank Selects (Extended Program Change)

To change bank...

0xB0, 0x00, <Bank Number>

Where <Bank Number> is in the range 0x00 to 0x01 (i.e. 0 to 1 decimal, referencing banks 1 and 2)

3.3. Input Channel Levels

To control the input channel level...

0xB0, 0x63, <Input Channel Number>, 0x62, 0x17, 0x06, <Level>

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 5dB maximum).

When an input channel level is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

0xB0, 0x63, <Input Channel Number>, 0x62, 0x17, 0x06, <Level>

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 5dB maximum).

3.4. Output Channel Levels

To control the output channel level...

0xB0, 0x63, <Output Channel Number>, 0x62, 0x1B, 0x06, <Level>

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 5dB maximum).

When an output channel level is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

0xB0, 0x63, <Output Channel Number>, 0x62, 0x1B, 0x06, <Level>

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 5dB maximum).

3.5. Matrix Cross-point Levels

To control the matrix cross-point levels...

0xB0, 0x63, <Output Channel Number>, 0x62, <Input Channel Number>, 0x06, <Level>

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).
And where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

When cross-point level is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

0xB0, 0x63, <Output Channel Number>, 0x62, <Input Channel Number>, 0x06, <Level>

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).
And where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

3.6. Input Channel Mutes

To turn an input mute on...

0x90, <Input Channel Number>, 0x7F

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

To turn an input mute off...

0x90, <Input Channel Number>, 0x01

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

When an input channel mute state is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

If the mute is turning on...

0x90, <Input Channel Number>, 0x7F

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

If the mute is turning off...

0x90, <Input Channel Number>, 0x01

Where <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

3.7. Output Channel Mutes

To turn an output mute on...

0x90, <0x20 + Output Channel Number>, 0x7F

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

To turn an output mute off...

0x90, <0x20 + Output Channel Number>, 0x01

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

When an output channel mute state is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

If the mute is turning on...

0x90, <0x20 + Output Channel Number>, 0x7F

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

If the mute is turning off...

0x90, <0x20 + Output Channel Number>, 0x01

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16).

3.8. Matrix Cross-point Mutes (NRPN)

To turn a matrix cross-point mute on...

0xB0, 0x63, <Output Channel Number>, 0x62, <0x40 + Input Channel Number>, 0x06, 0x7F

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16) and <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

To turn a matrix cross-point mute off...

0xB0, 0x63, <Output Channel Number>, 0x62, <0x40 + Input Channel Number>, 0x06, 0x01

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16) and <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

When an output channel mute state is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

If the matrix cross-point mute is turning on...

0xB0, 0x63, <Output Channel Number>, 0x62, <0x40 + Input Channel Number>, 0x06, 0x7F

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16) and <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

If the matrix cross-point mute is turning off...

0xB0, 0x63, <Output Channel Number>, 0x62, <0x40 + Input Channel Number>, 0x06, 0x01

Where <Output Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing outputs 1 to 16) and <Input Channel Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing inputs 1 to 16).

3.9. Input Group Levels

To control the input group level...

0xB0, 0x63, <Input Group Number>, 0x62, 0x18, 0x06, <Level>

Where <Input Group Number> is in the range 0x00 to 0x07 (i.e. 0 to 7 decimal, referencing inputs 1 to 8). And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

When an input group level is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

0xB0, 0x63, <Input Group Number>, 0x62, 0x18, 0x06, <Level>

Where <Input Group Number> is in the range 0x00 to 0x07 (i.e. 0 to 7 decimal, referencing inputs 1 to 8). And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

3.10. Output Group Levels

To control the output group level...

0xB0, 0x63, <Output Group Number>, 0x62, 0x19, 0x06, <Level>

Where <Output Group Number> is in the range 0x00 to 0x07 (i.e. 0 to 7 decimal, referencing outputs 1 to 8). And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

When an output group level is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

0xB0, 0x63, <Output Group Number>, 0x62, 0x19, 0x06, <Level>

Where <Output Group Number> is in the range 0x00 to 0x07 (i.e. 0 to 7 decimal, referencing outputs 1 to 8). And where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

3.11. Matrix Cross-point Group Levels (NRPN)

To control the cross-point group level...

0xB0, 0x63, <Cross-point Group Number>, 0x62, 0x1C, 0x06, <Level>

Where <Cross-point Group Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing cross-point groups 1 to 16) and where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

When a cross-point group level is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

0xB0, 0x63, <Cross-point Group Number>, 0x62, 0x1C, 0x06, <Level>

Where <Cross-point Group Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing cross-point groups 1 to 16) and where <Level> is in the range 0x00 to 0x7F (0 to 127 decimal – 0 is channel off, and 127 is 0dB maximum).

3.12. Switches

To turn a switch on...

0x90, <0x40 + Switch Number>, 0x7F

Where <Switch Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing switches 1 to 16).

To turn a switch off...

0x90, <0x40 + Switch Number>, 0x01

Where <Switch Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing switches 1 to 16).

3.13. Indicators

When an Indicator state is changed via another method (e.g. Soft-Key, Remote Key, Preset Recall) the following is transmitted from the Sys-Net...

If the Indicator is turning on...

0x90, <0x40 + Indicator Number>, 0x7F

Where <Indicator Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing Indicators 1 to 16).

If the Indicator is turning off...

0x90, <0x40 + Indicator Number>, 0x01

Where <Indicator Number> is in the range 0x00 to 0x0F (i.e. 0 to 15 decimal, referencing Indicators 1 to 16).

4. Custom Sys-Net Strings

Custom Sys-Net strings can be added to Presets and triggered using a Preset recall. For further information refer to the iDR System Manager help.