# Digital Speaker Processor DP-SP3
# External Control Protocol – TCP/IP

Ver.1.0.0 Aug.20 /2013

## ■ Summary

The External Control protocol described in this document is designed for use of controlling the DP-SP3 from a remote controller.
This spec sheet applies to the DP-SP3 firmware of version 2.0.0 or later.

Settings that can be controlled are as follows:

- Gain
- Matrix Assignment
- Matrix Crosspoint Gain
- Attenuator
- Mute
- Preset Memory Load
- Preset Memory Store
- Level Meter Status Notification Interval
- Auto Status Notification Start/Stop

If necessary, the DP-SP3's activation can be checked or setting values read by using the following commands:

- Status request (reading of the DP-SP3's setting value)

Status Information

- DP-SP3 connection establishment status (output from the DP-SP3 at the time of connection establishment)
- Level Meter Status (output from the DP-SP3 at the time of level meter status changed)
- Contact Input Make/Break Status (output from the DP-SP3 at the time of Contact Input make/break status changed)

**Using TCP Port**

Control Port No.: 3000
Level Meter Status Port No.: 3001

## ■ TCP/IP Connection

| No. | Parameter | Description (rules) |
|---|---|---|
| 1 | Connection Path | 1 path |
| 2 | Data Length | Variable-length, The maximum length is 1024 bytes |
| 3 | Code Classification | Binary |
| 4 | Delivery Confirm | No handshakes at application layer |
| 5 | Resend Control | None |
| 6 | Priority Control | None |

DP-SP3 is a TCP server.

TCP Port is always connected.

For the purpose of connection keeping, DP-SP3 performs the following behavior.

Transmitting some kind of data at least once in the last 10 seconds.

When there is the status that for send, DP-SP3 transmits the contents. When there is not it, DP-SP3 transmits 0xFF only as for 1 byte.

When DP-SP3 received nothing from a remote controller more than 1 minute, DP-SP3 disconnect the TCP/IP connection.

## ■ Command Construction

- Command Data length (N) Data 1 Data 2 …… Data N
- Where Command is in the range 80H to FFH. And where Data length and Data are in the range 00H to 7FH.
- The second byte data indicates the number of byte data that follow the second byte data.
- If received data contains more byte data than the indicated number, those exceeding the number are abandoned.
- When a next command is received, the previous data is abandoned if shorter than the indicated number.

## ■ Control Command and Setting Value

- **Gain (Position)**

Set the input and output channel gains by position.

For the relationship of position to gain (dB), refer to the Position vs. Gain Table.

The DP-SP3 transmits changed value data after receiving this command.

**91H, 03H, <Channel Attribute>, <Channel Number>, <Position>**

<Channel Attribute>

00H: Input channel

01H: Output channel

<Channel Number>

When Channel Attribute=00H: 00H - 01H (Input channel 1 – 2)

When Channel Attribute=01H: 00H - 05H (Output channel 1 – 6)

<Position>

00H - 3FH (-INF - +12dB, see the Position vs. Gain Table)

Example of setting Input channel 1 gain to 0 dB:

91H, 03H, 00H, 00H, 33H

- **Gain (Step)**

Set the input and output channel gain positions by the number of steps.

Positions can be varied from the current status by the designated number of steps.

One position varies per step.

The DP-SP3 informs position values changed by step Up or Down.

**91H, 03H, <Channel Attribute>, <Channel Number>, <Step>**

<Channel Attribute>

00H: Input channel

01H: Output channel

<Channel Number>

When Channel Attribute=00H: 00H - 01H (Input channel 1 – 2)

When Channel Attribute=01H: 00H - 05H (Output channel 1 – 6)

<Step>

UP: 41H - 5FH (1 step up - 31-step up) ; Example showing 1step Up: 41H

Down: 61H - 7FH (1 step down – 31–step down) ; Example showing 1step Down: 61H)

Example showing 3-step Up of Input channel 1 gain

91H, 03H, 00H, 00H, 43H

- **Matrix Assignment**

Set the matrix assignment (matrix crosspoint) to ON or OFF.

The DP-SP3 transmits changed value data after receiving this command.

**94H, 03H, <Input Channel Number>, <Output Channel Number>, <ON/OFF>**

<Input Channel Number>

00H - 01H (Input channel 1 - 2)

<Output Channel Number>

00H - 05H (Output channel 1 - 6)

<ON/OFF>

00H: <Input channel> to <Output channel> assign OFF

01H: <Input channel> to <Output channel> assign ON

Example of setting the matrix assignment from Input channel 1 to Output channel 1 to ON:

94H, 03H, 00H, 00H, 01H

- **Matrix Crosspoint Gain**

Set the crosspoint gains by position.

The DP-SP3 transmits changed value data after receiving this command.

**95H, 03H, <Input Channel Number>, <Output Channel Number>, <Value>**

<Input Channel Number>

00H - 01H (Input channel 1 - 2)

<Output Channel Number>

00H - 05H (Output channel 1 - 6)

<Value>

00～3DH : Gain Position (-INF - 0dB), refer to Value vs. Gain Table for Crosspoint gain.

60～6FH : Position Down (1～16 Step Down)

70～7FH : Position Up (1～16 Step Up)

Example of setting the crosspoint gain from Input channel 1 to Output channel 1 to 0dB:

95H, 03H, 00H, 00H, 3DH

Example showing 3-step Up of Input channel 1 to Output channel 1 crosspoint gain

95H, 03H, 00H, 00H, 72H

- **Attenuator (Position)**

Set the output attenuator by position.

For the relationship of position to attenuator (dB), refer to the Position vs. Attenuator Table.

The DP-SP3 transmits changed value data after receiving this command.

**96H, 02H, <Channel Number>, <Position>**

<Channel Number>

00H - 05H (Output channel 1 – 6)

<Position>

00H - 3FH (-INF - 0dB, see the Position vs. Attenuator Table)

Example of setting Output channel 1 attenuator to -12 dB:

96H, 02H, 00H, 33H

- **Attenuator (Step)**

Set the output channel attenuator positions by the number of steps.

Positions can be varied from the current status by the designated number of steps.

One position varies per step.

The DP-SP3 informs position values changed by step Up or Down.

**96H, 02H, <Channel Number>, <Step>**

<Channel Number>

00H - 05H (Output channel 1 – 6)

<Step>

UP: 41H - 5FH (1 step up - 31-step up) ; Example showing 1step Up: 41H

Down: 61H - 7FH (1 step down – 31–step down) ; Example showing 1step Down: 61H)

Example showing 3-step Up of Output channel 1 attenuator

96H, 02H, 00H, 43H

- **Mute**

Set the output channel mute to ON or OFF.

The DP-SP3 transmits changed value data after receiving this command.

**97H, 02H, <Channel Number>, <ON/OFF>**

<Channel Number>

00H - 05H (Output channel 1 – 6)

<ON/OFF>

00H: OFF

01H: ON

Example of setting Output channel 1 mute to ON:

97H, 02H, 00H, 01H

- **Preset Memory Load**

Load desired preset memories.

The DP-SP3 transmits changed preset memory number after receiving this command.

**F1H, 02H, 00H, <Preset Number>**

<Preset Number>

00H - 0FH: Preset Memory Numbers 1 - 16

Example of loading Preset Memory 1:

F1H, 02H, 00H, 00H

- **Preset Memory Store**

Store desired preset memory. (UTC TimeStamp)

The DP-SP3 transmits stored preset memory number after receiving this command.

**F3H, 08H, 00H, <Preset Number>, <Year>,<Month>,<Day>,<Hour>,<Minute>,<Second>**

<Preset Number>

00H – 0FH: Preset Memory Numbers 1 - 16

<Year>

00H - 63H: Year 2000 - 2099

<Month>

01H – 0CH: Month 1 - 12

<Day>

01H – 1FH: Day 1 - 31

<Hour>

00H – 17H: Hour 0 - 23

<Minute>

00H – 3BH: Minute 0 - 59

<Second>

00H – 3BH: Second 0 - 59

Example of Storing Preset Memory 1:

F3H, 08H, 00H, 00H, 0CH, 0CH, 15H, 0FH, 00H, 00H

- **Level Meter Status Notification Interval**

Set the Level Meter Status Notification Interval.

**F2H, 02H, 00H, <Notify Interval>**

<Notify Interval>

00H – 07H: 50ms, 100ms, 200ms, 500ms, 1s, 2s, 5s, 10s

- **Auto Status Notification Start/Stop**

Set the Auto Status Notification ON or OFF.

**F2H, 02H, 01H, <ON/OFF>**

<ON/OFF>

00H: OFF (Auto Status Notification Stop)

01H: ON (Auto Status Notification Start)

## ■ Status Request Command

### ● Status Request(Gain position)

This command requests the DP-SP3 to send its current gain position setting data.

The DP-SP3 informs the current gain position.

**F0H, 03H, 11H, <Channel Attribute>, <Channel Number>**

<Channel Attribute>

00H: Input channel

01H: Output channel

<Channel Number>

When Channel Attribute=00H: 00H - 01H (Input channel 1 – 2)

When Channel Attribute=01H: 00H - 05H (Output channel 1 – 6)

Example of requesting Input channel 1's gain position value data:

F0H, 03H, 11H, 00H, 00H

### ● Status Request (Matrix Assignment)

This command requests the DP-SP3 to send its current matrix assignment setting data.

The DP-SP3 informs the current matrix assignment setting status.

**F0H, 03H, 14H, <Input Channel Number>, <Output Channel Number>**

Example of requesting Input channel 1 to Output channel 1 matrix assignment setting data:

F0H, 03H, 14H, 00H, 00H

### ● Status Request (Matrix Crosspoint Gain)

This command requests the DP-SP3 to send its current matrix crosspoint gain setting data.

The DP-SP3 informs the current crosspoint gain setting status.

**F0H, 03H, 15H, <Input Channel Number>, <Output Channel Number>**

Example of requesting Input channel 1 to Output channel 1 crosspoint gain setting data:

F0H, 03H, 15H, 00H, 00H

### ● Status Request (Attenuator Position)

This command requests the DP-SP3 to send its current attenuator position setting status data.

The DP-SP3 informs the current attenuator position setting status.

**F0H, 02H, 16H, <Channel Number>**

<Channel Number>

00H - 05H (Output channel 1 – 6)

Example of requesting Output channel 1's attenuator position setting status data:

F0H, 02H, 16H, 00H

- **Status Request (Mute)**

This command requests the DP-SP3 to send its current channel mute ON/OFF setting status data.

The DP-SP3 informs the current mute ON/OFF setting status.

**F0H, 02H, 17H, <Channel Number>**

<Channel Number>

00H - 05H (Output channel 1 – 6)

Example of requesting Output channel 1's mute ON/OFF setting status data:

F0H, 02H, 17H, 00H

- **Status Request (Current Preset Number)**

This command requests to send the DP-SP3's currently loaded preset number data.

The DP-SP3 transmits the current preset number data.

**F0H, 02H, 71H, 00H**

- **Status request (Contact Input Make/Break Status)**

This command requests to send the DP-SP3's current contact input make/break status data.

The DP-SP3 transmits the current contact I/O's status data.

**F0H, 03H, 42H, <Contact I/O>, <Contact Number>**

<Contact I/O>

00H: Contact Input

<Contact Number>

00H – 03H: Contact Number 1 - 4

Example of requesting contact input No.4's status data:

F0H, 03H, 42H, 00H, 03H

## ■ Status Information

### ● DP-SP3 connection establishment status

Status data is transmitted from the DP-SP3 when the TCP connection is established.

**DFH, 01H,01H**

### ● Level Meter Status Format

The DP-SP3 transmits the current status data when level meter status changed in Level Meter Status Notification started.

**E6H, 04H, 00H, <Channel Attribute>, <Channel Number>, <Level Meter>**

<Channel Attribute>

00H: Input channel

01H: Output channel

<Channel Number>

When Channel Attribute=00H: 00H - 01H (Input channel 1 – 2)

When Channel Attribute=01H: 00H - 05H (Output channel 1 – 6)

<Level Meter>

00H – 48H: (-48dBu - +24dBu(PEAK), See: “Level Meter Table”)

Example of the Level Meter status data of Input 1 changes to 0dB

E6H, 04H, 00H, 00H, 00H, 30H

### ● Contact Input Make/Break status

The DP-SP3 transmits the current status data when contact terminal status changed in Auto Status Notification started.

**E6H, 04H, 02H, <Contact I/O>, <Terminal Number>, <Make/Break>**

<Contact I/O>

00H: Contact Input

<Terminal Number>

00H - 03H : Terminal Number 1 - 4

<Make/Break>

00H: Break

01H: Make

Example of the contact status data of contact input terminal No.3 changes to break

E6H, 04H, 02H, 00H, 02H, 00H

## ■ Command List

| Function | Command Code |
|---|---|
| Gain (position) | 91H, 03H, <Channel Attribute>, <Channel Number>, <Position> |
| Gain (step) | 91H, 03H, <Channel Attribute>, <Channel Number>, <Step> |
| Matrix Assignment | 94H, 03H, <Input Channel Number>, <Output Channel Number>, <ON/OFF> |
| Matrix Crosspoint Gain | 95H, 03H, <Input Channel Number>, <Output Channel Number>, <Value> |
| Attenuator (position) | 96H, 02H, <Channel Number>, <Position> |
| Attenuator (step) | 96H, 02H, <Channel Number>, <Step> |
| Mute | 97H, 02H, <Channel Number>, <ON/OFF> |
| Preset Memory Load | F1H, 02H, 00H, <Preset Number> |
| Preset Memory Store | F3H, 08H, 00H, <Preset Number>, <Year>, <Month>, <Day>, <Hour>, <Minute>, <Second> |
| Level Meter Status Notification Interval | F2H, 02H, 00H, <Notify Interval> |
| Auto Status Notification Start/Stop | F2H, 02H, 01H, <ON/OFF> |
| Status (Gain) | F0H, 03H, 11H, <Channel Attribute>, <Channel Number> |
| Status (Matrix Assignment) | F0H, 03H, 14H, <Input Channel Number>, < Output Channel Number> |
| Status (Matrix Crosspoint Gain) | F0H, 03H, 15H, <Input Channel Number>, <Output Channel Number> |
| Status（Preset） | F0H, 02H, 71H, 00H |
| Status (Contact Input make/break Status) | F0H, 03H, 42H, 00H, <Contact Number> |
| DP-SP3 Connection establishment status | DFH, 01H, 01H |
| Contact Input Make/Break Status | E6H, 04H, 02H, <Contact I/O>, <Contact Number>, <Make/Break> |
| Level Meter Status Format | E6H, 04H, 00H, <Channel Attribute>, <Channel Number>, <Level> |

## ■ Position vs Gain Table

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | -∞ | 10H | 16 | -35.0 | 20H | 32 | -19.0 | 30H | 48 | -3.0 |
| 1 | -60.0 | 11H | 17 | -34.0 | 21H | 33 | -18.0 | 31H | 49 | -2.0 |
| 2 | -58.0 | 12H | 18 | -33.0 | 22H | 34 | -17.0 | 32H | 50 | -1.0 |
| 3 | -56.0 | 13H | 19 | -32.0 | 23H | 35 | -16.0 | 33H | 51 | 0.0 |
| 4 | -54.0 | 14H | 20 | -31.0 | 24H | 36 | -15.0 | 34H | 52 | 1.0 |
| 5 | -52.0 | 15H | 21 | -30.0 | 25H | 37 | -14.0 | 35H | 53 | 2.0 |
| 6 | -50.0 | 16H | 22 | -29.0 | 26H | 38 | -13.0 | 36H | 54 | 3.0 |
| 7 | -48.0 | 17H | 23 | -28.0 | 27H | 39 | -12.0 | 37H | 55 | 4.0 |
| 8 | -46.0 | 18H | 24 | -27.0 | 28H | 40 | -11.0 | 38H | 56 | 5.0 |
| 9 | -44.0 | 19H | 25 | -26.0 | 29H | 41 | -10.0 | 39H | 57 | 6.0 |
| 10 | -42.0 | 1AH | 26 | -25.0 | 2AH | 42 | -9.0 | 3AH | 58 | 7.0 |
| 11 | -40.0 | 1BH | 27 | -24.0 | 2BH | 43 | -8.0 | 3BH | 59 | 8.0 |
| 12 | -39.0 | 1CH | 28 | -23.0 | 2CH | 44 | -7.0 | 3CH | 60 | 9.0 |
| 13 | -38.0 | 1DH | 29 | -22.0 | 2DH | 45 | -6.0 | 3DH | 61 | 10.0 |
| 14 | -37.0 | 1EH | 30 | -21.0 | 2EH | 46 | -5.0 | 3EH | 62 | 11.0 |
| 15 | -36.0 | 1FH | 31 | -20.0 | 2FH | 47 | -4.0 | 3FH | 63 | 12.0 |

## ■ Value vs Gain Table for Crosspoint gain

| Value | | Gain(dB) | Value | | Gain(dB) | Value | | Gain(dB) | Value | | Gain(dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00H | 0 | -∞ | 10H | 16 | -45 | 20H | 32 | -29 | 30H | 48 | -13 |
| 01H | 1 | -60 | 11H | 17 | -44 | 21H | 33 | -28 | 31H | 49 | -12 |
| 02H | 2 | -59 | 12H | 18 | -43 | 22H | 34 | -27 | 32H | 50 | -11 |
| 03H | 3 | -58 | 13H | 19 | -42 | 23H | 35 | -26 | 33H | 51 | -10 |
| 04H | 4 | -57 | 14H | 20 | -41 | 24H | 36 | -25 | 34H | 52 | -9 |
| 05H | 5 | -56 | 15H | 21 | -40 | 25H | 37 | -24 | 35H | 53 | -8 |
| 06H | 6 | -55 | 16H | 22 | -39 | 26H | 38 | -23 | 36H | 54 | -7 |
| 07H | 7 | -54 | 17H | 23 | -38 | 27H | 39 | -22 | 37H | 55 | -6 |
| 08H | 8 | -53 | 18H | 24 | -37 | 28H | 40 | -21 | 38H | 56 | -5 |
| 09H | 9 | -52 | 19H | 25 | -36 | 29H | 41 | -20 | 39H | 57 | -4 |
| 0AH | 10 | -51 | 1AH | 26 | -35 | 2AH | 42 | -19 | 3AH | 58 | -3 |
| 0BH | 11 | -50 | 1BH | 27 | -34 | 2BH | 43 | -18 | 3BH | 59 | -2 |
| 0CH | 12 | -49 | 1CH | 28 | -33 | 2CH | 44 | -17 | 3CH | 60 | -1 |
| 0DH | 13 | -48 | 1DH | 29 | -32 | 2DH | 45 | -16 | 3DH | 61 | 0 |
| 0EH | 14 | -47 | 1EH | 30 | -31 | 2EH | 46 | -15 | 3EH | 62 | reserved |
| 0FH | 15 | -46 | 1FH | 31 | -30 | 2FH | 47 | -14 | 3FH | 63 | reserved |
| **Value** | | **Gain(dB)** | **Value** | | | **Value** | | **Step Down** | **Value** | | **Step Up** |
| 40H | 64 | reserved | 50H | 80 | reserved | 60H | 96 | 1step | 70H | 112 | 1step |
| 41H | 65 | reserved | 51H | 81 | reserved | 61H | 97 | 2step | 71H | 113 | 2step |
| 42H | 66 | reserved | 52H | 82 | reserved | 62H | 98 | 3step | 72H | 114 | 3step |
| 43H | 67 | reserved | 53H | 83 | reserved | 63H | 99 | 4step | 73H | 115 | 4step |
| 44H | 68 | reserved | 54H | 84 | reserved | 64H | 100 | 5step | 74H | 116 | 5step |
| 45H | 69 | reserved | 55H | 85 | reserved | 65H | 101 | 6step | 75H | 117 | 6step |
| 46H | 70 | reserved | 56H | 86 | reserved | 66H | 102 | 7step | 76H | 118 | 7step |
| 47H | 71 | reserved | 57H | 87 | reserved | 67H | 103 | 8step | 77H | 119 | 8step |
| 48H | 72 | reserved | 58H | 88 | reserved | 68H | 104 | 9step | 78H | 120 | 9step |
| 49H | 73 | reserved | 59H | 89 | reserved | 69H | 105 | 10step | 79H | 121 | 10step |
| 4AH | 74 | reserved | 5AH | 90 | reserved | 6AH | 106 | 11step | 7AH | 122 | 11step |
| 4BH | 75 | reserved | 5BH | 91 | reserved | 6BH | 107 | 12step | 7BH | 123 | 12step |
| 4CH | 76 | reserved | 5CH | 92 | reserved | 6CH | 108 | 13step | 7CH | 124 | 13step |
| 4DH | 77 | reserved | 5DH | 93 | reserved | 6DH | 109 | 14step | 7DH | 125 | 14step |
| 4EH | 78 | reserved | 5EH | 94 | reserved | 6EH | 110 | 15step | 7EH | 126 | 15step |
| 4FH | 79 | reserved | 5FH | 95 | reserved | 6FH | 111 | 16step | 7FH | 127 | 16step |

■ **Position vs Attenuator Table**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | -∞ | 10H | 16 | -54.0 | 20H | 32 | -31.0 | 30H | 48 | -15.0 |
| 1 | -96.0 | 11H | 17 | -52.0 | 21H | 33 | -30.0 | 31H | 49 | -14.0 |
| 2 | -90.0 | 12H | 18 | -50.0 | 22H | 34 | -29.0 | 32H | 50 | -13.0 |
| 3 | -84.0 | 13H | 19 | -48.0 | 23H | 35 | -28.0 | 33H | 51 | -12.0 |
| 4 | -78.0 | 14H | 20 | -46.0 | 24H | 36 | -27.0 | 34H | 52 | -11.0 |
| 5 | -76.0 | 15H | 21 | -44.0 | 25H | 37 | -26.0 | 35H | 53 | -10.0 |
| 6 | -74.0 | 16H | 22 | -42.0 | 26H | 38 | -25.0 | 36H | 54 | -9.0 |
| 7 | -72.0 | 17H | 23 | -40.0 | 27H | 39 | -24.0 | 37H | 55 | -8.0 |
| 8 | -70.0 | 18H | 24 | -39.0 | 28H | 40 | -23.0 | 38H | 56 | -7.0 |
| 9 | -68.0 | 19H | 25 | -38.0 | 29H | 41 | -22.0 | 39H | 57 | -6.0 |
| 10 | -66.0 | 1AH | 26 | -37.0 | 2AH | 42 | -21.0 | 3AH | 58 | -5.0 |
| 11 | -64.0 | 1BH | 27 | -36.0 | 2BH | 43 | -20.0 | 3BH | 59 | -4.0 |
| 12 | -62.0 | 1CH | 28 | -35.0 | 2CH | 44 | -19.0 | 3CH | 60 | -3.0 |
| 13 | -60.0 | 1DH | 29 | -34.0 | 2DH | 45 | -18.0 | 3DH | 61 | -2.0 |
| 14 | -58.0 | 1EH | 30 | -33.0 | 2EH | 46 | -17.0 | 3EH | 62 | -1.0 |
| 15 | -56.0 | 1FH | 31 | -32.0 | 2FH | 47 | -16.0 | 3FH | 63 | 0.0 |

■ **Level Meter Table**

| Value | | Level(dBu) | Value | | Level(dBu) | Value | | Level(dBu) | Value | | Level(dBu) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00H | 0 | -48 | 10H | 16 | -32 | 20H | 32 | -16 | 30H | 48 | 0 |
| 01H | 1 | -47 | 11H | 17 | -31 | 21H | 33 | -15 | 31H | 49 | 1 |
| 02H | 2 | -46 | 12H | 18 | -30 | 22H | 34 | -14 | 32H | 50 | 2 |
| 03H | 3 | -45 | 13H | 19 | -29 | 23H | 35 | -13 | 33H | 51 | 3 |
| 04H | 4 | -44 | 14H | 20 | -28 | 24H | 36 | -12 | 34H | 52 | 4 |
| 05H | 5 | -43 | 15H | 21 | -27 | 25H | 37 | -11 | 35H | 53 | 5 |
| 06H | 6 | -42 | 16H | 22 | -26 | 26H | 38 | -10 | 36H | 54 | 6 |
| 07H | 7 | -41 | 17H | 23 | -25 | 27H | 39 | -9 | 37H | 55 | 7 |
| 08H | 8 | -40 | 18H | 24 | -24 | 28H | 40 | -8 | 38H | 56 | 8 |
| 09H | 9 | -39 | 19H | 25 | -23 | 29H | 41 | -7 | 39H | 57 | 9 |
| 0AH | 10 | -38 | 1AH | 26 | -22 | 2AH | 42 | -6 | 3AH | 58 | 10 |
| 0BH | 11 | -37 | 1BH | 27 | -21 | 2BH | 43 | -5 | 3BH | 59 | 11 |
| 0CH | 12 | -36 | 1CH | 28 | -20 | 2CH | 44 | -4 | 3CH | 60 | 12 |
| 0DH | 13 | -35 | 1DH | 29 | -19 | 2DH | 45 | -3 | 3DH | 61 | 13 |
| 0EH | 14 | -34 | 1EH | 30 | -18 | 2EH | 46 | -2 | 3EH | 62 | 14 |
| 0FH | 15 | -33 | 1FH | 31 | -17 | 2FH | 47 | -1 | 3FH | 63 | 15 |
| **Value** | | **Level(dBu)** | | | | | | | | | |
| 40H | 64 | 16 | | | | | | | | | |
| 41H | 65 | 17 | | | | | | | | | |
| 42H | 66 | 18 | | | | | | | | | |
| 43H | 67 | 19 | | | | | | | | | |
| 44H | 68 | 20 | | | | | | | | | |
| 45H | 69 | 21 | | | | | | | | | |
| 46H | 70 | 22 | | | | | | | | | |
| 47H | 71 | 23 | | | | | | | | | |
| 48H | 72 | 24 | | | | | | | | | |

Revision history

| Version | Amendment day | The contents of establishment / change |
|---|---|---|
| 1.00 | August 20/2013 | First edition establishment |
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