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...install/configure the GPI kit for Loudspeaker Management Systems

The GPI (General Purpose Interface) allows the recall of memories via an external switch box, alleviating the need for a computer system when only memory changes are needed.

Contents of this Kit.

The following parts are contained in the GPI Kit. One GPI Interface card; one 15pin D-type to 9pin D-type adaptor; one male 15pin D-type with hood; software upgrade disk; one application note.

Software Installation.

Note that the interface will only operate with software version 3.10 (supplied on the disk) or later. For DP224 units, the earliest compatible version is 2.10. Included on the disc supplied with the kit is a readme.txt file. This describes the process of updating the software in the unit from a PC using the RS232 port. The 9-pin D-type serial cable supplied with the unit (or equivalent) will be required to connect the COM port of the PC to the unit. Please read the file on the disc for details.

Hardware Installation.

Ensure that the unit is switched off and that the power cord is removed from the mains supply! Position the unit so that the front panel is facing you, remove the seven retaining screws from the top cover and place the screws and cover to one side. Now locate the RS232 card and remove the retaining bolts (5mm) from the rear of the unit and unclip the connector from the main circuit board. The card can now be removed and the GPI card put in its place. Be sure to tighten the retaining screws but be careful not to strip the thread.
The installation of the card is now complete - please replace the top cover.

What can I do with the GPI interface?

The interface has two modes of operation, 'Simple' and 'Complex'. In 'Simple' mode the interface allows the recall of the first 7 memories and in 'Complex' mode the first 31 memories can be recalled. In both cases the user can select whether input memories or output (xover) memories are recalled or, if desired, both memories at the same time. The mode of operation and memory recall options can be set in the GPI SUB MENU located at the end of the MAIN MENU on the loudspeaker management system.

What do I need to plug in to recall a memory?

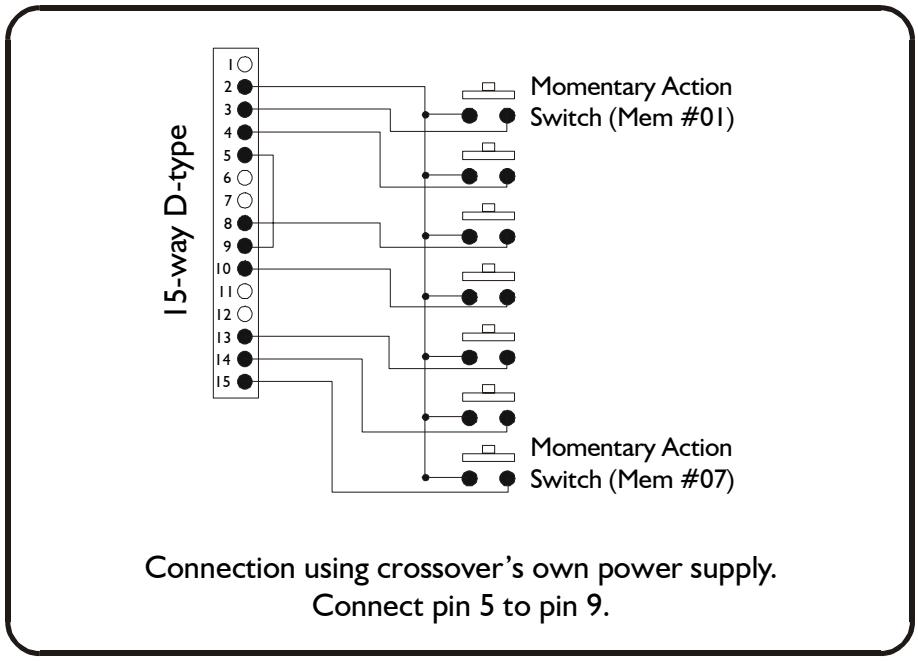
On the following page there are two example circuit diagrams of GPI switches. The first is a self powered version, that is it takes its power from the unit and is therefore not fully isolated from the unit. The second diagram is a powered version, this gives full isolation from the unit, it should be noted however that **no more than 10v** should be used to activate the opto isolators as damage could occur.
To recall more than the first 7 memories, 'Complex' mode must be used. Details of the operation of this mode are covered in the next section.

Note that either individual momentary action or latching switches may be used. Additionally, a rotary switch may be used for the 'Simple' mode, but this will mean that the seven memories will only be accessible in a linear fashion. Individual switches allows "Random Access" of the memories in any order which might be more useful. The type of switch used to build a remote interface is not crucial, but XTA suggest the following as suitable.

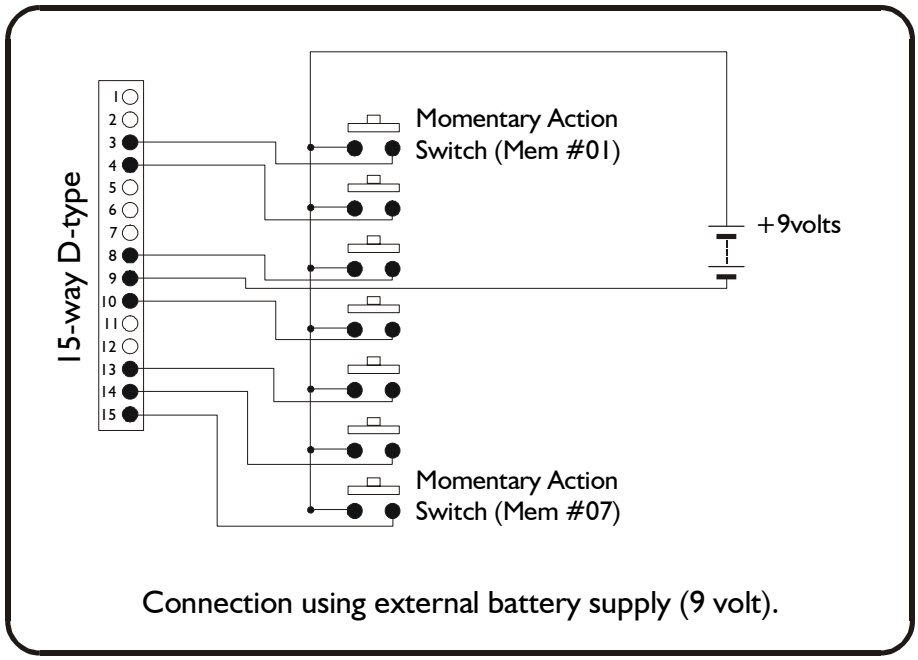
Farnell Components Order Code 176-477 (Momentary Push-button Variety)
Farnell Components Order Code 176-478 (Latching Push-button Variety)
Farnell Components Order Code 176-487 (Mounting Bracket for Interlocking Set)
Farnell Components Order Code 176-516 (Interlocking Cam)
Farnell Components Order Code 176-491 (Round Caps)
Farnell Components Order Code 176-492 (Rectangular Caps)

For a rotary switch we suggest:
Farnell Components Order Code 422-381 (Rotary Non-Shorting)
Note that the rotary switch must be a 'break before make' variety, or unpredictable operation may occur.

Examples of two typical interfaces that may be used to operate the interface in 'Simple' mode.



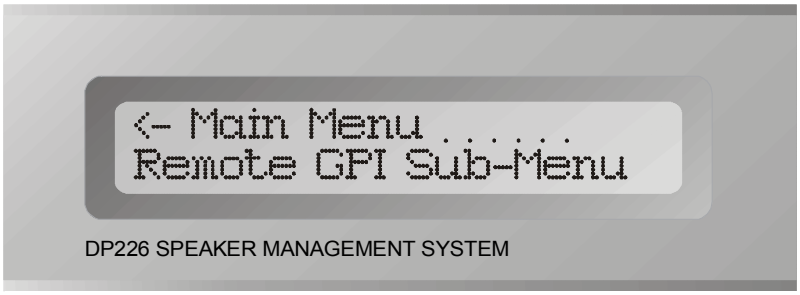
Connection using crossover's own power supply.
Connect pin 5 to pin 9.



Connection using external battery supply (9 volt).

How Do I Configure The Interface?

The GPI Interface sub-menu is at the end of the menu list accessed by pressing 'MENU' and scrolling using the 'NEXT' key, until the screen shows...

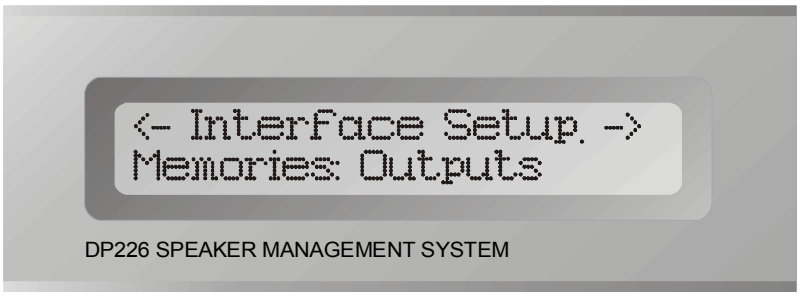


Pressing 'ENTER' will access the interface sub-menu which is configured as a 'wizard', leading the user through the required parameters.

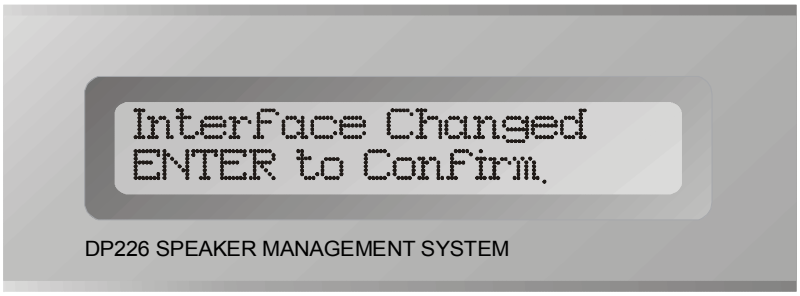
Pressing 'ENTER' will display the screen shown to the right. There are only currently two parameters to configure for correct operation. These are outlined below.

Firstly, choose the format (operation mode) of the interface, or disable it by setting this parameter to the 'OFF' position. Use the 'BACK' and 'NEXT' keys to choose from 'COMPLEX', 'SIMPLE' or 'OFF'. The use of the formats is explained in following sections. 'COMPLEX' allows recall of up to the first 31 memories; 'SIMPLE' allows the first 7 to be accessed. Press 'ENTER' when ready.

Next, choose whether the recall will operate on input memories, output (crossover) memories, or both. Choosing 'Both' means that corresponding input equalisation and output crossover settings will be recalled simultaneously. Assure that the correct input and output settings are in corresponding memory numbers (input memory 01 with crossover 01 etc.) to avoid accidental recalling of incorrect configurations!



Finally, after pressing 'ENTER' to accept these new settings, a final warning message is displayed. Press 'ENTER' again to confirm the changes, or press 'QUIT' to cancel all changes and revert to the default screen.

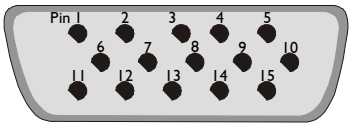


How Do I Trigger a Memory Recall?

As can be seen from the schematic diagrams, the 'Simple' mode of operation just involves connecting a single pin of the socket to a positive supply, derived either from the unit (non-isolated – ground must also be connected from pin 5 to pin 9), or from an external supply. In the case of the external supply, its ground must be connected to pin 9 to complete the circuit. In both cases, only a momentary action switch is required, but latching ones may be used if a physical indication of the remote memory selected is required.

For the remote recall of more than the first 7 memories, the 'Complex' mode must be used. This involves presenting a 5-bit binary number on the pins originally used for initiating individual memories in 'Simple' mode. Use the 'lowest' five pins (for memories 01 to 05 in 'Simple' mode. The following table details how to recall memories in 'Complex' mode. A '1' below a pin number corresponds to a positive voltage (at least 2.5V, but no more than 10v) on that pin; a '0' means ground (or open circuit). So, for example, to recall memory 13 pins 8, 10, and 3 need to be 'pulled high' with a positive voltage. As with the 'Simple' mode, this need only be a momentary action, but may be latched (permanent) if some form of remote static indication is required.

	15-Pin Interface Connections				
Memory Number	Pin13	Pin10	Pin8	Pin4	Pin3
01	0	0	0	0	1
02	0	0	0	1	0
03	0	0	0	1	1
04	0	0	1	0	0
05	0	0	1	0	1
06	0	0	1	1	0
07	0	0	1	1	1
08	0	1	0	0	0
09	0	1	0	0	1
10	0	1	0	1	0
11	0	1	0	1	1
12	0	1	1	0	0
13	0	1	1	0	1
14	0	1	1	1	0
15	0	1	1	1	1
16	1	0	0	0	0
17	1	0	0	0	1
18	1	0	0	1	0
19	1	0	0	1	1
20	1	0	1	0	0
21	1	0	1	0	1
22	1	0	1	1	0
23	1	0	1	1	1
24	1	1	0	0	0
25	1	1	0	0	1
26	1	1	0	1	0
27	1	1	0	1	1
28	1	1	1	0	0
29	1	1	1	0	1
30	1	1	1	1	0
31	1	1	1	1	1



Pin Numbering of 15-pin connector
(as viewed from the rear of the unit)

Have I Lost My RS-232 Port?

No. The circuitry for the RS-232 port is included on the GPI card. An adapter is included in the GPI kit which plugs into the 15-pin connector, and converts it to the original 9-pin which may be used in exactly the same way as before. The menu options relating to the standard interface have not changed.

The port may be used for loading software upgrades, and remote control applications. Note that new software is required to operate the GPI interface itself.

If you have any questions or application queries about the GPI interface, please ring XTA and ask for technical support. Contact details may be found at the start of this application note. We will be pleased to help.

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