

Delta Series, DPA Series

How to configure and use the GPIO port.

Introduction

The General Purpose Input and Output pins on the DPA Series can be programmed in a variety of ways to adjust the operation of the amplifier.

To configure the GPI interface, from the home screen, press MENU, choose the INTERFACE Sub-Menu and press ENTER.

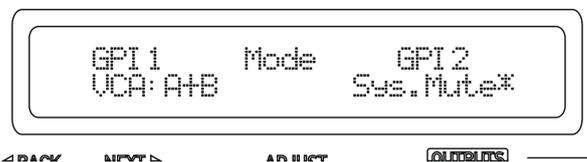


Use the encoder or BACK and NEXT keys to select GPI Interface and press ENTER.



This will invoke a series of further choices to determine the operation of the inputs, as outlined below:

Operating Mode



Use the encoder to select from the list of combinations of operating modes for the two GPI inputs. The available combinations are given at the end of this document. Press ENTER to confirm selection and move to the next option.

RS485 Relay



Use the encoder to select if RS485 relay should be used for the two GPI inputs. Use the encoder to choose from the four possible options and press ENTER to confirm selection finish set-up.

To enable reception of these relayed commands, other amplifiers need to have their External Interface set to receive on either "RS485 only" or on Ethernet/USB connections, the RS485 Relay mode must be set to "Simple" mode. Baud rate must match on all amplifiers.

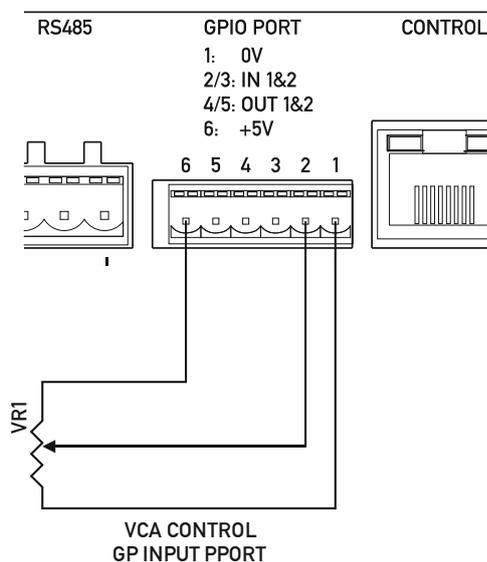
The following input control modes are available on the GPI pins in a variety of preset combinations.

VCA Mode

Input gains can be adjusted in channel pairs with absolute level control over the range of +6dB to -18dB in 0.5dB steps, via an analogue voltage applied to the GPI input. The channel choices are A+B, C+D or A+B+C+D. Recalling a memory or adjusting gain either remotely by another method or via the front panel will override the VCA setting until the control is next adjusted (last takes priority).

The input gain setting adjusted by the GPI input can also be transmitted as a global message to all other connected DPA (and Delta) DSP amplifiers via RS485. See page 1 for details of how to enable or disable this feature.

A typical connection to a GP input port for VCA control would be to connect a linear potentiometer as shown below:



VR1 – the potentiometer should be a linear taper, with have a value of 10k or greater to avoid cabling losses affecting the value.

As the inputs are active over a 3V3 range and the output on port pin 6 is +5V, the top 33% of the potentiometer's range will not be active.

Both GPI inputs can be used in VCA mode to control inputs A+B on input 1, and C+D on input 2.

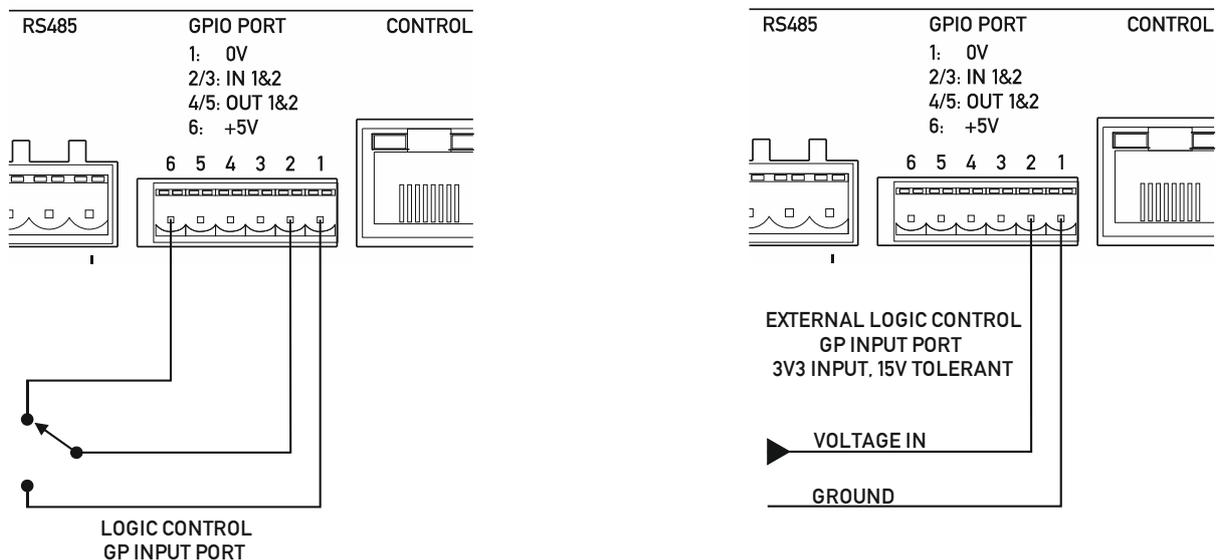
Standby Mode

The amplifier can be put into or brought out of standby by applying a logic level to the selected GPI pin.

The standby setting adjusted by the GPI input can also be transmitted as a global message to all other connected DPA (and Delta) DSP amplifiers via RS485. See page 1 for details of how to enable or disable this feature.

Changing standby by another method (remote message or front panel) will override the GPI setting until the state of the GPI input is next changed (last takes priority).

A typical connection to a GP input port for standby control would be to connect a simple changeover switch as shown below:



It is also possible to supply an external voltage trigger for the GP Input, as long as the ground for the trigger source is also connected. The logic level is 3v3, but the input is tolerant of up to 15v. Do not apply higher voltages to this input or damage to the amplifier may occur!

Hint: To bring a Delta Series amplifier out of standby via the front panel, power up with ENTER + QUIT held in.

Mutes Mode

The amplifier can be muted by applying a logic level to the selected GPI pin. This can either be a "System Mute" (as with AudioCore/DeltaDirect) so when enabled all outputs (power amps and auxes) are muted and previous mute state is restored when disabled, or "Alarm Mute" which mutes inputs A+B+C leaving only input D active for emergency evacuation announcements. Disabling Alarm Mute will unmute inputs A+B+C, NOT restore their pre-alarm state.

The mutes setting adjusted by the GPI input can also be transmitted as a global message to all other connected DPA (and Delta) DSP amplifiers via RS485. See page 1 for details of how to enable or disable this feature.

Changing mutes by another method (remote message or front panel) will override the GPI setting until the state of the GPI input is next changed (last takes priority). A typical connection to a GP input port for mutes control is the same as above, for standby control.

Memory Recall Mode

The amplifier can recall memory settings based on either a logic level (memory 1 or 2) or a voltage level (memories 1 to 8 are available).

Select the required recall mode and press ENTER – either “Mem 1-8” or “Mem 1/2”.

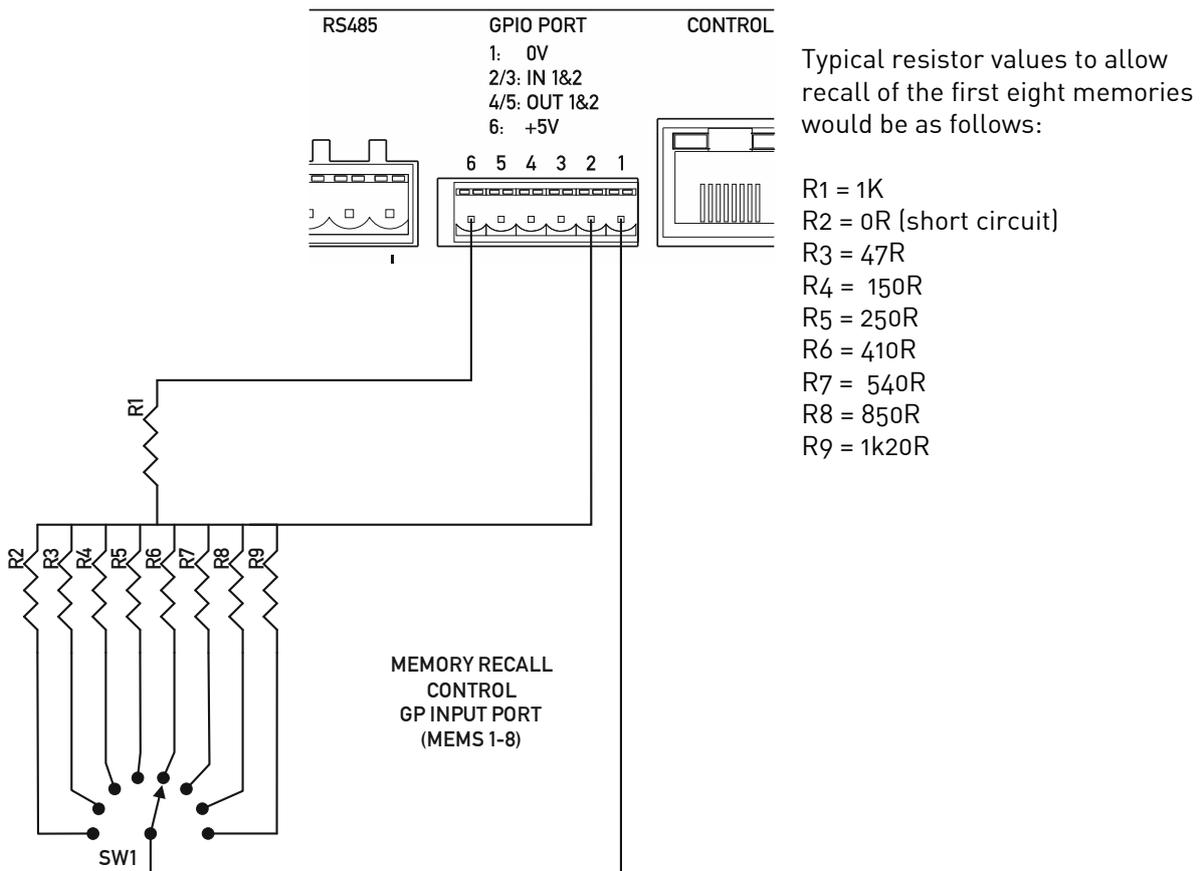
The memory recall selected by the GPI input can also be transmitted as a global message to all other connected DPA (and Delta) DSP amplifiers via RS485. See page 1 for details of how to enable or disable this feature.

Recalling a memory by another method (remote message or front panel) will override the GPI setting until the state of the GPI input is next changed (last takes priority).

When toggling between two memories in mode “Mem 1/2”, the simple switch logic method can be used as for controlling mutes or standby modes as described on the previous page.

For the “Mem 1-8” mode, it is recommended that a multi-position switch is used, as the input relies on a voltage threshold to act as the trigger for a memory recall.

Such an arrangement is shown below:

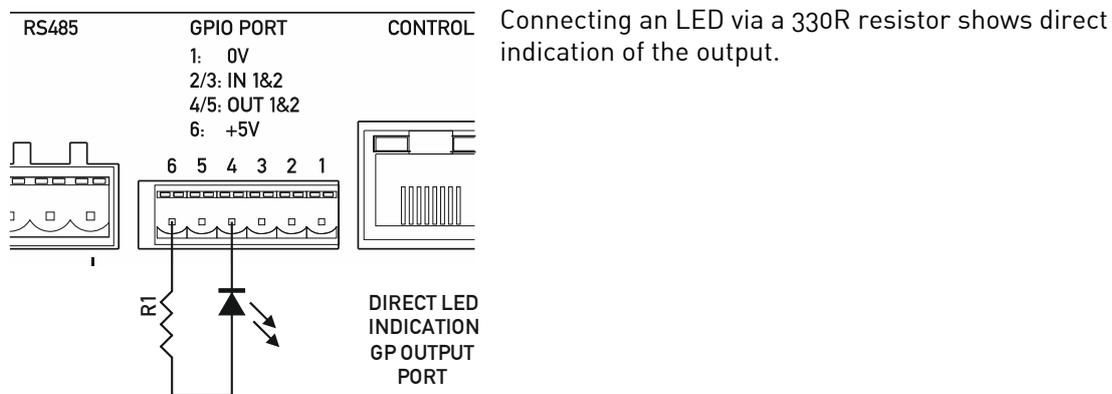


General Purpose Output Pins

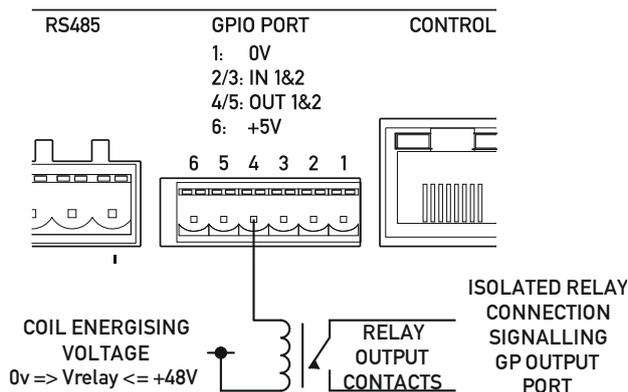
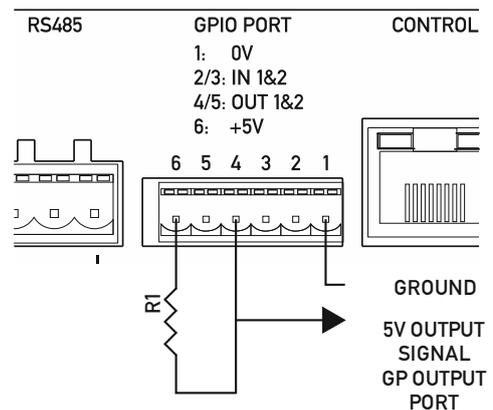
The general purpose output pins have a preset configuration and there are no user adjustable options for them. GP output 1 (port pin 4) reflects the amplifier's standby state and is active high, so a high logic level seen on this pin means the amplifier is in standby. An LED connected as below will be illuminated when the amplifier is NOT in standby.

GP output 2 (port pin 5) reflects the amplifier's "health" and is also active high. This pin will be pulled low if the amplifier goes into protect. This also means if the amplifier loses power or this line is disconnected accidentally, it can passively signal a problem. An LED connected as below will be illuminated when the amplifier is NOT in protect.

Both the outputs are configured as "current sink" topology, so they can be used in a variety of ways to provide direct LED indication, voltage level indication for external systems' integration, or isolated output for higher voltage direct control via use of a relay.



Connecting an 10K resistor across the 5V and required output provides a voltage driven indication of output state.



Connecting a relay coil to an output is also possible – the coil voltage be up to 48V, and this will then provide fully isolated control allowing switching of other higher power loads.

Operating Mode Combinations

The following combinations of operation are available for the GPI pins:

| | | | |
|---------------------------|------------------------|------------------------|------------------------|
| GPI1 Mode UCA: A+B | GPI2 Mode Sys. Mute | GPI1 Mode Sys. Mute | GPI2 Mode Standby |
| GPI1 Mode UCA: C+D | GPI2 Mode Sys. Mute | GPI1 Mode Alm. Mute | GPI2 Mode Standby |
| GPI1 Mode UCA: A+B+C+D | GPI2 Mode Sys. Mute | GPI1 Mode Mem 1/2 | GPI2 Mode Standby |
| GPI1 Mode UCA: A+B | GPI2 Mode UCA: C+D | GPI1 Mode Mem 1-8 | GPI2 Mode Sys. Mute |
| GPI1 Mode UCA: A+B | GPI2 Mode Alm. Mute | GPI1 Mode Mem 1-8 | GPI2 Mode Alm. Mute |
| GPI1 Mode UCA: C+D | GPI2 Mode Alm. Mute | GPI1 Mode Mem 1/2 | GPI2 Mode Sys. Mute |
| GPI1 Mode UCA: A+B+C+D | GPI2 Mode Alm. Mute | GPI1 Mode Mem 1/2 | GPI2 Mode Alm. Mute |
| GPI1 Mode UCA: A+B | GPI2 Mode Standby | | |
| GPI1 Mode UCA: C+D | GPI2 Mode Standby | | |
| GPI1 Mode UCA: A+B+C+D | GPI2 Mode Standby | | |
| GPI1 Mode UCA: A+B | GPI2 Mode Mem 1/2 | | |
| GPI1 Mode UCA: C+D | GPI2 Mode Mem 1/2 | | |
| GPI1 Mode UCA: A+B+C+D | GPI2 Mode Mem 1/2 | | |
| GPI1 Mode UCA: A+B | GPI2 Mode Mem 1-8 | | |
| GPI1 Mode UCA: C+D | GPI2 Mode Mem 1-8 | | |
| GPI1 Mode UCA: A+B+C+D | GPI2 Mode Mem 1-8 | | |