Electrically Isolated GPI/O

C8817

Features:

- Parallel remote GPI/O interface
- Electrically isolated I/Os
- 8 GPIs by optical coupler with current source and bridge rectifier
- Inverter for input logic
- 8 GPO (TALLY) relays with change over contact (N.O.)
- Electrically isolated 5V aux voltage supply
- 24x comprehensive two operands logical operation

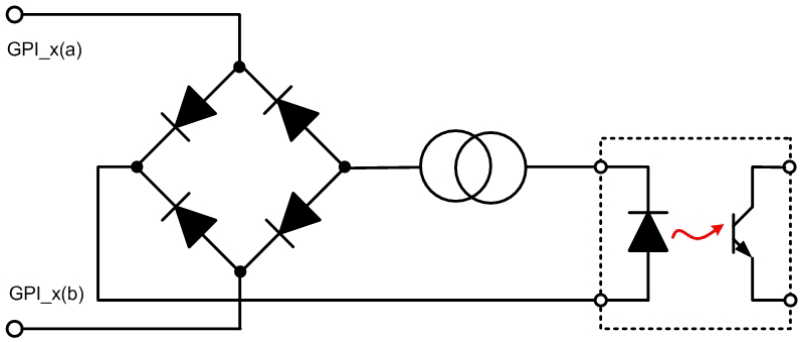
Functional description:

Each of the **8 GPOs** may be addressed from C8k modules (see module manual) by sending a predefined **GPO number** to the **CAN bus**. The **C8817** is permanently listening to the **CAN bus**. If it reads such a number, the associated **GPO** will be activated. There is a maximum of **127 GPO numbers**.
The **GPOs** may be **logically inverted**, i.e. a N.O. relay contact becomes N.C.

If one of the **8 GPI** inputs is activated, the C8817 will send a predefined **GPI number** to the **CAN bus**. C8k modules are permanently listening to the CAN bus for such numbers. If any of the C8k modules reads such a number, the predefined action will be performed by the module.
There is a maximum of **127 GPI numbers**. The **GPIs** may be **logically inverted**, i.e. an input now needs 5V for **de-activation.**

Principle of the GPI circuit:

At the GPI input there is a **bridge rectifier**, i.e. you do **not** need to care about the polarity of the input voltage. A **current source** in line with the **optical coupler** limits the current. An input voltage between 3V and at 24V max. must be applied to activate the GPI.



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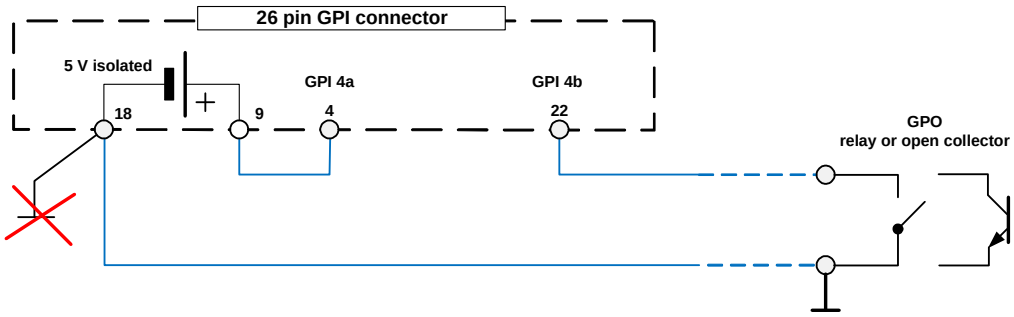
If you have open collector outputs or simple relay closures as the driving **GPOs** (this technique is commonly known as "low active" and will be found in most legacy equipment), you must wire up an auxiliary voltage supply.

The device provides such auxiliary power supply. It offers an isolated 5 V source that you can imagine as a battery.

Here is an example of to wire up GPI #4:



We strongly recommend using a wire for ground connection instead of using the chassis common grounds of an installation.

Electrical specifications:

Function	General purpose inputs and outputs interface board (GPIO)	
GPI (External)	8 general purpose inputs (GPI), isolated, bidirectional	
	Connector type	HD D-Sub26 connector female (3 rows)
	Input conditions	3 … 24Vdc, < 5mA@5Vnom.
	Auxiliary supply	5Vdc (nom.), 200mA (max.), isolated, same for GPI and GPO
GPO (External)	8 general purpose outputs (GPO), isolated, relay change over (SPDT)	
	Connector type	HD D-Sub26 connector female (3 rows)
	Output conditions	48Vac/dc (max.), 1…250mA
	Auxiliary supply	5Vdc (nom.), 200mA (max.), isolated, same for GPI and GPO
Power Supply	5Vdc (4.75 … 5.25V), max. 500mA	
Dimension	3RU, 4HP, 160mm depth (DIN41612 backplane connector)	
Environmental	Operating temperature 0 … 40ºC, Non-operating -20 … 70ºC, Humidity < 90%, non-condensing	
General Features	• 127 virtual plus 8 physical (external) general purpose inputs (GPI) • 127 virtual plus 8 physical (external) general purpose outputs (GPO) • GPOs can be generated from GPIs by logical expressions • Isolated auxiliary supply for switches/buttons or LED signalization	

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Pin assignment of the GPI/O connectors:

connector :	**GPI**
female	26 pin D-Sub
1	GPI_1a
2	GPI_2a
3	GPI_3a
4	GPI_4a
5	GPI_5a
6	GPI_6a
7	GPI_7a
8	GPI_8a
9	**+5V**
10	
11	
12	
13	
14	
15	
16	
17	
18	**-5V**
19	GPI_1b
20	GPI_2b
21	GPI_3b
22	GPI_4b
23	GPI_5b
24	GPI_6b
25	GPI_7b
26	GPI_8b

connector :	**GPO**
female	26 pin D-Sub
1	GPO_1_common
2	GPO_2_common
3	GPO_3_common
4	GPO_4_common
5	GPO_5_common
6	GPO_6_common
7	GPO_7_common
8	GPO_8_common
9	**+5V**
10	GPO_1_N.C.
11	GPO_2_N.C.
12	GPO_3_N.C.
13	GPO_4_N.C.
14	GPO_5_N.C.
15	GPO_6_N.C.
16	GPO_7_N.C.
17	GPO_8_N.C.
18	**-5V**
19	GPO_1_N.O.
20	GPO_2_N.O.
21	GPO_3_N.O.
22	GPO_4_N.O.
23	GPO_5_N.O.
24	GPO_6_N.O.
25	GPO_7_N.O.
26	GPO_8_N.O.

Important Note: The 5V **isolated** voltage supply is connected to both the GPI and the GPO connector in parallel. It **may** be used for external wiring in case there is no system power supply for GPI/O operation available.

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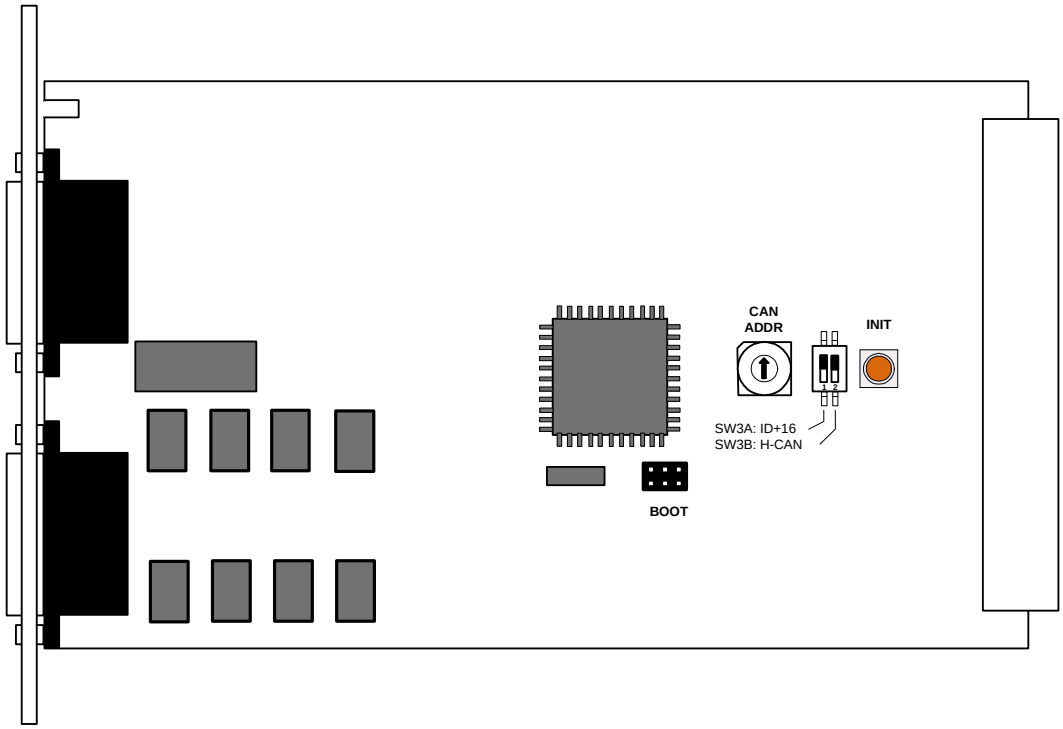
Installation:



CAN ADDR	Set the **CAN ADDR** rotary encoder to an address, which is not in use by another module of a C8000 frame (for details regarding CAN addressing, see C8000 system manual).
SW3A	Position towards the bottom enables the CAN **"+16"** address schema to handle up to 32 modules. If **"+16**" is turned on, addresses set by the rotary encoder counting from 0x10 to 0x1F.
SW3B	Position towards the bottom sets the CAN speed to 1Mbit/s. This function requires a Rev.3 of the hardware or a modification: [Engineering Change Notice (-82)] of a Rev.2 module.

Important Note! For a certain number of modules like the C8491/2 it is possible to communicate with a CAN bus speed of 1MBit/s. This provides more bandwidth to move measuring data from the module via the frame controller to the J*AM based loudness logger. Be sure that all parties hereto within a frame are working with the same CAN bus speed.

INIT	Pressing the **INIT** button during power up will initialize the module parameters to factory default values.

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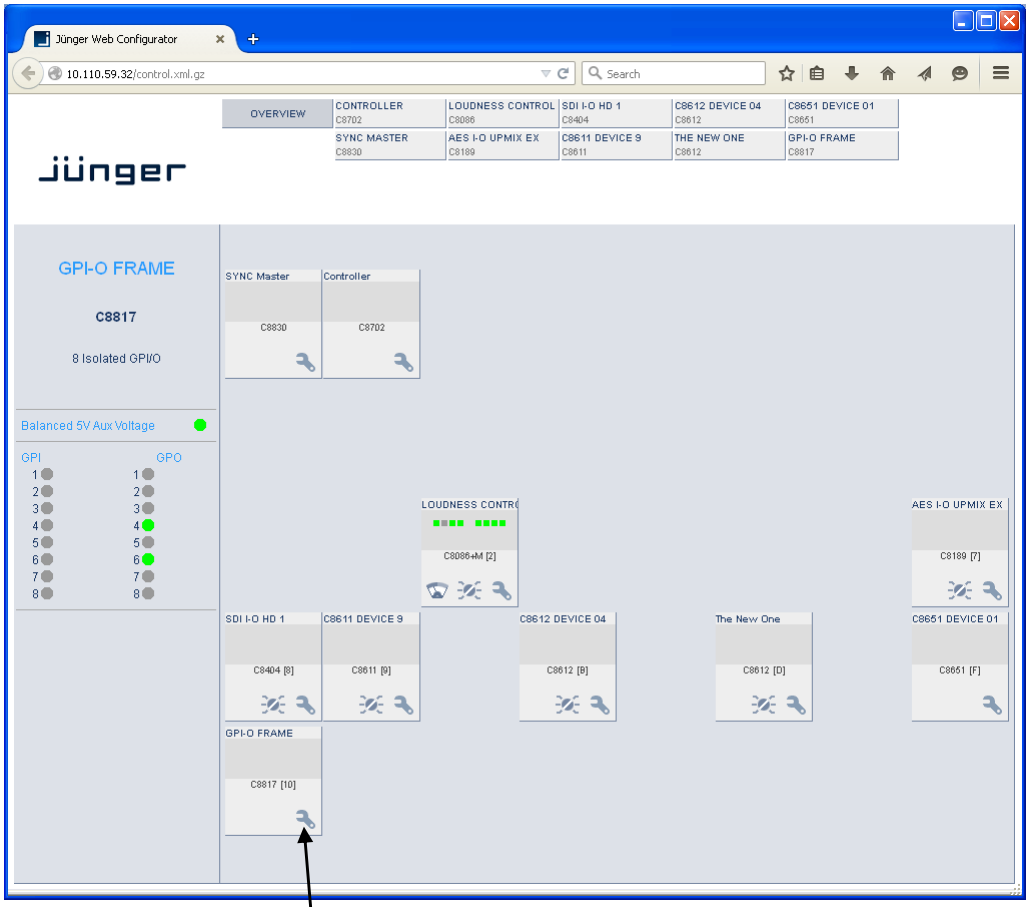
Web browser based GUI:

OVERVIEW The example below shows a **C8817** (Name: “GPI-O FRAME”)



Clicking on the **spanner tool** within the module graphics of the **C8817** will open the pages of the module.

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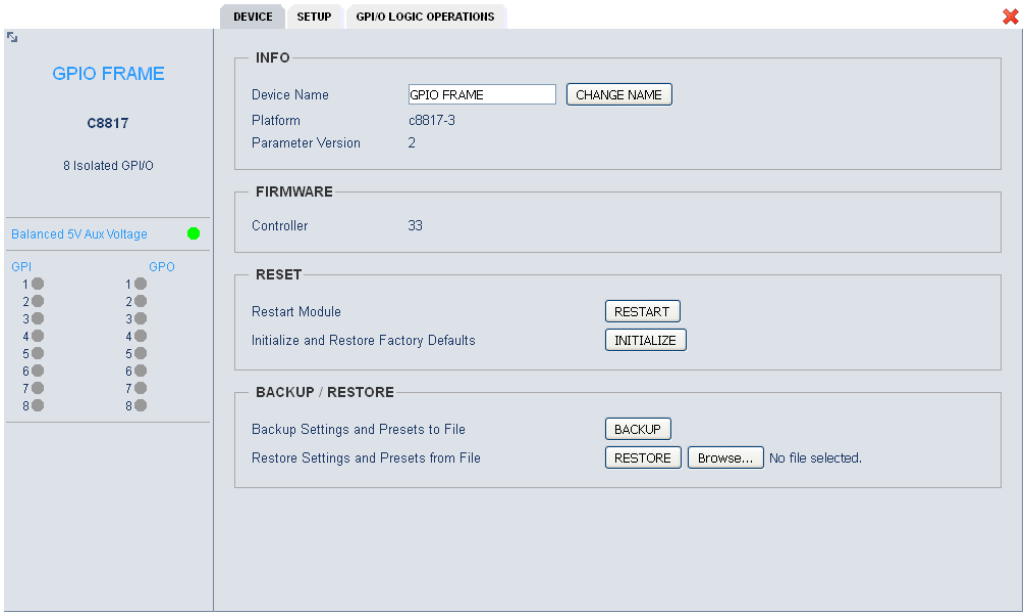
DEVICE



INFO

Device Name — You can assign the module a **name** (up to 16 digits).

Platform — Hardware related information (Rev.3)

Parameter Version — Indicates the implemented set of control parameters.

FIRMWARE

Controller — The module controller firmware version.

RESET

Restart Module — **<RESTART>** performs a warm start (soft reset).

Initialize and Restore Factory Defaults — **<INITIALIZE>** restores the factory default values for all parameters of the module including all presets.

BACKUP / RESTORE

Backup Settings and Presets to File — **<BACKUP>** will put all active parameters and the content of all presets into an XML file. You may store such file on a PC.

Restore Settings and Presets from File — You may select [browse for] a matching XML file from a PC. **<RESTORE>** will overwrite all active parameters and the content of the presets with the content of the backup file.
The name of the selected file will appear to the right of the **<Browse>** button.

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SETUP

Electrical Isolated 5V Aux Voltage

This check box turns on the auxiliary 5V power supply. For smaller installation (where no centralized GPI/O supply is in place) it may be used as the feed for the GPIs and/or to drive destinations of the GPOs.

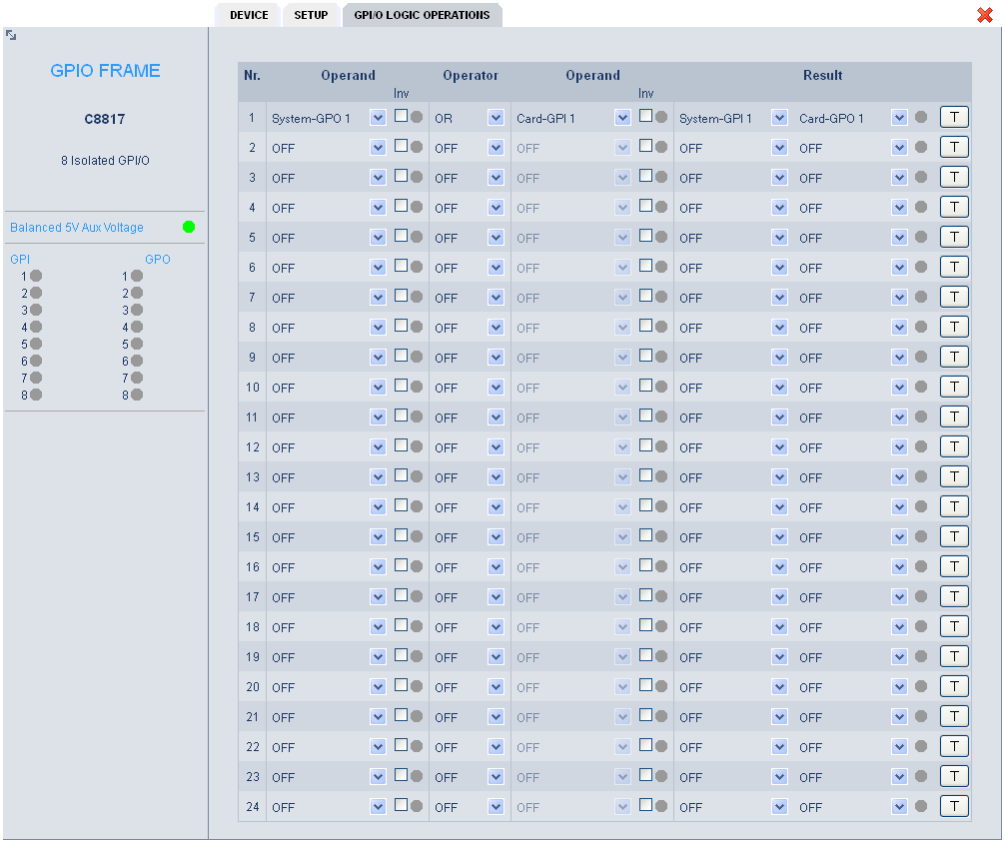
General remark:

The logical GPI/O numbers within a C8k system are strictly separated (127 GPO numbers, 127 GPI numbers) from each other so a hardware GPI/O module may distinguish between GPIs and GPOs. As a consequence there is no way to connect the GPIs of a C8k modules to a GPO of another one by using the same logical GPI and GPO number. The C8817 closes this gap. It offers the feature to convert GPO numbers into GPI numbers.

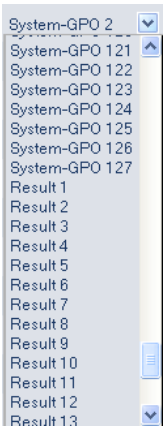
Important Note! The system of GPI/Os throughout a C8k frame has no plausibility check! Great care must be taken to avoid same logical numbers being assigned to different functions, because it will activate multiple functions, causing great confusion in bigger installations, e.g. where Junger HW remote controller is in place or GPIs are connected with automation systems or GPOs are connected with other management systems!

Beside the assignment of logical GPI/O numbers to the 8 hardware GPI/Os of the module you are able to define logical combinations of all 4 components (hardware GPI/Os and module GPI/Os) to form a result that can be assigned to two independent destinations in parallel.

GPI/O LOGIC OPERATION



Each logical operand has a pull-down menu to select a specific variable:



Nr. [1 … 24]
Number of the result line for reference within the Operand pull down.

Operand [OFF / Card-GPI 1 … 8 / System-GPO 1 … 127 / Result1 … 24]

Inv. Inverts the actual logical status of this operand.

Soft LED [grey / green]

Operator [OFF / OR / AND / XOR / TOGGLE]
The logical operation that will be performed on the two operands.

Result [OFF / Card-GPO1 … 8 / System-GPI1 … 127]
Two results in parallel can be defined.

Soft LED [grey / green]

<T> Test switch
Turns operands temporarily active to simulate the function.

Important Note! For logical expressions you can **only** use **Results** from lines above. I.e. **Result #1** will work in expression of line #2 and below. E.g. will **Result #16 not** work in lines #15 and above.