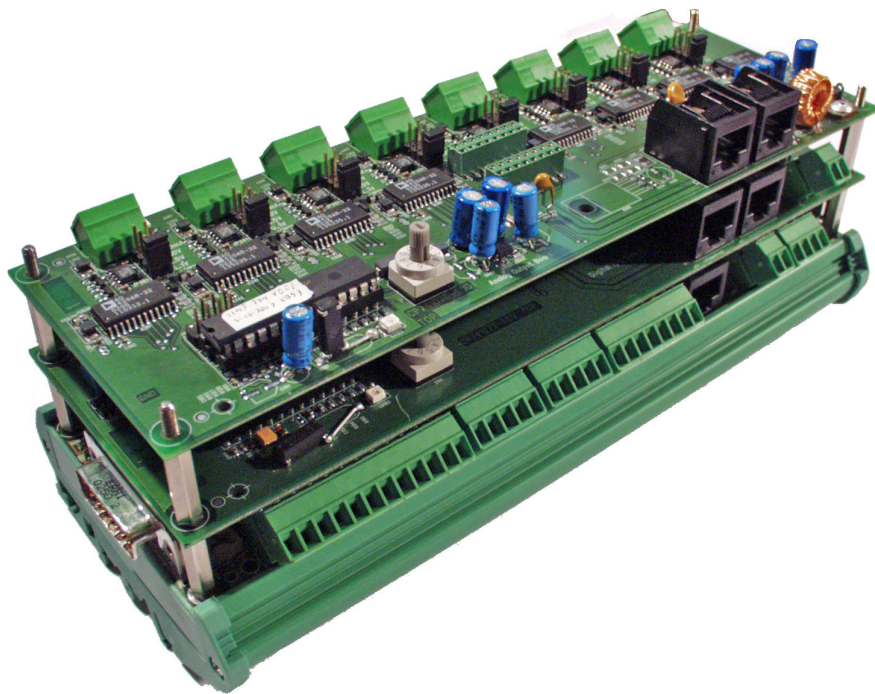


Agilent 990  
**Micro-GC PRO Extension Boards**

**User Manual**



# Notices

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### CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

### WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

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# Safety Information

## Information

In accordance with Agilent's commitment to customer service and safety, these Micro-GC PRO Extension Boards and their accompanying documentation (NEN 5509) comply with the CE specifications and the safety requirements for electrical equipment for measurement, control, and laboratory use (CEI/IEC 1010-1).

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

To prevent any injury to the user or any damage to the instrument it is essential that you read the information in this chapter.

If this manual is not in your native language and if you have problems understanding the text, we advise you to contact your Agilent office for assistance. Agilent cannot accept responsibility for any damage or injury caused by misunderstanding of the information in this manual.

## Operating instructions

This instruction manual is provided to help you establish operating conditions, which will permit safe and efficient use of your equipment.

Special considerations and precautions are also described in the manual, which appear in the form of NOTES, CAUTIONS, and WARNINGS as described below.

It is important that you operate your equipment in accordance with this instruction manual and any additional information, which may be provided by Agilent. Address any questions regarding the safe and proper use of your equipment to your local Agilent office.

### NOTE

**Information to aid you in obtaining optimal performance from your instrument**

### WARNING

**Alerts you to potentially hazardous situations that could result in serious injury, and how to avoid these situations.**

### CAUTION

**Alerts you to situations that may cause moderate injury and/or equipment damage, and how to avoid these situations.**



**WARNING:**  
**Shock hazard**

Indicates dangerous voltage: terminals fed from the interior by a voltage exceeding 1000V must be so marked.



**WARNING:**  
**Burn hazard**

Indicates parts that may cause burns when touched



**Instruction Manual**

Indicates that the user should refer to the manual before operating the equipment.



**Protective Conductor terminal**

For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal, which must be connected to ground before operating equipment.



**Radioactive hazard**

Indicates that the instrument contains radioactive components, which may cause personal injury when handled incorrectly.



**Skin puncture**

Indicates sharp or suddenly moving parts such as injection needles that may cause injury.



**Static discharge Warning**

Indicates instrument contains parts that can be damaged by electrostatic discharge. Take care for proper grounding before handling.



**Do not touch**

Touching this item may result in damage to the instrument or personal injury.

## General safety precautions

### NOTE

This instrument has been tested per applicable requirements of EMC Directive as required to carry the European Union CE Mark. As such, this equipment may be susceptible to radiation/interference levels or frequencies, which are not within the tested limits.

### WARNING

This instrument is designed for chromatographic analysis of appropriately prepared samples. It must be operated using appropriate gases and/or solvents and within specified maximum ranges for pressure, flows, and temperatures as described in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

### WARNING

It is the responsibility of the customer to inform Agilent Customer Support Representatives if the instrument has been used for the analysis of hazardous biological, radioactive, or toxic samples, prior to any instrument service being performed or when an instrument is being returned to the Service Center for repair.

**CAUTION**

- Disconnect the instrument from all power sources before removing protective panels to avoid exposure to potentially dangerous voltages.
- When it is necessary to use a non-original power cord plug, make sure the replacement cord adheres to the color-coding and polarity described in the manual and all local building safety codes.
- Replace faulty or frayed power cords immediately with the same type and rating.
- This instrument should be placed in a suitable location with sufficient ventilation to remove gases and vapors. Space around the instrument must be sufficient to enable cooling of the instrument.
- Before plugging the instrument in or turning the power on, always make sure that the voltage and fuses are set appropriately for your local power source.
- Do not turn on the instrument if there is a possibility of any kind of electrical damage. Instead, disconnect the power cord and contact your Agilent office.
- The supplied power cord must be inserted into a power outlet with a protective earth ground connection. When using an extension cord, make sure that the cord is also properly grounded.
- Do not change the external or internal grounding connections as this could endanger you and/or damage the instrument.
- The instrument is properly grounded when shipped. You do not need to make any changes to the electrical connections or to the instrument chassis to ensure safe operation.
- When working with this instrument, follow the regulations for GLP (Good Laboratory Practice). Take care to wear safety glasses and appropriate clothing.
- Do not place containers with flammable liquids on this instrument. Spillage of the liquid over hot parts may cause fire.
- Never try to repair or replace any component that is not described in this manual without the assistance of a Agilent service engineer. Unauthorized repairs or modifications will result in rejection of warranty claims.
- Always disconnect the (AC) power cord before attempting any type of maintenance.
- Use proper tools when working on the instrument to prevent danger for you and/or damage to the instrument.
- The customer should not attempt to replace any fuses in this instrument.
- Damage can result if the instrument is stored under unfavorable conditions for prolonged periods (e.g. subject to heat, water, etc.).
- This unit has been designed and tested in accordance with recognized safety standards and designed for indoors use only.
- If the extension boards are used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired.
- Substituting parts or performing any unauthorized modification to the instrument may result in a safety hazard.
- Changes or modifications not expressly approved by the responsible party for compliance could void the user's authority to operate the equipment.

## Spare parts availability

It is the policy of Agilent to provide operational spare parts for any instrument and major accessory for a period of five (5) years after shipment of the final production run of that instrument. Spare parts will be available after this five (5) year period but on an as available basis. Operational spare parts are defined as those individual electrical or mechanical parts that are susceptible to failure during their normal operation. Examples include relays, lamps, temperature probes, detector elements, motors, etc. Sheet metal parts, structural members or assemblies and castings, printed circuit boards, and functional modules are normally capable of being rebuilt to like-new condition throughout their useful life and therefore will be supplied only on an as available basis after the final production run of the instrument.

## Service availability

Agilent provides a variety of services to support its customers after warranty expiration. Repair service can be provided by attractively priced service contracts or on a time and material basis. Technical support and training can be provided by qualified personnel on both a contractual or as-needed basis.

## Analytical Instruments sales offices

For sales or service assistance and to order Parts and Supplies, contact your local Agilent office.

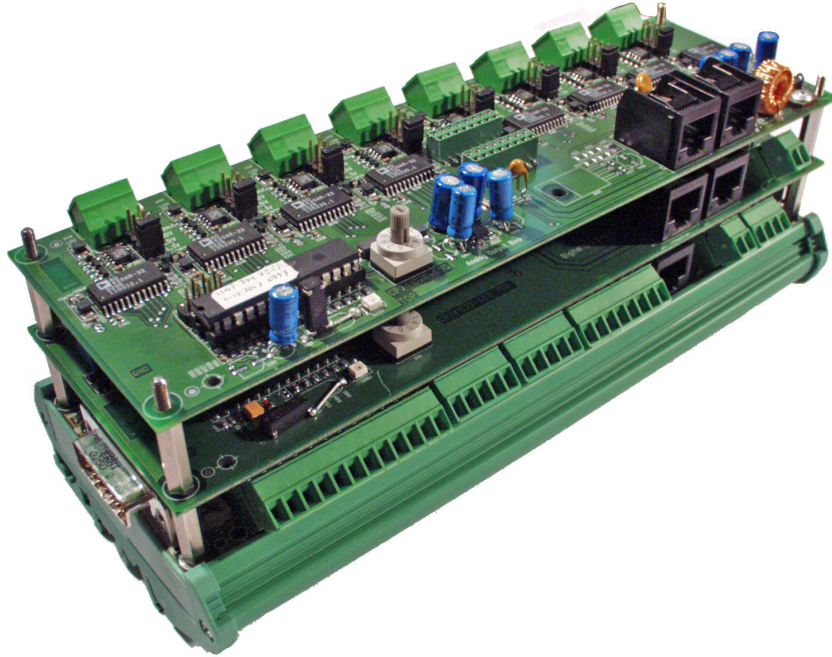
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<b>Brazil and Latin America (S)</b>	<b>India</b>	<b>Spain</b>	<b>United States</b>
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<b>Canada</b>	<b>Italy</b>	<b>Sweden</b>	(GC and GC/MS)
Mississauga, Ontario	Torino	Solna	Tel. +1.800.367.4752 (LC)
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**Agilent Technologies**

<http://www.agilent.com>

# Introduction



**Figure 1.** Micro-GC PRO Extension Boards

Congratulations and thank you for purchasing the Micro-GC PRO Extension Boards.

The Micro-GC PRO Extension Boards are used to provide the Micro-GC PRO additional in-outputs.

## NOTE

**For problems or questions about your Micro-GC PRO Extension Boards, please contact your nearest Agilent subsidiary or Agilent representative.**

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# Pre-Installation Requirements

In order to assure a quick, safe and uncomplicated installation, we kindly request you make provisions as stated below before our Agilent service engineer will install your instrument(s). For more details please consult the Pre-Installation manual Micro-GC partnumber: CP501389.

## Environmental requirements

- The Micro-GC PRO Extension Boards are intended for indoor use.
- The Micro-GC PRO Extension Boards should be protected from corrosive chemicals or gases, dust/particulate accumulation, and direct venting of air conditioners, heaters, furnaces or fans.

## Space requirements

See Pre-Installation manual Micro-GC.

## Micro-GC PRO

The Micro-GC PRO Extension Boards need specific level of hard/software to function correct.

For problems or questions about the Micro-GC PRO hardware/software, please contact your nearest Agilent subsidiary or Agilent representative.

## Power source

The extension boards can be powered through the Micro-GC PRO or by an external power supply.



# Micro-GC PRO Extension Boards Installation

## Inspection

The Micro-GC PRO Extension Boards will arrive packed in several small cartons. Inspect the cartons carefully for damage or signs of rough handling. Report damage to the carrier and to your local Agilent office.

## Unpacking

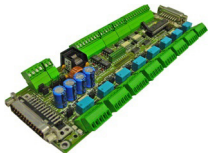
Unpack the Micro-GC PRO Extension Boards and accessories carefully and transfer to the work area, using proper handling techniques. Inspect the Micro-GC PRO Extension Boards and accessories carefully for damage or signs of rough handling. Report damage to the carrier and to your local Agilent office.

Check the packing list(s) to see if you have received all that you require.

## Packing list

**Table 1 Basic Extension Board (G3588-68015)**

Basic Extension Board (packed in anti-static bag)



Extension Y-Cable, 40 pin to separated 25 pin Digital I/O and 15 pin Analog I/O connectors.  
(p/n G3588-60825)



Small material  
Screws x 4  
Washer x 4  
Standoff x 4



Package contents slip



Table 2 Digital Extension Board (G3588-68017)

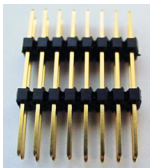
Digital Extension Board (packed in anti-static bag)



Small material:  
Screws x 4  
Washer x 4  
Standoff x 4  
Nut x 4



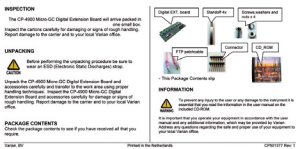
Connector for board stacking



Cable for boards interconnection 0.5 meter



Package contents slip



**Table 3    Analog Extension Board (G3588-68016)**

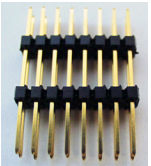
Analog Extension Board (packed in anti-static bag)



Small material:  
Screws x 4  
Washer x 4  
Standoff x 4  
Nut x 4



Connector for board stacking



Cable for boards interconnection 0.5 meter



Package contents slip

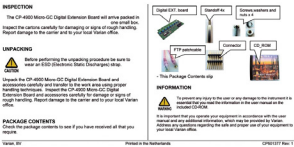
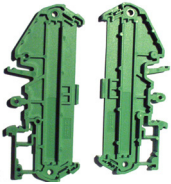


Table 4 Housing for extension boards (G3588-68018)

Baseplate



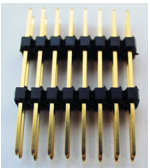
Side panels (2x)



Small material:  
Screws x 4



Connector for board stacking



## Shipping Instructions

If the Micro-GC PRO Extension Boards must be sent back to the factory, it is very important to follow the additional shipping instructions:

### NOTE

---

**Include all cables.**

## Cleaning Instructions

To keep the Micro-GC PRO Extension Board's surface clean, refer to the remarks given below:

- Ensure the Micro-GC PRO Extension Boards are disconnected from the Micro-GC PRO and any other equipment before attempting to clean.
- Use a soft (not hard or abrasive) brush to carefully brush away all dust and dirt.
- Do not get water on the electronics components.
- Do not use compressed air to clean.

## Disposal Instructions

Disposal must be carried out in accordance with all (environmental) regulations applicable in your country.

## Extension Boards Concept

The standard Micro-GC was developed to be used in combination with an external workstation that processes the data and controls external devices like relays, valves, etc.

In the process-market, there is a strong need to add extra analog and digital I/O functions to the Micro-GC.

If the Micro-GC is used as a PROcess-GC, the data-handling will be done inside the Micro-GC itself, no external workstation (software) is needed. The Micro-GC PRO calculates the final results itself and sends this information to an external process-computer, which also reads data from other devices in the process.

The Micro-GC PRO now controls the external devices (such as valves) and communication to process-computers which often takes place in analog form (0-10V or 4-20 mA).

The standard Micro-GC contains limited external I/O like two extra relays and several unused digital I/O lines.

The Extension Bus is designed to control external devices, like digital I/O, relays, DACs etc, over a relatively small distance (up to 10m). This bus is only intended for extension of the external I/O.

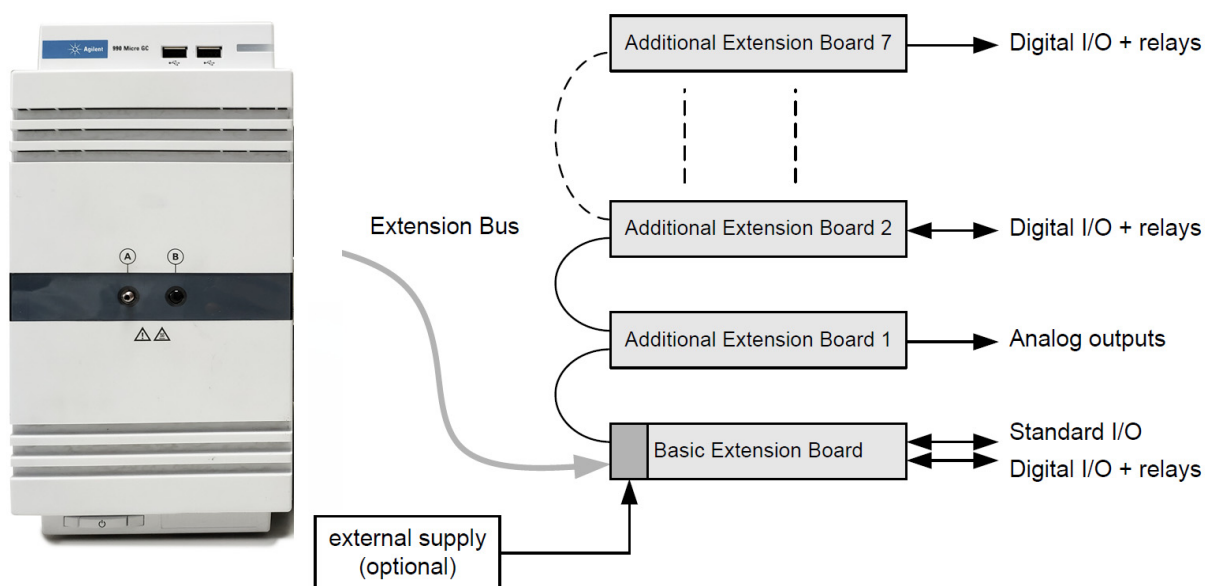


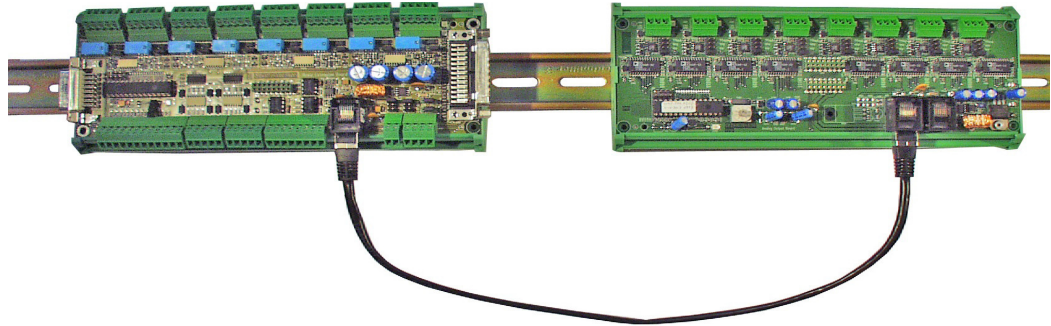
Figure 2. Extension boards connected to the 990 Micro-GC

Several types of boards are developed to extend the number of digital I/O lines, relay-contacts and analog outputs. The basis is the Basic Extension Board containing the interface to the Micro-GC PRO. The maximum number of extension boards (including the Basic Extension Board) is three when using the GC to power the boards, and 8 when using an external power supply.

## Housing and Mounting Options

All extension boards are prepared to be mounted in a baseplate. ([Table 4](#) on page 16) A standard DIN-rail is used to mount the baseplate on a flat underground.

This makes it possible to stack all boards together onto one housing (with the Basic Extension Board mounted at the bottom) or to place each board in a separate housing (every extension board needing its own baseplate) and interconnect them via interconnection board cables.

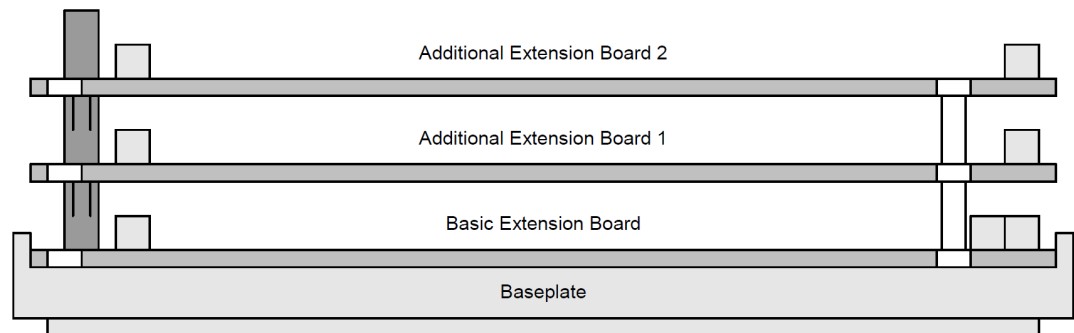


**Figure 3.** Boards connected with an interconnection board cable

If the boards are stacked together, spacers have to be used to maintain a stable construction.

### NOTE

**All extension board types are supplied without a baseplate.**



**Figure 4.** Example of stacked extension boards

Available extension boards:

- **Basic Extension Board** on page 26
- **Analog Extension Board** on page 38
- **Digital Extension Board** on page 44

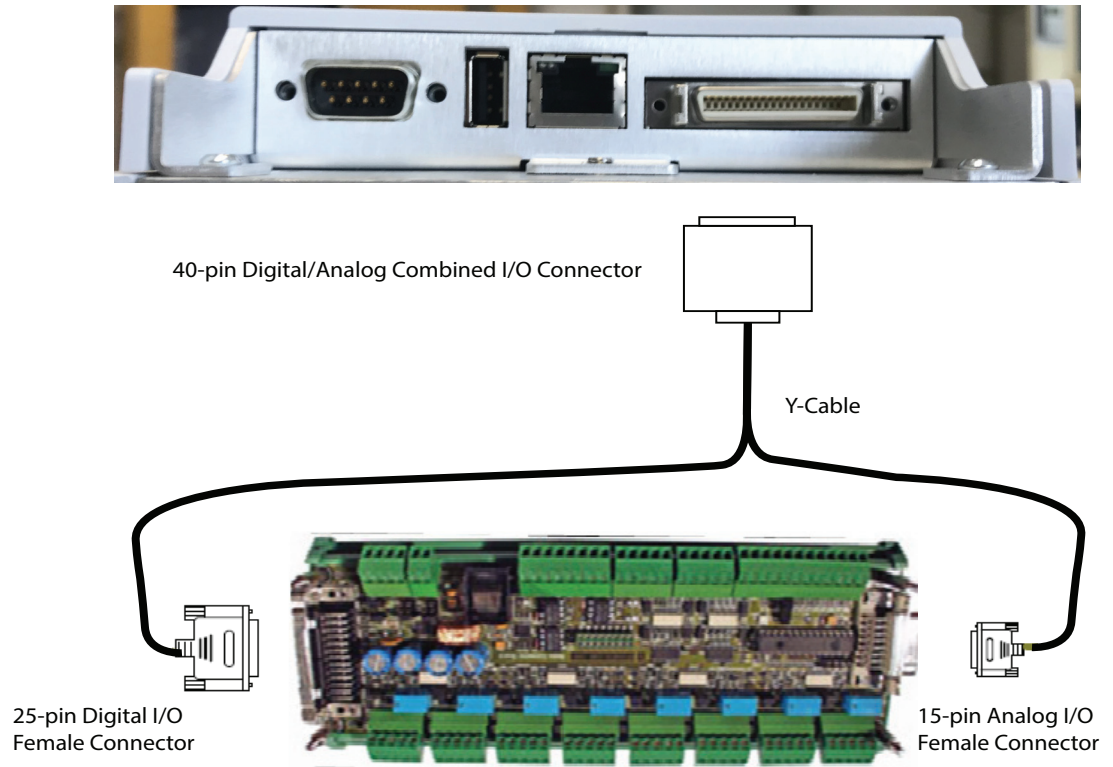


## Connect Basic Extension Board

### CAUTION

Be sure to switch the Micro-GC PRO off and remove the power cable before connecting any cable.

Use the included digital I/O and input cable to connect the Basic Extension Board to the Micro-GC PRO, as pictured in **Figure 5**.



**Figure 5.** Basic extension board connection to Micro-GC PRO

## Power Supply

All extension boards are powered by 12 volt DC.

Two power supply options are possible:

- 12 volt DC coming from the Micro-GC PRO. The maximum current is 500 mA (by electronic fuse). The maximum number of boards is three (3).
- 12 volt DC from an external +12 volt supply. This option can be used when galvanic isolation is required, or when more than 3 extension boards are connected.

Selection between the power sources must be done via jumpers (see **Power Supply** on page 22) on the Basic Extension Board. (**Basic Extension Board** on page 26)

### CAUTION

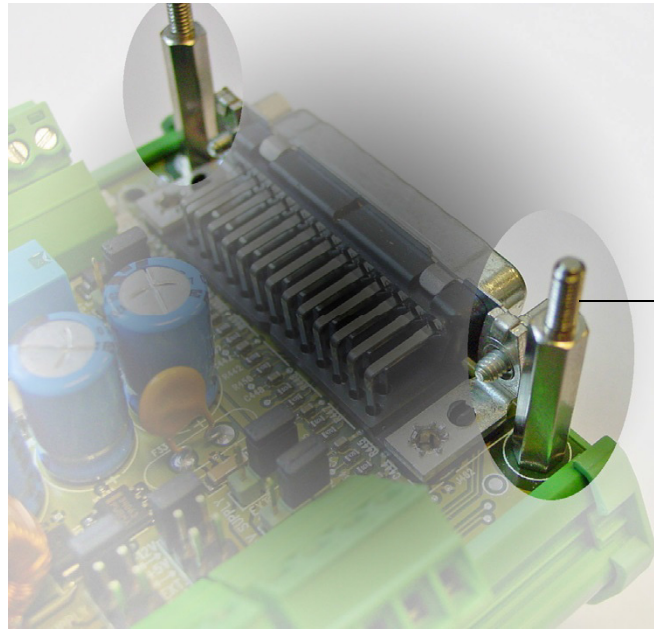
**When using an external +12 volt power supply it's mandatory to use the same power supply specifications as used in the Micro-GC Power Supply (document CP501267).**

## Connecting Extension Boards



Extension boards contain parts that can be damaged by electrostatic discharge. Ensure you are properly grounded before handling.

- 1 To connect Analog or Digital Extension Boards on top of the Basic Extension Board replace the four corner screws with four standoff screws.



Standoff screw

Standoff screw

Figure 6. Standoff screws

- 2 Place the board-connector in the Basic Extension Board.

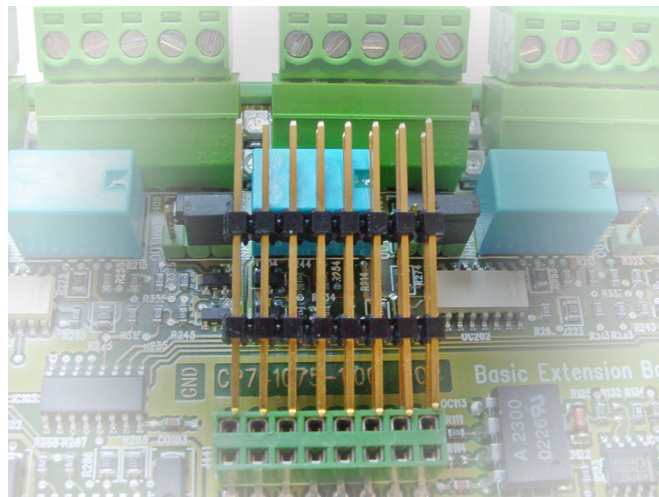
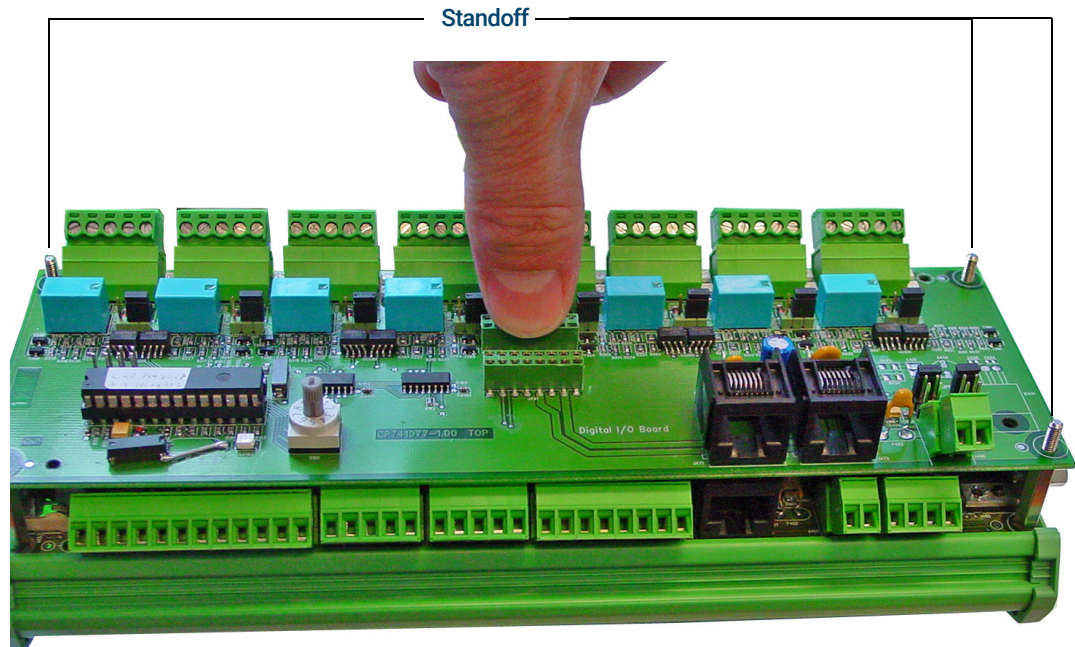


Figure 7. Placing the board-connector

## 2 General Information

### Connecting Extension Boards

- 3 Place the extension board carefully over the four standoffs.
- 4 Gently press on the connector (in the middle of the board) to ensure a good electrical connection with the Basic Extension Board.

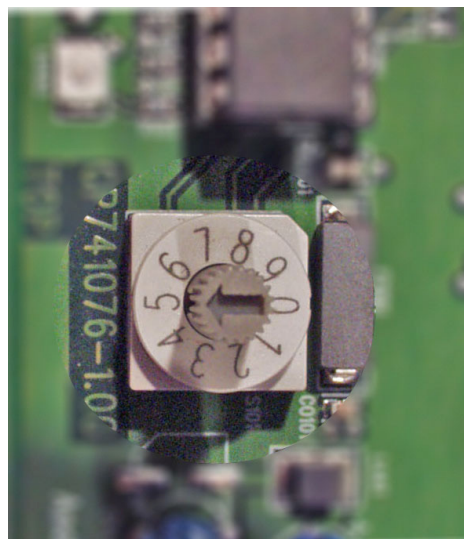


**Figure 8.** Connecting boards

- 5 Either secure the board with four nuts, or repeat this procedure to add another extension board.

#### NOTE

Set the Board ID switch (**Board ID** on page 42) to the correct position (do not use “0” position).



**Figure 9.** Board ID switch

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1Hdigital I/O Power Supply	30
2Hstandard Analog GC Inputs	32
Standard Digital GC I/O	33
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# Basic Extension Board



Extension Boards contain parts that can be damaged by electrostatic discharge. Ensure you are properly grounded before handling.

The Basic Extension Board contains the general Micro-GC I/O-signals, 8 opto-decoupled digital I/O lines, and 8 contact closure relays (contact rating: 0.5A-120VAC, 1A-30VDC or 0.15A-48VDC). Each in- or output channel also has a green status LED indicating the state of the signal (low or high). Each relay has a red status LED indicating the relay's on/off state.

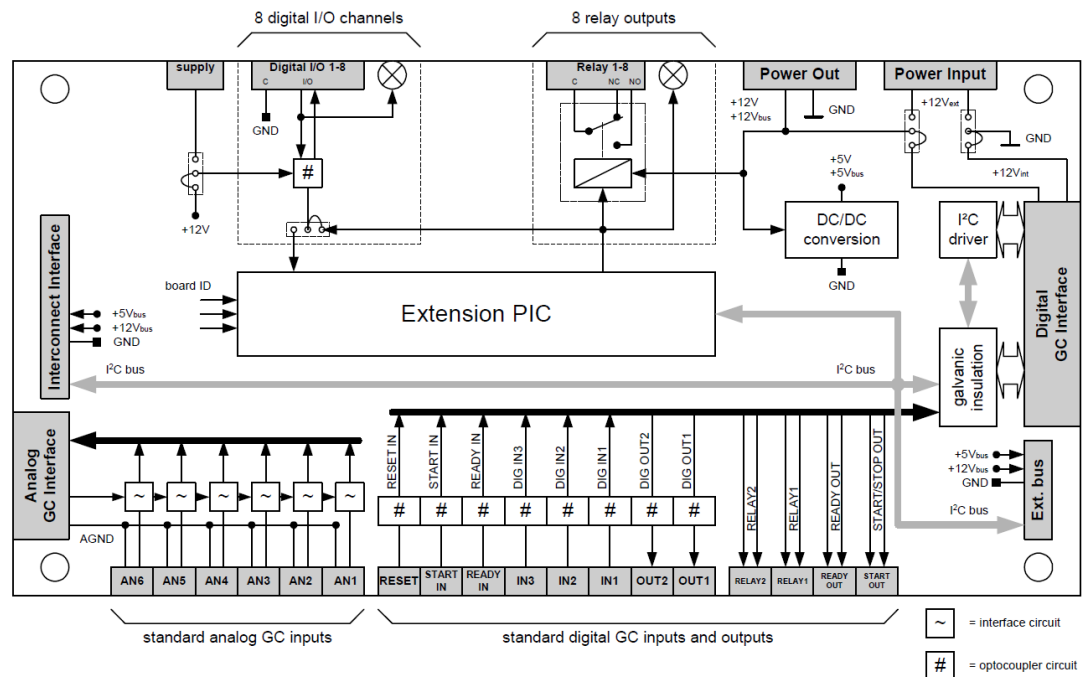


Figure 10. Basic extension board



## Basic extension board layout

For detailed information on each part, click the links in the callouts.

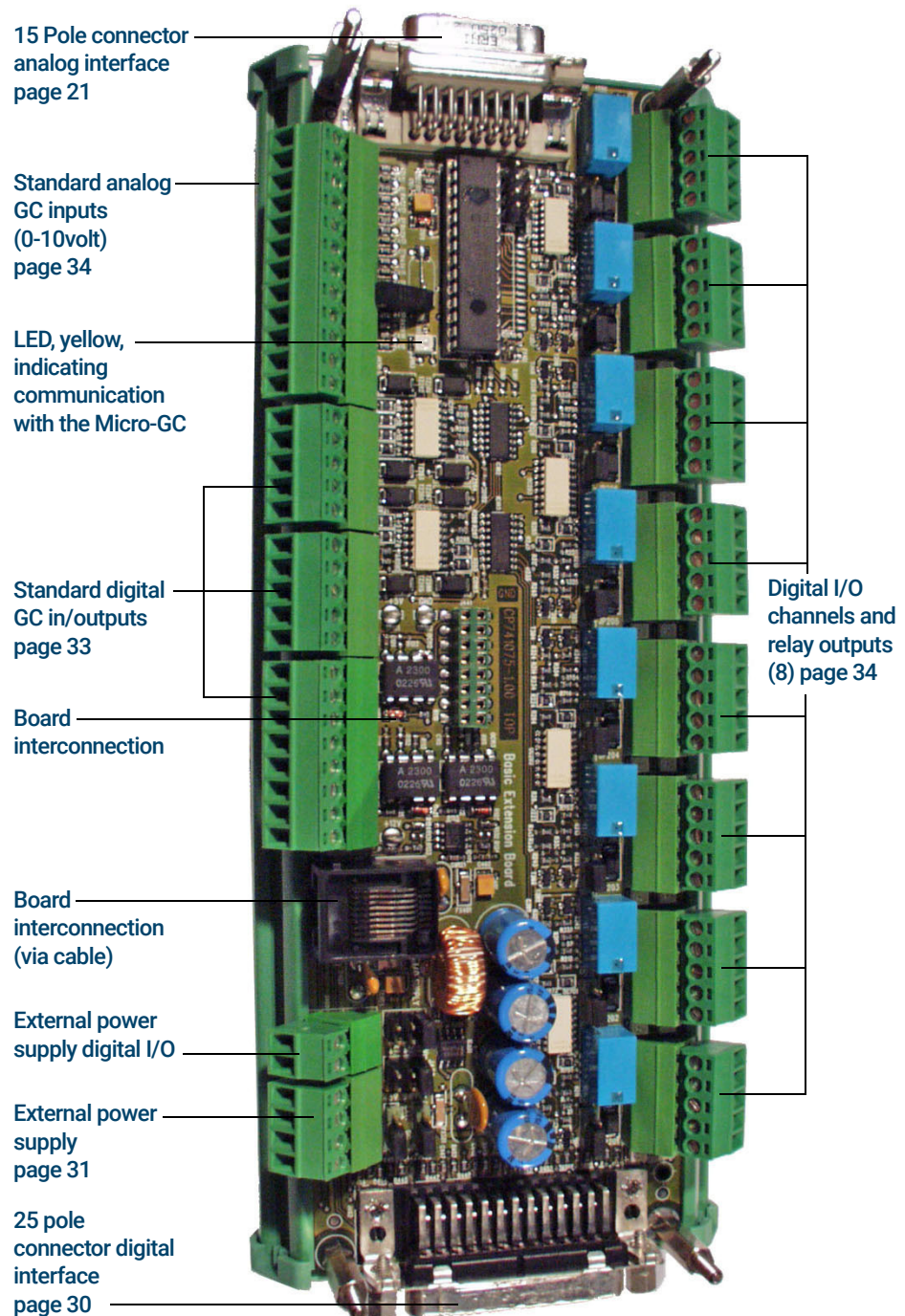
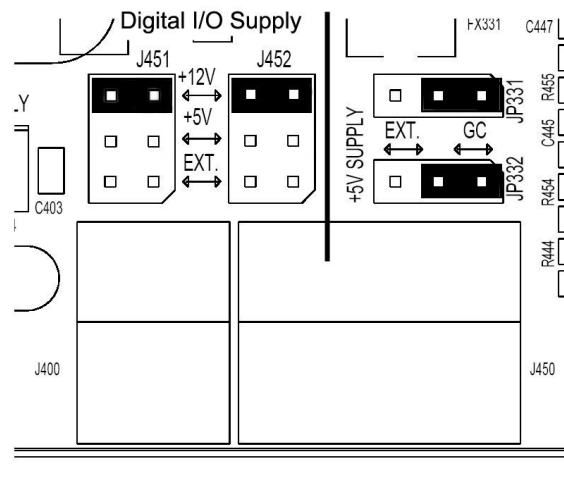
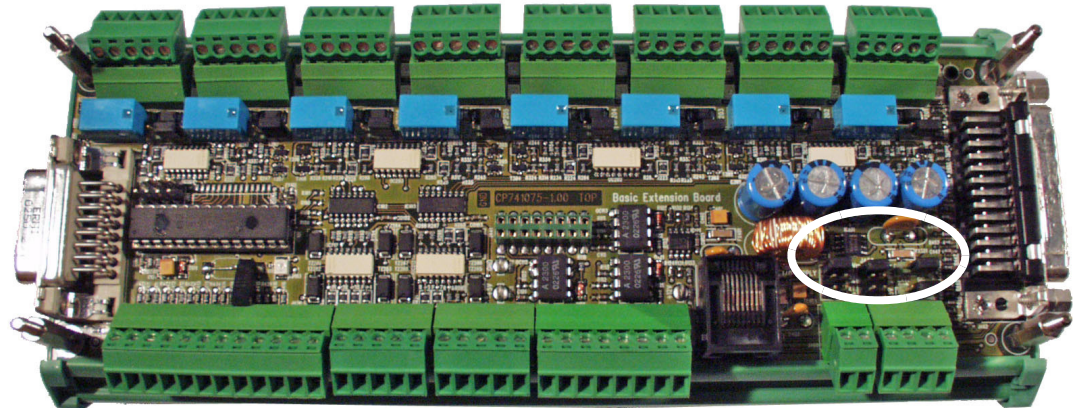


Figure 11. Basic extension board layout

## Power supply

Refer to **Power Supply** on page 22.

Selection between the power sources must be done via jumpers on the Basic Extension Board. Factory set at 12 volt DC coming from the Micro-GC PRO.



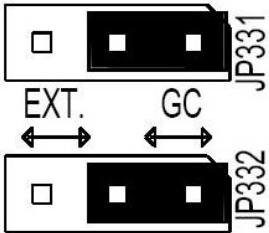
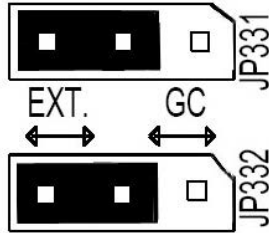
**Figure 12.** Power supply jumpers



# OHexternal power supply

The jumpers JP331 and JP332 (Figure 12 on page 28) are used to switch from 12 volt coming from he Micro-GC PRO and an external 12 volt voltage.

Table 5 Power source jumpers

Power source	JP331 and JP332 jumpers	
12 volt from Micro-GC PRO Maximum of 3 boards. Default settings		See note
12 volt from external power supply		See note

NOTE

Move both jumpers as a pair, never move one jumper without the other one.

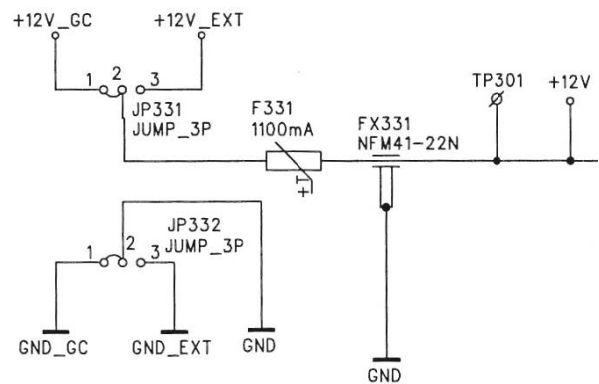
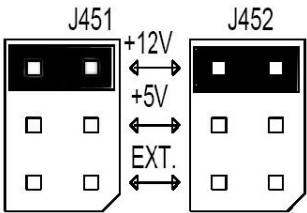
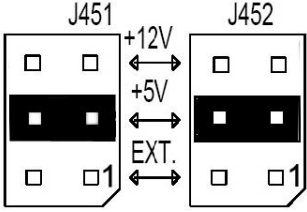
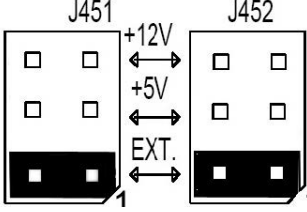


Figure 13. Schematic diagram of JP331 and JP332 (power supply) jumpers

# 1Hdigital I/O Power Supply

The digital I/O power supply is the voltage that is used for all digital I/O signals present on the Basic Extension Board.

Table 6 Digital voltage I/O jumpers

Digital voltage I/O possibilities	JP451 and JP452 (jumper)	
+ 12 volt (from Micro-GC PRO). Default settings		See note
+ 5 volt (from Micro-GC PRO).		See note
+ 5 to +24 volt (external power supply). The external power supply must be connected to connector J400.		See note

NOTE

Move both jumpers as a pair, never move one jumper without the other one.

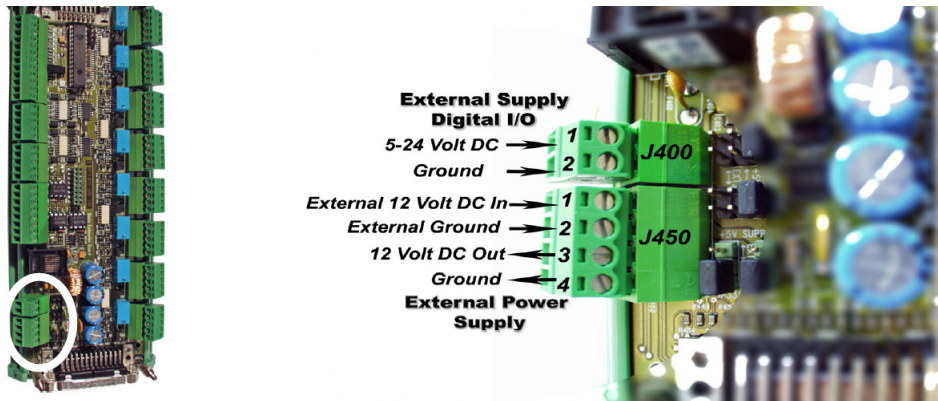


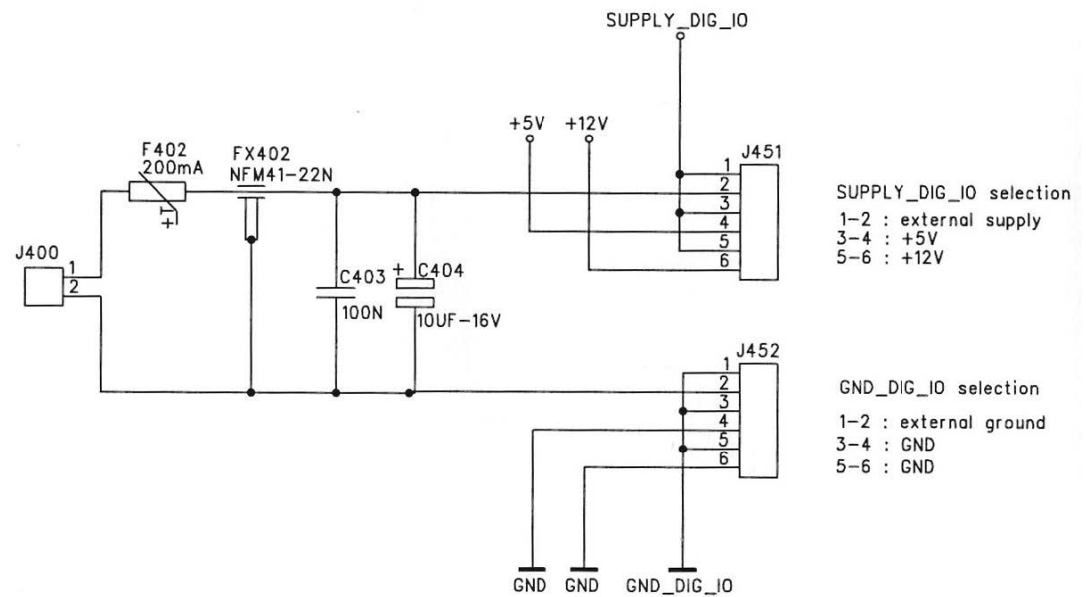
Figure 14. Power connections basic extension board

CAUTION

During installation of the external power supply, connect the wires according to Figure 13 on page 29. Misconnection can damage the extension boards!

### 3 Basic Extension Board

#### 1Hdigital I/O Power Supply



**Figure 15.** Schematic diagram of J400, J451 and J452 power connector

## 2Hstandard Analog GC Inputs

Six (6) analog inputs are available for custom use.

The input voltage range is 0-10 volts.

When using the analog inputs, the Basic Extension Board needs to be connected to the Micro-GC PRO with the 15-pin analog input cable. (See [Connect Basic Extension Board](#) on page 21.)

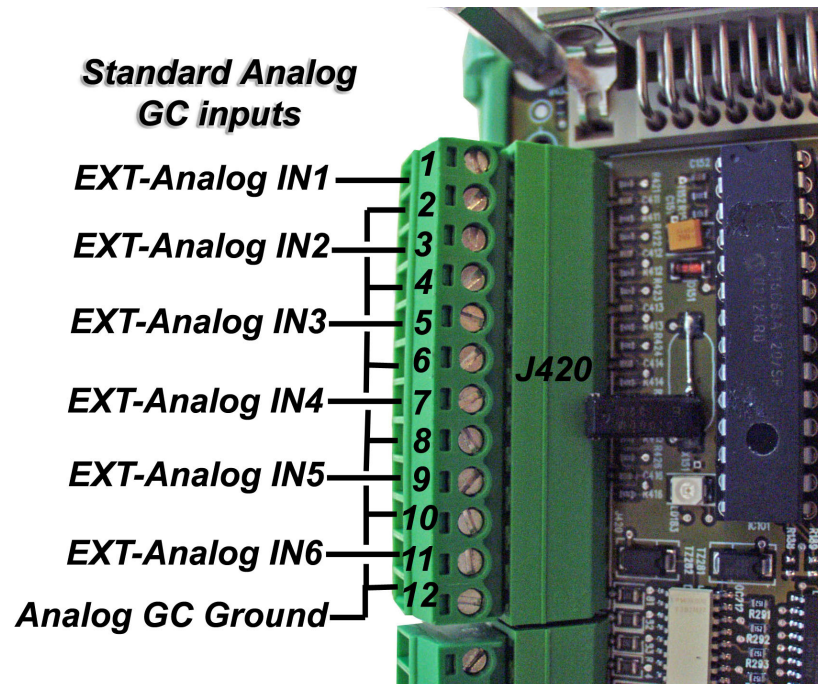
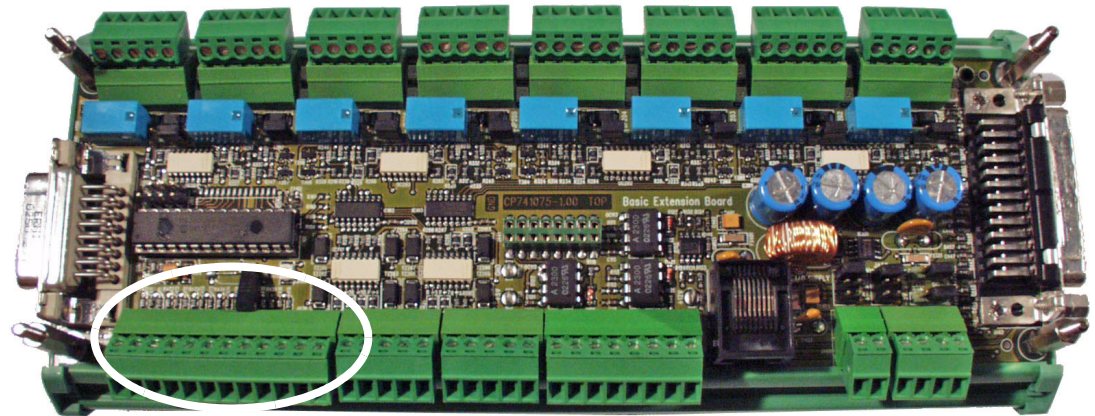


Figure 16. Standard analog GC inputs



## Standard Digital GC I/O

The images below show the standard digital Micro-GC in and outputs.

For more details, refer to the Micro-GC User Manual, chapter “external digital I/O”.

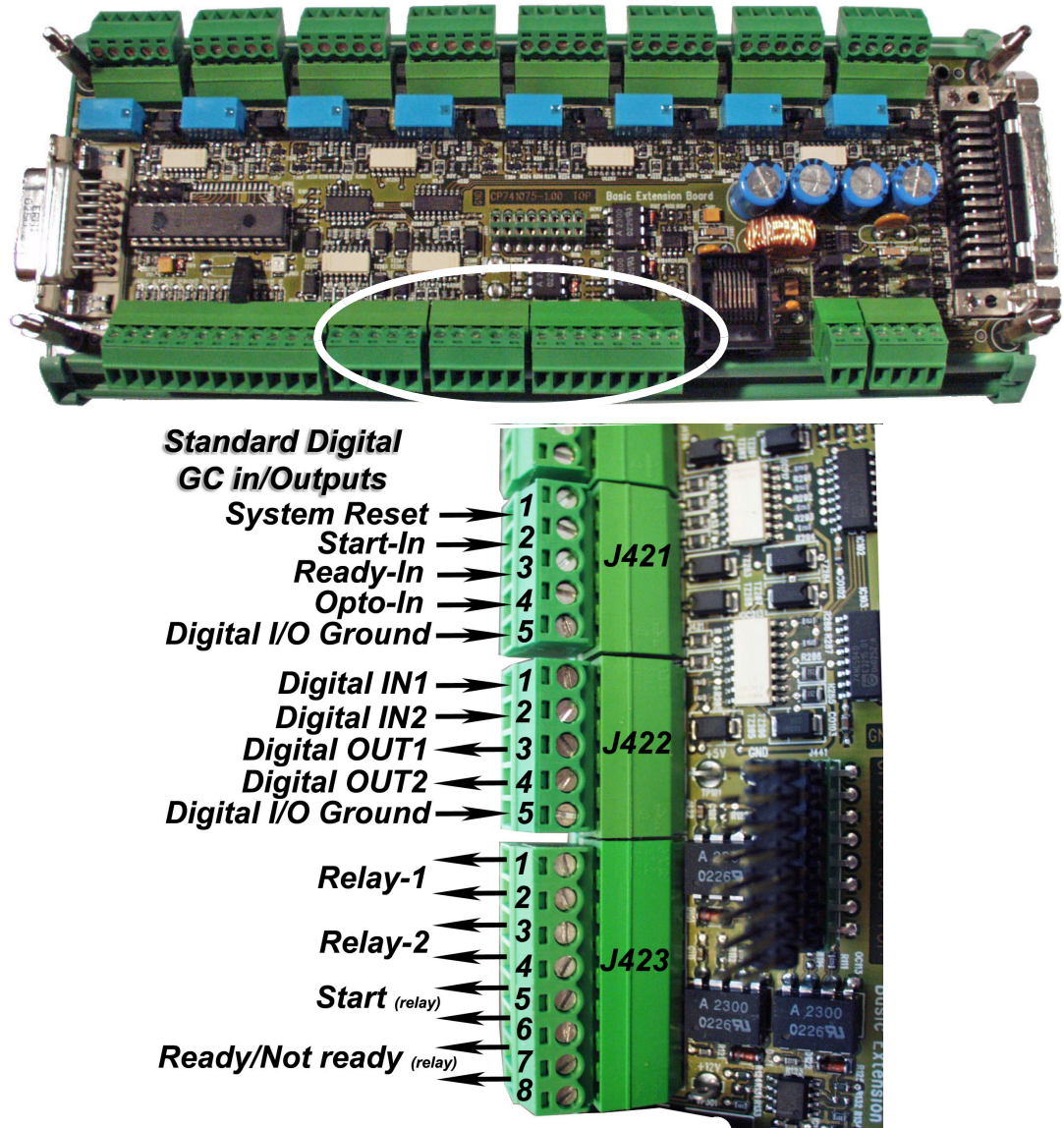


Figure 17. Standard digital GC in/outputs

## Digital I/O Channels and Relay Outputs (8x)

In addition to the standard GC I/O-lines, 8 extension digital I/O lines and 8 relays (contact rating: 0.5A-120VAC, 1A-30VDC or 0.15A-48VDC) are present on the Basic Extension Board.

Each in/output channel (input or output status selectable by jumper) has a green LED indicating the state of the signal (low is "ON" or high is "OFF").

Each relay has a red LED indicating the digital output and relay status.

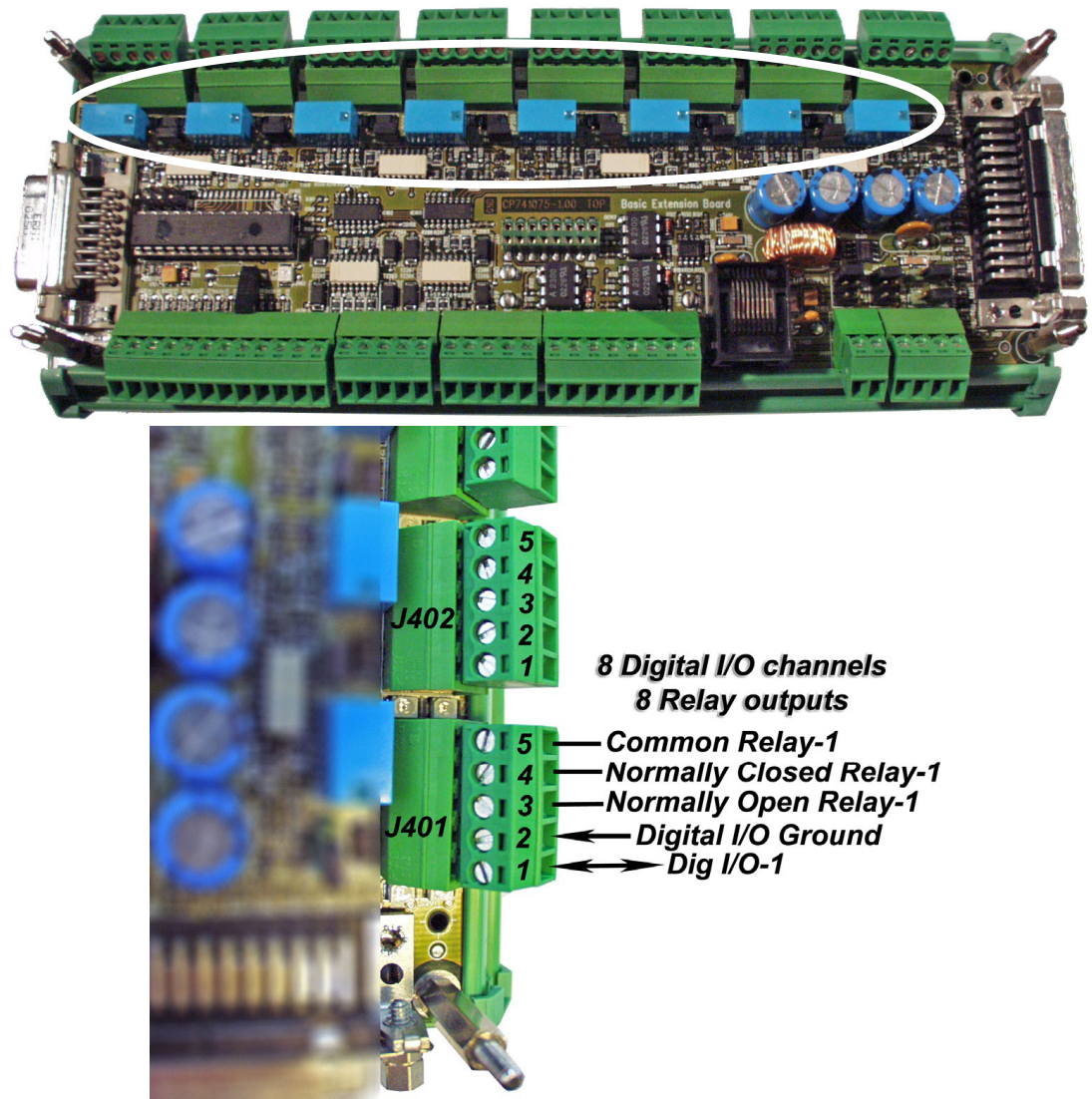


Figure 18. Digital I/O channels and relay outputs

3 Basic Extension Board  
Digital I/O Channels and Relay Outputs (8x)

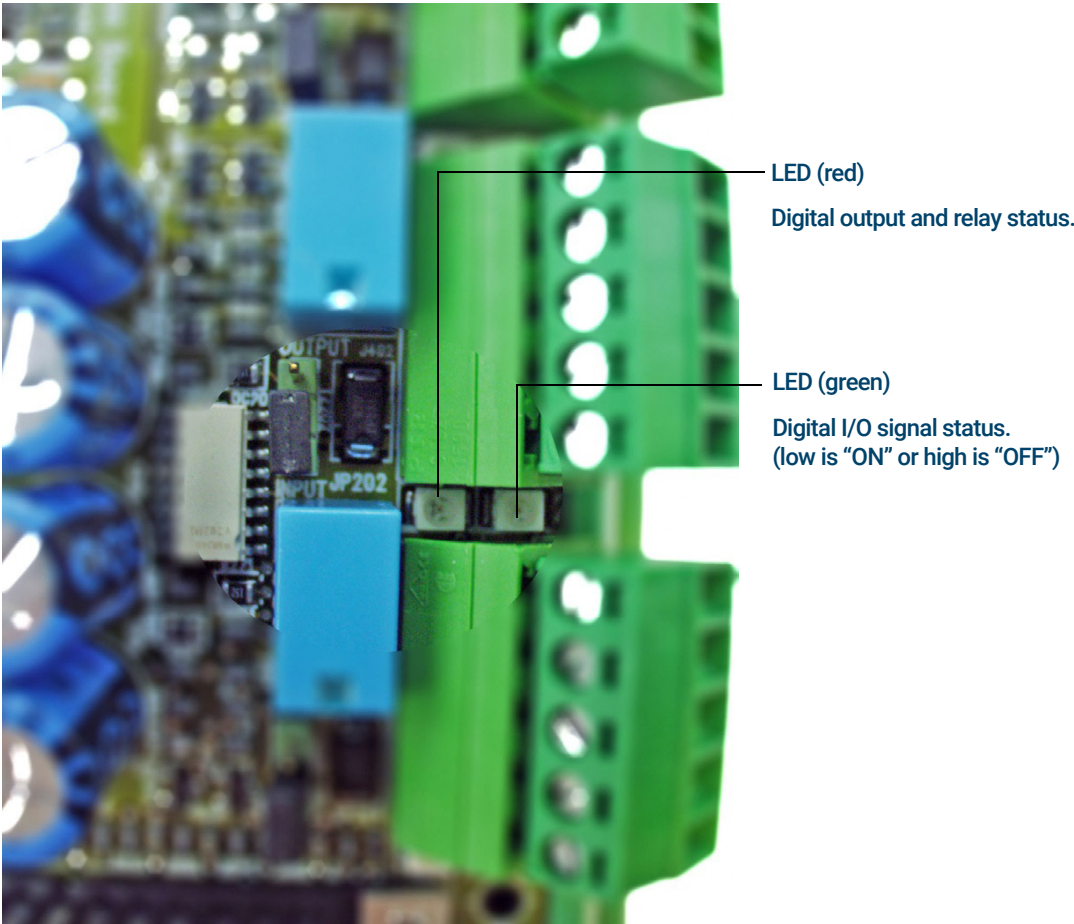


Figure 19. Digital I/O jumper, relay and LED

Table 7 Digital in/output jumper

Digital voltage I/O possibilities	JP20X jumper
Digital input	
+ 5 volt (from Micro-GC PRO).	

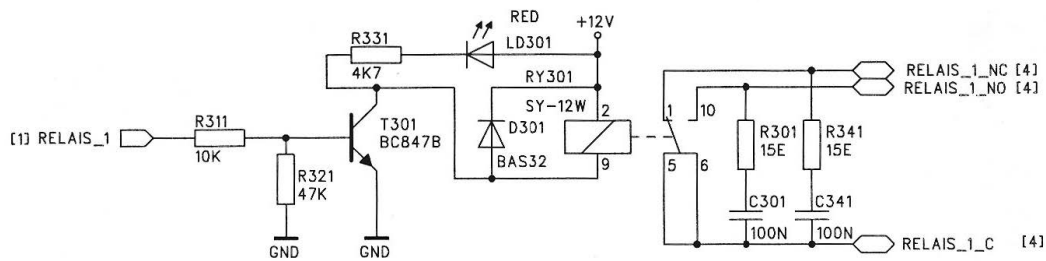


### 3 Basic Extension Board

### Digital I/O Channels and Relay Outputs (8x)



**Figure 20.** Schematic diagram of the digital in/outputs



**Figure 21.** Schematic diagram of the relay output



# Analog Extension Board

Analog Extension Board 38

Analog Extension Board Layout 39

Analog Output Channels 40

Board ID 42

## Analog Extension Board



Extension Boards contain parts that can be damaged by electrostatic discharge. Ensure you are properly grounded before handling.

The Analog Extension Board contains 8 analog output channels. Each analog output channel generates an output voltage or current. The output voltage can be configured for one of three ranges (0-1 volt, 0-5 volt or 0-10 volt via jumper), the output current has a fixed range of 4-20 mA (without jumper 0-20 mA).

Each channel has a red LED indicating that the current loop is not closed. All signals are galvanically isolated (if an external power supply is used) from the Micro-GC PRO.

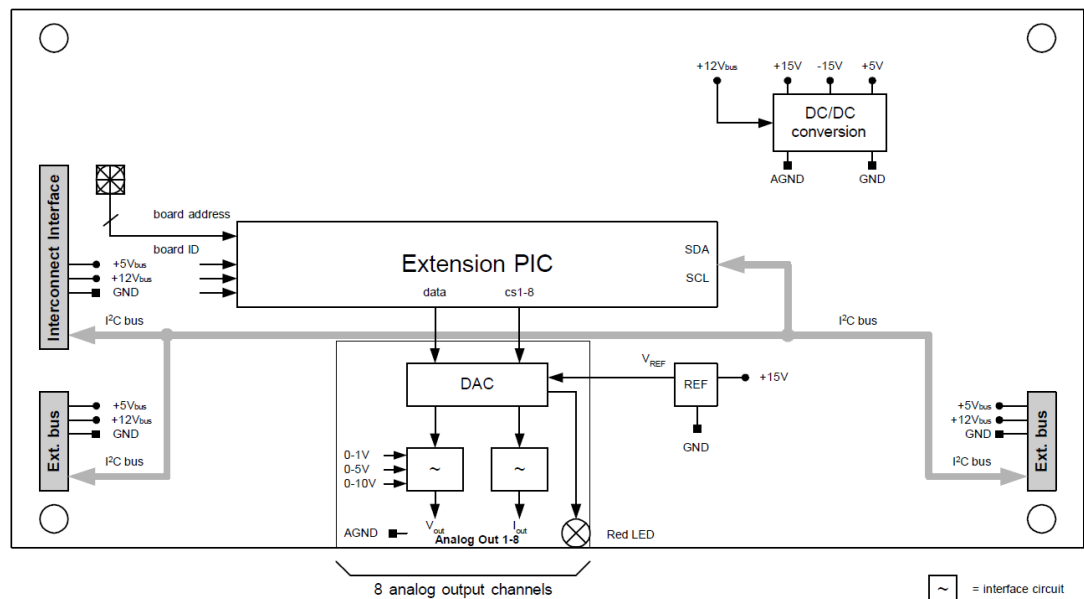


Figure 22. Analog Extension Board

# Analog Extension Board Layout

For detailed information on each part, click the links in the callouts.

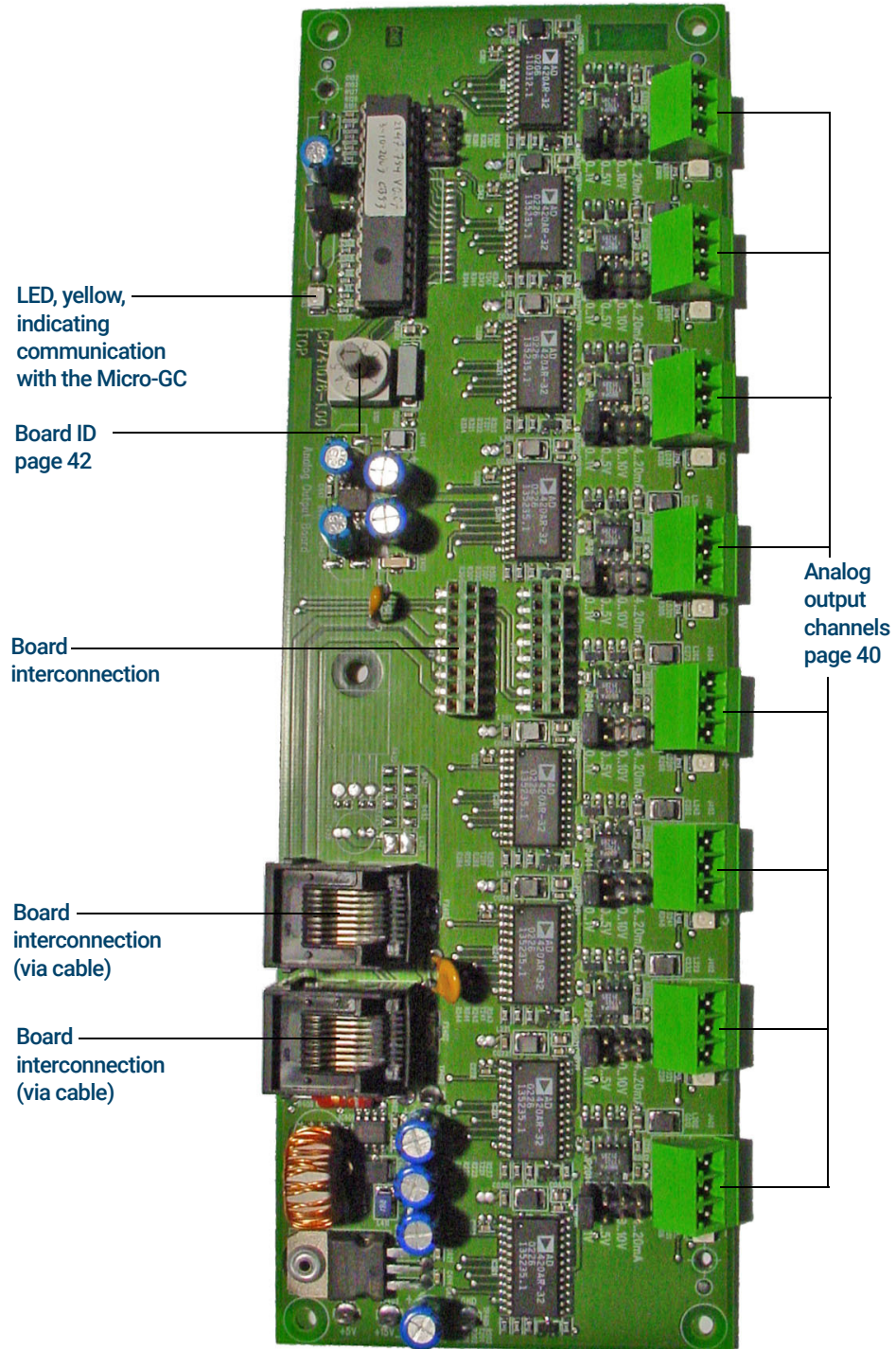


Figure 23. Analog extension board

# Analog Output Channels

Each analog output channel has his own connector, jumper, and LED.

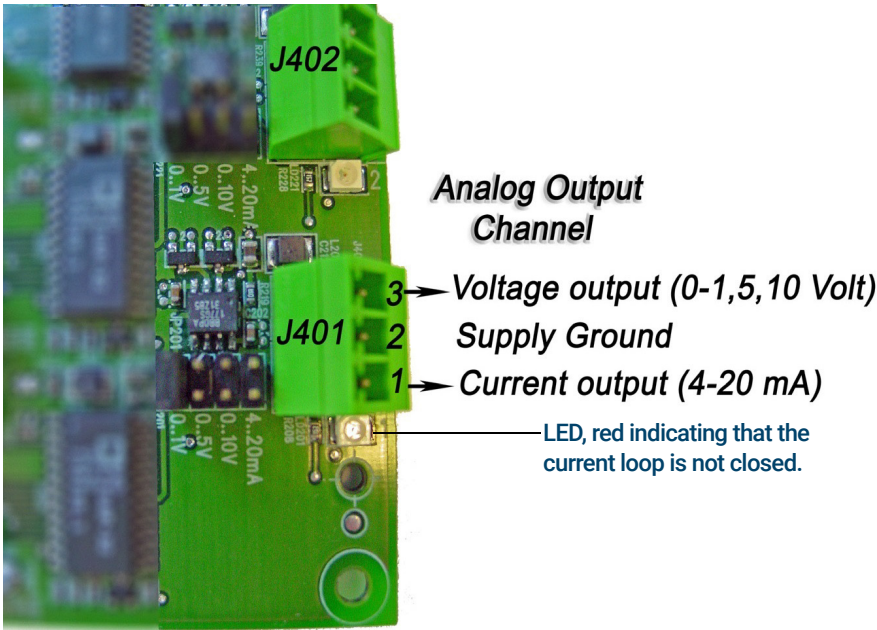


Figure 24. Analog output channel

Table 8 Analog outputs and jumpers

Analog output (voltage)	JPXXX jumper	Analog output (current)	JPXXX jumper
0 – 1 volt (max 10mA)	<div><div><div></div><div></div></div>4..20mA</div> <div><div><div></div><div></div></div>0..10V</div> <div><div><div></div><div></div></div>0..5V</div> <div><div><div></div><div></div></div>0..1V</div>	4 – 20 mA	<div><div><div></div><div></div></div>4..20mA</div> <div><div><div></div><div></div></div>0..10V</div> <div><div><div></div><div></div></div>0..5V</div> <div><div><div></div><div></div></div>0..1V</div>
0 – 5 volt (max 10mA)	<div><div><div></div><div></div></div>4..20mA</div> <div><div><div></div><div></div></div>0..10V</div> <div><div><div></div><div></div></div>0..5V</div> <div><div><div></div><div></div></div>0..1V</div>	0 – 20 mA No jumper	<div><div><div></div><div></div></div>4..20mA</div> <div><div><div></div><div></div></div>0..10V</div> <div><div><div></div><div></div></div>0..5V</div> <div><div><div></div><div></div></div>0..1V</div>
0 – 10 volt (max 10mA) Default settings	<div><div><div></div><div></div></div>4..20mA</div> <div><div><div></div><div></div></div>0..10V</div> <div><div><div></div><div></div></div>0..5V</div> <div><div><div></div><div></div></div>0..1V</div>		

#### 4 Analog Extension Board

##### Analog Output Channels

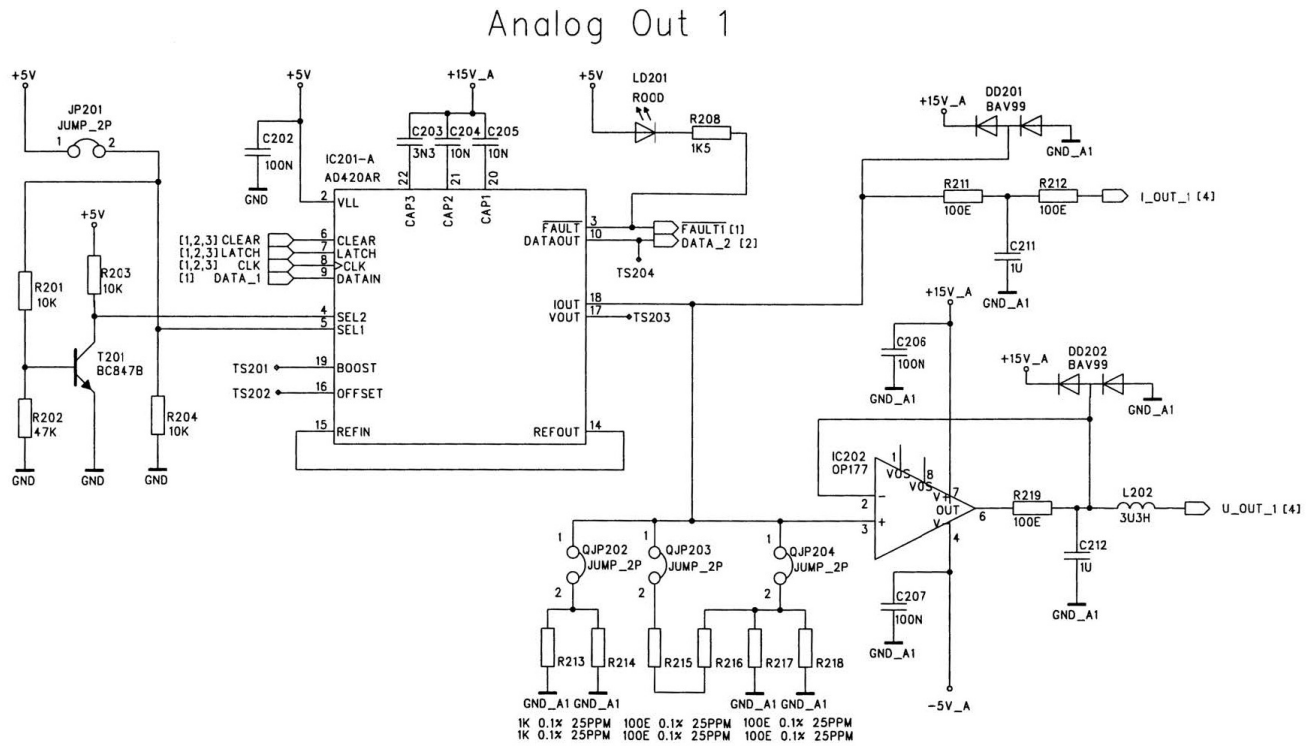
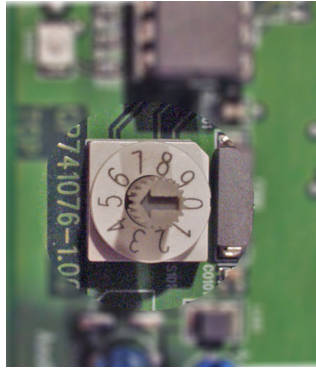


Figure 25. Schematic diagram analog output

## Board ID

Each of the connected extension boards must be set with a unique board address, selectable with the "Board ID" switch.

The "0" position must not be used, as it is reserved for the Basic Extension Board.



**Figure 26.** Board ID switch

## Digital Extension Board

Digital Extension Board 44

Digital Extension Board Layout 45

Digital I/O Power Supply 46

Digital I/O Channels and Relay Outputs (8x) 48

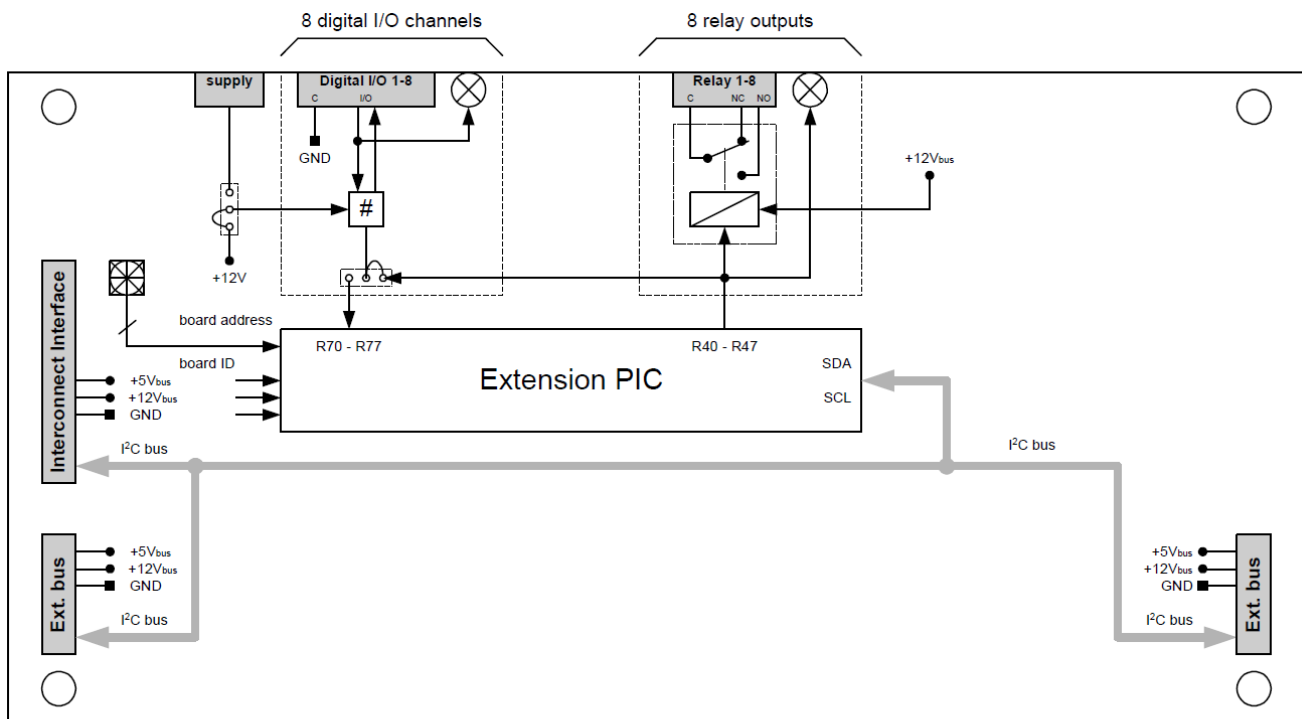
Board ID 51

# Digital Extension Board



Extension Boards contain parts that can be damaged by electrostatic discharge. Ensure you are properly grounded before handling.

The Digital Extension Board contains 8 opto-decoupled digital I/O lines and 8 contact closure relays (contact rating: 0.5A-120VAC, 1A-30VDC or 0.15A-48VDC). All digital I/O channels are identical as on the [Basic Extension Board](#) on page 32. Each in- or output channel has also a green status LED indicating the state of the signal (low or high). Each relay has a red status LED indicating the relay on/off state.



# = optocoupler circuit

Figure 27. Digital extension board



# Digital Extension Board Layout

For detailed information on each part, click the links in the callouts.

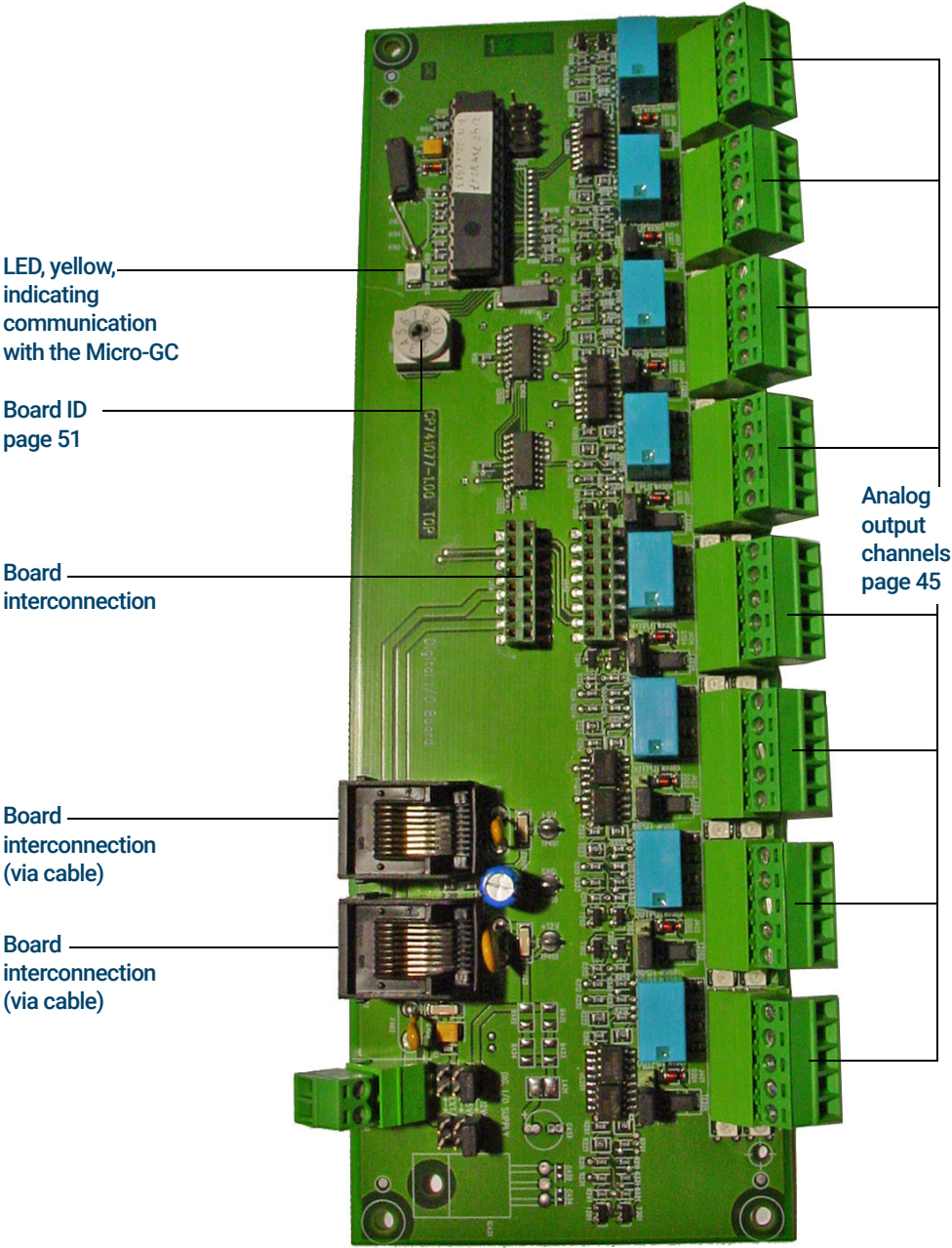


Figure 28. Digital Extension Board

# Digital I/O Power Supply

The digital I/O power supply is the voltage that is used for all digital I/O signals present on the Digital Extension Board.

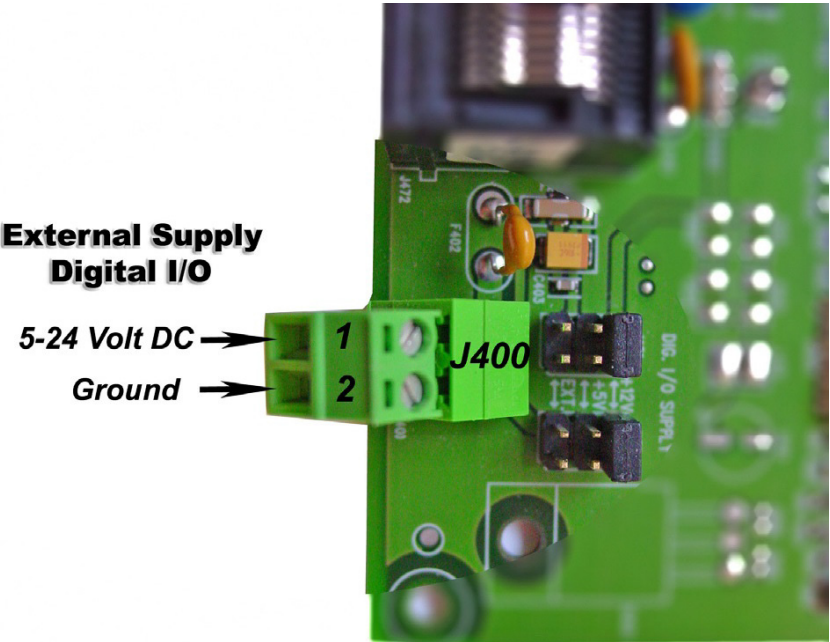


Figure 29. Digital voltage I/O jumpers

Table 9 Power source jumpers

Power source	JP451 and JP452 jumper	
+12 volt (from Micro-GC PRO). Default settings		See note
+5 volt (from Micro-GC PRO)		See note
+5 to +24 volt (external power supply). The external power supply must be connected to connector J400.		See note

NOTE

Move both jumpers as a pair; never move one jumper without the other one.

## 5 Digital Extension Board

### Digital I/O Power Supply

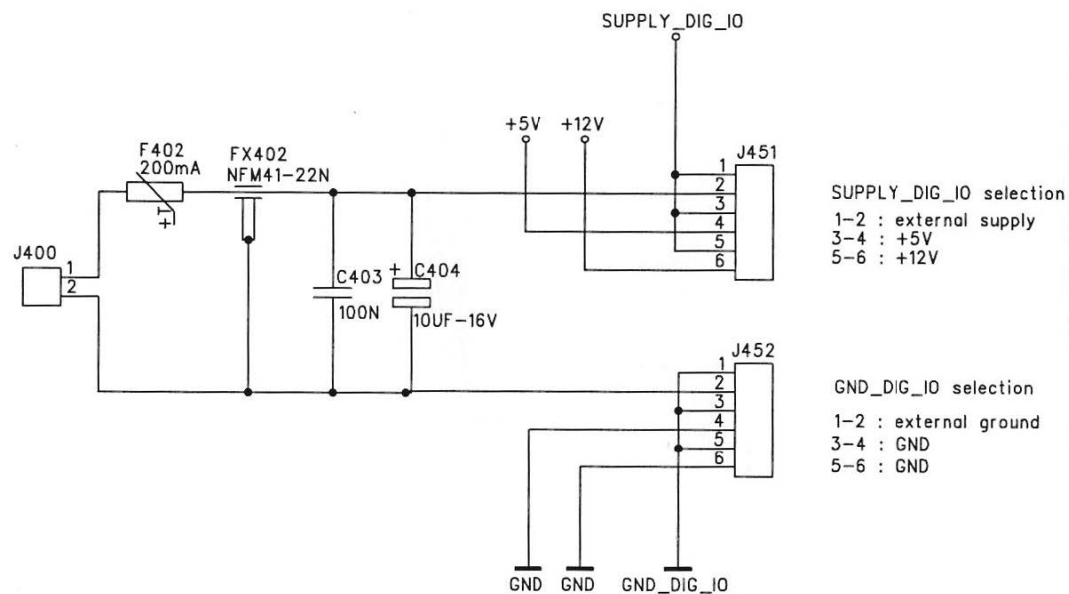


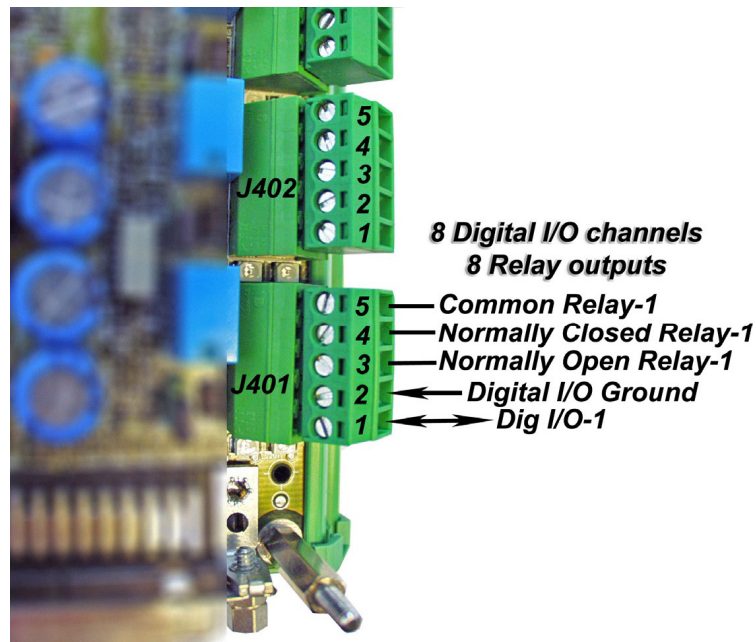
Figure 30. Schematic diagram of J400 power connector

## Digital I/O Channels and Relay Outputs (8x)

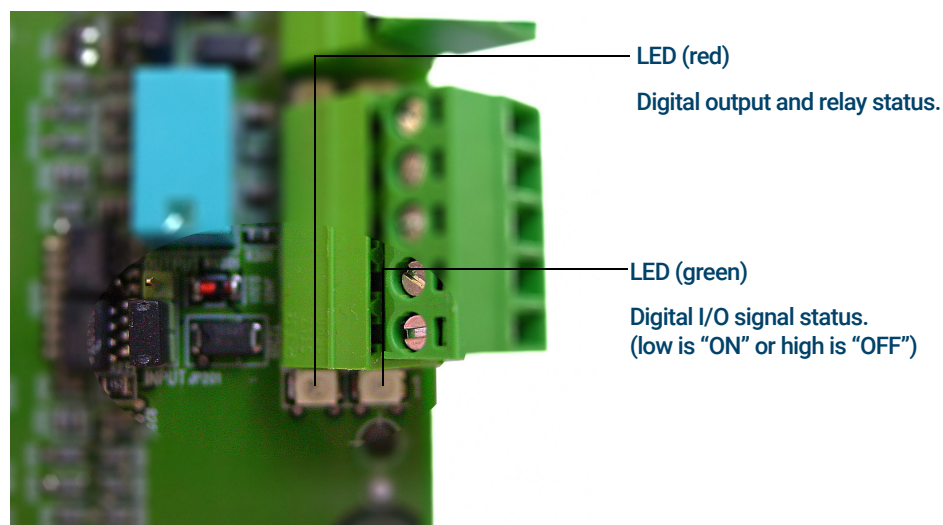
In addition to the standard GC and Basic Extension board I/O-lines, 8 extension digital I/O lines and 8 relays (contact rating: 0.5A-120VAC, 1A-30VDC or 0.15A-48VDC) are present on the Digital Extension Board.

Each in/output channel (Input or Output status selectable by jumper) has a green LED indicating the state of the signal (low or high).

Each relay has a red LED indicating the activated (On/Off) state of the relay.



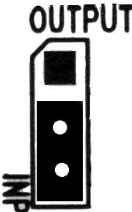
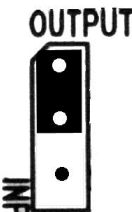
**Figure 31.** Digital I/O channels and relay outputs



**Figure 32.** Digital I/O jumper, relay and LED

5    **Digital Extension Board**  
Digital I/O Channels and Relay Outputs (8x)

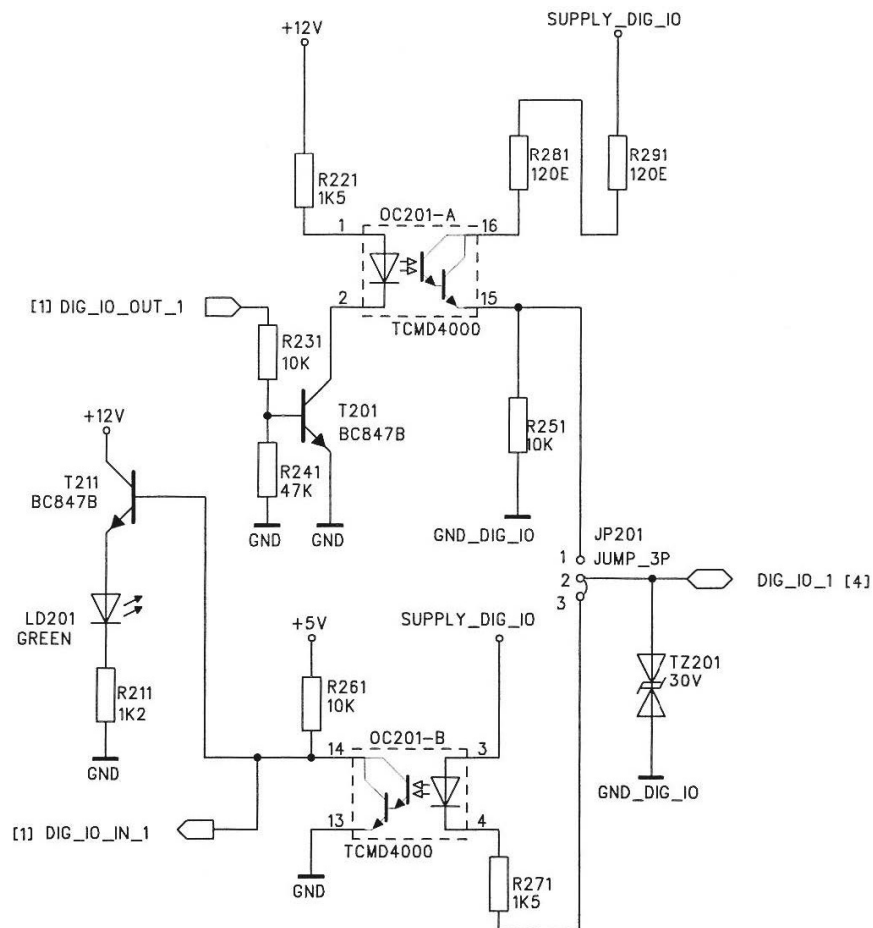
Table 10    Digital in/output jumper

Digital in/output	JP20X jumper
Digital input	
Digital output Default settings	

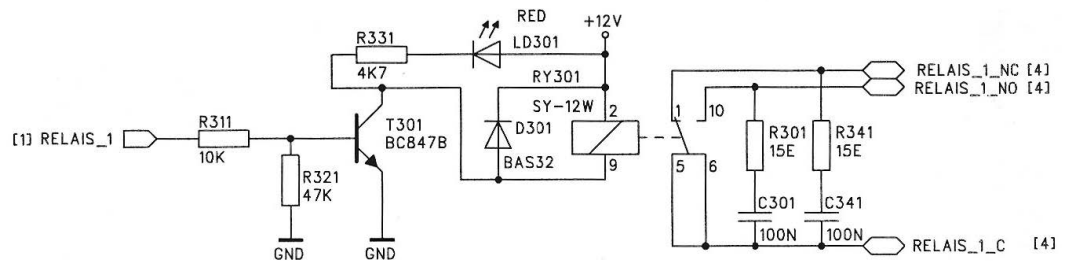
## 5 Digital Extension Board

### Digital I/O Channels and Relay Outputs (8x)

DIG I/O 1



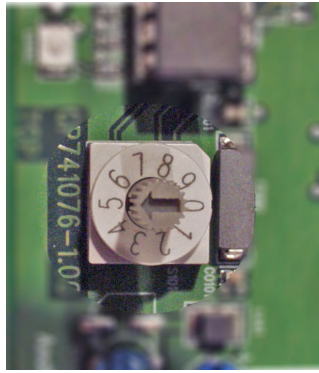
**Figure 33.** Schematic diagram of the digital in/outputs



**Figure 34.** Schematic diagram of the relay output

## Board ID

Each extension board must have a unique board address selectable with the “Board ID” switch. The “0” position may not be used, as it is reserved for the Basic Extension Board.



**Figure 35.** Board ID switch

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