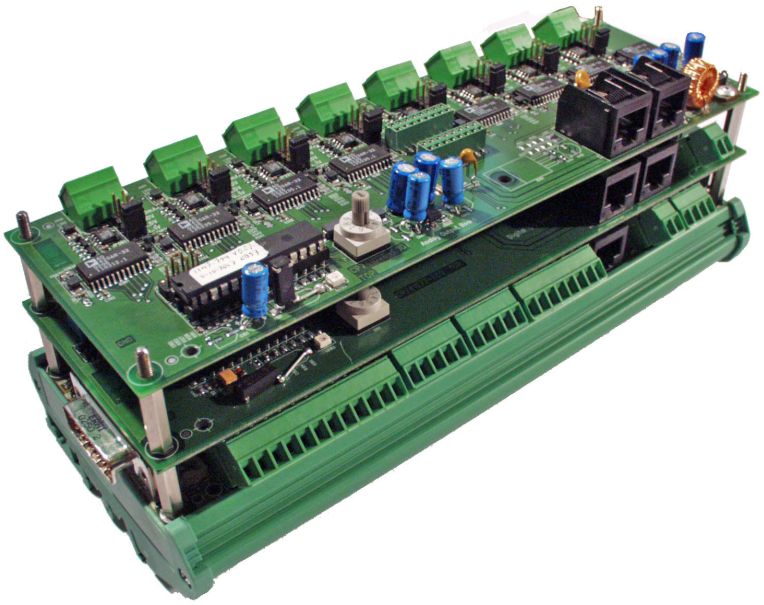
NOTICE: This document contains references to Varian. Please note that Varian, Inc. is now part of Agilent Technologies. For more information, go to **www.agilent.com/chem.**

Agilent Technologies

Varian BV
Herculesweg 8
4330 EA Middelburg
The Netherlands

Micro-GC PRO Extension Boards



User Manual

North/South America
2700 Mitchell Drive
Walnut Creek
94598 California, USA
Tel: ++(1)9259392400
Fax: ++(1)9259452360 or
++(1)9259452344

Europe
P.O. Boards 8033
4330 EA Middelburg
The Netherlands
Tel: ++(31)118671000
Fax: ++(31)118623193

Australia/East Asia
679 Springvale Road
Mulgrave, Victoria 3171
Australia
Tel: ++(61)395607133
Fax: ++(61)395607950

Printed in the Netherlands

CP501370 Rev:3 November 2009

VARIAN ANALYTICAL INSTRUMENT WARRANTY

HARDWARE PRODUCTS

All analytical instruments sold by Varian are warranted to be free from defects in material and workmanship for the periods specified and in accordance with the terms on the face of Varian's quotation or as otherwise agreed upon in writing between Varian and the Customer. The warranty period begins on the date of **shipment** from Varian to the original Customer. However, where installation is paid for by the Customer or included in the purchase price, the warranty period begins upon completion of installation. If the Customer schedules installation to start later than 30 days after delivery or if such delay is caused through the Customer's inability to provide adequate facilities or utilities or through failure to comply with Varian's reasonable pre-installation instructions or through other omissions by Customer, then the warranty period starts on the 31st day from date of shipment. Moreover Varian will charge the Customer for labor and other expenses involved in making multiple or follow-up installation service calls.

SOFTWARE PRODUCTS

Where software is provided within the frame of a license agreement concluded between the Customer and Varian, any warranty shall be strictly in accordance with the terms of such agreement.
In the absence of a license agreement and unless an alternate warranty period is agreed upon in writing between Varian and the Customer, the warranty period is as specified on the face of Varian's quotation. Varian warrants such software products, if used with and properly installed on Varian hardware or other hardware as specified by Varian to perform as described in the accompanying Operator's Manual and to be substantially free of those defects which cause failure to execute respective programming instructions; however, Varian does not warrant uninterrupted or error-free operation.

REMEDIES

The sole and exclusive remedy under hardware warranty shall be **repair** of instrument malfunctions which in Varian's opinion are due or traceable to defects in original materials or workmanship or, at Varian's option, **replacement** of the respective defective parts, provided that Varian may as an alternative elect to **refund** an equitable portion of the purchase price of the instrument or accessory.
Repair or replacement under warranty does not extend the original warranty period.
Repair or replacement under warranty claims shall be made in Varian's sole discretion either by sending a Customer Support Representative to the site or by authorizing the Customer to return the defective accessory or instrument to Varian or to send it to a designated service facility. The Customer shall be responsible for loss or damage in transit and shall prepay shipping cost. Varian will return the accessory or instrument to the Customer prepaid and insured. Claims for loss or damage in transit shall be filed by the Customer. To correct software operation anomalies, Varian will issue software revisions where such revisions exist and where, in Varian's opinion, this is the most efficient remedy.

LIMITATION OF WARRANTY

This **warranty does not cover** software supplied by the Customer, equipment and software warranted by another manufacturer or replacement of expendable items and those of limited life, such as but not limited to: Filters, glassware, instrument status lamps, source lamps, septa, columns, fuses, chart paper and ink, nebulizers, flow cells, pistons, seals, fittings, valves, burners, sample tubes, probe inserts, print heads, glass lined tubing, pipe and tube fittings, variable temperature dewars, transfer lines, flexible discs, magnetic tape cassettes, electron multipliers, filaments, vacuum gaskets, seats and all parts exposed to samples and mobile phases.
This **warranty shall be void** in the event of accident, abuse, alteration, misuse, neglect, breakage, improper operation or maintenance, unauthorized or improper modifications or tampering, use in an unsuitable physical environment, use with a marginal power supply or use with other inadequate facilities or utilities. Reasonable care must be used to avoid hazards.
This warranty is expressly in lieu of and excludes all other express or implied warranties, including but not limited to warranties of merchantability and of fitness for particular purpose, use or application, and all other obligations or liabilities on the part of Varian, unless such other warranties, obligations or liabilities are expressly agreed to in writing by Varian.

LIMITATION OF REMEDIES AND LIABILITY

The remedies provided herein are the sole and exclusive remedies of the Customer. In no case will Varian be liable for incidental or consequential damages, loss of use, loss of production or any other loss incurred.

SAFETY INFORMATION

INFORMATION

In accordance with Varian's commitment to customer service and safety, this Micro-GC PRO Extension Boards and its accompanying documentation (NEN 5509) complies 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 case harmful interference in witch 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 Varian office for assistance. Varian 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 (next page).

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

NOTE

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

CAUTION

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

WARNING

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

Warning Symbol	***Warning Description***
 **WARNING: Shock hazard**	Indicates dangerous voltage: (terminals fed from the interior by 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**  **Do not touch**	Indicates instrument contains parts that can be damaged by electrostatic discharge. Take care for proper grounding before handling. Touching this item may result in damage to the instrument or personal injury.

GENERAL SAFETY PRECAUTIONS

NOTICE: 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.

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.

It is the responsibility of the Customer to inform Varian 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.

CAUTIONS

1. Disconnect the instrument from all power sources before removing protective panels to avoid exposure to potentially dangerous voltages.
2. 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.
3. Replace faulty or frayed power cords immediately with the same type and rating.
4. 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.
5. 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.
6. 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 Varian office.
7. 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.
8. Do not change the external or internal grounding connections as this could endanger you and/or damage the instrument.

9. 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.
10. When working with this instrument, follow the regulations for GLP (Good Laboratory Practice). Take care to wear safety glasses and appropriate clothing.
11. Do not place containers with flammable liquids on this instrument. Spillage of the liquid over hot parts may cause fire.
12. Never try to repair or replace any component that is not described in this manual without the assistance of a Varian service engineer. Unauthorized repairs or modifications will result in rejection of warranty claims.
13. Always disconnect the (AC) power cord before attempting any type of maintenance.
14. Use proper tools when working on the instrument to prevent danger for you and/or damage to the instrument.
15. The customer should not attempt to replace any fuses in this instrument.
16. Damage can result if the instrument is stored under unfavorable conditions for prolonged periods (e.g. subject to heat, water, etc.).
17. This unit has been designed and tested in accordance with recognized safety standards and designed for indoors use only.
18. If the Extension Boards is used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired.
19. Substituting parts or performing any unauthorized modification to the instrument may result in a safety hazard.
20. 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 Varian 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

Varian 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.

Varian Analytical Instruments Sales Offices

For Sales or Service assistance and to order Parts and Supplies, contact your local Varian office.

Argentina
Buenos Aires
Tel. +54.11.4.783.5306

Australia
Mulgrave, Victoria
Tel. +61. 3.9560.7133

Austria
Poettelsdorf
Tel. +43.2626.20090

Benelux
Middelburg
Tel. +31.118.671500

Brazil and Latin America (S)
São Paulo
Tel. +55.11.32380400

Canada
Mississauga, Ontario
Tel. 800.387.2216

China
Beijing
Tel. +86.106310.8550

Europe
Middelburg, The Netherlands
Tel. +31.118.671.000

France
Les Ulis Cédex
Tel. +33.1.6986.3838

Germany
Darmstadt
Tel. +49.6151.7030

India
Mumbai
Tel.
+91.22.2570.8595/97

Italy
Torino
Tel. +39.011.997.9111

Japan
Tokyo
Tel. +81.3.5232.1239

Korea
Seoul
Tel. +82.333.665.5171

Mexico and Latin America (N)
Mexico City
Tel.
+52.5.55.5239465/026

Russian Federation
Moscow
Tel. +7.095.937.4280

Spain
Madrid
Tel. +34.91.472.7612

Sweden
Solna
Tel. +46.8.445.1620

Switzerland
Steinhausen
Tel. +41.848.803.800

Taiwan
Shih-Chi
Tel. +886.22.698.9555

United Kingdom and Ireland
Oxford
Tel. +44.1865.291500

Venezuela
Caracas
Tel.
+58.212.285.0320/2494

United States

Walnut Creek, California, USA
Tel. +1.800.926.3000
(GC and GC/MS)

Tel. +1.800.367.4752 (LC)

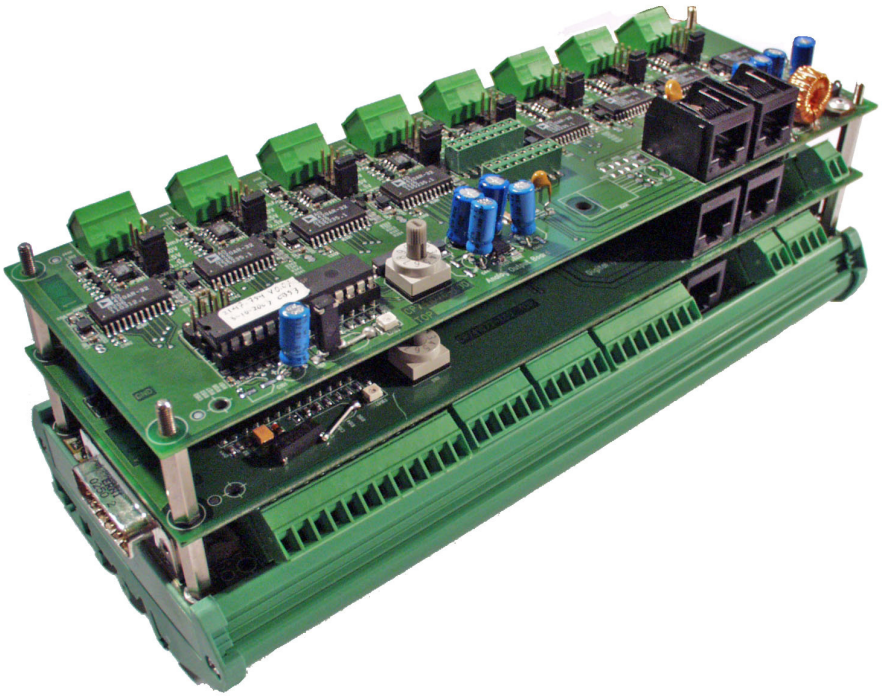
VARIAN

http://www.varianinc.com/

TABLE OF CONTENTS

TABLES AND FIGURES

INTRODUCTION



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

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

NOTE

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

PRE-INSTALLATION REQUIREMENTS

In order to assure a quick, safe and uncomplicated installation, we kindly request you to make provisions as stated below before our Varian 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 Varian subsidiary or Varian representative.

POWER SOURCE

- The Extension Boards can be powered throughout the Micro-GC PRO or external power supply.

MICRO-GC PRO EXTENSION BOARDS INSTALLATION

INSPECTION

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

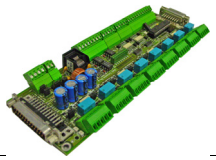
UNPACKING

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 Varian office.

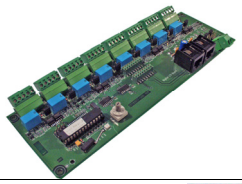
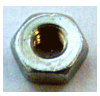
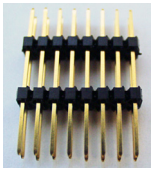
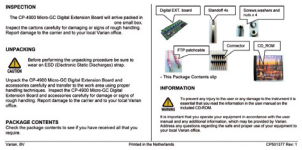
Check the packing list(s) to see if you have received all that you require.

PACKING LIST

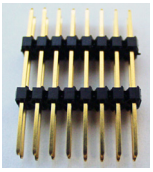
BASIC EXTENSION BOARD (CP741116)

Basic Extension Board (Packed in anti-static bag)	
Digital IO cable, 25 pins	
Analog Input cable, 15 pins	
Small material: Screws x 4 Washer x 4 Standoff x 4	  
CD-Rom Manuals	
Package contents slip	

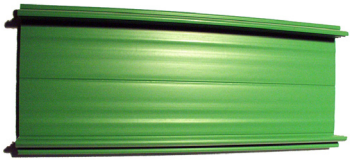
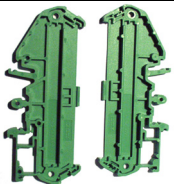
DIGITAL EXTENSION BOARD (CP741118)

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	
CD-Rom Manuals	
Package contents slip	

ANALOG EXTENSION BOARD (CP741117)

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	
CD-Rom Manuals	
Package contents slip	

HOUSING FOR EXTENSION BOARDS (CP741119)

Baseplate	
Side panels (2x)	
Small material: Screws x 4	

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 PROcess-GC, the data-handling will be done inside the Micro-GC itself, no external workstation (-software) is needed anymore. 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 (like valves) itself, also communication to process-computers takes often 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, relay's, DAC's etc, over a relatively small distance (up to 10m). This bus is only intended for extension of the external I/O.

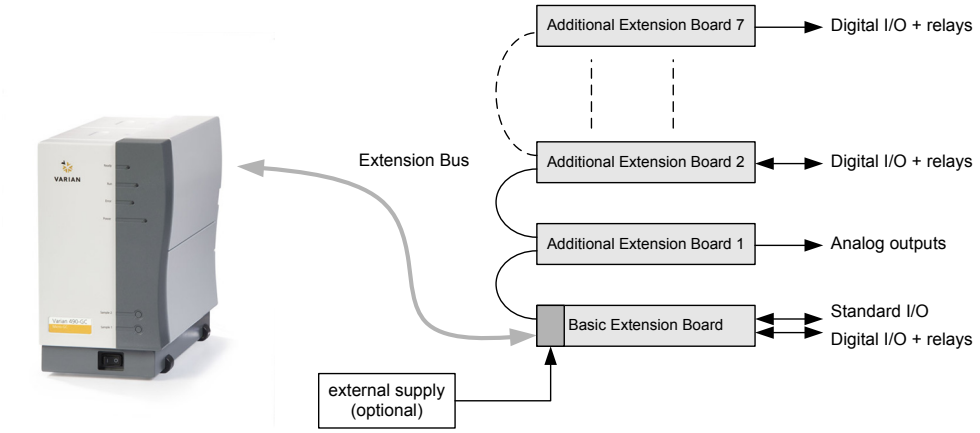
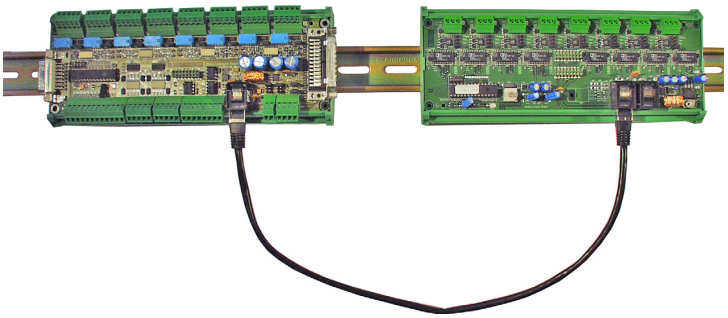


Figure 1: Extension Boards connected to the Micro-GC PRO

Several board-types 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 total number of extension boards (including Basic Extension Board) is 3 when using the GC as board supply and 8 using external power supply.

HOUSING AND MOUNTING OPTIONS

All extension boards are prepared to be mounted in a Baseplate on page 7. 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 need a Baseplate) and interconnect them via interconnection board cables.



In case the boards are stacked together, spacers have to be used to realize a stable construction.

NOTE

All Extension Board types will be supplied without Baseplate.

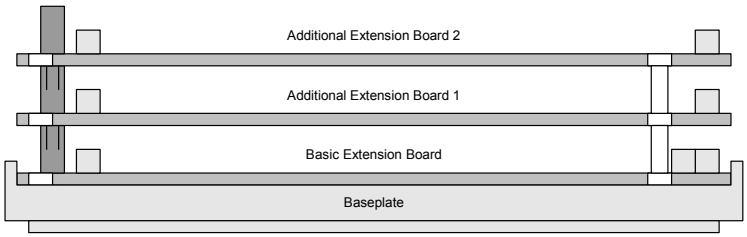


Figure 2: Example of stacked Extension Boards

Available Extension boards:

1. Basic Extension Board on page 15.
2. Analog Extension Board on page 27.
3. Digital Extension Board on page 33.

CONNECT BASIC EXTENSION BOARD

CAUTION

Switch the Micro-GC PRO off, 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 3.

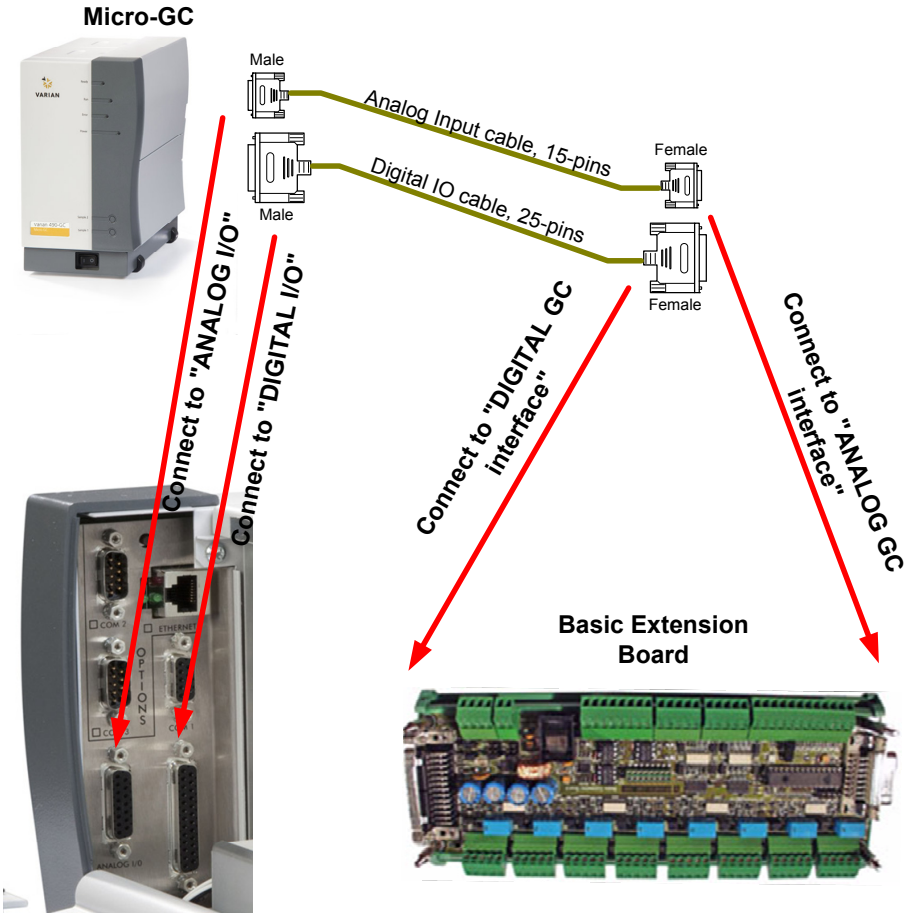


Figure 3: Basic Extension Board connection to Micro-GC PRO

In case NO analog inputs are required for the application, the Analog Input cable can be omitted.

POWER SUPPLY

All Extension Boards are powered by 12 Volt DC.
Two Power supply options are possible:

1. 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).
2. 12 Volt DC from an external +12Volt supply. This option can be used when galvanic isolation is required, or when more than 3 extension boards are connected.

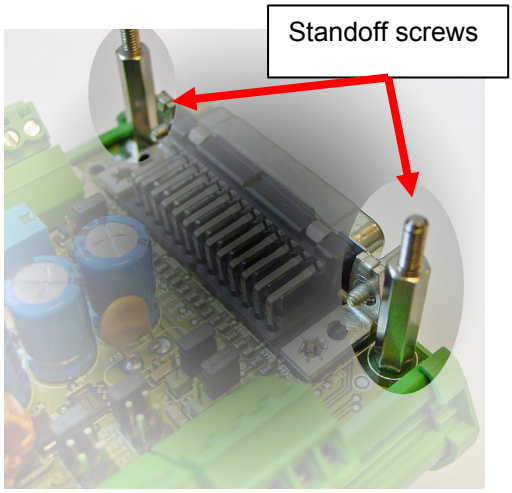
Selection between the power sources must be done via jumpers on page 17 on the Basic Extension Board on page 15.

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).

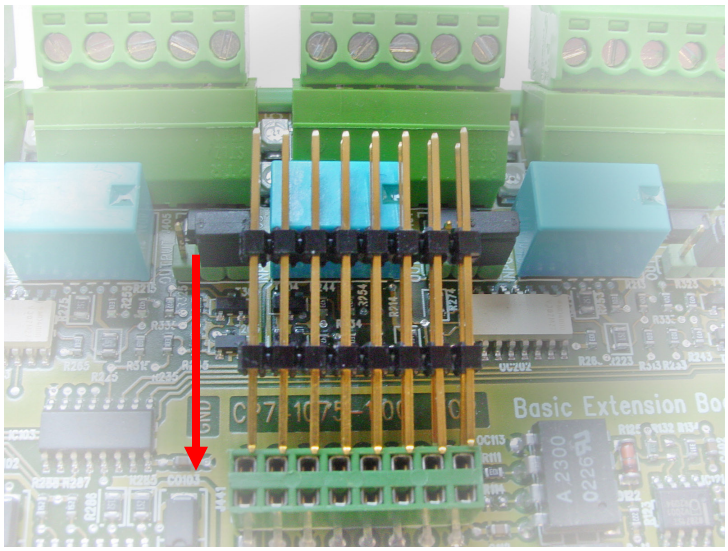
CONNECTING EXTENSION BOARDS

Extension Boards contain parts that can be damaged by electrostatic discharge. Take care for proper grounding before handling.

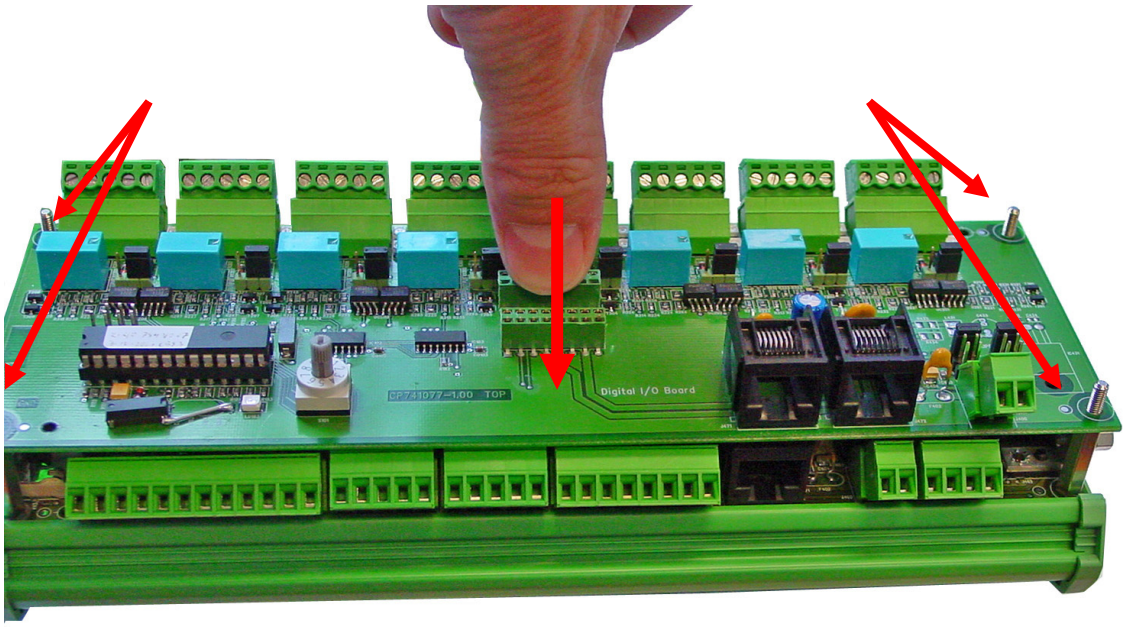
- To connect Analog or Digital Extension board on top off the Basic Extension Board replace the four corner screws for four standoff screws.



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



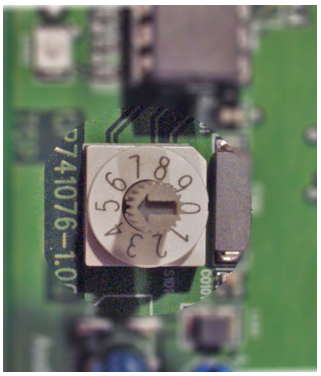
- Place now the used Extension board carefully over the four standoffs, gently press on the connector (in the middle of the board) to ensure a good electrical connection with the Basic Extension Board.



- Two possibilities now, secure board with four nuts or expand again with an Extension Board using the same procedure as mentioned above.

NOTE

Set the "Board ID" on page 40 switch in the correct position (do not use "0" position).



BASIC EXTENSION BOARD

Extension Boards contain parts that can be damaged by electrostatic discharge. Take care for proper grounding before handling.

The Basic Extension Board contains the general Micro-GC I/O-signals, 8 opto-decoupled digital I/O lines and 8 contact closures relays (contact rating: 0.5A-120VAC, 1A-30VDC or 0.15A-48VDC). 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.

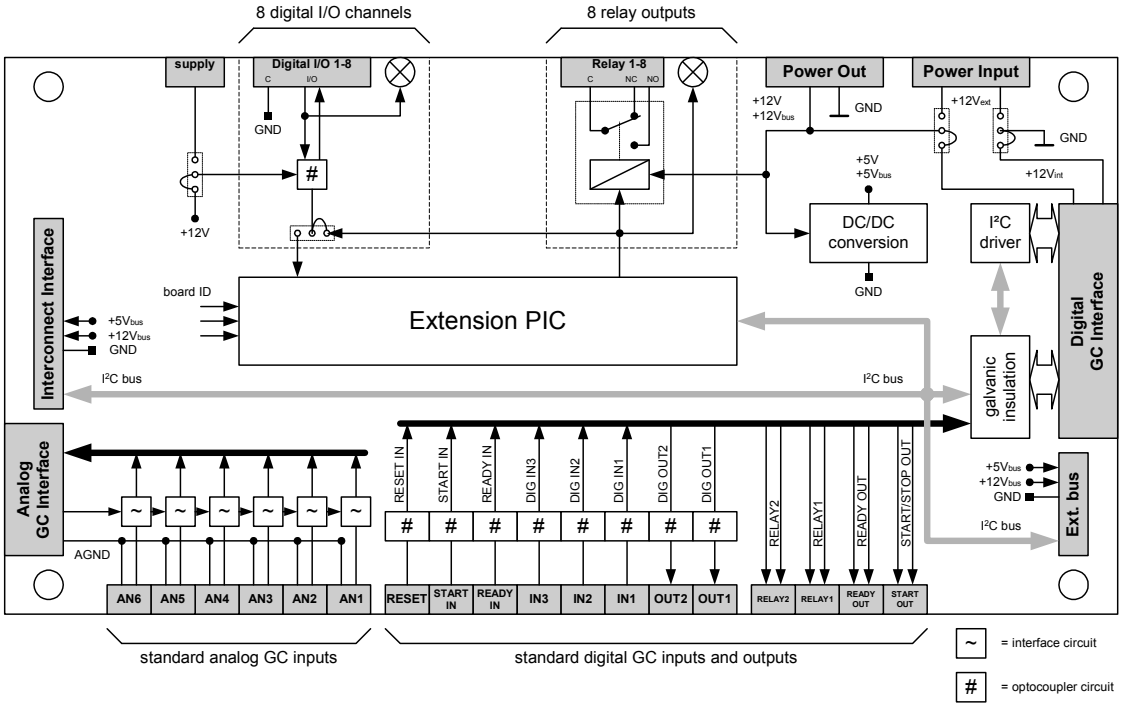
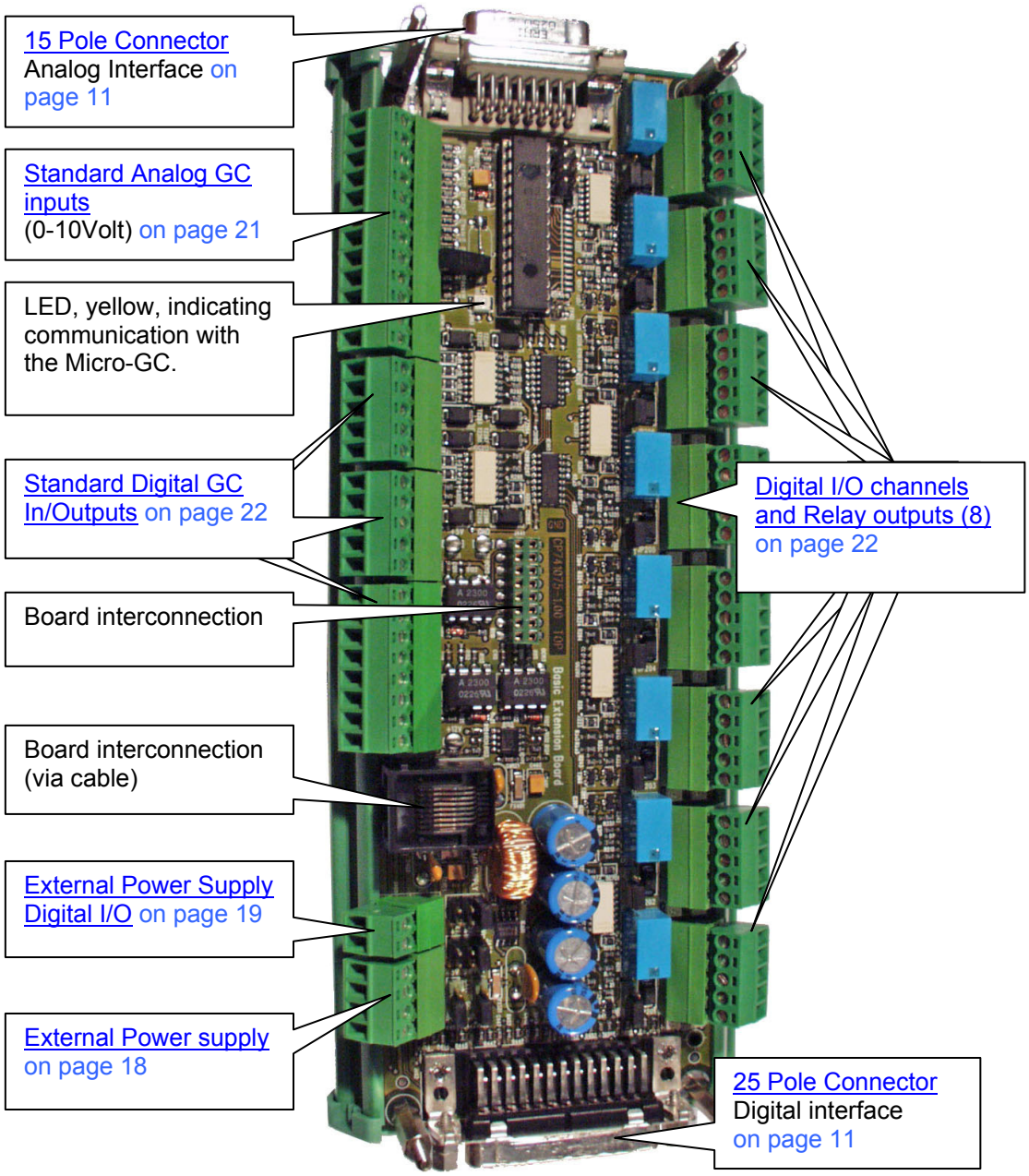


Figure 4: Basic Extension Board

BASIC EXTENSION BOARD LAY-OUT

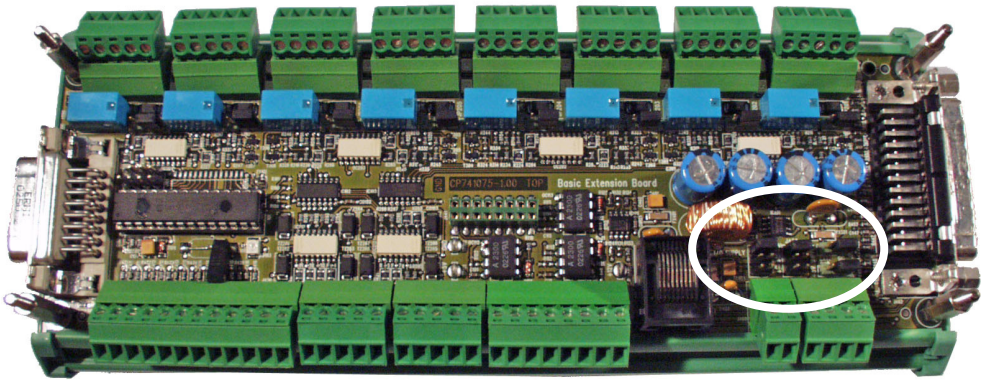
Click on the link inside the boxes, this will guide you to detail information.



POWER SUPPLY

Refer to the chapter Power supply on page 12.

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.



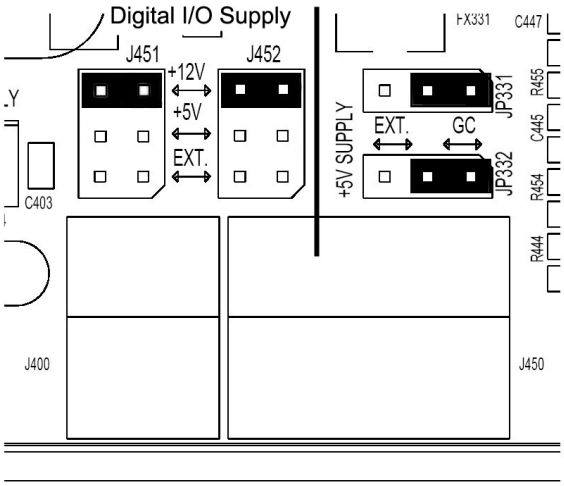


Figure 5: Power supply jumpers

0HEXTERNAL POWER SUPPLY

The jumpers JP331 and JP332 (see Figure: 5) are used to switch from 12 Volt coming from the Micro-GC PRO and an external 12 Volt voltage.

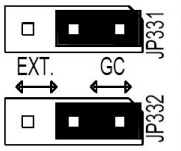
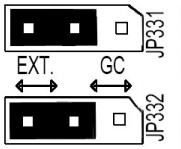
Power source	JP331 and JP332 Jumpers
12 Volt from Micro-GC PRO Maximum of 3 boards. **Default settings**	 **see note!**
12 Volt form External Power Supply	 **see note!**

Table 1: Power Source Jumpers

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

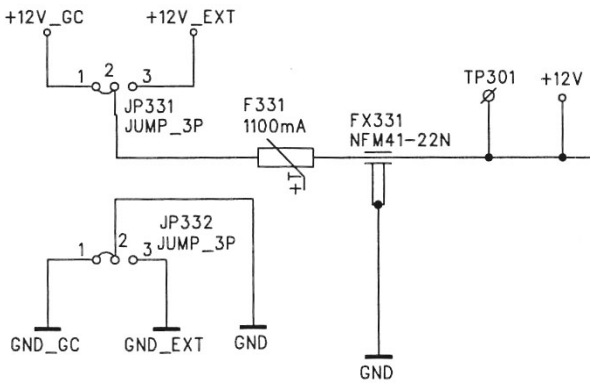


Figure 6: Schematic diagram of JP331 and JP332 (power supply) jumpers

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.

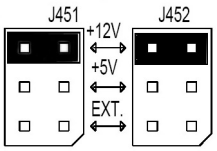
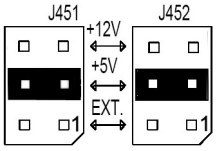
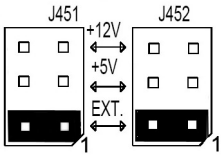
Digital voltage I/O possibilities	JP451and JP452 (jumper)
+ 12 Volt (from Micro-GC PRO). **Default settings**	 **see note!**
+ 5 Volt (from Micro-GC PRO).	 **see note!**
+ 5 to +24 Volt (External power supply). The External power supply must be connected to connector J400.	 **see note!**

Table 2: Digital Voltage I/O Jumpers

NOTE

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

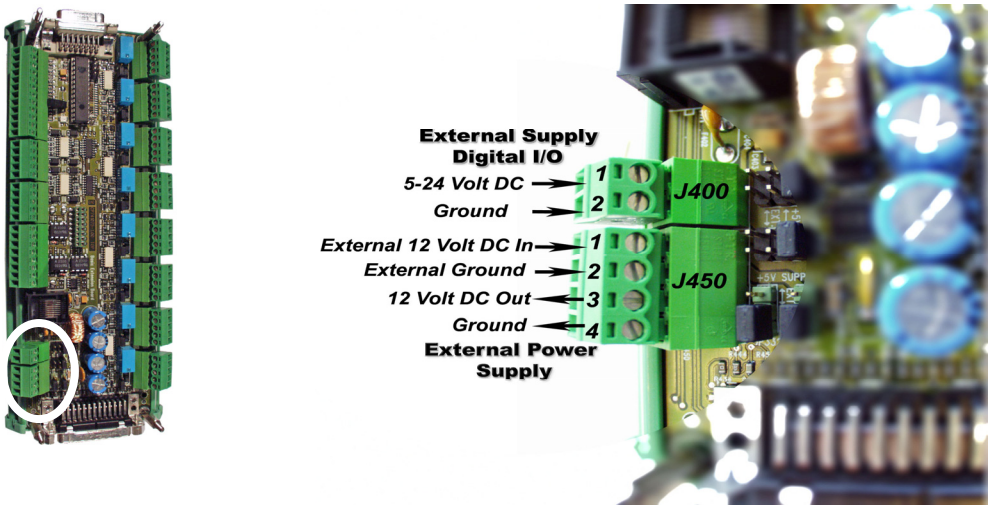


Figure 7: Power connections Basic Extension Board

CAUTION

During installation of the External Power supply connect the wires according figure 6. Misconnection can damage the Extension Boards!

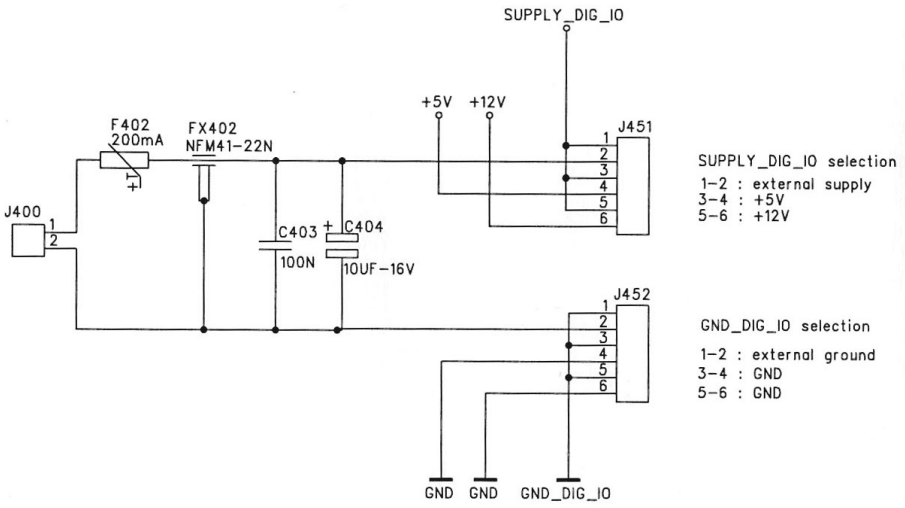
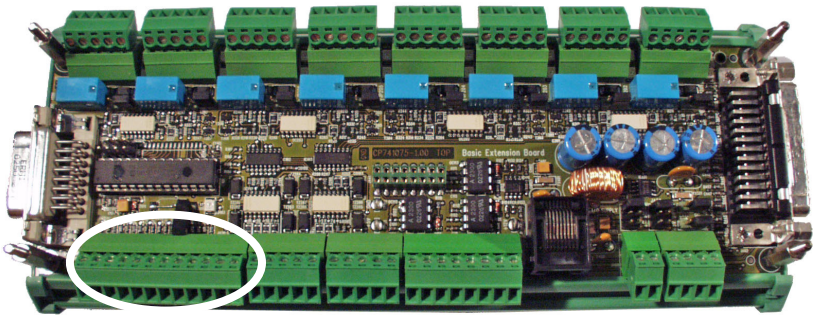


Figure 8: Schematic diagram of J400, J451 and J452 Power connector

2HSTANDARD ANALOG GC INPUTS

Six (6) Analog inputs are available for custom use.
The input voltage range is 0-10 Volt.
When using the Analog Inputs, the Basic Extension Board needs to be connected to the Micro-GC PRO with the 15-pins Analog Input Cable on page 11.



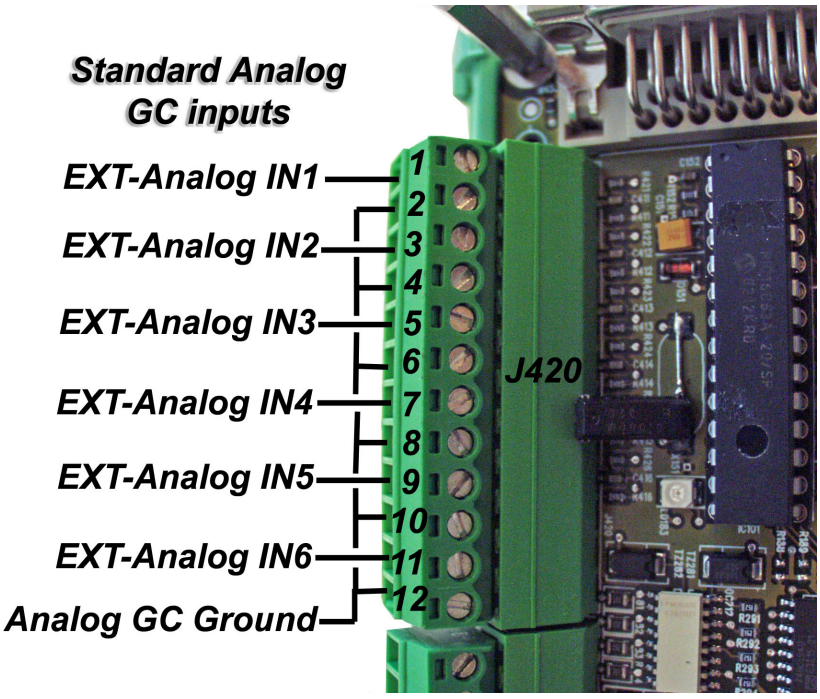
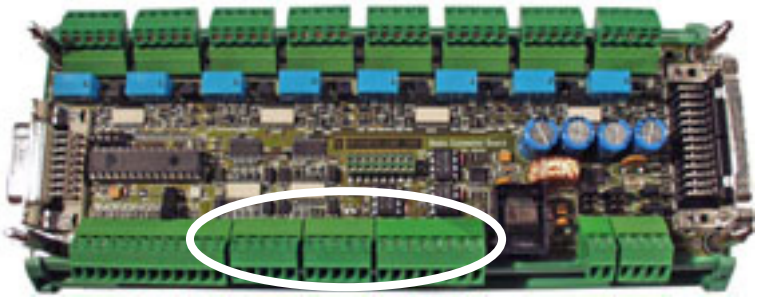


Figure 9: Standard Analog GC inputs

STANDARD DIGITAL GC I/O

The standard Digital Micro-GC in and outputs.
For more details, refer to the Micro-GC User Manual, chapter “external digital I/O”.



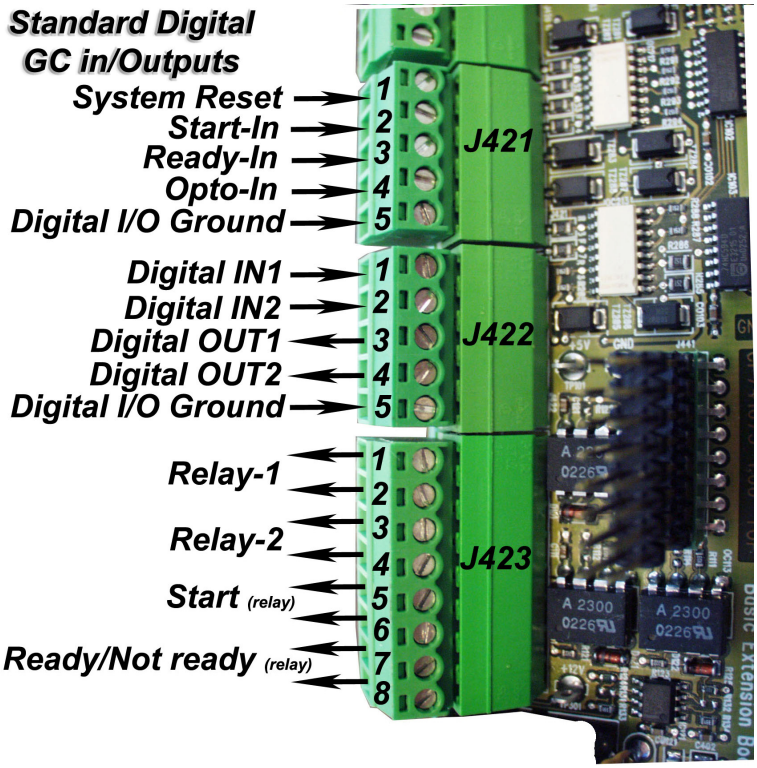


Figure 10: Standard Digital GC In/Outputs

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.

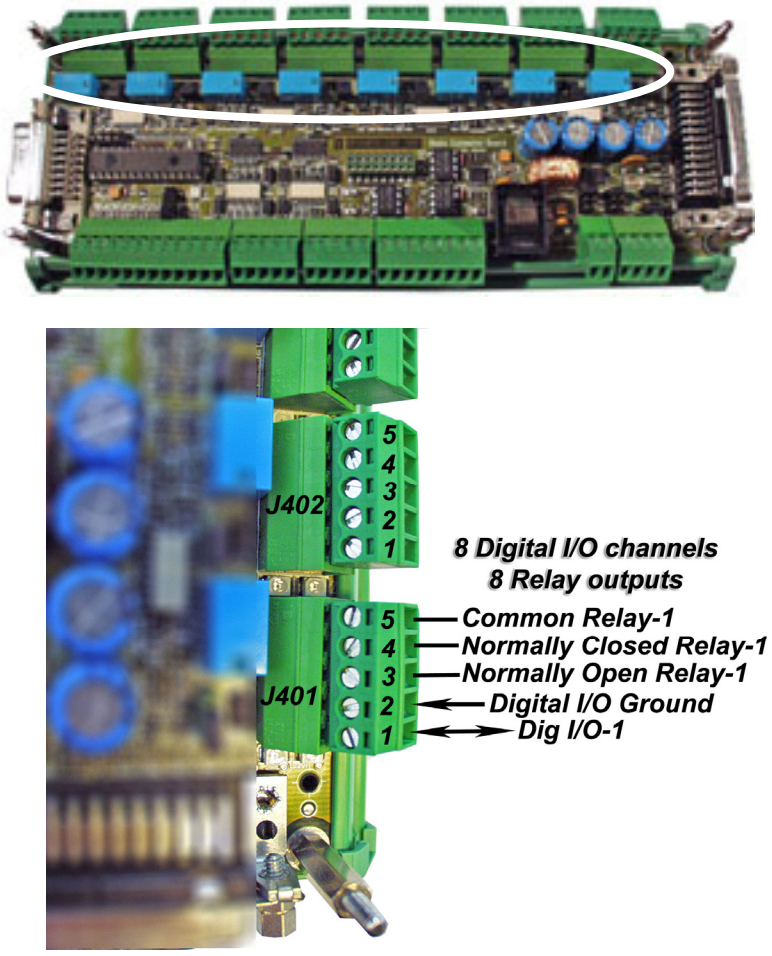


Figure 11: Digital I/O channels and Relay outputs

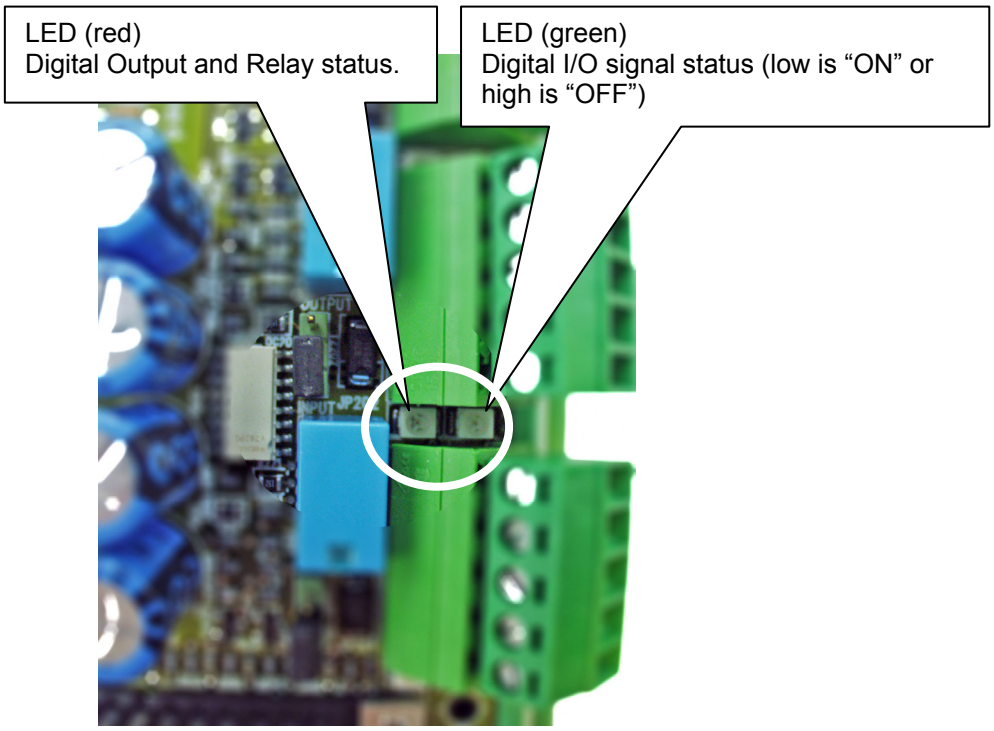


Figure 12: Digital I/O jumper, Relay and LED

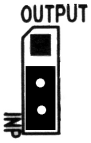
Digital In/Output	JP20X Jumper
Digital Input	
Digital Output **Default setting**	

Figure 13: Digital In/Output jumper

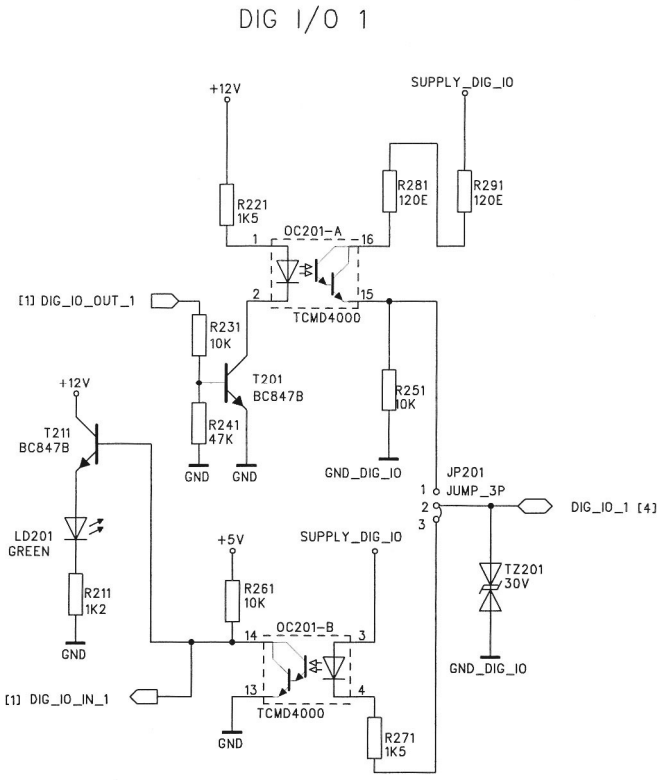


Figure 14: Schematic diagram of the Digital In/Outputs

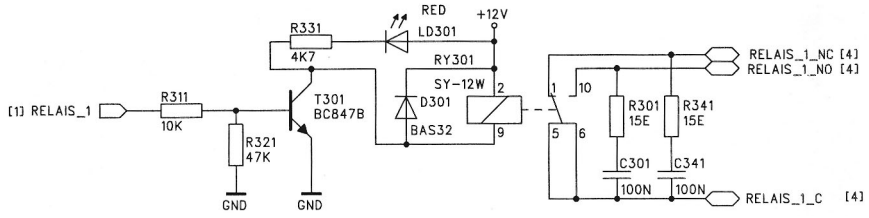


Figure 15: Schematic diagram of the Relay output

ANALOG EXTENSION BOARD

Extension Boards contain parts that can be damaged by electrostatic discharge. Take care for proper grounding 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 galvanic isolated (in case of an external power supply) from the Micro-GC PRO.

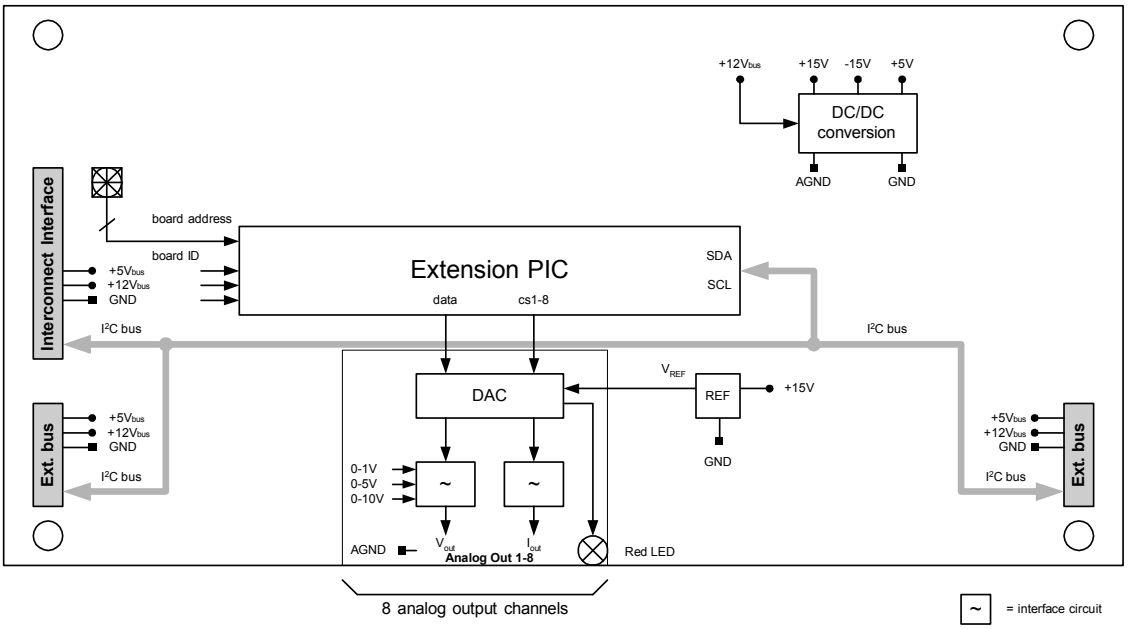
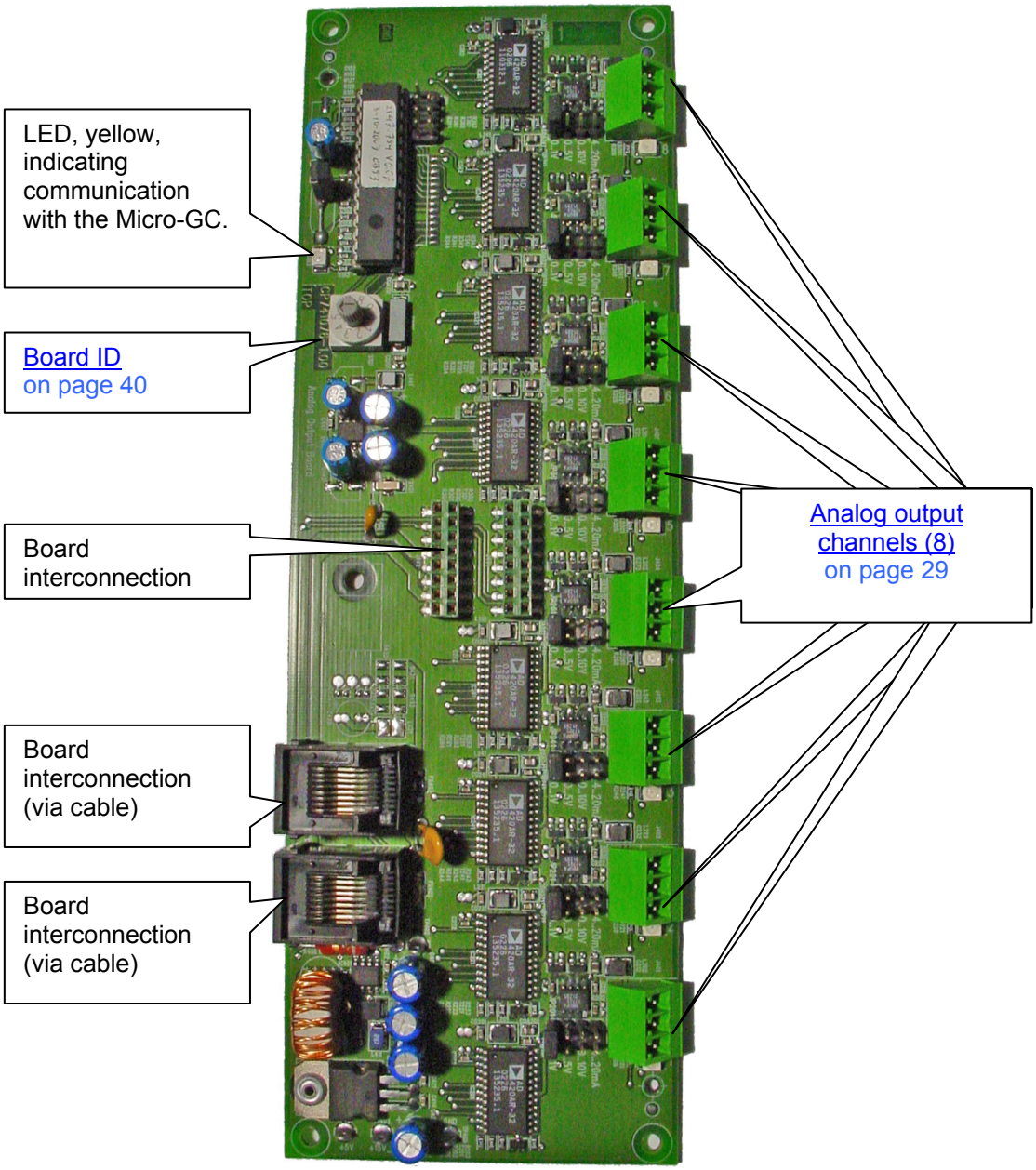


Figure 16: Analog Extension Board

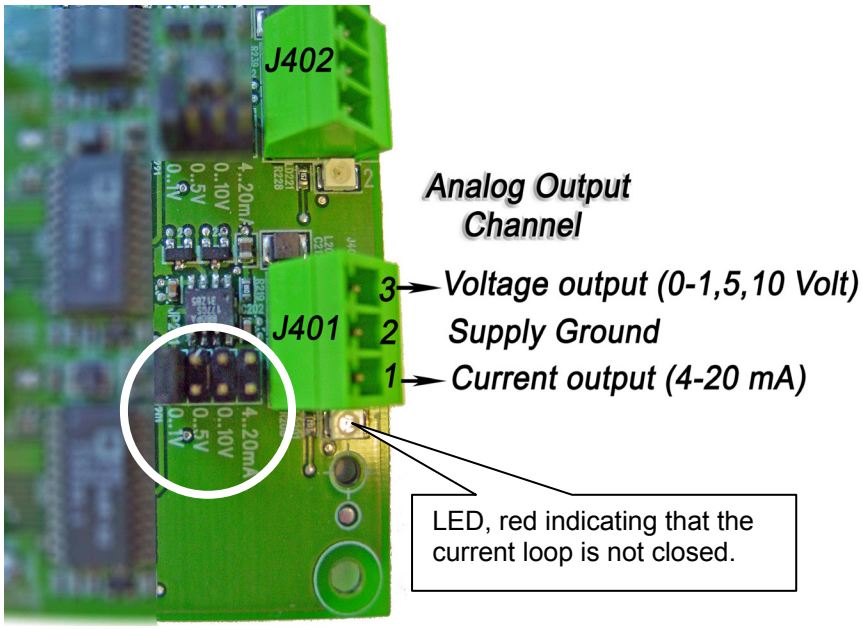
ANALOG EXTENSION BOARD LAY-OUT

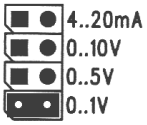
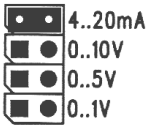
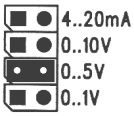
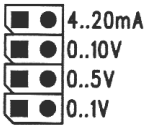
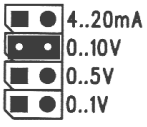
Click on the link inside the boxes, this will guide you to detail information.



ANALOG OUTPUT CHANNELS

Each Analog Output Channel has his own connector, jumper and LED.



Analog Output (Voltage)	JPXXX Jumper	Analog Output (Current)	JPXXX Jumper
0 – 1 Volt (max 10mA)		4 – 20 mA	
0 – 5 Volt (max 10mA)		0 – 20 mA No Jumper	
0 – 10 Volt (max 10mA) **Default settings**			

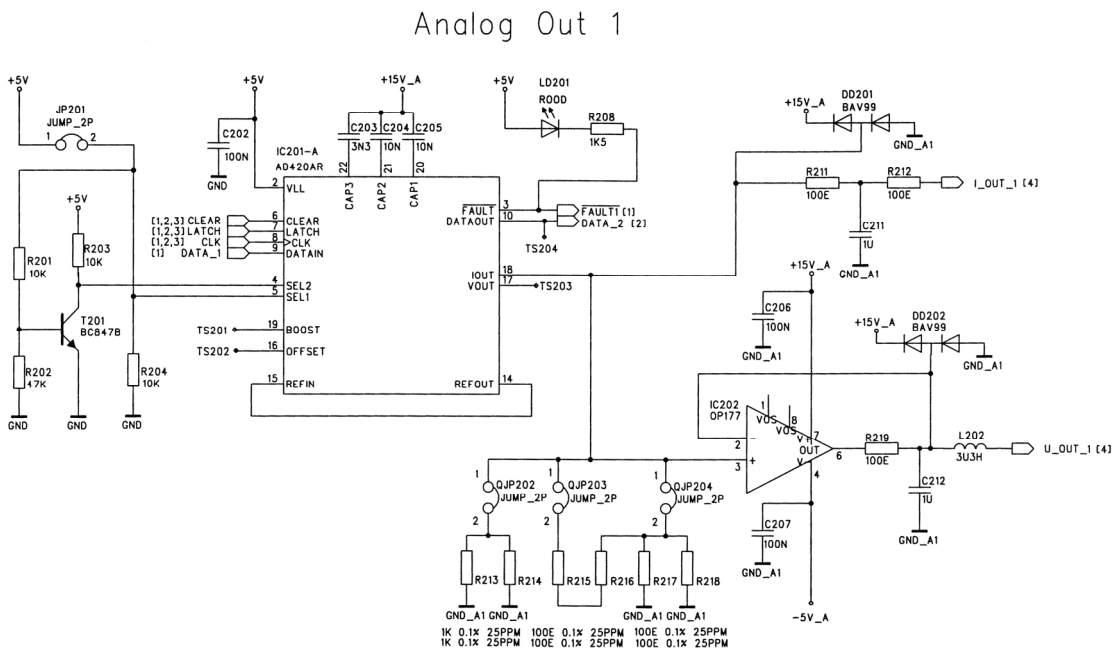
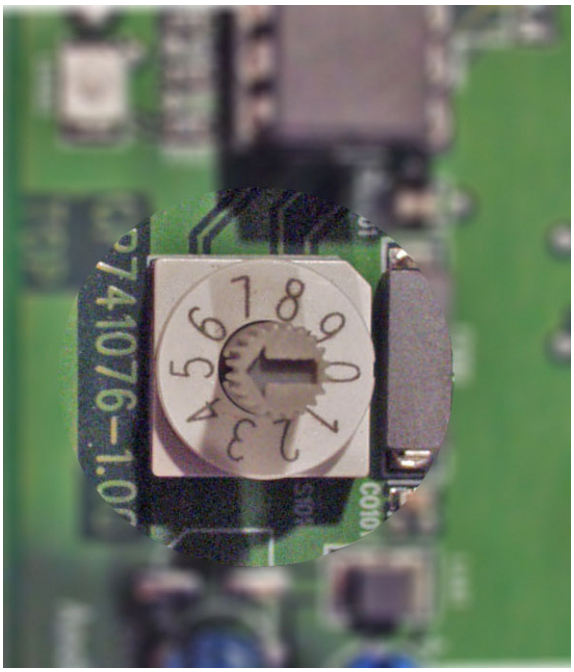


Figure 17: Schematic diagram Analog Output

BOARD ID

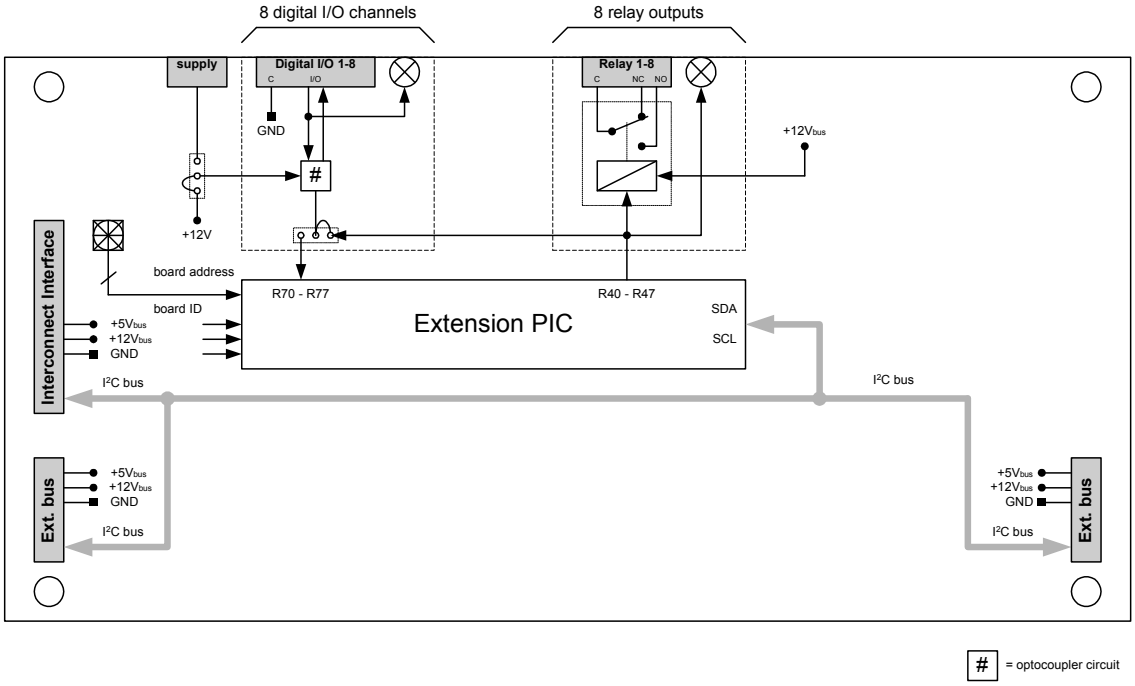
Each of the connected Extension Boards must be set with a unique board address, selectable with the “Board ID” switch.
The “0” position must not be used (reserved for the Basic Extension Board).



DIGITAL EXTENSION BOARD

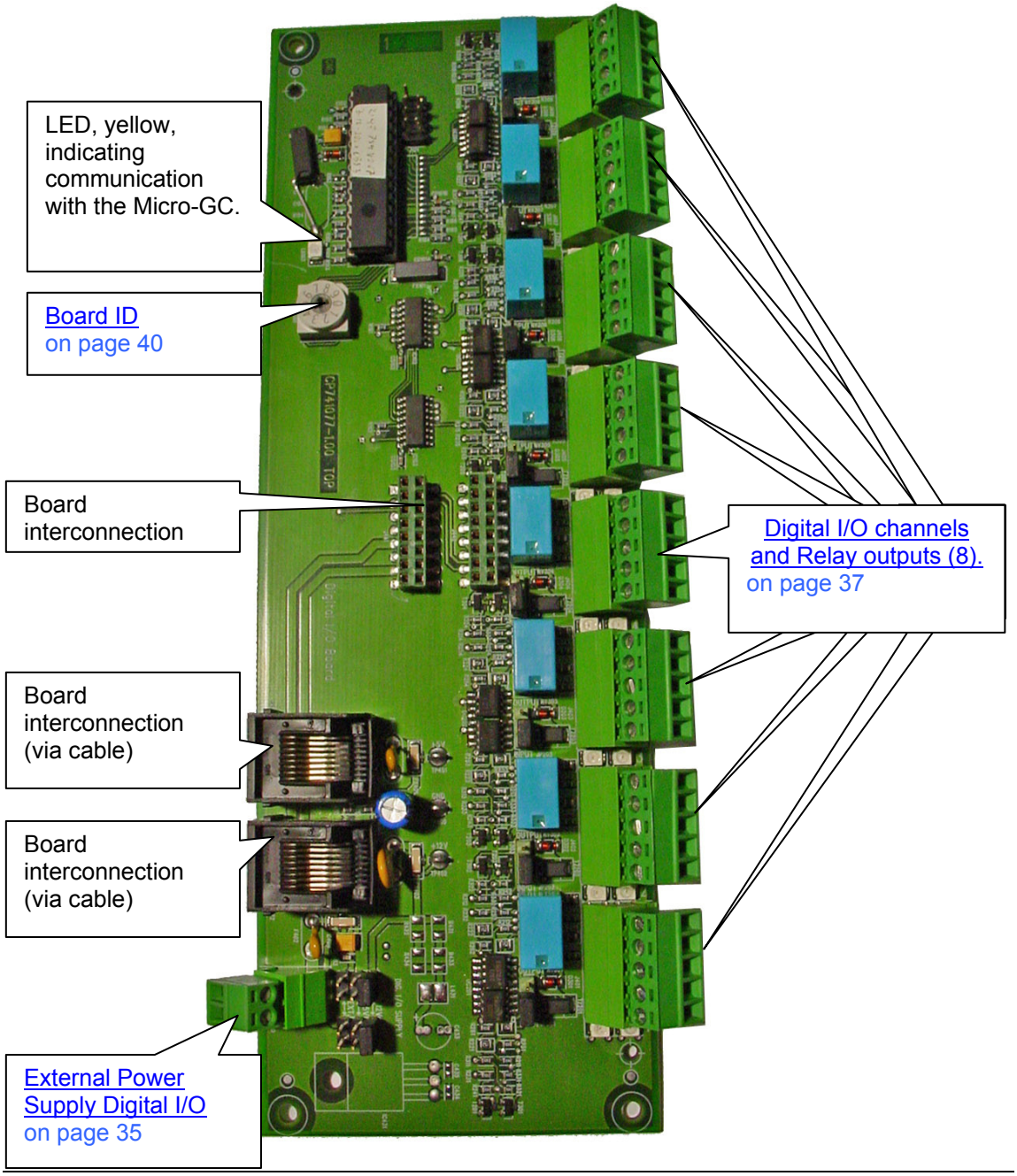
Extension Boards contain parts that can be damaged by electrostatic discharge. Take care for proper grounding before handling.

The Digital Extension Board contains 8 opto-decoupled digital I/O lines and 8 contact closures 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. 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.



DIGITAL EXTENSION BOARD LAY-OUT

Click on the link inside the boxes, this will guide you to detail information.



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.

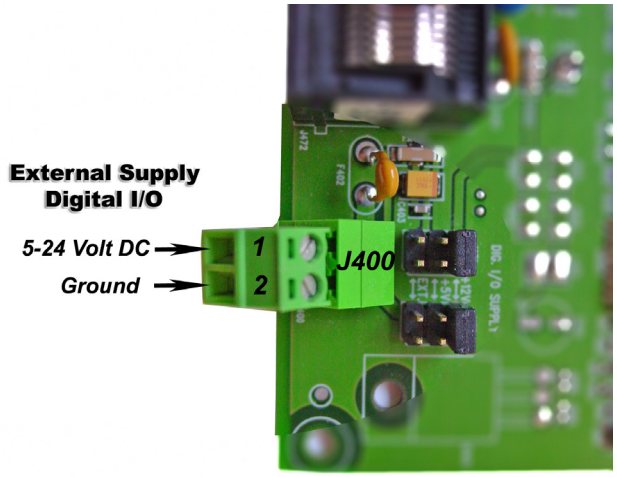


Figure 18: Digital Voltage I/O Jumpers

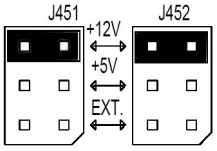
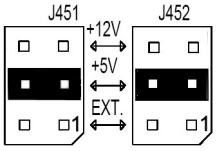
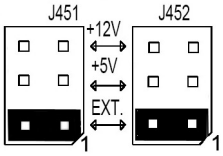
Digital voltage I/O possibilities	JP451and JP452 (jumper)
+ 12 Volt (from Micro-GC PRO). **Default settings**	 **see note!**
+ 5 Volt (from Micro-GC PRO).	 **see note!**
+ 5 to +24 Volt (External power supply). The External power supply must be connected to connector J400.	 **see note!**

Figure 19: Power connections Digital Extension Board

NOTE

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

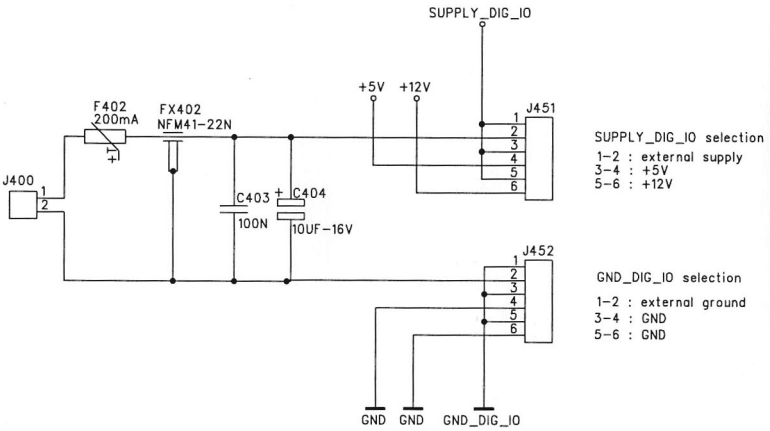


Figure 20: Schematic diagram of J400 Power connector

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.

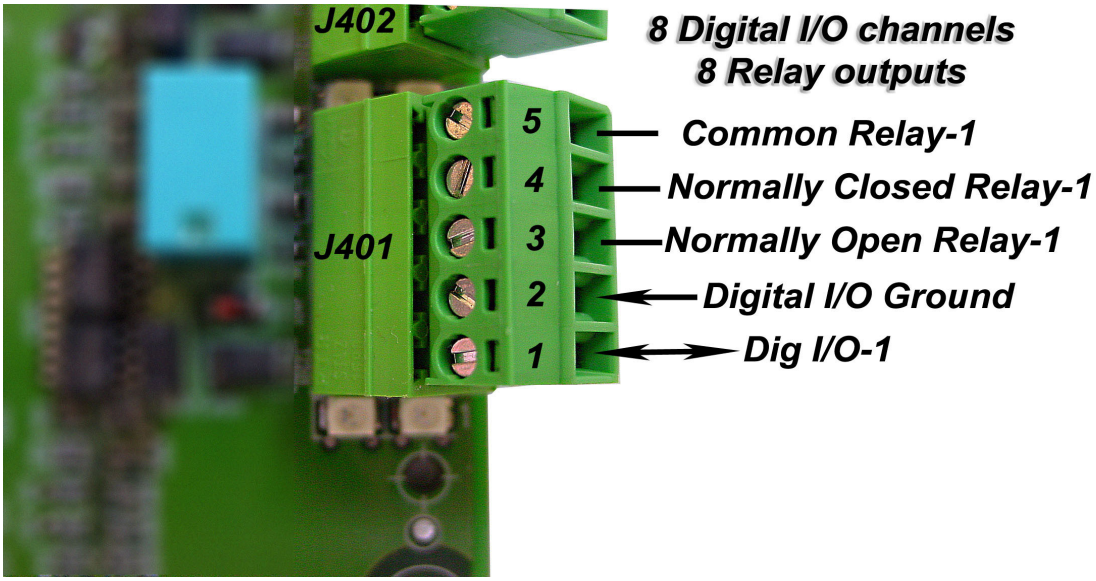


Figure 21: Digital I/O channels and Relay outputs

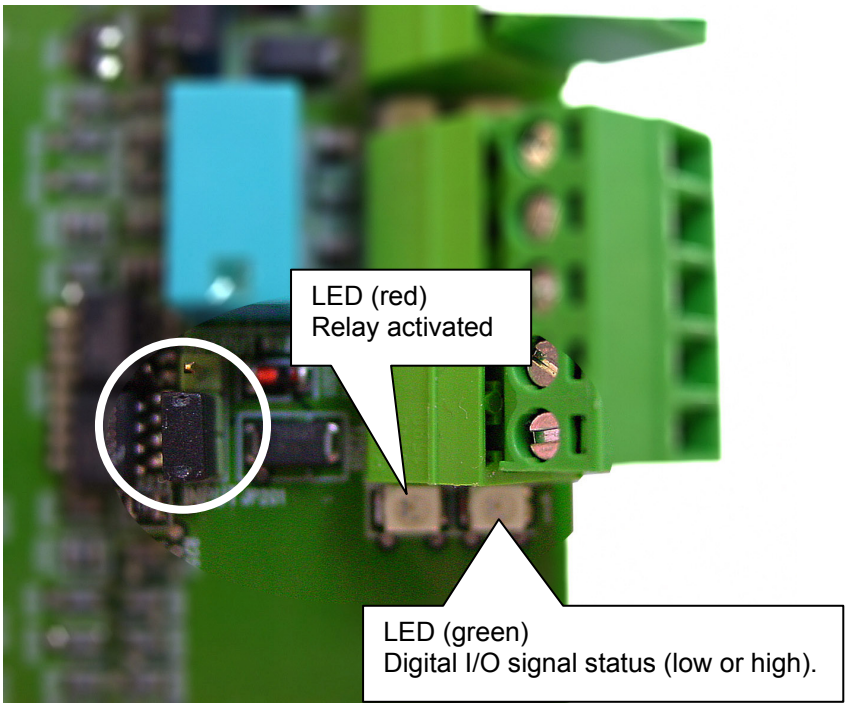


Figure 22: Digital I/O jumper, Relay and LED

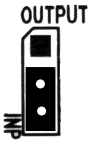
Digital In/Output	JP20X Jumper
Digital Input	
Digital Output **Default settings**	

Figure 23: Digital In/Output jumper

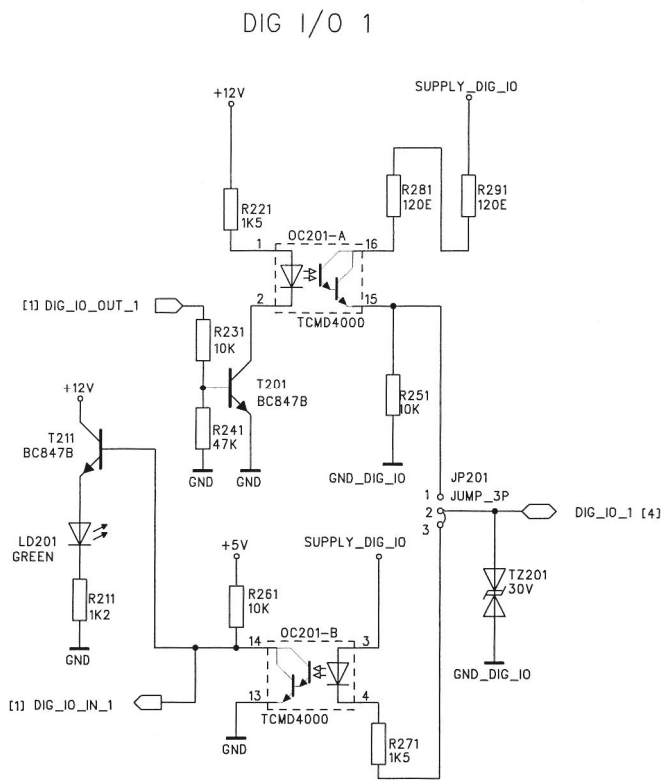


Figure 24: Schematic diagram of the Digital In/Outputs

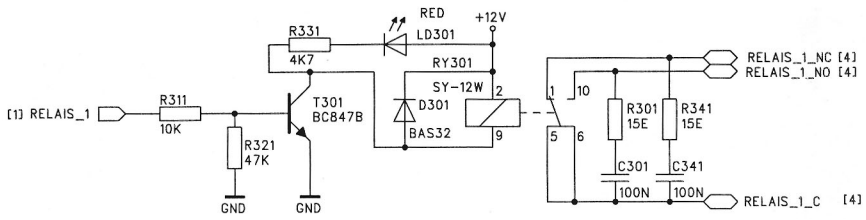
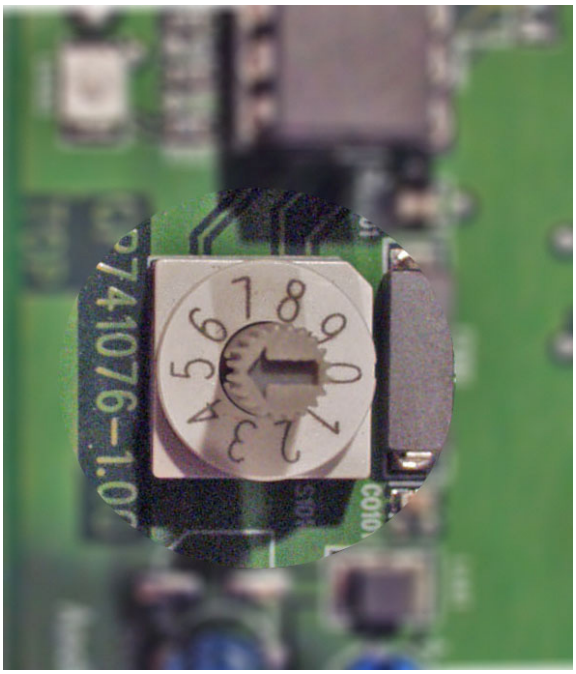


Figure 25: Schematic diagram of the Relay output

BOARD ID

Each Extension Board must have a unique board address selectable with the “Board ID” switch. The “0” position may not be used (reserved for the Basic Extension Board).



SHIPPING INSTRUCTIONS

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

1. Include all cables.

CLEANING INSTRUCTIONS

To keep the Micro-GC PRO Extension Boards surface clean refer to the remarks given below:

- Clean only when Micro-GC PRO Extension Boards are disconnected from the Micro-GC PRO or other equipment.
- Use a soft (no hard or abrasive) brush to carefully brush away all dust and dirt.
- Be careful not to 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.