# MultiChoice
# *BASIC*
# USB
# ETH


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# 1 Imprint

Soft & Hardware Entwicklung Goldammer GmbH

Manual: *MultiChoice Basic USB*
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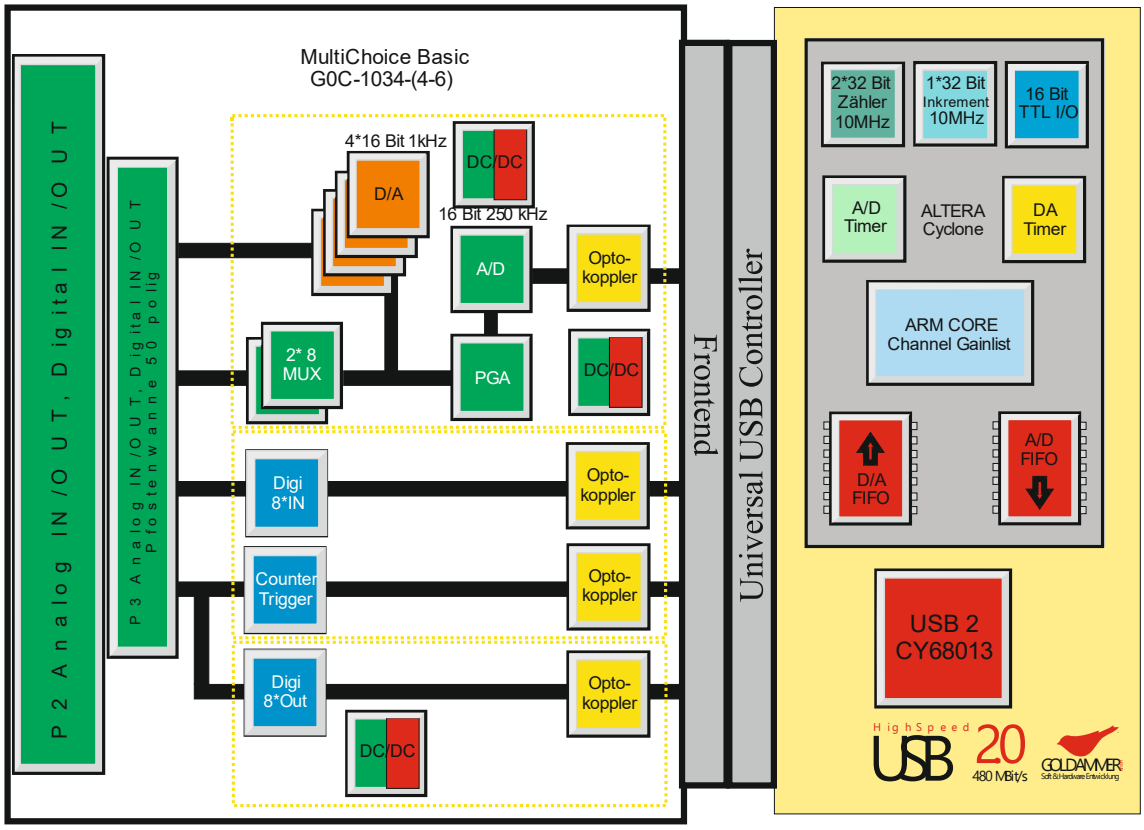
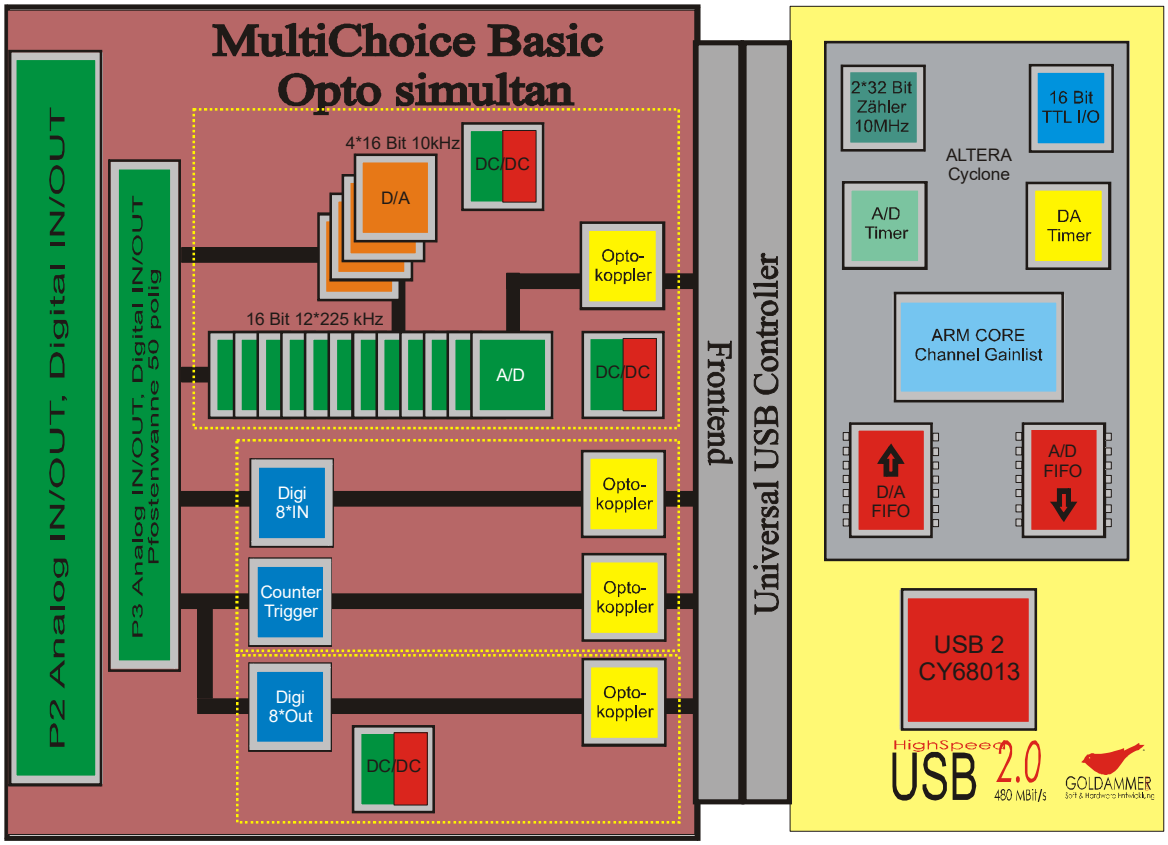
# 2 Introduction

## 2.1 MultiChoice PCI and USB-Series

The intelligent data acquisition cards of the MultiChoice Basic series offer a maximum of flexibility as their powerful family members of the USB generation do.
Unrivaled reliability and very high operating speeds are combined with easy configurability by the user. Depending on the type of the card galvanic decoupling is available. Furthermore MultiChoice Basic offers integrated counters and is able to work with pulse width modulation and frequency measurement. It is possible to customize the cards to individual needs. The all new card generation not only offers a wide variety of functionality it also offers the capability to directly control relays and to read signals with up to 24V. This is the base for a wide range of different applications:

- Very fast control systems
- Fast control of test systems
- Controlling counter readings, pulse widths/frequencies
- Simultaneous measuring and outputting of signals
- Direct control of relays with up to 35V
- Galvanic decoupling, voltage resistant up to 1000V





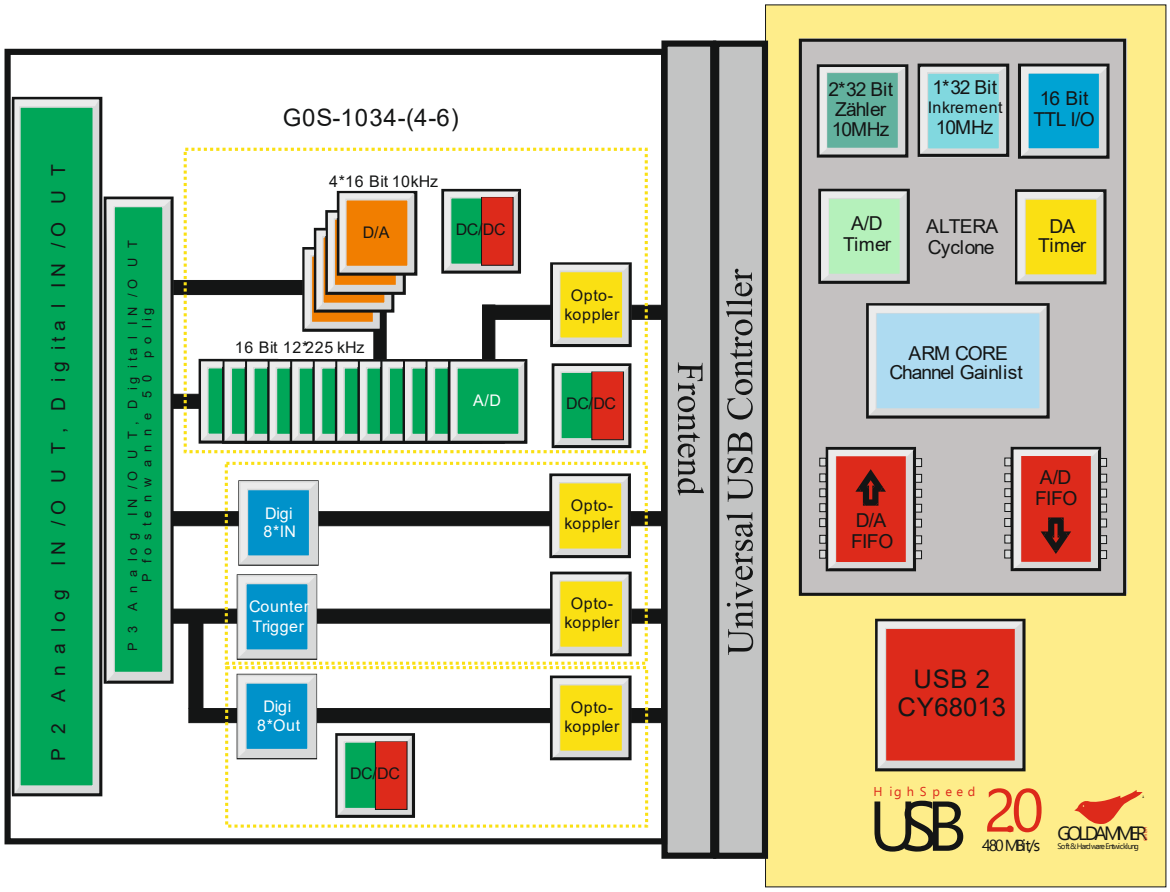

The USB versions of these measuring cards are equipped with an USB 2.0-interface. With full downward compatibility this version offers 40 times of the USB1.1 data rate. Any of the cards can be hot plugged and are operative immediately. After connecting to the system they are operative immediately.

- No Configuration Conflicts
  The measuring cards are configured after connecting them to the PC system and are ready to run immediately.
- High bandwidth with USB2.0 while fully downward compatible to USB1.1.

MultiChoice cards allow simultaneous measuring and outputting of data with up to two independent sequential control systems. Each sequence has associated its own channel list. So not only a time synchronized measuring is possible but also a time synchronized output of analog and digital data and the output of counter readings. Furthermore the cards offer a lot of different trigger modes which allow starting sequences depending on various signals.

- Programmable channel lists
  - Analog inputs
  - Digital inputs (synchronized to A/D data)
  - Counters (synchronized to A/D data)
  - Analog outputs
  - Digital outputs
- Single processing: Measuring a single predefined input value is possible
- Block processing: with and without flexible signaling

Numerous triggers r
- External clock
- External, digital trigger




## 2.2 Signal Description

The measurement cards offer a wide range of available inputs and outputs. They differ depending on the type of cards in data width, data rate, and functionality.

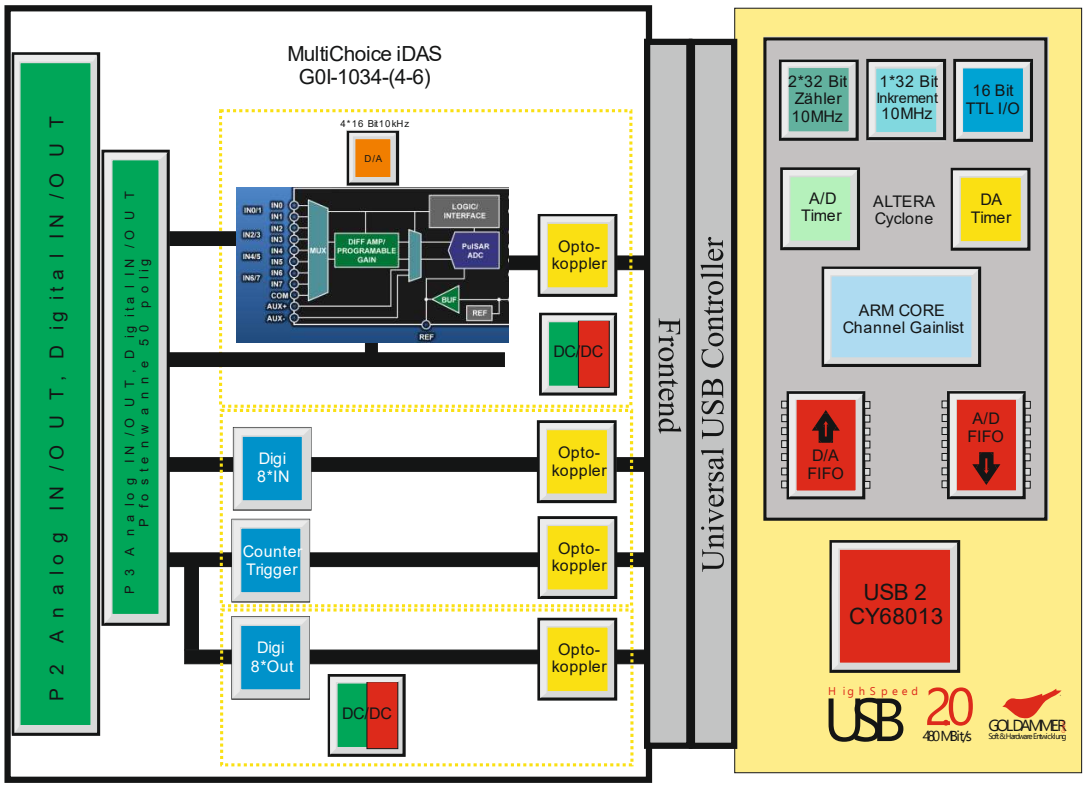
| Order code: | Analog In | Resolution | Sample Rate | D/A | Digital In | Digital Out | Counter | Signal Coupling |
|---|---|---|---|---|---|---|---|---|
| **OEM Version without case, equipped with Pin Terminals** | | | | | | | | |
| GOC-1034-9 | 8SE | 16 Bit | 150kHz | | 4 Bit In<br>Ue. 2.4V-30V | 4 Bit Out<br>Ua. 0-35V 60mA | 1 * 32 Bit | **(optocoupled)** |
| GOC-1034-6 | 16SE/8DI | 16 Bit | 250kHz | 4*16 Bit | 8 Bit In<br>Ue. 2.4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | **(optocoupled)** |
| GOC-1034-2 | 16SE/8DI | 16 Bit | 250kHz | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOC-1034-3 | 16SE/8DI | 16 Bit | 250kHz | 4*16 Bit | 48 Bit TTL | | 2 * 32 Bit | |
| **Standard Version in rugged Aluminum Case**<br>**Weidmüller Screw Terminals** | | | | | | | | |
| GOC-1034-8 | 8SE | 16 Bit | 150kHz | | 4 Bit In | 4 Bit Out | 1 * 32 Bit | **(optocoupled)** |
| GOC-1034-1 | 16SE/8DI | 16 Bit | 250kHz | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOC-1034-5 | 16SE/8DI | 16 Bit | 250kHz | 4*16 Bit | 8 Bit In<br>Ue. 2.4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | **(optocoupled)** |
| **Standard Version in rugged Aluminum Case**<br>**Digital Inputs/Outputs are equipped with Weidmüller Screw Terminals**<br>**Analog BNC connectors** | | | | | | | | |
| GOC-1034-0 | 16SE/8DI | 16 Bit | 250kHz | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOC-1034-4 | 16SE/8DI | 16 Bit | 250kHz | 4*16 Bit | 8 Bit In<br>Ue. 2.4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | **(optocoupled)** |

## 2.3 Signal descriptions iDAS

The newest family members of the iDAS data acquisition systems allow the processing of input signals in the range of ± 640 mV to ± 24.576 V with a resolution of 16 bits and a

maximum sum sampling rate of 1 to 2 MHz depending on the type of the device. The available eight channels per transducer can be used with maximum flexibility, depending on the system 1 to 2 transducers are in the system. Thus, applications with e.g. 8/16 ground-specific inputs, 4/8 real differential inputs or a combination of both can be configured, so current measurement via shunt resistor is also easy to implement and no additional pre-circuit is required.

| Order code: | Analog In | Resolution | Sample Rate | D/A | Digital In | Digital Out | Counter | Signal Coupling |
|---|---|---|---|---|---|---|---|---|
| **OEM Version without case, equipped with Pin Terminals** | | | | | | | | |
| GOI-1034-9 | 8SE/4DI | 16 Bit | 1MHz | | 4 Bit In<br>Ue. 2,4V-30V | 4 Bit Out<br>Ua. 0-35V 60mA | 1 * 32 Bit | **(optocoupled)** |
| GOI-1034-6 | 16SE/8DI | 16 Bit | 2MHz | 4*16 Bit | 8 Bit In<br>Ue. 2,4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | **(optocoupled)** |
| **Standard Version in rugged Aluminum Case** | | | | | | | | |
| **Weidmüller Screw Terminals** | | | | | | | | |
| GOI-1034-8 | 8SE/4DI | 16 Bit | 1MHz | | 4 Bit In | 4 Bit Out | 1 * 32 Bit | **(optocoupled)** |
| GOI-1034-5 | 16SE/8DI | 16 Bit | 2MHz | 4*16 Bit | 8 Bit In<br>Ue. 2,4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | **(optocoupled)** |
| **Standard Version in rugged Aluminum Case** | | | | | | | | |
| **Digital Inputs/Outputs are equipped with Weidmüller Screw Terminals** | | | | | | | | |
| **Analog BNC connector** | | | | | | | | |
| GOI-1034-4 | 16SE/8DI | 16 Bit | 2MHz | 4*16 Bit | 8 Bit In<br>Ue. 2,4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | **(optocoupled)** |




### 2.3.1 Analog Inputs:

Analog data acquisition serves to measure analog voltages. It is possible to measure single ended and dual ended. In the first mode the voltage is measured relative to ground of the card. This mode allows measuring voltages only. Dual ended measuring means to measure between two input terminals. The negative terminal should be connected with a resistor 4k70 to the ground of the card which serves to associate to a referential potential. This mode allows to

measure voltages and, aided by a shunt, also currents. Dual ended measuring cuts the number of available inputs in half because each channel has associated two input terminals.
The inputs are available with resolutions of 16 bits (65535 quantifying steps)
Any cards are configured by software. No more jumpers have to be set. Furthermore there are numerous options associated to the channels. In example it is possible to set the channel gain individually (1x, 2x, 4, 8x).

| Order code: | Analog In | Resolution | Sample Rate | D/A | Digital In | Digital Out | Counter | Signal Coupling |
|---|---|---|---|---|---|---|---|---|
| **OEM Version without case, equipped with Pin Terminals** | | | | | | | | |
| GOS-1034-9 | 6SE | 16 Bit | 225kHz ** | | 4 Bit In<br>Ue. 2,4V-30V | 4 Bit Out<br>Ua. 0-35V 60mA | 1 * 32 Bit | (**optocoupled**) |
| GOS-1034-6 | 12SE | 16 Bit | 225kHz ** | 4*16 Bit | 8 Bit In | 8 Bit Out | 2 * 32 Bit | (**optocoupled**) |
| GOM-1034-6 | 2SE | 16 Bit | 2500kHz ** | 4*16 Bit | 8 Bit In<br>Ue. 2,4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | (**optocoupled**) |
| GOS-1034-2 | 12SE | 16 Bit | 225kHz ** | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOS-1034-3 | 12SE | 16 Bit | 225kHz ** | 4*16 Bit | 48 Bit TTL | | 2 * 32 Bit | |
| GOM-1034-2 | 2SE | 16 Bit | 3000kHz ** | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOM-1034-3 | 2SE | 16 Bit | 3000kHz ** | 4*16 Bit | 48 Bit TTL | | 2 * 32 Bit | |
| **Standard Version in rugged Aluminum Case**<br>**Weidmüller Screw Terminals** | | | | | | | | |
| GOS-1034-8 | 8SE | 16 Bit | 225kHz ** | | 4 Bit In<br>Ue. 2,4V-30V, | 4 Bit Out<br>Ua. 0-35V 60mA | 1 * 32 Bit | (**optocoupled**) |
| GOS-1034-1 | 12SE | 16 Bit | 225kHz ** | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOS-1034-5 | 12SE | 16 Bit | 225kHz ** | 4*16 Bit | 8 Bit In<br>Ue. 2,4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | (**optocoupled**) |
| GOM-1034-1 | 2SE | 16 Bit | 3000kHz ** | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOM-1034-5 | 2SE | 16 Bit | 2500kHz ** | 4*16 Bit | 8 Bit In<br>Ue. 2,4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | (**optocoupled**) |
| **Standard Version in rugged Aluminum Case**<br>**Digital Inputs/Outputs are equipped with Weidmüller Screw Terminals**<br>**Analog BNC connectors** | | | | | | | | |
| GOS-1034-0 | 12SE | 16 Bit | 225kHz ** | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOM-1034-0 | 2SE | 16 Bit | 2500kHz ** | 4*16 Bit | 16 Bit TTL | | 2 * 32 Bit | |
| GOS-1034-4 | 12SE | 16 Bit | 225kHz ** | 4*16 Bit | 8 Bit In | 8 Bit Out | 2 * 32 Bit | (**optocoupled**) |
| GOM-1034-4 | 2SE | 16 Bit | 2500kHz ** | 4*16 Bit | 8 Bit In<br>Ue. 2,4V-30V, | 8 Bit Out<br>Ua. 0-35V 60mA | 2 * 32 Bit | (**optocoupled**) |
| ****Per Channel** | | | | | | | | |

### 2.3.2 Analog Outputs:

The analog outputs deliver a voltage. The voltage is kept as long as a new value is applied. After switching on the measuring card all voltages are set to zero volts. Output voltage is ±10Volt.
The outputs are available with resolutions of 16 bits (65535 quantifying steps).

### 2.3.3 Digital Inputs/Outputs without Optocoupling:

Most of the cards of the Basic series offer 16 or 48 digital inputs/outputs. The data direction of these 16 pins is programmable. They can be used as inputs or outputs in groups of four bits. The 48 bit OEM version can be switched between input and output in groups of 16 bits. Digital inputs are able to handle low voltage TTL level voltages up to 5V max.

### 2.3.4 Digital Inputs/Outputs with Optocoupling:

Optocoupled versions offer four/eight digital inputs. Their input voltage ranges from 0V to 30V. Switching to logical 0 is performed with voltages above 2.4V. Four/eight digital outputs source up to 60mA at voltages from 2.4V up to 35V are also available. Depending on the load a supply voltage of 2.4 up to 35V has to be connected to the pins V_Extern and DGND.

### 2.3.5 Counters:

The counters count digital pulses (low voltage level) and process them automatically. So pulses can be counted and frequencies can be measured. All counters are fully software configured. The optocoupled versions allow input voltages of up to 30V. Inputs switch to logical 1 if the voltage exceeds 2.4V. It is mandatory to connect respective ground level to pin ZGND.

#### *2.3.5.1 Counting Pulses:*

Counting pulses up to 32 bit values 4294967295 and a maximum frequency of approx. 10 MHz are provided. It is possible to set an initial value. The counter can be used in up or in down mode.

#### *2.3.5.2 Counting Pulses:*

Counting pulses up to 32 bit values 4294967295 and a maximum frequency of approx. 10(*50) MHz. It is possible to set an initial value. The counter can be used in up or in down mode.

#### *2.3.5.3 Measuring Frequencies:*

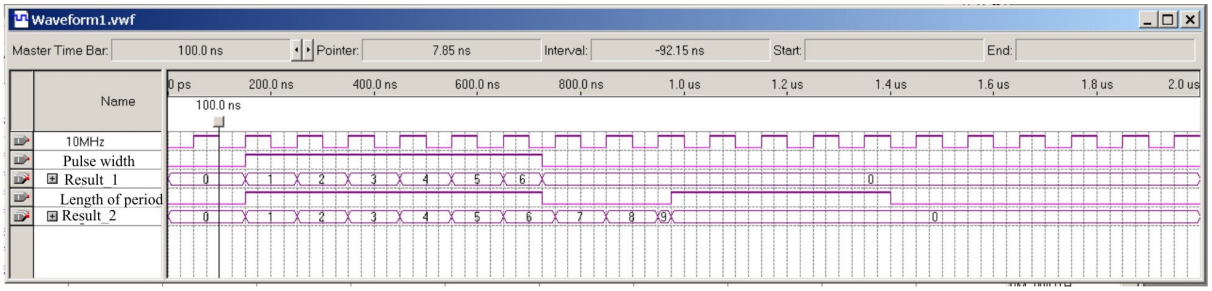
The method of „measuring frequencies by counting in a time window“ depends on the definition of the frequency (number of oscillations or periods per second). After starting the measurement a clock generator keeps open the „time window“ for a certain period of time. The time window can be set in 1000, 100, 10 and in 1 millisecond(s). Within the time window the number of pulses of the frequency signal to determine are counted. The number of pulses can be read directly as frequency value shown in Hz and can be used for the display. The highest resolution is available within the one second range because it is counted exactly to 1 Hz. Indeed a new result can be displayed once a second because the time window is one second long.
The display shows the following with an input frequency of 12563 Hz depending on the setting of the reference frequency:

| Resolution | Display |
|---|---|
| 1 Hz | 12563 Hz |
| 10 Hz | 12560 Hz |
| 100 Hz | 12600 Hz |
| 1000 Hz | 13000 Hz |

#### *2.3.5.4 Measuring the Period Length:*

To measure the length of a period a time window is compared with the length of the period of the signal to determine and the number of pulses within this window are counted. The counting pulses are generated by a 10(*50) MHz clock oscillator. This is the equivalent of a counter resolution of 100(*20)ns.
The measuring of the length of the period is to prefer for high precision or very fast frequency measures because for each period a new reciprocal value of the frequency is available. If an input frequency of 1 kHz is fed into the counter the display shows 10000 which means 10000 * 100 (*20)ns. Other than the frequency measurement the counter reading without a signal, in example if a pulse generator is not turned on any more, is not refreshed because the second reference pulse is missing. The calculation into rotations per second or into a frequency will

not lead to a zero value in the display, instead the last value is displayed. This is caused by technical details because a zero frequency means the length of the period had to be infinite – a value that is limited by the properties of the real hardware.




### *2.3.5.5 Measuring the Pulse Width (Pulse/Pause Ratio):*

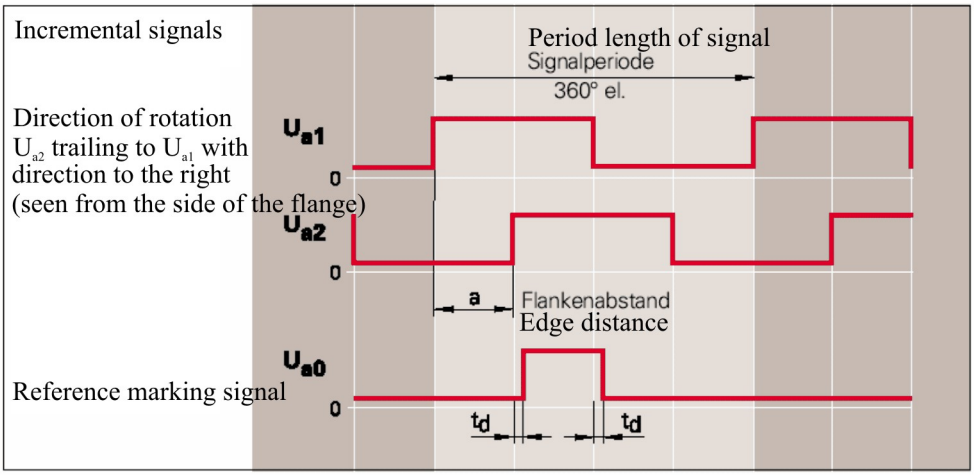
Measuring the pulse width is used to determine pulse width modulated signals. Depending on the selected mode the positive or the negative part of the signal is processed. If two counters are used to measure the pulse width, and one of them is programmed to be triggered by the negative and the other one by the positive edge of the input signal, the summed up result will show the period length. If the input signals are stopped the last measured value becomes available.

| | 10 Mhz | 50 Mhz |
|---|---|---|
| 32 Bit | 429,00000 s | 85,00000 s |
| 24 Bit | 1,67778 s | 0,33550 s |
| 16 Bit | 0,00655 s | 0,00131 s |
| 8 Bit | 0,00003 s | - |

### *2.3.5.6 Incremental Counter:*

Measuring with an incremental encoder means two signals of the encoder are measured and the direction of counting will be detected by the phase difference and the direction information.
The counters can count 24 bits and offer a programmable interpolation (1x, 2x, 4x) which allow to interpolate the signal. The maximum input frequency at the input of the counters is 20 MHz. An edge configurable zero position detection is also available which can be switched off and which makes it possible to reset the counter to zero over an additional digital input. Additionally to the incremental values there are time stamps available. These time stamps are equal to the period length of the last pulse. With a resolution of 100 ns the maximum readable frequency of the counters ranges depends on the type of the card and is between 1 kHz and 100 kHz. Caused by the interpolation a higher resolution of the encoder signals become available. Up to 4x interpolation resulting in 4 times higher resolution is supported.

The time stamp of the incremental encoder shows a zero reading after the maximum time interval within the time stamp was valid. This zero value signals the idle mode of the encoder.




### 2.3.6 External Trigger/External Clock

Measurement cards offer a digital input which allows starting of an external measurement and the generation of an external clock for the measurement. Externally started measurement is run after a change of the logical level (programmable high/low) while externally clocked measurements are edge started (programmable rising/falling) and a burst measurement is achieved. Maximum input voltage is 5V (low voltage TTL level). Optocoupled versions are able to handle up to 30V input voltage. Inputs switch to logical 1 if the voltage exceeds 2.4V. It is mandatory to connect respective ground level to pin ZGND.

### 2.3.7 Master and Slave

The optocoupled version of the USB Basic measuring cards support the master slave mode. In this mode the master card provides the clock frequency with which include the slave cards. The adujsted sampling rate per channel is provided by the master card. This means that at the output of a clock impuls a complete burst is measured on the slave card. The output of the clock impulse is carried out on master cards of the type *G(0-E)C-1034-(4-6)* on the digital output channel *PB.7* and at cards of the type *G(0-E)C-1034-(8-9)* on the digital output channel *PA.7*. On the slave's measuring card this will connect with the entrance for *external clock* (AD-Start).

### 2.3.8 Synchronizing multiple cards

All versions of the USB Basic measuring cards support master salvage operation. In this mode, the master card specifies the clock rate at which the slave cards are recorded. The set sampling rate per channel is output from the master card to the slave cards. When the clock pulse of the master card is output, a complete burst is measured on the slave cards. The clock signal is output to the digital output channel (for the G0C[I]+[S]-1034- (0-1-2-4-5-6) cards to "PB7" and for the G0C[I]+[S]-1034- (8-9 ) To "PA7"). The output of the master card must be connected to the input of the ext. Clock (AD-start) slave card. For the opto-decoupled versions, a resistor to PA7 (PB7) must be used against ground if no load is connected at the output. The resistance should vary depending on the operating voltage of the outputs, e.g. 5-10 volts should be 10kOhm and at 10-30 volts 50kOhm.

## 2.4 Extended Customizing

Beside their basic functionality the cards can be customized to the special needs of the users. This is not only possible as far as the software configuration is concerned. It also applies to the hardware configuration.

- Customizing Software
  With a minimum of programming effort it is possible to meet individual needs above the standard functionality like this could be in example for a sine wave analysis in energy generation. To program the signal processor with assembler or C several library functions are available. Programming can be carried out by the user or the manufacturer.
- Customizing Hardware
  It is also possible to fit the individual needs concerning the counters and the digital input or output of the pulse width modulation. The number and the resolution of reference frequencies or event driven control can be customized as well. Any customization of this type can carried out at the manufacturer only.
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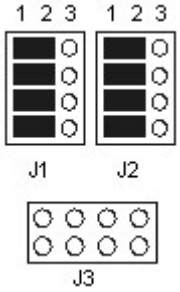
## 2.5 Configuring the Basic-BNC Measurement Card for Single Ended or Dual Ended Mode

The BNC version of the USB measuring card makes it necessary, because of the internal board and the way the inputs are designed, to open the case and to set the jumper if the mode has to be changed from single ended to dual ended mode or vice versa. The card itself is switched by software.

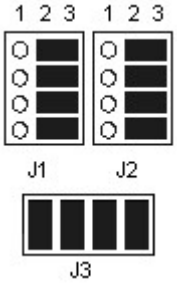
16 channel version

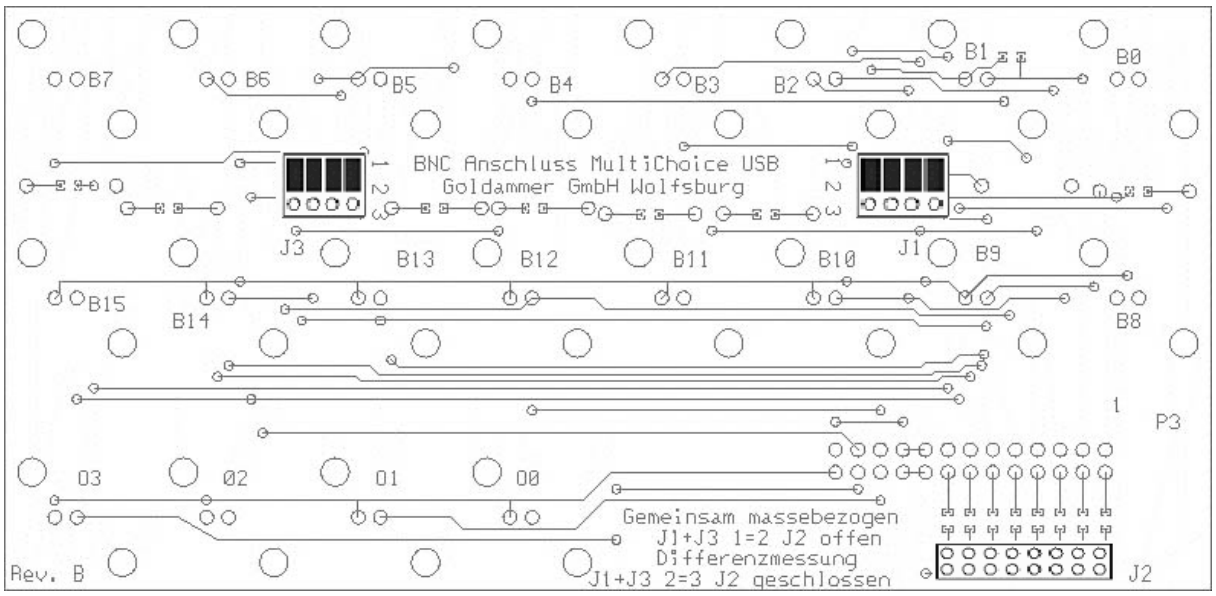
| | | |
|---|---|---|
| Single ended mode: | J1+ J2 set to single ended, | J3 open |
| Dual ended mode: | J1+ J2 set to dual ended, | J3 set |

16 single ended channels
J1+ J2 set to single ended,
J3 open



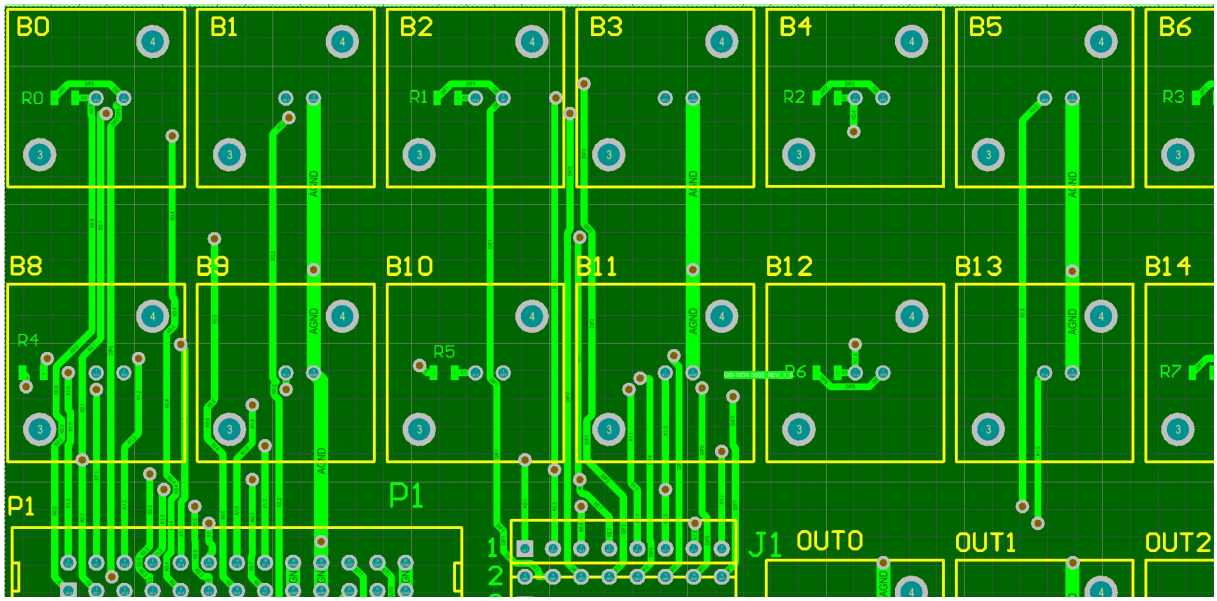

8 dual ended channels:
J1+ J2 set to dual ended,
J3 set



## 2.6 G(0-E)I-1034-4 PCB of the BNC front panel for iDAS

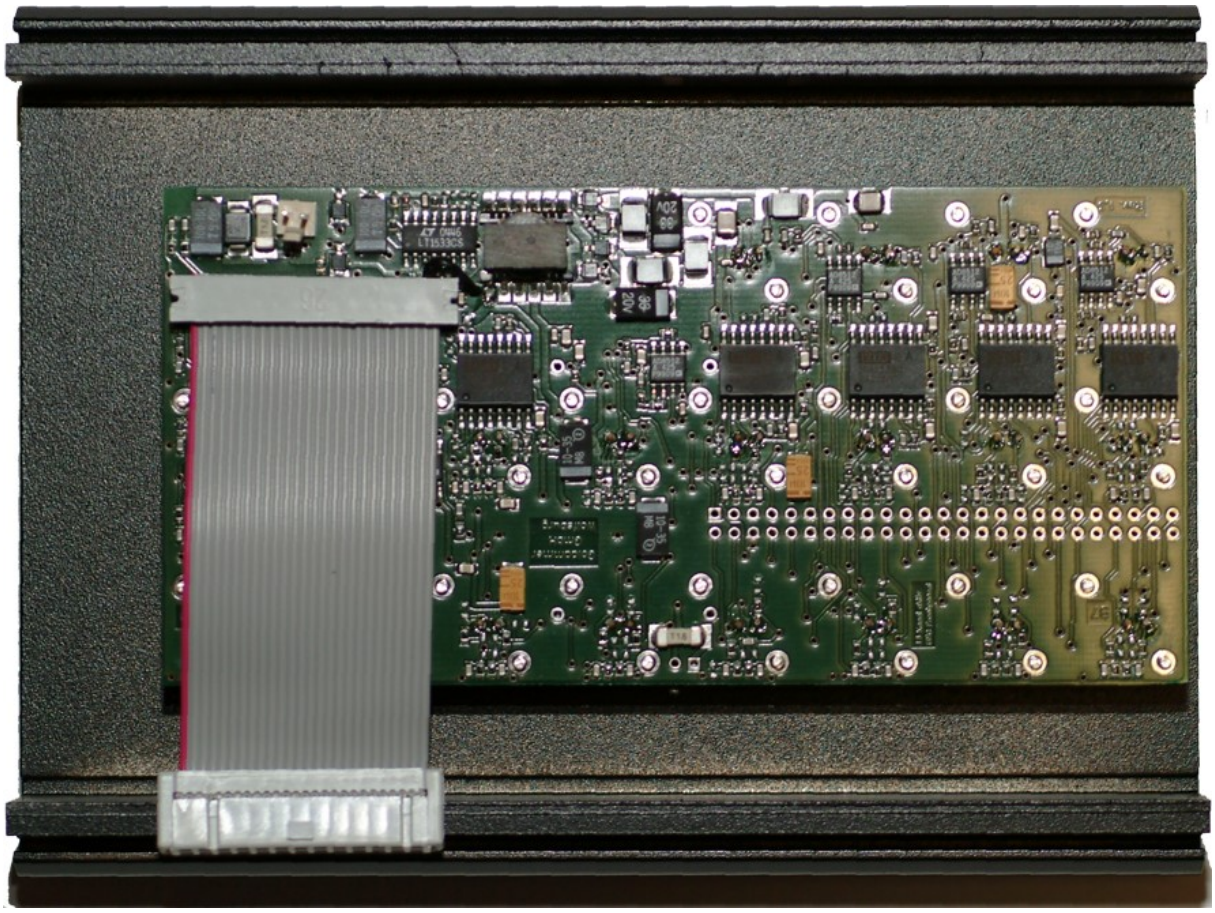
The jumper J1 is used to configure the inputs, the inputs are connected between the ground and the difference. Each channel can be switched individually. The configuration with must be the same as the application software.
Optionally for variable inputs, shunt resistors for the channels (B0) K0 =R0, (B2) K2 =R1, (B4) K0 =R4, (B6) K6 =R3, (B8) K8 =R4, (B10) K10 =R5, (B4) K12 =R12, und (B14) K14 =R7 In the size SMD0805.
For differential inputs, the signals are applied to K0, K2, K4, K6, K8, K10, K12 and K14 connected.




## 2.7 16 Active Differential Inputs

Any channel is equipped with an INA2128 instrumentation amplifier. The inputs are connected to ground over a 2.47 MΩ resistor. The frequency limitation of the inputs is set to 80 kHz.
An optional installable resistor provides additional gain settings.
When the differential amplifiers are used, AGND must be connected to the system ground to establish a reference potential for the instrument amplifier.

Because of the instrumentation amplifiers for each of the channels no more capacitive changes can occur like this was often found with very weak sensors.



Active inputs allow longer signal lines without an increase of distortions. Even very long lines can be used to connect sensors. Instead of pseudo differential measurements true differential measuring is possible

## 2.8 Drivers and Applications

See by www.goldammer.de

# 3 Hardware/Software Installation

## 3.1 Handling of the Measurement Cards

**Important:**
**To avoid erroneous measuring and severe damages to your equipment please follow the following global advices for installing/uninstalling measuring hardware, changing jumper settings or switch positions or connecting/removing plugs.**

- Integrated circuits in common and especially CMOS devices input and output circuitry is very sensitive against high voltages. The maximum values can easily be exceeded as in example with static discharging of the human body. Because of this CMOS devices can be destroyed by touching analog inputs, devices or the boards conductive paths.
- Please touch the back panel to discharge any static electricity prior to touch the measuring hardware.
- Avoid any contact to substances which are subject to develop static electricity like plastics, vinyl, styrofoam, woolen or synthetic sweaters and the like.
- Touch measuring cards and other cards on their borders only.
- While switched on, a maximum voltage of ±13.5 Volts (voltage resistant multiplexers: ±40 Volts) should not exceeded under any circumstances. The maximum voltage value for digital inputs and inputs of counters is 5 Volts.
- Switched off the maximum voltage for any kind of input is ±1 volts while voltage resistant multiplexers can withstand up to ±40V. The measurement of inductive loads should be avoided without protective diodes since it can damage the analog inputs.
- Analog outputs and as analog outputs defined bits are not allowed to connect to any voltage. Furthermore it is not allowed to source/sink more current as specified because this can lead to damages to the devices.
- Please note that when the IEPE supply is switched on, no voltages should be applied to the BNC sockets as this will damage the IEPE supply. If you switch on the EIPE supply in the application software, it remains active after the measurement has ended, in order to supply your sensors. Before you connect voltage-carrying signals to the BNC sockets, you must switch off the IEPE supply using application software, as this will damage the IEPE supply.

### 3.1.1 Systemdriver install

After plugging in the USB device the assistant for installing new devices appears. Insert the provided CD into the CDROM drive and let the assistant search for the respective driver. Please click on the button Install Driver and use this driver.
The measuring card is shown now under Multifunktionsadapter → Multichoice Basic.
Please repeat the last steps for each of the cards.

Important!
After changing the USB port the measuring card is recognized as a new device and is newly installed.

## 3.2 Miscellaneous Information

The kind of feeding of the signals to measure depends on the type of the card and the type of the device.

- It has to be taken into consideration that no one of the analog inputs will resist an input voltage exceeding ±40 Volt regardless if it is switched on or off.

After switching on the signals of all analog outputs are reset to zero. The digital pins are configured as inputs with no voltage applied.
Analog inputs are measured in relation to the ground of the card. Inputs related to a common ground can be used for voltage measurement only. Any of these inputs are connected to the same referential ground level. The inputs do not depend against each other. Please ensure the ground of the card is connected to the ground level of the measured object. Any of the analog inputs are freely available.
In differential mode the difference between two inputs is measured. Inputs of this type can be used for voltage and current measurements.

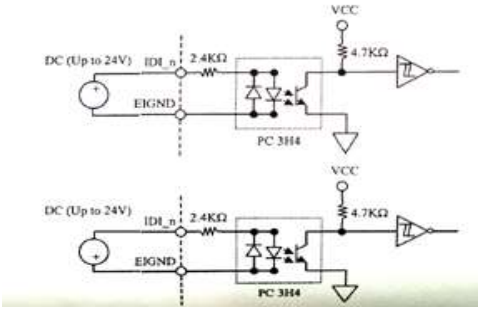
If current is measured the shunt resistor R and the voltmeter V are a measuring unit (equivalent to an ammeter). The shunt resistor has to have a certain exactly known resistance. If the dual ended inputs are connected it has to be taken into consideration that the voltage measurement is achieved parallel to the circuitry while the current measurement is a sequential one. If a dual ended input has to be connected both terminals of the input have to be connected.
It is mandatory to connect the ground of the card (board) to the ground of the signal source and a resistor must be in the negative terminal against ground to ensure a reference potential. The negative terminal of the dual ended inputs has to be connected with a resistor of 5kΩ to ground.
For this purpose two of the inputs of neighboring multiplexers are put together to an input (in example 0-8, 1-9, 2-10, …, 16-24, 17-25, …).

### 3.2.1 Signal Connection MultiChoice Basic

Feeding of the signals is achieved depending on the type of case and card over different sockets.
The BNC sockets are connected to an encoder or a signal source on one side and the other one is connected to the channel in question. The digital inputs are connected with the screw terminals on the back panel. For dual ended measurements the jumpers on the board under the BNC sockets have to be configured respectively. After this is carried out the dual ended inputs are available at the channels 0 .. 7, where the BNC signal carries the positive and the negative part.
Weidmüller screw terminals are connected respectively. To use the dual ended mode please connect the negative route (K8-K15) with a 5 kΩ resistor to the cards ground. Connecting the digital signals is similar to the BNC version. The OEM version is equipped with two pin connectors (P3, P5). Aided by flat ribbon cables the signals are fed. In this way customer specific kinds of connections can be realized easily.
OEM version equipped with 48 TTL inputs/outputs offers the second pin terminal P5 to which the TTL ports 16 to 47 are connected.
Cards of the type G(0-E)C-1034-(8-9) offer four optocoupled inputs/outputs, while cards of the type G(0-E)C-1034-(0 + 4) offer eight optocoupled inputs/outputs.

### 3.2.2 Optocoupled Inputs

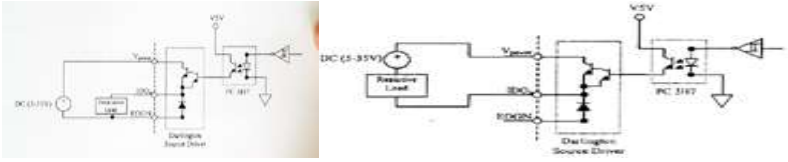
Inputs are related to the same ground (EGND). Input signals are separated galvanically from the ground of the card. The circuit diagrams show an overview of the functionality of the card.
Min in Voltage 2.4 V – max. 30.0 V




### 3.2.3 Optocoupled Outputs

Cards of the type G(0-E)C-1034-(8-9) offer four optocoupled outputs, while cards of the type G(0-E)C-1034-(0 + 4) offer eight optocoupled outputs. A Darlington transistor makes output signals available. Powersupply is connected to V_Extern. The supply voltage can be in the range 2.4V up to 35V at 60mA.

1 2



# 4 Pin Assignment:

## 4.1 Pin Assignment G(0-E)C-1034-X

### 4.1.1 G(0-E)C-1034-[0,1] Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 +K0 | Pin 01 | | Pin 48 | K8 -K0 | Analog Input 8 |
| Analog Input 1 | K1 +K1 | Pin 02 | | Pin 47 | K9 -K1 | Analog Input 9 |
| Analog Input 2 | K2 +K2 | Pin 03 | | Pin 46 | K10 -K2 | Analog Input 10 |
| Analog Input 3 | K3 +K3 | Pin 04 | | Pin 45 | K11 -K3 | Analog Input 11 |
| Analog Input 4 | K4 +K4 | Pin 05 | | Pin 44 | K12 -K4 | Analog Input 12 |
| Analog Input 5 | K5 +K5 | Pin 06 | | Pin 43 | K13 -K5 | Analog Input 13 |
| Analog Input 6 | K6 +K6 | Pin 07 | | Pin 42 | K14 -K6 | Analog Input 14 |
| Analog Input 7 | K7 +K7 | Pin 08 | | Pin 41 | K15 -K7 | Analog Input 15 |
| Analog Ground | AGND | Pin 09 | | Pin 40 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 10 | | Pin 39 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 13 | | Pin 36 | AGND | Analog Ground |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.Takt | A/D Start/Slave<br>Incremental Counter/RST |
| Counter 0<br>Incremental Counter/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1<br>Incremental Counter/PH90 |
| Digital I/O 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital I/O 8 |
| Digital I/O 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital I/O 9 |
| Digital I/O 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital I/O 10 |
| Digital I/O 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital I/O 11 |
| Digital I/O 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital I/O 12 |
| Digital I/O 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital I/O 13 |
| Digital I/O 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital I/O 14 |
| Digital I/O 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital I/O 15<br>Master-Clock |
| Ground | GND | Pin 24 | | Pin 25 | GND | Ground |

### 4.1.2 G(0-E)C-1034-[2,3] Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 +K0 | Pin 01 | | Pin 02 | K8 -K0 | Analog Input 8 |
| Analog Input 1 | K1 +K1 | Pin 03 | | Pin 04 | K9 -K1 | Analog Input 9 |
| Analog Input 2 | K2 +K2 | Pin 05 | | Pin 06 | K10 -K2 | Analog Input 10 |
| Analog Input 3 | K3 +K3 | Pin 07 | | Pin 08 | K11 -K3 | Analog Input 11 |
| Analog Input 4 | K4 +K4 | Pin 09 | | Pin 10 | K12 -K4 | Analog Input 12 |
| Analog Input 5 | K5 +K5 | Pin 11 | | Pin 12 | K13 -K5 | Analog Input 13 |
| Analog Input 6 | K6 +K6 | Pin 13 | | Pin 14 | K14 -K6 | Analog Input 14 |
| Analog Input 7 | K7 +K7 | Pin 15 | | Pin 16 | K15 -K7 | Analog Input 15 |
| Analog Ground | AGND | Pin 17 | | Pin 18 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 19 | | Pin 20 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 25 | | Pin 26 | AGND | Analog Ground |
| Ground | GND | Pin 27 | | Pin 28 | GND | Ground |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start/Slave<br>Incremental Counter/RST |
| Counter 0<br>Incremental Counter/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1<br>Incremental Counter/PH90 |
| Digital I/O 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital I/O 8 |
| Digital I/O 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital I/O 9 |
| Digital I/O 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital I/O 10 |
| Digital I/O 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital I/O 11 |
| Digital I/O 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital I/O 12 |
| Digital I/O 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital I/O 13 |
| Digital I/O 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital I/O 14 |
| Digital I/O 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital I/O 15<br>Master-Clock |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

### 4.1.3 G(0-E)C-1034-3 Connector P5 Pin Terminal 40-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Digital I/O 16 | PC 0 | Pin 01 | | Pin 02 | PD 0 | Digital I/O 24 |
| Digital I/O 17 | PC 1 | Pin 03 | | Pin 04 | PD 1 | Digital I/O 25 |
| Digital I/O 18 | PC 2 | Pin 05 | | Pin 06 | PD 2 | Digital I/O 26 |
| Digital I/O 19 | PC 3 | Pin 07 | | Pin 08 | PD 3 | Digital I/O 27 |
| Digital I/O 20 | PC 4 | Pin 09 | | Pin 10 | PD 4 | Digital I/O 28 |
| Digital I/O 21 | PC 5 | Pin 11 | | Pin 12 | PD 5 | Digital I/O 29 |
| Digital I/O 22 | PC 6 | Pin 13 | | Pin 14 | PD 6 | Digital I/O 30 |
| Digital I/O 23 | PC 7 | Pin 15 | | Pin 16 | PD 7 | Digital I/O 31 |
| Ground | GND | Pin 17 | | Pin 18 | GND | Ground |
| +5 Volt | +5V | Pin 19 | | Pin 20 | +12V | +12 Volt |
| Digital I/O 32 | PE 0 | Pin 21 | | Pin 22 | PF 0 | Digital I/O 40 |
| Digital I/O 33 | PE 1 | Pin 23 | | Pin 24 | PF 1 | Digital I/O 41 |
| Digital I/O 34 | PE 2 | Pin 25 | | Pin 26 | PF 2 | Digital I/O 42 |
| Digital I/O 35 | PE 3 | Pin 27 | | Pin 28 | PF 3 | Digital I/O 43 |
| Digital I/O 36 | PE 4 | Pin 29 | | Pin 30 | PF 4 | Digital I/O 44 |
| Digital I/O 37 | PE 5 | Pin 31 | | Pin 32 | PF 5 | Digital I/O 45 |
| Digital I/O 38 | PE 6 | Pin 33 | | Pin 34 | PF 6 | Digital I/O 46 |
| Digital I/O 39 | PE 7 | Pin 35 | | Pin 36 | PF 7 | Digital I/O 47 |
| Ground | GND | Pin 37 | | Pin 38 | GND | Ground |
| +5 Volt | +5V | Pin 39 | | Pin 40 | +12V | +12 Volt |

### 4.1.4 G(0-E)C-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 +K0 | Pin 01 | | Pin 48 | K8 -K0 | Analog Input 8 |
| Analog Input 1 | K1 +K1 | Pin 02 | | Pin 47 | K9 -K1 | Analog Input 9 |
| Analog Input 2 | K2 +K2 | Pin 03 | | Pin 46 | K10 -K2 | Analog Input 10 |
| Analog Input 3 | K3 +K3 | Pin 04 | | Pin 45 | K11 -K3 | Analog Input 11 |
| Analog Input 4 | K4 +K4 | Pin 05 | | Pin 44 | K12 -K4 | Analog Input 12 |
| Analog Input 5 | K5 +K5 | Pin 06 | | Pin 43 | K13 -K5 | Analog Input 13 |
| Analog Input 6 | K6 +K6 | Pin 07 | | Pin 42 | K14 -K6 | Analog Input 14 |
| Analog Input 7 | K7 +K7 | Pin 08 | | Pin 41 | K15 -K7 | Analog Input 15 |
| Analog Ground | AGND | Pin 09 | | Pin 40 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 10 | | Pin 39 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog Output 4 |
| Ground Counter u. Trigger<br>Ext_Takt Trigger | ZGND | Pin 13 | | Pin 36 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.Takt | A/D Start/Slave<br>Incremental Counter/RST |
| Counter 0<br>Incremental Counter/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1<br>Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital Output 7<br>Master-Clock |
| Ground Digital Input | EGND | Pin 24 | | Pin 25 | DGND | Ground Digital Output |

### 4.1.5 G(0-E)C-1034-6 Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 +K0 | Pin 01 | | Pin 02 | K8 -K0 | Analog Input 8 |
| Analog Input 1 | K1 +K1 | Pin 03 | | Pin 04 | K9 -K1 | Analog Input 9 |
| Analog Input 2 | K2 +K2 | Pin 05 | | Pin 06 | K10 -K2 | Analog Input 10 |
| Analog Input 3 | K3 +K3 | Pin 07 | | Pin 08 | K11 -K3 | Analog Input 11 |
| Analog Input 4 | K4 +K4 | Pin 09 | | Pin 10 | K12 -K4 | Analog Input 12 |
| Analog Input 5 | K5 +K5 | Pin 11 | | Pin 12 | K13 -K5 | Analog Input 13 |
| Analog Input 6 | K6 +K6 | Pin 13 | | Pin 14 | K14 -K6 | Analog Input 14 |
| Analog Input 7 | K7 +K7 | Pin 15 | | Pin 16 | K15 -K7 | Analog Input 15 |
| Analog Ground | AGND | Pin 17 | | Pin 18 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 19 | | Pin 20 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 25 | | Pin 26 | AGND | Analog Ground |
| Ground Counter u. Trigger Ext_Takt Trigger | ZGND | Pin 27 | | Pin 28 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start/Slave Incremental Counter/RST |
| Counter 0 Incremental Counter/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1 Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital Output 7 Master-Clock |
| Ground Digital Input | EGND | Pin 49 | | Pin 50 | DGND | Ground Digital Output |

### 4.1.6 G(0-E)C-1034-8 Connector P2 Weidmüller 24-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 13 | K4 | Analog Input 4 |
| Analog Input 1 | K1 | Pin 02 | | Pin 14 | K5 | Analog Input 5 |
| Analog Input 2 | K2 | Pin 03 | | Pin 15 | K6 | Analog Input 6 |
| Analog Input 3 | K3 | Pin 04 | | Pin 16 | K7 | Analog Input 7 |
| Analog Ground | AGND | Pin 05 | | Pin 17 | AGND | Analog Ground |
| Digital Input 0 | PA 0 | Pin 06 | | Pin 18 | PA 4 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 07 | | Pin 19 | PA 5 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 08 | | Pin 20 | PA 6 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 09 | | Pin 21 | PA 7 | Digital Output 3<br>Master-Clock |
| Ground Digital Input | EGND | Pin 10 | | Pin 22 | V_Extern | External Power Supply<br>Digital Output max.<br>35Volt. |
| Ground Counter u.<br>Trigger | ZGND | Pin 11 | | Pin 23 | DGND | Ground Digital Output |
| Trigger<br>Incremental Counter/PH0 | Trigger | Pin 12 | | Pin 24 | Counter 0 | Counter 0/Slave<br>Incremental Counter/PH90 |

NC = Reserved

### 4.1.7 G(0-E)C-1034-9 Connector P3 Pin Terminal 26-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 02 | K4 | Analog Input 4 |
| Analog Input 1 | K1 | Pin 03 | | Pin 04 | K5 | Analog Input 5 |
| Analog Input 2 | K2 | Pin 05 | | Pin 06 | K6 | Analog Input 6 |
| Analog Input 3 | K3 | Pin 07 | | Pin 08 | K7 | Analog Input 7 |
| Analog Ground | AGND | Pin 09 | | Pin 10 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 11 | | Pin 12 | AGND | Analog Ground |
| Digital Input 0 | PA 0 | Pin 13 | | Pin 14 | PA 4 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 15 | | Pin 16 | PA 5 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 17 | | Pin 18 | PA 6 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 19 | | Pin 20 | PA 7 | Digital Output 3<br>Master-Clock |
| Ground Digital Input | EGND | Pin 21 | | Pin 22 | V_Extern | External Power Supply<br>Digital Output max.<br>35Volt. |
| Ground Counter u.<br>Trigger | ZGND | Pin 23 | | Pin 24 | DGND | Ground Digital Output |
| Trigger/<br>Incremental Counter/PH0 | Trigger | Pin 25 | | Pin 26 | Counter 0 | Counter 0/Slave<br>Incremental Counter/PH90 |

## 4.2 Pin Assignment G(0-E)S-1034-X

### 4.2.1 G(0-E)S-1034-[0,1] Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 48 | K8 | Analog Input 8 |
| Analog Input 1 | K1 | Pin 02 | | Pin 47 | K9 | Analog Input 9 |
| Analog Input 2 | K2 | Pin 03 | | Pin 46 | K10 | Analog Input 10 |
| Analog Input 3 | K3 | Pin 04 | | Pin 45 | K11 | Analog Input 11 |
| Analog Input 4 | K4 | Pin 05 | | Pin 44 | NC | Reserved |
| Analog Input 5 | K5 | Pin 06 | | Pin 43 | NC | Reserved |
| Analog Input 6 | K6 | Pin 07 | | Pin 42 | NC | Reserved |
| Analog Input 7 | K7 | Pin 08 | | Pin 41 | NC | Reserved |
| Analog Ground | AGND | Pin 09 | | Pin 40 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 10 | | Pin 39 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 13 | | Pin 36 | AGND | Analog Ground |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.Takt | A/D Start/Slave<br>Incremental Counter/RST |
| Counter 0<br>Incremental Counter/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1<br>Incremental Counter/PH90 |
| Digital I/O 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital I/O 8 |
| Digital I/O 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital I/O 9 |
| Digital I/O 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital I/O 10 |
| Digital I/O 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital I/O 11 |
| Digital I/O 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital I/O 12 |
| Digital I/O 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital I/O 13 |
| Digital I/O 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital I/O 14 |
| Digital I/O 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital I/O 15<br>Master-Clock |
| Ground | GND | Pin 24 | | Pin 25 | GND | Ground |

### 4.2.2 G(0-E)S-1034-[2,3] Connector P3 Pin Terminal 50-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 02 | K8 | Analog Input 8 |
| Analog Input 1 | K1 | Pin 03 | | Pin 04 | K9 | Analog Input 9 |
| Analog Input 2 | K2 | Pin 05 | | Pin 06 | K10 | Analog Input 10 |
| Analog Input 3 | K3 | Pin 07 | | Pin 08 | K11 | Analog Input 11 |
| Analog Input 4 | K4 | Pin 09 | | Pin 10 | NC | Reserved |
| Analog Input 5 | K5 | Pin 11 | | Pin 12 | NC | Reserved |
| Analog Input 6 | K6 | Pin 13 | | Pin 14 | NC | Reserved |
| Analog Input 7 | K7 | Pin 15 | | Pin 16 | NC | Reserved |
| Analog Ground | AGND | Pin 17 | | Pin 18 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 19 | | Pin 20 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 25 | | Pin 26 | AGND | Analog Ground |
| Ground | GND | Pin 27 | | Pin 28 | GND | Ground |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start/Slave<br>Incremental Counter/RST |
| Counter 0<br>Incremental Counter/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1<br>Incremental Counter/PH90 |
| Digital I/O 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital I/O 8 |
| Digital I/O 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital I/O 9 |
| Digital I/O 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital I/O 10 |
| Digital I/O 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital I/O 11 |
| Digital I/O 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital I/O 12 |
| Digital I/O 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital I/O 13 |
| Digital I/O 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital I/O 14 |
| Digital I/O 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital I/O 15<br>Master-Clock |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

### 4.2.3 G(0-E)S-1034-3 Connector P5 Pin Terminal 40-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Digital I/O 16 | PC 0 | Pin 01 | | Pin 02 | PD 0 | Digital I/O 24 |
| Digital I/O 17 | PC 1 | Pin 03 | | Pin 04 | PD 1 | Digital I/O 25 |
| Digital I/O 18 | PC 2 | Pin 05 | | Pin 06 | PD 2 | Digital I/O 26 |
| Digital I/O 19 | PC 3 | Pin 07 | | Pin 08 | PD 3 | Digital I/O 27 |
| Digital I/O 20 | PC 4 | Pin 09 | | Pin 10 | PD 4 | Digital I/O 28 |
| Digital I/O 21 | PC 5 | Pin 11 | | Pin 12 | PD 5 | Digital I/O 29 |
| Digital I/O 22 | PC 6 | Pin 13 | | Pin 14 | PD 6 | Digital I/O 30 |
| Digital I/O 23 | PC 7 | Pin 15 | | Pin 16 | PD 7 | Digital I/O 31 |
| Ground | GND | Pin 17 | | Pin 18 | GND | Ground |
| +5 Volt | +5V | Pin 19 | | Pin 20 | +12V | +12 Volt |
| Digital I/O 32 | PE 0 | Pin 21 | | Pin 22 | PF 0 | Digital I/O 40 |
| Digital I/O 33 | PE 1 | Pin 23 | | Pin 24 | PF 1 | Digital I/O 41 |
| Digital I/O 34 | PE 2 | Pin 25 | | Pin 26 | PF 2 | Digital I/O 42 |
| Digital I/O 35 | PE 3 | Pin 27 | | Pin 28 | PF 3 | Digital I/O 43 |
| Digital I/O 36 | PE 4 | Pin 29 | | Pin 30 | PF 4 | Digital I/O 44 |
| Digital I/O 37 | PE 5 | Pin 31 | | Pin 32 | PF 5 | Digital I/O 45 |
| Digital I/O 38 | PE 6 | Pin 33 | | Pin 34 | PF 6 | Digital I/O 46 |
| Digital I/O 39 | PE 7 | Pin 35 | | Pin 36 | PF 7 | Digital I/O 47 |
| Ground | GND | Pin 37 | | Pin 38 | GND | Ground |
| +5 Volt | +5V | Pin 39 | | Pin 40 | +12V | +12 Volt |

### 4.2.4 G(0-E)S-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 48 | K8 | Analog Input 8 |
| Analog Input 1 | K1 | Pin 02 | | Pin 47 | K9 | Analog Input 9 |
| Analog Input 2 | K2 | Pin 03 | | Pin 46 | K10 | Analog Input 10 |
| Analog Input 3 | K3 | Pin 04 | | Pin 45 | K11 | Analog Input 11 |
| Analog Input 4 | K4 | Pin 05 | | Pin 44 | NC | Reserved |
| Analog Input 5 | K5 | Pin 06 | | Pin 43 | NC | Reserved |
| Analog Input 6 | K6 | Pin 07 | | Pin 42 | NC | Reserved |
| Analog Input 7 | K7 | Pin 08 | | Pin 41 | NC | Reserved |
| Analog Ground | AGND | Pin 09 | | Pin 40 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 10 | | Pin 39 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog Output 4 |
| Ground Counter u. Trigger Ext_Takt Trigger | ZGND | Pin 13 | | Pin 36 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.Takt | A/D Start/Slave Incremental Counter/RST |
| Counter 0 Incremental Counter/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1 Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital Output 7 Master-Clock |
| Ground Digital Input | EGND | Pin 24 | | Pin 25 | DGND | Ground Digital Output |

### 4.2.5 G(0-E)S-1034-6 Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 02 | K8 | Analog Input 8 |
| Analog Input 1 | K1 | Pin 03 | | Pin 04 | K9 | Analog Input 9 |
| Analog Input 2 | K2 | Pin 05 | | Pin 06 | K10 | Analog Input 10 |
| Analog Input 3 | K3 | Pin 07 | | Pin 08 | K11 | Analog Input 11 |
| Analog Input 4 | K4 | Pin 09 | | Pin 10 | NC | Reserved |
| Analog Input 5 | K5 | Pin 11 | | Pin 12 | NC | Reserved |
| Analog Input 6 | K6 | Pin 13 | | Pin 14 | NC | Reserved |
| Analog Input 7 | K7 | Pin 15 | | Pin 16 | NC | Reserved |
| Analog Ground | AGND | Pin 17 | | Pin 18 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 19 | | Pin 20 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 25 | | Pin 26 | AGND | Analog Ground |
| Ground Counter u. Trigger Ext_Takt Trigger | ZGND | Pin 27 | | Pin 28 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start/Slave Incremental Counter/RST |
| Counter 0 Incremental Counter/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1 Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital Output 7 Master-Clock |
| Ground Digital Input | EGND | Pin 49 | | Pin 50 | DGND | Ground Digital Output |

### 4.2.6 G(0-E)S-1034-8 Connector P2 Weidmüller 24-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 13 | K4 | Analog Input 4 |
| Analog Input 1 | K1 | Pin 02 | | Pin 14 | K5 | Analog Input 5 |
| Analog Input 2 | K2 | Pin 03 | | Pin 15 | NC | Reserved |
| Analog Input 3 | K3 | Pin 04 | | Pin 16 | NC | Reserved |
| Analog Ground | AGND | Pin 05 | | Pin 17 | AGND | Analog Ground |
| Digital Input 0 | PA 0 | Pin 06 | | Pin 18 | PA 4 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 07 | | Pin 19 | PA 5 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 08 | | Pin 20 | PA 6 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 09 | | Pin 21 | PA 7 | Digital Output 3 Master-Clock |
| Ground Digital Input | EGND | Pin 10 | | Pin 22 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Ground Counter u. Trigger | ZGND | Pin 11 | | Pin 23 | DGND | Ground Digital Output |
| Trigger Incremental Counter/PH0 | Trigger | Pin 12 | | Pin 24 | Counter 0 | Counter 0/Slave Incremental Counter/PH90 |

NC = Reserved

### 4.2.7 G(0-E)S-1034-9 Connector P3 Pin Terminal 26-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 02 | K4 | Analog Input 4 |
| Analog Input 1 | K1 | Pin 03 | | Pin 04 | K5 | Analog Input 5 |
| Analog Input 2 | K2 | Pin 05 | | Pin 06 | NC | Reserved |
| Analog Input 3 | K3 | Pin 07 | | Pin 08 | NC | Reserved |
| Analog Ground | AGND | Pin 09 | | Pin 10 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 11 | | Pin 12 | AGND | Analog Ground |
| Digital Input 0 | PA 0 | Pin 13 | | Pin 14 | PA 4 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 15 | | Pin 16 | PA 5 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 17 | | Pin 18 | PA 6 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 19 | | Pin 20 | PA 7 | Digital Output 3 Master-Clock |
| Ground Digital Input | EGND | Pin 21 | | Pin 22 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Ground Counter u. Trigger | ZGND | Pin 23 | | Pin 24 | DGND | Ground Digital Output |
| Trigger/ Incremental Counter/PH0 | Trigger | Pin 25 | | Pin 26 | Counter 0 | Counter 0/Slave Incremental Counter/PH90 |

## **4.1** G(0-E)I-1034-[4,5] Connector P2 Weidmüller Screw Terminal iDAS

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0.0 +K0 | Pin 01 | | Pin 48 | K1.0 +K4 | Analog Input 8 |
| Analog Input 1 | K0.1 -K0 | Pin 02 | | Pin 47 | K1.1 -K4 | Analog Input 9 |
| Analog Input 2 | K0.2 +K1 | Pin 03 | | Pin 46 | K1.2 +K5 | Analog Input 10 |
| Analog Input 3 | K0.3 -K1 | Pin 04 | | Pin 45 | K1.3 -K5 | Analog Input 11 |
| Analog Input 4 | K0.4 +K2 | Pin 05 | | Pin 44 | K1.4 +K6 | Analog Input 12 |
| Analog Input 5 | K0.5 -K2 | Pin 06 | | Pin 43 | K1.5 -K6 | Analog Input 13 |
| Analog Input 6 | K0.6 +K3 | Pin 07 | | Pin 42 | K1.6 +K7 | Analog Input 14 |
| Analog Input 7 | K0.7 -K3 | Pin 08 | | Pin 41 | K1.7 -K7 | Analog Input 15 |
| Common K0.0-K0.7 | COM0 | Pin 09 | | Pin 40 | COM1 | Common K1.0-K1.7 |
| Analog Ground | AGND | Pin 10 | | Pin 39 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog Output 4 |
| Ground Counter u. Trigger Ext_Takt Trigger | ZGND | Pin 13 | | Pin 36 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.Takt | A/D Start/Slave Incremental Counter/RST |
| Counter 0 Incremental Counter/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1 Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital Output 7 Master-Clock |
| Ground Digital Input | EGND | Pin 24 | | Pin 25 | DGND | Ground Digital Output |

### 4.1.1 G(0-E)I-1034-6 Connector P3 Pin Terminal 50-pin OEM iDAS

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0.0 +K0 | Pin 01 | | Pin 02 | K1.0 +K4 | Analog Input 8 |
| Analog Input 1 | K0.1 -K0 | Pin 03 | | Pin 04 | K1.1 -K4 | Analog Input 9 |
| Analog Input 2 | K0.2 +K1 | Pin 05 | | Pin 06 | K1.2 +K5 | Analog Input 10 |
| Analog Input 3 | K0.3 -K1 | Pin 07 | | Pin 08 | K1.3 -K5 | Analog Input 11 |
| Analog Input 4 | K0.4 +K2 | Pin 09 | | Pin 10 | K1.4 +K6 | Analog Input 12 |
| Analog Input 5 | K0.5 -K2 | Pin 11 | | Pin 12 | K1.5 -K6 | Analog Input 13 |
| Analog Input 6 | K0.6 +K3 | Pin 13 | | Pin 14 | K1.6 +K7 | Analog Input 14 |
| Analog Input 7 | K0.7 -K3 | Pin 15 | | Pin 16 | K1.7 -K7 | Analog Input 15 |
| Common K0.0-K0.7 | COM0 | Pin 17 | | Pin 18 | COM1 | Common K1.0-K1.7 |
| Analog Ground | AGND | Pin 19 | | Pin 20 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 25 | | Pin 26 | AGND | Analog Ground |
| Ground Counter u. Trigger Ext_Takt Trigger | ZGND | Pin 27 | | Pin 28 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start/Slave Incremental Counter/RST |
| Counter 0 Incremental Counter/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1 Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital Output 7 Master-Clock |
| Ground Digital Input | EGND | Pin 49 | | Pin 50 | DGND | Ground Digital Output |

### 4.1.2 G(0-E)I-1034-8 Connector P2 Weidmüller Screw Terminal 24-pin iDAS

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 +K0 | Pin 01 | | Pin 13 | K4 +K2 | Analog Input 4 |
| Analog Input 1 | K1 -K0 | Pin 02 | | Pin 14 | K5 -K2 | Analog Input 5 |
| Analog Input 2 | K2 +K1 | Pin 03 | | Pin 15 | K6 +K3 | Analog Input 6 |
| Analog Input 3 | K3 -K1 | Pin 04 | | Pin 16 | K7 -K3 | Analog Input 7 |
| Analog Masse | AGND | Pin 05 | | Pin 17 | COM0 | Common K0-K7 |
| Digital Input 0 | PA 0 | Pin 06 | | Pin 18 | PA 4 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 07 | | Pin 19 | PA 5 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 08 | | Pin 20 | PA 6 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 09 | | Pin 21 | PA 7 | Digital Output 3<br>Master-Clock |
| Ground Digital Input | EGND | Pin 10 | | Pin 22 | V_Extern | External Power Supply<br>Digital Output max.<br>35Volt. |
| Ground Counter u.<br>Trigger | ZGND | Pin 11 | | Pin 23 | DGND | Ground Digital Output |
| Trigger<br>Incremental Counter/PH0 | Trigger | Pin 12 | | Pin 24 | Counter 0 | Counter 0/Slave<br>Incremental Counter/PH90 |

### 4.1.3 G(0-E)I-1034-9 Connector P3 Pin Terminal 26-pin OEM iDAS

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 +K0 | Pin 01 | | Pin 02 | K4 +K2 | Analog Input 4 |
| Analog Input 1 | K1 -K0 | Pin 03 | | Pin 04 | K5 -K2 | Analog Input 5 |
| Analog Input 2 | K2 +K1 | Pin 05 | | Pin 06 | K6 +K3 | Analog Input 6 |
| Analog Input 3 | K3 -K1 | Pin 07 | | Pin 08 | K7 -K3 | Analog Input 7 |
| Analog Ground | AGND | Pin 09 | | Pin 10 | COM0 | Common K0-K7 |
| Analog Ground | AGND | Pin 11 | | Pin 12 | AGND | Analog Ground |
| Digital Input 0 | PA 0 | Pin 13 | | Pin 14 | PA 4 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 15 | | Pin 16 | PA 5 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 17 | | Pin 18 | PA 6 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 19 | | Pin 20 | PA 7 | Digital Output 3<br>Master-Clock |
| Ground Digital Input | EGND | Pin 21 | | Pin 22 | V_Extern | External Power Supply<br>Digital Output max.<br>35Volt. |
| Ground Counter u.<br>Trigger | ZGND | Pin 23 | | Pin 24 | DGND | Ground Digital Output |
| Trigger/<br>Incremental Counter/PH0 | Trigger | Pin 25 | | Pin 26 | Counter 0 | Counter 0/Slave<br>Incremental Counter/PH90 |

## 4.2 Pin Assignment G0M-1034-X

### 4.2.1 G0M-1034-[0,1] Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 +K0 | Pin 01 | | Pin 48 | NC | Reserved |
| Analog Input 1 | K1 +K1 | Pin 02 | | Pin 47 | NC | Reserved |
| Reserved | NC | Pin 03 | | Pin 46 | NC | Reserved |
| Reserved | NC | Pin 04 | | Pin 45 | NC | Reserved |
| Reserved | NC | Pin 05 | | Pin 44 | NC | Reserved |
| Reserved | NC | Pin 06 | | Pin 43 | NC | Reserved |
| Reserved | NC | Pin 07 | | Pin 42 | NC | Reserved |
| Reserved | NC | Pin 08 | | Pin 41 | NC | Reserved |
| Analog Ground | AGND | Pin 09 | | Pin 40 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 10 | | Pin 39 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 13 | | Pin 36 | AGND | Analog Ground |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.Takt | A/D Start/Slave<br>Incremental Counter/RST |
| Counter 0<br>Incremental Counter/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1<br>Incremental Counter/PH90 |
| Digital I/O 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital I/O 8 |
| Digital I/O 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital I/O 9 |
| Digital I/O 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital I/O 10 |
| Digital I/O 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital I/O 11 |
| Digital I/O 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital I/O 12 |
| Digital I/O 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital I/O 13 |
| Digital I/O 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital I/O 14 |
| Digital I/O 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital I/O 15<br>Master-Clock |
| Ground | GND | Pin 24 | | Pin 25 | GND | Ground |

### 4.2.2 G0M-1034-[2,3] Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 02 | NC | Reserved |
| Analog Input 1 | K1 | Pin 03 | | Pin 04 | NC | Reserved |
| Reserved | NC | Pin 05 | | Pin 06 | NC | Reserved |
| Reserved | NC | Pin 07 | | Pin 08 | NC | Reserved |
| Reserved | NC | Pin 09 | | Pin 10 | NC | Reserved |
| Reserved | NC | Pin 11 | | Pin 12 | NC | Reserved |
| Reserved | NC | Pin 13 | | Pin 14 | NC | Reserved |
| Reserved | NC | Pin 15 | | Pin 16 | NC | Reserved |
| Analog Ground | AGND | Pin 17 | | Pin 18 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 19 | | Pin 20 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 25 | | Pin 26 | AGND | Analog Ground |
| Ground | GND | Pin 27 | | Pin 28 | GND | Ground |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start/Slave<br>Incremental Counter/RST |
| Counter 0<br>Incremental Counter/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1<br>Incremental Counter/PH90 |
| Digital I/O 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital I/O 8 |
| Digital I/O 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital I/O 9 |
| Digital I/O 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital I/O 10 |
| Digital I/O 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital I/O 11 |
| Digital I/O 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital I/O 12 |
| Digital I/O 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital I/O 13 |
| Digital I/O 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital I/O 14 |
| Digital I/O 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital I/O 15<br>Master-Clock |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

### 4.2.3 G0M-1034-3 Connector P5 Pin Terminal 40-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Digital I/O 16 | PC 0 | Pin 01 | | Pin 02 | PD 0 | Digital I/O 24 |
| Digital I/O 17 | PC 1 | Pin 03 | | Pin 04 | PD 1 | Digital I/O 25 |
| Digital I/O 18 | PC 2 | Pin 05 | | Pin 06 | PD 2 | Digital I/O 26 |
| Digital I/O 19 | PC 3 | Pin 07 | | Pin 08 | PD 3 | Digital I/O 27 |
| Digital I/O 20 | PC 4 | Pin 09 | | Pin 10 | PD 4 | Digital I/O 28 |
| Digital I/O 21 | PC 5 | Pin 11 | | Pin 12 | PD 5 | Digital I/O 29 |
| Digital I/O 22 | PC 6 | Pin 13 | | Pin 14 | PD 6 | Digital I/O 30 |
| Digital I/O 23 | PC 7 | Pin 15 | | Pin 16 | PD 7 | Digital I/O 31 |
| Ground | GND | Pin 17 | | Pin 18 | GND | Ground |
| +5 Volt | +5V | Pin 19 | | Pin 20 | +12V | +12 Volt |
| Digital I/O 32 | PE 0 | Pin 21 | | Pin 22 | PF 0 | Digital I/O 40 |
| Digital I/O 33 | PE 1 | Pin 23 | | Pin 24 | PF 1 | Digital I/O 41 |
| Digital I/O 34 | PE 2 | Pin 25 | | Pin 26 | PF 2 | Digital I/O 42 |
| Digital I/O 35 | PE 3 | Pin 27 | | Pin 28 | PF 3 | Digital I/O 43 |
| Digital I/O 36 | PE 4 | Pin 29 | | Pin 30 | PF 4 | Digital I/O 44 |
| Digital I/O 37 | PE 5 | Pin 31 | | Pin 32 | PF 5 | Digital I/O 45 |
| Digital I/O 38 | PE 6 | Pin 33 | | Pin 34 | PF 6 | Digital I/O 46 |
| Digital I/O 39 | PE 7 | Pin 35 | | Pin 36 | PF 7 | Digital I/O 47 |
| Ground | GND | Pin 37 | | Pin 38 | GND | Ground |
| +5 Volt | +5V | Pin 39 | | Pin 40 | +12V | +12 Volt |

### 4.2.4 G0M-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 48 | NC | Reserved |
| Analog Input 1 | K1 | Pin 02 | | Pin 47 | NC | Reserved |
| Reserved | NC | Pin 03 | | Pin 46 | NC | Reserved |
| Reserved | NC | Pin 04 | | Pin 45 | NC | Reserved |
| Reserved | NC | Pin 05 | | Pin 44 | NC | Reserved |
| Reserved | NC | Pin 06 | | Pin 43 | NC | Reserved |
| Reserved | NC | Pin 07 | | Pin 42 | NC | Reserved |
| Reserved | NC | Pin 08 | | Pin 41 | NC | Reserved |
| Analog Ground | AGND | Pin 09 | | Pin 40 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 10 | | Pin 39 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog Output 4 |
| Ground Counter u. Trigger Ext_Takt Trigger | ZGND | Pin 13 | | Pin 36 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.Takt | A/D Start/Slave Incremental Counter/RST |
| Counter 0 Incremental Counter/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1 Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital Output 7 Master-Clock |
| Ground Digital Input | EGND | Pin 24 | | Pin 25 | DGND | Ground Digital Output |

### 4.2.5 G0M-1034-6 Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Input 0 | K0 | Pin 01 | | Pin 02 | NC | Reserved |
| Analog Input 1 | K1 | Pin 03 | | Pin 04 | NC | Reserved |
| Reserved | Reserved | NC | | Pin 06 | NC | Reserved |
| Reserved | Reserved | NC | | Pin 08 | NC | Reserved |
| Reserved | Reserved | NC | | Pin 10 | NC | Reserved |
| Reserved | Reserved | NC | | Pin 12 | NC | Reserved |
| Reserved | Reserved | NC | | Pin 14 | NC | Reserved |
| Reserved | Reserved | NC | | Pin 16 | NC | Reserved |
| Analog Ground | AGND | Pin 17 | | Pin 18 | AGND | Analog Ground |
| Analog Ground | AGND | Pin 19 | | Pin 20 | AGND | Analog Ground |
| Analog Output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog Output 2 |
| Analog Output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog Output 4 |
| Analog Ground | AGND | Pin 25 | | Pin 26 | AGND | Analog Ground |
| Ground Counter u. Trigger Ext_Takt Trigger | ZGND | Pin 27 | | Pin 28 | V_Extern | External Power Supply Digital Output max. 35Volt. |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start/Slave Incremental Counter/RST |
| Counter 0 Incremental Counter/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1 Incremental Counter/PH90 |
| Digital Input 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital Output 0 |
| Digital Input 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital Output 1 |
| Digital Input 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital Output 2 |
| Digital Input 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital Output 3 |
| Digital Input 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital Output 4 |
| Digital Input 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital Output 5 |
| Digital Input 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital Output 6 |
| Digital Input 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital Output 7 Master-Clock |
| Ground Digital Input | EGND | Pin 49 | | Pin 50 | DGND | Ground Digital Output |

## 4.3 Connectorbelegungen G0C-1023-X UniversalCounter

### 4.3.1 G0C-1023-0 Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | Z0 | Pin 01 | | Pin 02 | Z1 | Counter Input 1 |
| Counter Input 2 | Z2 | Pin 03 | | Pin 04 | Z3 | Counter Input 3 |
| Counter Input 4 | Z4 | Pin 05 | | Pin 06 | Z5 | Counter Input 5 |
| Counter Input 6 | Z6 | Pin 07 | | Pin 08 | Z7 | Counter Input 7 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| | | Pin 11 | | Pin 12 | | |
| | | Pin 13 | | Pin 14 | | |
| | | Pin 15 | | Pin 16 | | |
| | | Pin 17 | | Pin 18 | | |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| | | Pin 21 | | Pin 22 | | |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | M/S | Master/Slave |

### 4.3.2 G0C-1023-1 Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | Z0 | Pin 01 | | Pin 02 | Z1 | Counter Input 1 |
| Counter Input 2 | Z2 | Pin 03 | | Pin 04 | Z3 | Counter Input 3 |
| Counter Input 4 | Z4 | Pin 05 | | Pin 06 | Z5 | Counter Input 5 |
| Counter Input 6 | Z6 | Pin 07 | | Pin 08 | Z7 | Counter Input 7 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| | | Pin 11 | | Pin 12 | | |
| | | Pin 13 | | Pin 14 | | |
| | | Pin 15 | | Pin 16 | | |
| | | Pin 17 | | Pin 18 | | |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| | | Pin 21 | | Pin 22 | | |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | S | Slave |

### 4.3.3 G0C-1023-2 Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | Z0 | Pin 01 | | Pin 02 | Z1 | Counter Input 1 |
| Counter Input 2 | Z2 | Pin 03 | | Pin 04 | Z3 | Counter Input 3 |
| Counter Input 4 | Z4 | Pin 05 | | Pin 06 | Z5 | Counter Input 5 |
| Counter Input 6 | Z6 | Pin 07 | | Pin 08 | Z7 | Counter Input 7 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| | | Pin 11 | | Pin 12 | | |
| | | Pin 13 | | Pin 14 | | |
| | | Pin 15 | | Pin 16 | | |
| | | Pin 17 | | Pin 18 | | |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| | | Pin 21 | | Pin 22 | | |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | M/S | Master/Slave |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

### 4.3.4 G0C-1023-3 Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | Z0 | Pin 01 | | Pin 02 | Z1 | Counter Input 1 |
| Counter Input 2 | Z2 | Pin 03 | | Pin 04 | Z3 | Counter Input 3 |
| Counter Input 4 | Z4 | Pin 05 | | Pin 06 | Z5 | Counter Input 5 |
| Counter Input 6 | Z6 | Pin 07 | | Pin 08 | Z7 | Counter Input 7 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| | | Pin 11 | | Pin 12 | | |
| | | Pin 13 | | Pin 14 | | |
| | | Pin 15 | | Pin 16 | | |
| | | Pin 17 | | Pin 18 | | |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| | | Pin 21 | | Pin 22 | | |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | S | Slave |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

## 4.4 Pin Assignment G0C-1015-X Incremental CounteralCounter

### 4.4.1 G0C-1015-0 Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | PHI0 (0) | Pin 01 | | Pin 02 | PHI90 (0) | Counter Input 0 |
| Counter Reference 0 | REF (0) | Pin 03 | | Pin 04 | PHI0 (1) | Counter Input 1 |
| Counter Input 1 | PHI90 (1) | Pin 05 | | Pin 06 | REF (1) | Counter Reference 1 |
| Counter Input 2 | PHI0 (2) | Pin 07 | | Pin 08 | PHI90 (2) | Counter Input 2 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| Counter Reference 2 | REF (2) | Pin 11 | | Pin 12 | PHI0 (3) | Counter Input 3 |
| Counter Input 3 | PHI90 (3) | Pin 13 | | Pin 14 | REF (3) | Counter Reference 3 |
| Counter Input 4 | PHI0 (4) | Pin 15 | | Pin 16 | PHI90 (4) | Counter Input 4 |
| Counter Reference 4 | REF (4) | Pin 17 | | Pin 18 | PHI0 (5) | Counter Input 5 |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| Counter Input 5 | PHI90 (5) | Pin 21 | | Pin 22 | REF (5) | Counter Reference 5 |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | M/S | Master/Slave |

### 4.4.2 G0C-1015-1 Connector P2 Weidmüller Screw Terminal 48-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | PHI0 (0) | Pin 01 | | Pin 02 | PHI90 (0) | Counter Input 0 |
| Counter Reference 0 | REF (0) | Pin 03 | | Pin 04 | PHI0 (1) | Counter Input 1 |
| Counter Input 1 | PHI90 (1) | Pin 05 | | Pin 06 | REF (1) | Counter Reference 1 |
| Counter Input 2 | PHI0 (2) | Pin 07 | | Pin 08 | PHI90 (2) | Counter Input 2 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| Counter Reference 2 | REF (2) | Pin 11 | | Pin 12 | PHI0 (3) | Counter Input 3 |
| Counter Input 3 | PHI90 (3) | Pin 13 | | Pin 14 | REF (3) | Counter Reference 3 |
| Counter Input 4 | PHI0 (4) | Pin 15 | | Pin 16 | PHI90 (4) | Counter Input 4 |
| Counter Reference 4 | REF (4) | Pin 17 | | Pin 18 | PHI0 (5) | Counter Input 5 |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| Counter Input 5 | PHI90 (5) | Pin 21 | | Pin 22 | REF (5) | Counter Reference 5 |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | S | Slave |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

### 4.4.3 G0C-1015-2 Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | PHI0 (0) | Pin 01 | | Pin 02 | PHI90 (0) | Counter Input 0 |
| Counter Reference 0 | REF (0) | Pin 03 | | Pin 04 | PHI0 (1) | Counter Input 1 |
| Counter Input 1 | PHI90 (1) | Pin 05 | | Pin 06 | REF (1) | Counter Reference 1 |
| Counter Input 2 | PHI0 (2) | Pin 07 | | Pin 08 | PHI90 (2) | Counter Input 2 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| Counter Reference 2 | REF (2) | Pin 11 | | Pin 12 | PHI0 (3) | Counter Input 3 |
| Counter Input 3 | PHI90 (3) | Pin 13 | | Pin 14 | REF (3) | Counter Reference 3 |
| Counter Input 4 | PHI0 (4) | Pin 15 | | Pin 16 | PHI90 (4) | Counter Input 4 |
| Counter Reference 4 | REF (4) | Pin 17 | | Pin 18 | PHI0 (5) | Counter Input 5 |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| Counter Input 5 | PHI90 (5) | Pin 21 | | Pin 22 | REF (5) | Counter Reference 5 |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | M/S | Master/Slave |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

### 4.4.4 G0C-1015-3 Connector P3 Pin Terminal 50-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Counter Input 0 | PHI0 (0) | Pin 01 | | Pin 02 | PHI90 (0) | Counter Input 0 |
| Counter Reference 0 | REF (0) | Pin 03 | | Pin 04 | PHI0 (1) | Counter Input 1 |
| Counter Input 1 | PHI90 (1) | Pin 05 | | Pin 06 | REF (1) | Counter Reference 1 |
| Counter Input 2 | PHI0 (2) | Pin 07 | | Pin 08 | PHI90 (2) | Counter Input 2 |
| Ground | GND | Pin 09 | | Pin 10 | GND | Ground |
| Counter Reference 2 | REF (2) | Pin 11 | | Pin 12 | PHI0 (3) | Counter Input 3 |
| Counter Input 3 | PHI90 (3) | Pin 13 | | Pin 14 | REF (3) | Counter Reference 3 |
| Counter Input 4 | PHI0 (4) | Pin 15 | | Pin 16 | PHI90 (4) | Counter Input 4 |
| Counter Reference 4 | REF (4) | Pin 17 | | Pin 18 | PHI0 (5) | Counter Input 5 |
| Ground | GND | Pin 19 | | Pin 20 | GND | Ground |
| Counter Input 5 | PHI90 (5) | Pin 21 | | Pin 22 | REF (5) | Counter Reference 5 |
| | | Pin 23 | | Pin 24 | | |
| | | Pin 25 | | Pin 26 | | |
| | | Pin 27 | | Pin 28 | | |
| Ground | GND | Pin 29 | | Pin 30 | GND | Ground |
| | | Pin 31 | | Pin 32 | | |
| | | Pin 33 | | Pin 34 | | |
| | | Pin 35 | | Pin 36 | | |
| | | Pin 37 | | Pin 38 | | |
| Ground | GND | Pin 39 | | Pin 40 | GND | Ground |
| | | Pin 41 | | Pin 42 | | |
| | | Pin 43 | | Pin 44 | | |
| | | Pin 45 | | Pin 46 | | |
| | | Pin 47 | | Pin 48 | S | Master/Slave |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

Pin Assignment G0D-1034-X

### 4.4.5 G0D-1034-[0,1] Connector P2 Weidmüller Screw Terminal 24-pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Output 0 | K0 | Pin 01 | | Pin 13 | K1 | Analog Output 1 |
| Analog Output 2 | K2 | Pin 02 | | Pin 14 | K3 | Analog Output 3 |
| Analog Output 4 | K4 | Pin 03 | | Pin 15 | K5 | Analog Output 5 |
| Analog Output 6 | K6 | Pin 04 | | Pin 16 | K7 | Analog Output 7 |
| Analog Output 8 | K8 | Pin 05 | | Pin 17 | K9 | Analog Output 9 |
| Analog Output 10 | K10 | Pin 06 | | Pin 18 | K11 | Analog Output 11 |
| Analog Output 12 | K12 | Pin 07 | | Pin 19 | K13 | Analog Output 13 |
| Analog Output 14 | K14 | Pin 08 | | Pin 20 | K15 | Analog Output 15 |
| Ground Analog Output | GND | Pin 09 | | Pin 21 | GND | Ground Analog Output |
| Ground Analog Output | GND | Pin 10 | | Pin 22 | GND | Ground Analog Output |
| Ground Analog Output | GND | Pin 11 | | Pin 23 | GND | Ground Analog Output |
| Ground Analog Output | GND | Pin 12 | | Pin 24 | GND | Ground Analog Output |

NC = Reserved

### 4.4.6 G0D-1034-[2,3] Connector P3 Pin Terminal 26-pin OEM

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Output 0 | K0 | Pin 01 | | Pin 02 | K1 | Analog Output 1 |
| Analog Output 2 | K2 | Pin 03 | | Pin 04 | K3 | Analog Output 3 |
| Analog Output 4 | K4 | Pin 05 | | Pin 06 | K5 | Analog Output 5 |
| Analog Output 6 | K6 | Pin 07 | | Pin 08 | K7 | Analog Output 7 |
| Analog Output 8 | K8 | Pin 09 | | Pin 10 | K9 | Analog Output 9 |
| Analog Output 10 | K10 | Pin 11 | | Pin 12 | K11 | Analog Output 11 |
| Analog Output 12 | K12 | Pin 13 | | Pin 14 | K13 | Analog Output 13 |
| Analog Output 14 | K14 | Pin 15 | | Pin 16 | K15 | Analog Output 15 |
| Ground Analog Output | GND | Pin 17 | | Pin 18 | GND | Ground Analog Output |
| Ground Analog Output | GND | Pin 19 | | Pin 20 | GND | Ground Analog Output |
| Ground Analog Output | GND | Pin 21 | | Pin 22 | GND | Ground Analog Output |
| Ground Analog Output | GND | Pin 23 | | Pin 24 | GND | Ground Analog Output |
| Ground Analog Output | GND | Pin 25 | | Pin 26 | GND | Ground Analog Output |

## 4.5 Pin Assignment of external extensions and adapter units

### 4.5.1 B5 Adapter for MultiChoice Basic OEM

**P5 USB-OEM**

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog Output 0 | VOUT0 | Pin 01 | | Pin 01 | GND | Ground |
| Analog Output 1 | VOUT1 | Pin 03 | | Pin 03 | GND | Ground |
| Analog Output 2 | VOUT2 | Pin 05 | | Pin 05 | GND | Ground |
| Analog Output 3 | VOUT3 | Pin 07 | | Pin 07 | GND | Ground |
| | | Pin 09 | | Pin 09 | GND | Ground |

P1 Channel 0-15 P2 Channel 16-31

### 4.5.2 G(0-E)S-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin

**Connector** Basic simultan highspeed (G0M-1034-[0-1]) P2 Weidmüller Screw Terminal 48pin

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog input 0 | K0 +K0 | Pin 01 | | Pin 48 | NC | Not conect |
| Analog input 1 | K1 +K1 | Pin 02 | | Pin 47 | NC | Not conect |
| Not conect | NC | Pin 03 | | Pin 46 | NC | Not conect |
| Not conect | NC | Pin 04 | | Pin 45 | NC | Not conect |
| Not conect | NC | Pin 05 | | Pin 44 | NC | Not conect |
| Not conect | NC | Pin 06 | | Pin 43 | NC | Not conect |
| Not conect | NC | Pin 07 | | Pin 42 | NC | Not conect |
| Not conect | NC | Pin 08 | | Pin 41 | NC | Not conect |
| Analog ground | AGND | Pin 09 | | Pin 40 | AGND | Analog ground |
| Analog ground | AGND | Pin 10 | | Pin 39 | AGND | Analog ground |
| Analog output 1 | DA0 | Pin 11 | | Pin 38 | DA1 | Analog output 2 |
| Analog output 3 | DA2 | Pin 12 | | Pin 37 | DA3 | Analog output 4 |
| Counter a. Trigger ground Ext_Takt Trigger | GND | Pin 13 | | Pin 36 | V_Extern | Power supply Digital outputs max. 35Volt. |
| Trigger | Trig. | Pin 14 | | Pin 35 | Ext.clock | A/D Start Incremental/Reset |
| Counter 0 Incremental/PH0 | Counter 0 | Pin 15 | | Pin 34 | Counter 1 | Counter 1 Incremental/PH90 |
| Digital input/output 0 | PA 0 | Pin 16 | | Pin 33 | PB 0 | Digital input/output 0 |
| Digital input/output 1 | PA 1 | Pin 17 | | Pin 32 | PB 1 | Digital input/output 1 |
| Digital input/output 2 | PA 2 | Pin 18 | | Pin 31 | PB 2 | Digital input/output 2 |
| Digital input/output 3 | PA 3 | Pin 19 | | Pin 30 | PB 3 | Digital input/output 3 |
| Digital input/output 4 | PA 4 | Pin 20 | | Pin 29 | PB 4 | Digital input/output 4 |
| Digital input/output 5 | PA 5 | Pin 21 | | Pin 28 | PB 5 | Digital input/output 5 |
| Digital input/output 6 | PA 6 | Pin 22 | | Pin 27 | PB 6 | Digital input/output 6 |
| Digital input/output 7 | PA 7 | Pin 23 | | Pin 26 | PB 7 | Digital input/output 7 |
| Digital inputs ground | GND | Pin 24 | | Pin 25 | DGND | Digital output ground |

**Connector** simultan highspeed OEM (G0M-1034-[2-3]) P3 50pin Terminal

| | | | | | | |
|---|---|---|---|---|---|---|
| Analog input 0 | K0 | Pin 01 | | Pin 02 | NC | Not conect |
| Analog input 1 | K1 | Pin 03 | | Pin 04 | NC | Not conect |
| Not conect | NC | Pin 05 | | Pin 06 | NC | Not conect |
| Not conect | NC | Pin 07 | | Pin 08 | NC | Not conect |
| Not conect | NC | Pin 09 | | Pin 10 | NC | Not conect |
| Not conect | NC | Pin 11 | | Pin 12 | NC | Not conect |
| Not conect | NC | Pin 13 | | Pin 14 | NC | Not conect |
| Not conect | NC | Pin 15 | | Pin 16 | NC | Not conect |
| Analog ground | AGND | Pin 17 | | Pin 18 | AGND | Analog ground |
| Analog ground | AGND | Pin 19 | | Pin 20 | AGND | Analog ground |
| Analog output 1 | DA0 | Pin 21 | | Pin 22 | DA1 | Analog output 2 |
| Analog output 3 | DA2 | Pin 23 | | Pin 24 | DA3 | Analog output 4 |
| Analog ground | AGND | Pin 25 | | Pin 26 | AGND | Analog ground |
| Ground | GND | Pin 27 | | Pin 28 | GND | Ground |
| Trigger | Trig. | Pin 29 | | Pin 30 | Ext.Takt | A/D Start Inkrement/RST |
| Counter 0 Inkrement/PH0 | Counter 0 | Pin 31 | | Pin 32 | Counter 1 | Counter 1 Inkrement/PH90 |
| Digital input/output 0 | PA 0 | Pin 33 | | Pin 34 | PB 0 | Digital input/output 8 |
| Digital input/output 1 | PA 1 | Pin 35 | | Pin 36 | PB 1 | Digital input/output 9 |
| Digital input/output 2 | PA 2 | Pin 37 | | Pin 38 | PB 2 | Digital input/output 10 |
| Digital input/output 3 | PA 3 | Pin 39 | | Pin 40 | PB 3 | Digital input/output 11 |
| Digital input/output 4 | PA 4 | Pin 41 | | Pin 42 | PB 4 | Digital input/output 12 |
| Digital input/output 5 | PA 5 | Pin 43 | | Pin 44 | PB 5 | Digital input/output 13 |
| Digital input/output 6 | PA 6 | Pin 45 | | Pin 46 | PB 6 | Digital input/output 14 |
| Digital input/output 7 | PA 7 | Pin 47 | | Pin 48 | PB 7 | Digital input/output 15 |
| Ground | GND | Pin 49 | | Pin 50 | GND | Ground |

**Connector** simultan highspeed OEM **(**G0S-1034-3**)** P5 40pin Terminal

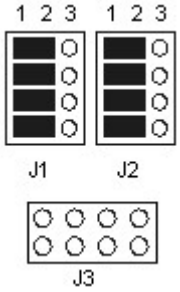
| | | | | | | |
|---|---|---|---|---|---|---|
| Digital input/output 16 | PC 0 | Pin 01 | | Pin 02 | PD 0 | Digital input/output 24 |
| Digital input/output 17 | PC 1 | Pin 03 | | Pin 04 | PD 1 | Digital input/output 25 |
| Digital input/output 18 | PC 2 | Pin 05 | | Pin 06 | PD 2 | Digital input/output 26 |
| Digital input/output 19 | PC 3 | Pin 07 | | Pin 08 | PD 3 | Digital input/output 27 |
| Digital input/output 20 | PC 4 | Pin 09 | | Pin 10 | PD 4 | Digital input/output 28 |
| Digital input/output 21 | PC 5 | Pin 11 | | Pin 12 | PD 5 | Digital input/output 29 |
| Digital input/output 22 | PC 6 | Pin 13 | | Pin 14 | PD 6 | Digital input/output 30 |
| Digital input/output 23 | PC 7 | Pin 15 | | Pin 16 | PD 7 | Digital input/output 31 |
| Ground | GND | Pin 17 | | Pin 18 | GND | Ground |
| +5 Volt | +5V | Pin 19 | | Pin 20 | +12V | +12 Volt |
| Digital input/output 32 | PE 0 | Pin 21 | | Pin 22 | PF 0 | Digital input/output 40 |
| Digital input/output 33 | PE 1 | Pin 23 | | Pin 24 | PF 1 | Digital input/output 41 |
| Digital input/output 34 | PE 2 | Pin 25 | | Pin 26 | PF 2 | Digital input/output 42 |
| Digital input/output 35 | PE 3 | Pin 27 | | Pin 28 | PF 3 | Digital input/output 43 |
| Digital input/output 36 | PE 4 | Pin 29 | | Pin 30 | PF 4 | Digital input/output 44 |
| Digital input/output 37 | PE 5 | Pin 31 | | Pin 32 | PF 5 | Digital input/output 45 |
| Digital input/output 38 | PE 6 | Pin 33 | | Pin 34 | PF 6 | Digital input/output 46 |
| Digital input/output 39 | PE 7 | Pin 35 | | Pin 36 | PF 7 | Digital input/output 47 |
| Ground | GND | Pin 37 | | Pin 38 | GND | Ground |
| +5 Volt | +5V | Pin 39 | | Pin 40 | +12V | +12 Volt |

The BNC version of the USB measuring card makes it necessary, because of the internal board and the way the inputs are designed, to open the case and to set the jumper if the mode has to be changed from single ended to dual ended mode or vice versa. The card itself is switched by software.

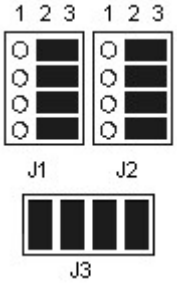
16 channel version

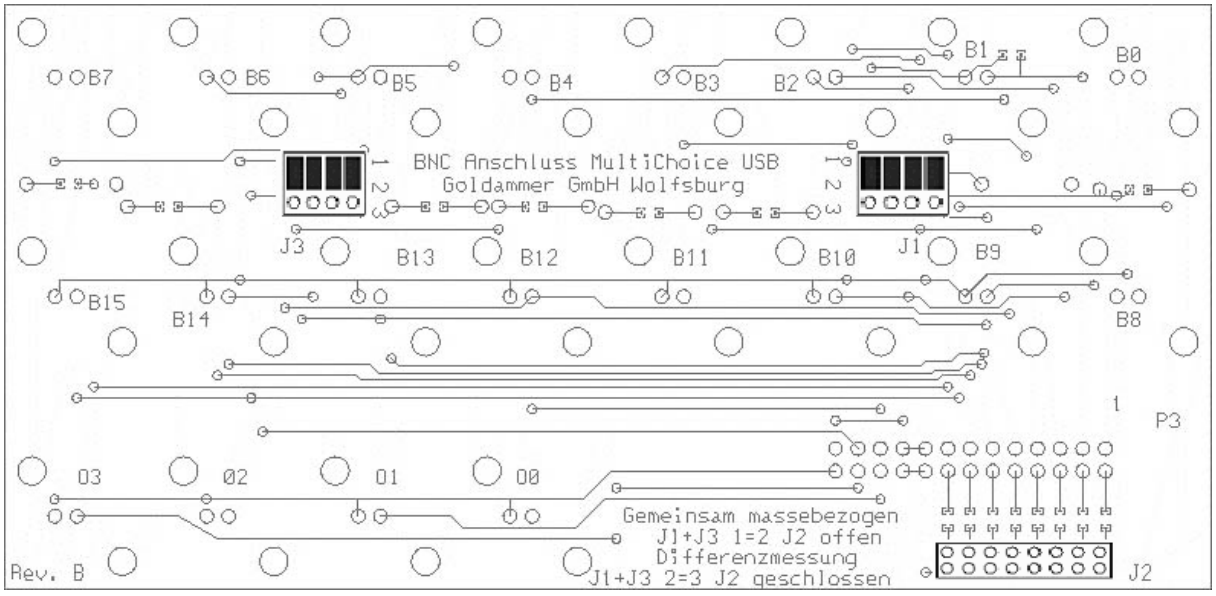
| | | |
|---|---|---|
| Single ended mode: | J1+ J2 set to single ended, | J3 open |
| Dual ended mode: | J1+ J2 set to dual ended, | J3 set |

16 single ended channels
J1+ J2 set to single ended,
J3 open




8 dual ended channels:
J1+ J2 set to dual ended,
J3 set



# 5 Installation of Software

## 5.1 Installation of the Drivers of the DIAdem Versions 6, 7, 8, 9 and 10DIAdem 6,7,8,9 and 16.x

### 5.1.1 Driver Properties and Performance

Types of Measurements:

- Standard measurement with hardware and software clock
- Disk measurement
- High speed measurement
- Edge triggered window measurement (each of the measurements) external triggering with hardware clock for high speed and disk measurements
- Measuring digital, counter, and analog signals at the same

### 5.1.2 Installation of DIAdem driver

The driver for the USB Basic series can be used for any DIAdem version starting with release 7.0. It supports all cards of the USB Basic series and has to be installed once only even when using more than one card in parallel.

SETUP.EXE is provided to install the Diadem driver. During the installation any needed files are copied to the Diadem directory. After installation was started a dialog window shows hints and latest information. Please read it carefully and proceed with “Next”. “Cancel” brings you back to the start dialog.

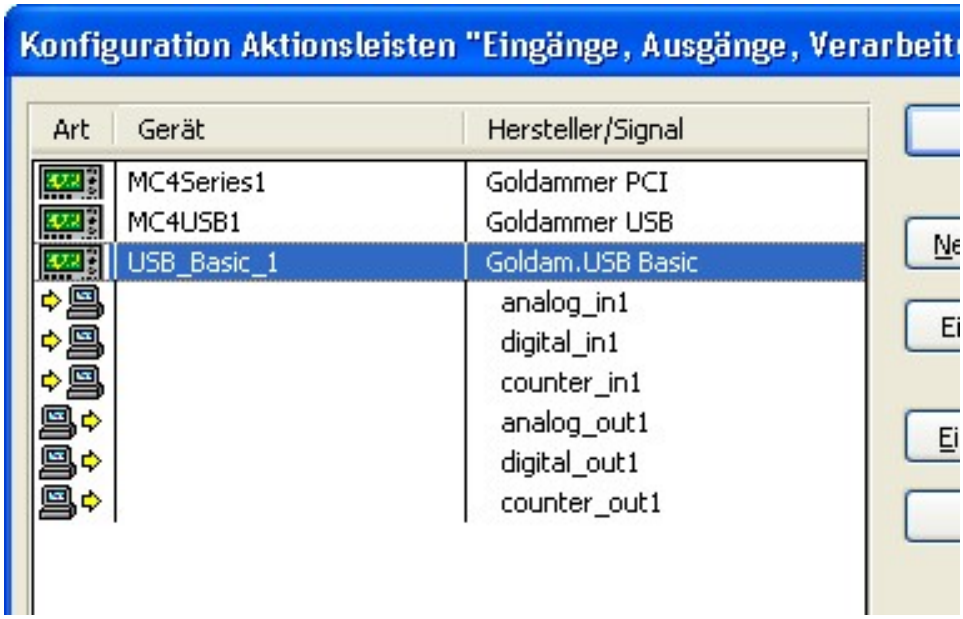
Next a window opens which is used to select an appropriate directory for installation. In this directory has to be installed a 32 bit version of the DIAdem software. Otherwise it is not possible to install the drivers.
The existence of the mentioned installation can be approved by the existence of a file named DIADEM.EXE within the directory. The default directory is C:\DIADEM. If you like to use another directory please specify.
After you typed in the name of the directory a dialog box asks if you really like to use this directory. Please confirm with Yes or return to the prior window with No. If you selected a directory without a DIAdem installation instead of the dialog box, an error message appears and the installation program is terminated. Please check if the directory name was typed in correctly and the DIAdem installation in this directory was completed. If both conditions are met please contact GfS Aachen or Goldammer GmbH.

Network based installation:
If DIAdem has to be installed over a network the Goldammer driver has to be copied into the server's directory. DIAdem runs with the option /s <path>. <path> is a path to the location where the files are stored.
If the directory is correct and you confirm with Yes the copying starts. After the copying process you are asked if the DLL shall be registered automatically. If your DIAdem installation was a first time installation you should confirm the automatic registering with Yes. If there is an older version of the driver you should select No. Otherwise the driver is loaded more than once.
Now a window appears which tells you the installation is finished. DIAdem is ready to run.

IMPORTANT: *If using Windows 2000 und XP it is necessary to have administrator rights for the first time installation. Otherwise the driver cannot be registered.*
The driver has to be installed only once to use any of the cards of the USB Basic series in your system. All of the cards are supported by the same driver. The switching between several cards is achieved in the blocks of the DAC circuit diagram.

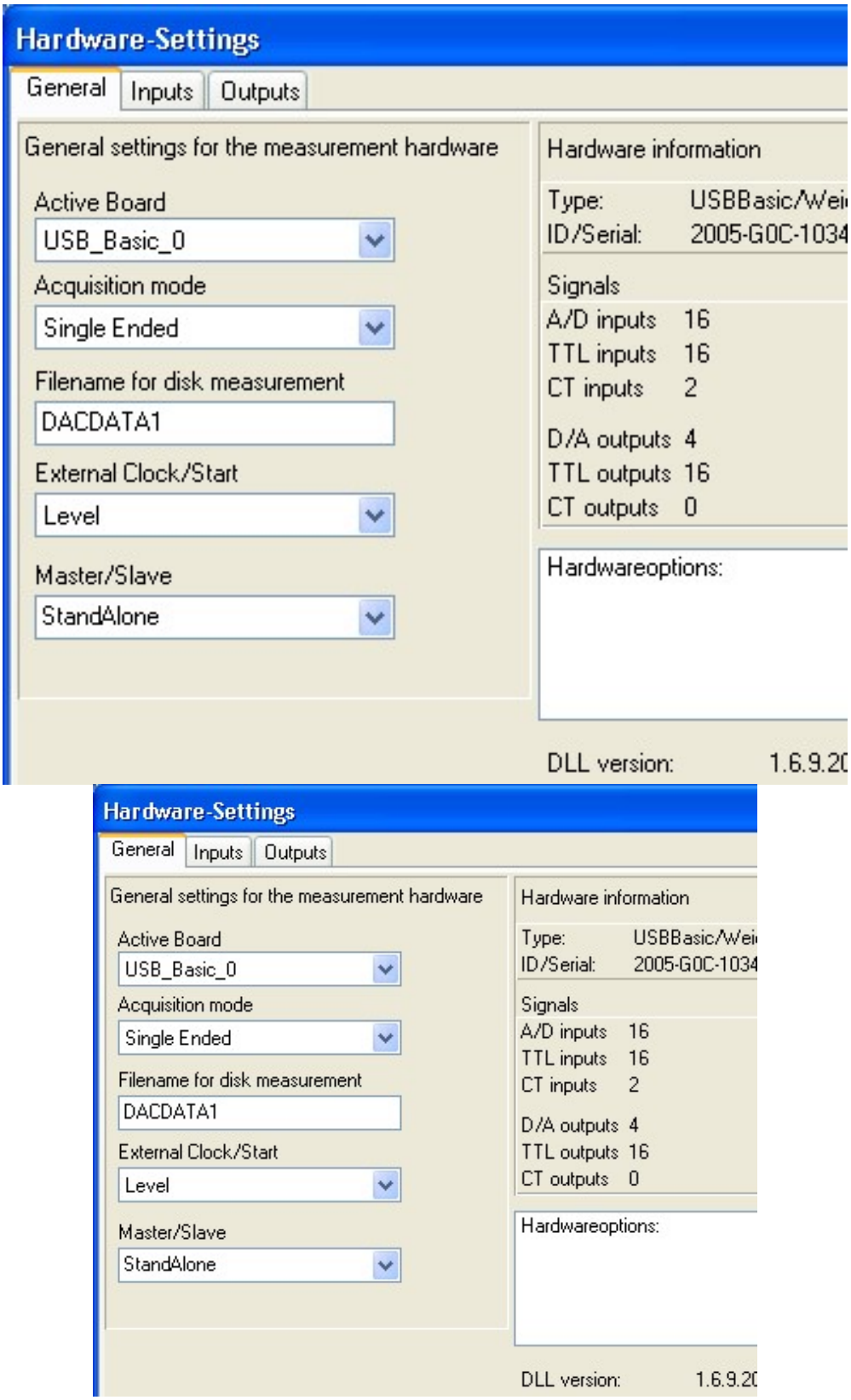
### 5.1.3 Registering the driver in DIAdem

To use the USB Basic driver in DIAdem you have to register it. Please select DIAdem DAC followed by the menu option „Settings → „Einzelwertverarbeitung (Single Value)“ → „Treiber konfigurieren (Configure Driver)“
The existent measuring cards can be configured there.
Please select „Goldam.USB Basic“ as manufacturer followed by the entry „UsbBasSeries1“.
All important configurations have been made after the driver was registered. Now you are able to run up to two cards of the USB Basic series in parallel.




Switching between the cards is carried out in the dialog box of the measuring blocks where each of the blocks can be associated to one of the available cards.

Under „Input Driver“ you will find the settings of the respective card

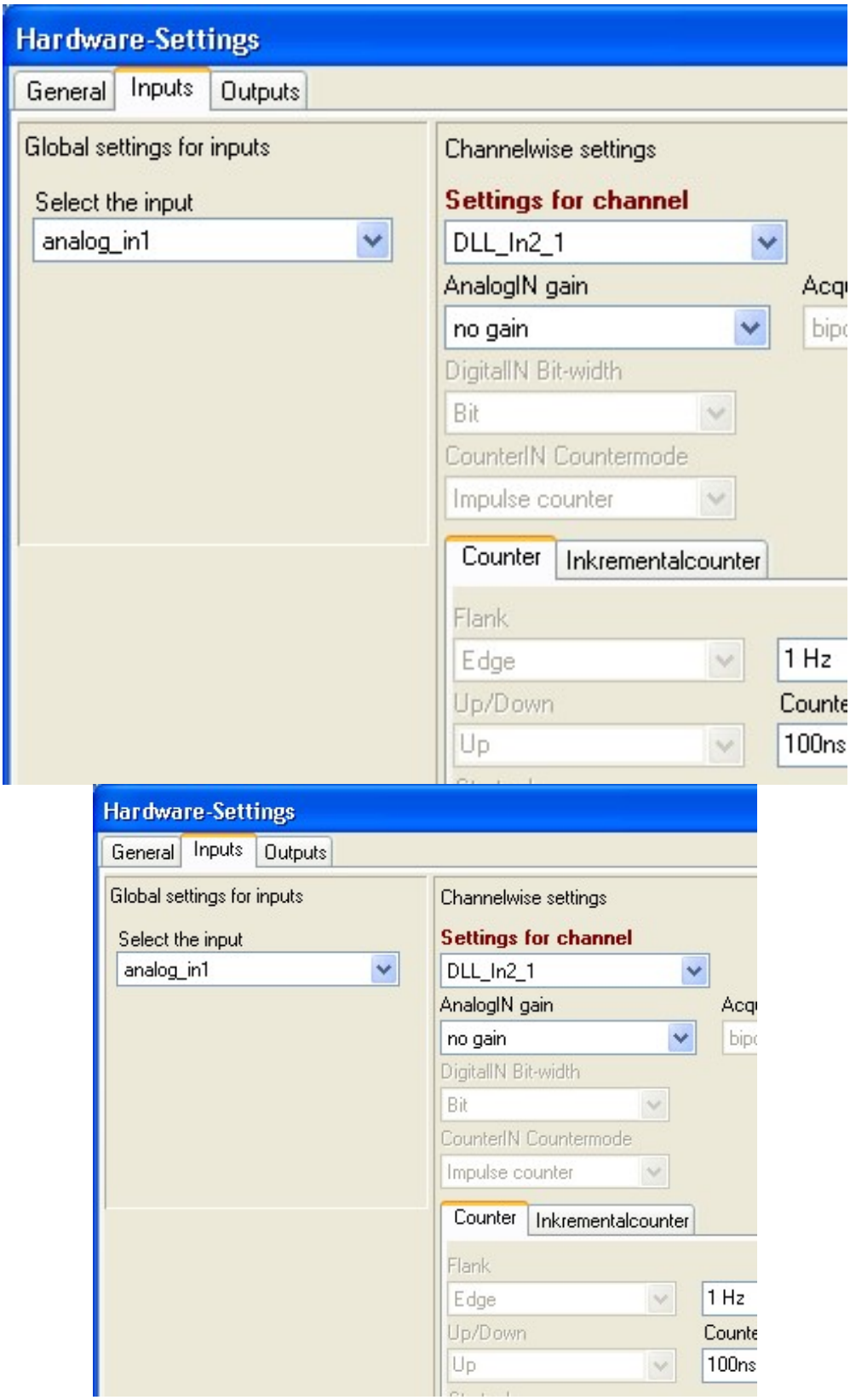



If you open an input block followed by the option devices you will get an overview of the device specific features which can be configured. You can set which card has to be used for measurement if there is more than one and you can configure some more details.
Filename for disk measurement to disk is the name of the .DAT file which contains the measured data after ending the measurement. If the file already exists if starting a new measure cycle, a message appears which warns and overwrites it.

The edge of the external start trigger describes the signal that has to be fed over the trigger input terminal by an externally triggered measurement to start the process. You can select a rising (low to high) or a falling (high to low) edge.

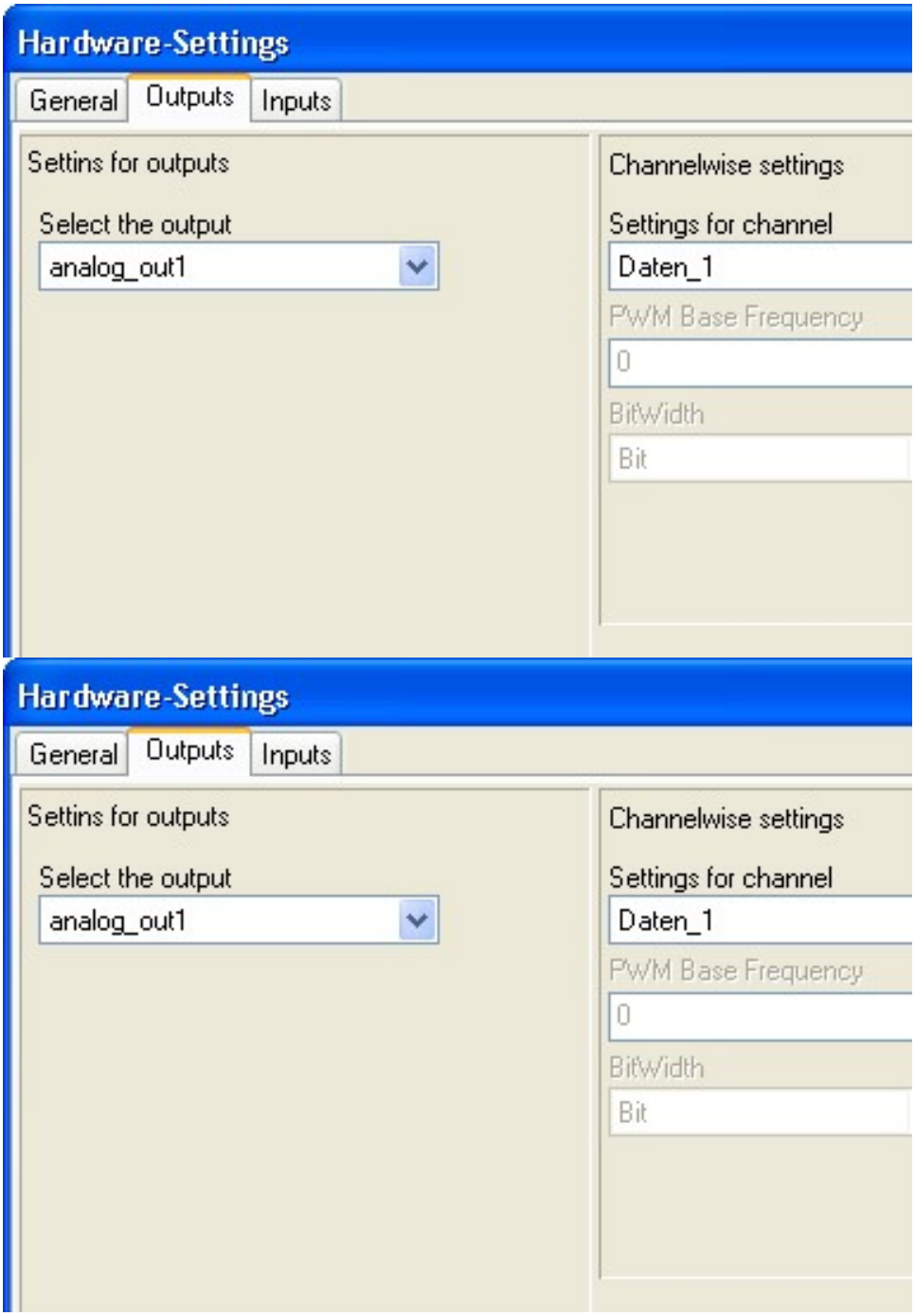
To get a better overview at the bottom of the dialog a small information bar shows the actual active card and the release number of the installed driver. Because you are able to switch between cards without limitation you are better informed about the card you are measuring actually.

After an input block was opened this window is displayed:


Hardware-Settings
General
Inputs
Outputs
Global settings for inputs
Select the input
analog_in1
Channelwise settings
Settings for channel
DLL_In2_1
AnalogIN gain
no gain
DigitalIN Bit-width
Bit
CounterIN Countermode
Impulse counter
Counter
Inkrementalcounter
Flank
Edge
1 Hz
Up/Down
Up
100ns

This window allows to specify the kind of measured input signal and to configure further parameters for the measurement. Any available options are displayed and can be configured.

This window is shown after an output block was opened:



In this window similar to the input signals kind and description of the output signal can be set. With the selected output mode the available configuration fields are enabled so you can make the detail settings for any kind of measurement.

The available settings depend on the kind of the selected output method and on the installed hardware and software expansions.

#### *5.1.3.1 External Clock of the ADC conversion*

External clock for the analog measurement is set within the clock block of the scheme. It can be programmed if the conversion is started by a rising or a falling edge. For each trigger pulse the whole number of activated channels are measured.

#### *5.1.3.2 Counters*

For counting frequencies all four modes of the timer are supported. Furthermore it can be set if and when the timer has to be reset. With a value written to an output the counter can be preset by the user.

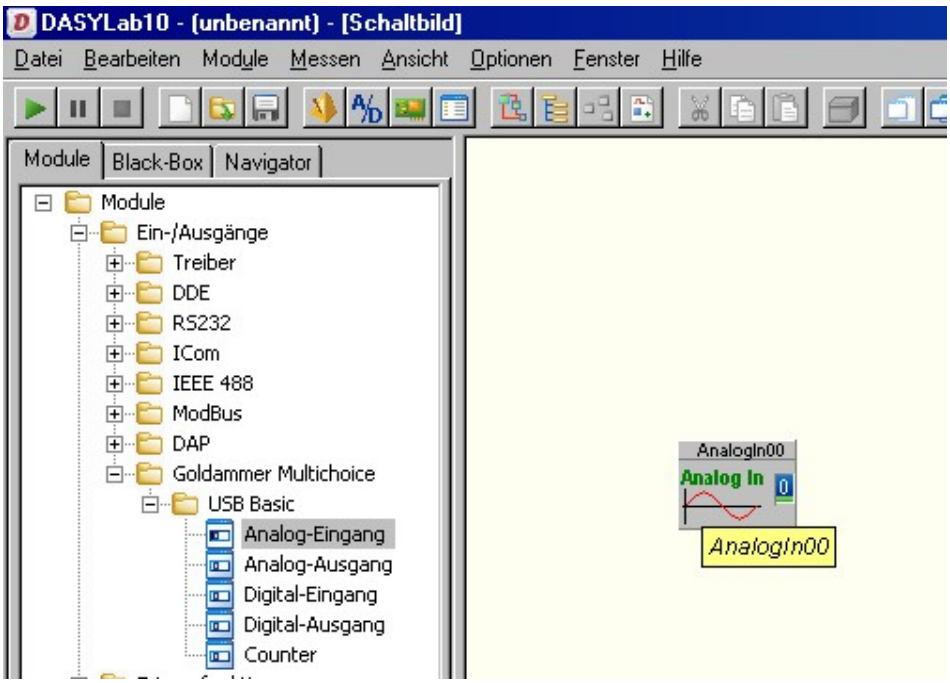
## 5.2 Installation of DasyLab Driver

### 5.2.1 Driver Installation

Installation of the driver for DasyLab is carried out with the provided installation program „SETUP.EXE“. For this installation procedure all necessary files have to be copied into the directory of DasyLab.
It is important to have administrator rights for the first time start under Windows2000 and Windows XP because the driver has to be registered in Windows. If you have no administrator rights please consult your system administrator.

The driver is no acquisition driver but it is integrated as an additional interface. Therefore proprietary block definitions are provided which have to be used instead of the existent ADC and DAC blocks. The advantage of this additional driver is that you can measure with up to two measurement cards at the same time. Furthermore an additional measuring hardware can be integrated and used also at the same time.

The additional DLL generates a menu called „ USB Basic” within the DasyLab menu. In this menu you can select the desired blocks. Alternatively you can reconfigure the module bar with the desired icons. To avoid conflicts or mix ups with other acquisition systems any of the blocks are marked with a T in front of their names. So the analog acquisition can be found under TanalogIn.




Now you can use the driver in the known way. During the first time start of a driver block all cards existing in the system are loaded automatically.

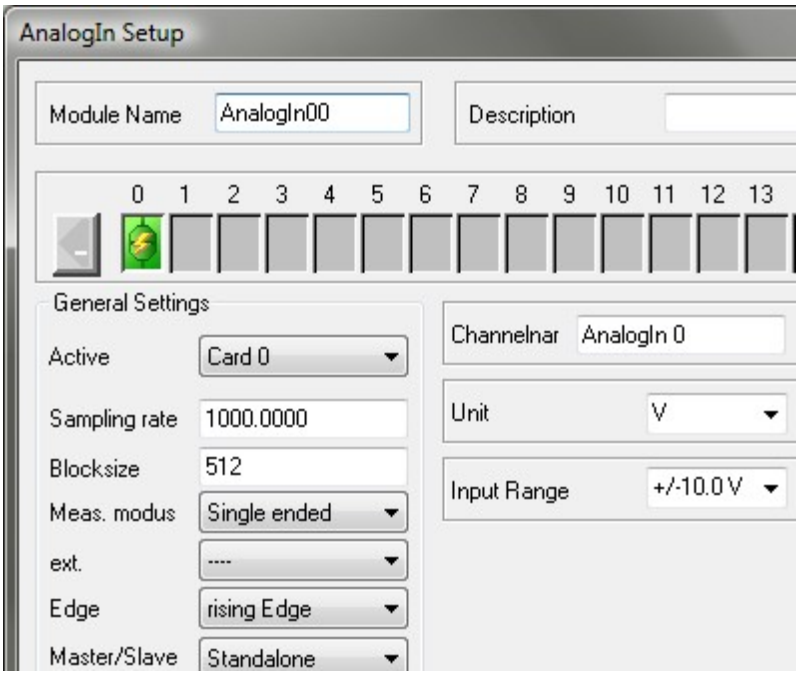
To keep the circuit diagrams configurable offline, nearly any options can be activated in the user interface. Error messages appear only at starting time if an invalid screwed terminal or a non existent option is tried to be used.

Depending on the type of block after double clicking a signal specific dialog box is opened which allows to specify the settings for the measurement card?

The analog measurement example allows setting and configuring sample rates, block size, measurement mode, and external triggers. The switching between the cards is done within the block and it is valid only within the block.

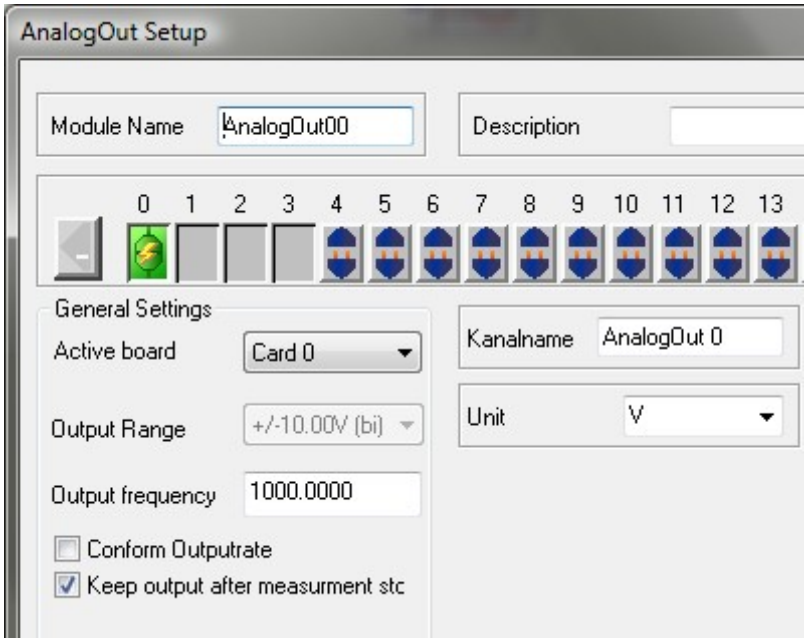
Because of limitations of DasyLab, where each block can consist of a maximum of 16 channels, for some signals like digital inputs or outputs the channel range of the block can be selected to cover more than 16 channels. A channel setting of 16..24 projects the set channels and parameters to the appropriate higher channels. The sample rates are taken from the block which was called first, because different sample rates per type of signal on one card are not possible.

### 5.2.2 Analog Acquisition:



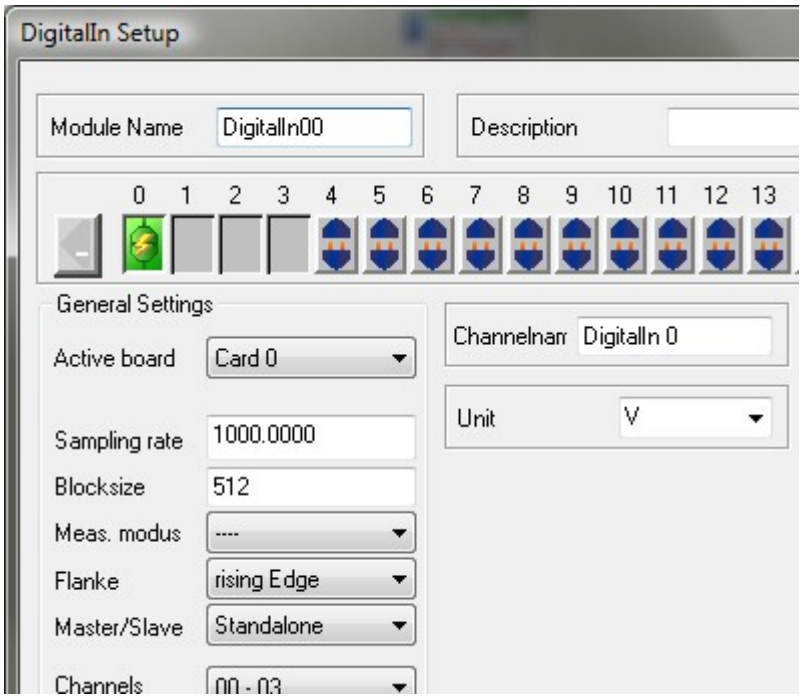

In some cases synchronization is done with parameters predefined for the default interface. If analog output is controlled of a generator it is necessary to set the output rate to a value identical to the global one of which the generator receives its time information. Otherwise no continuous output is possible.

### 5.2.3 Analog Output:




Specifying the output frequency specifies also which of the DA converters generates output signals.

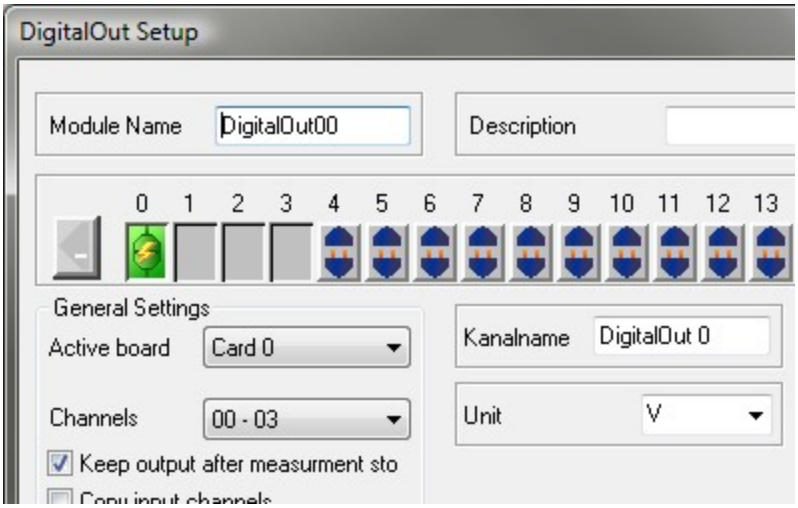
### 5.2.4 Synchronous Digital Acquisition:




DasyLab drivers support the synchronous digital acquisition for USB Basic measurement cards. This means that digital channels are put into the list of analog channels and are treated identically. Therefore they are run with the same clock so it is possible to have an exact time

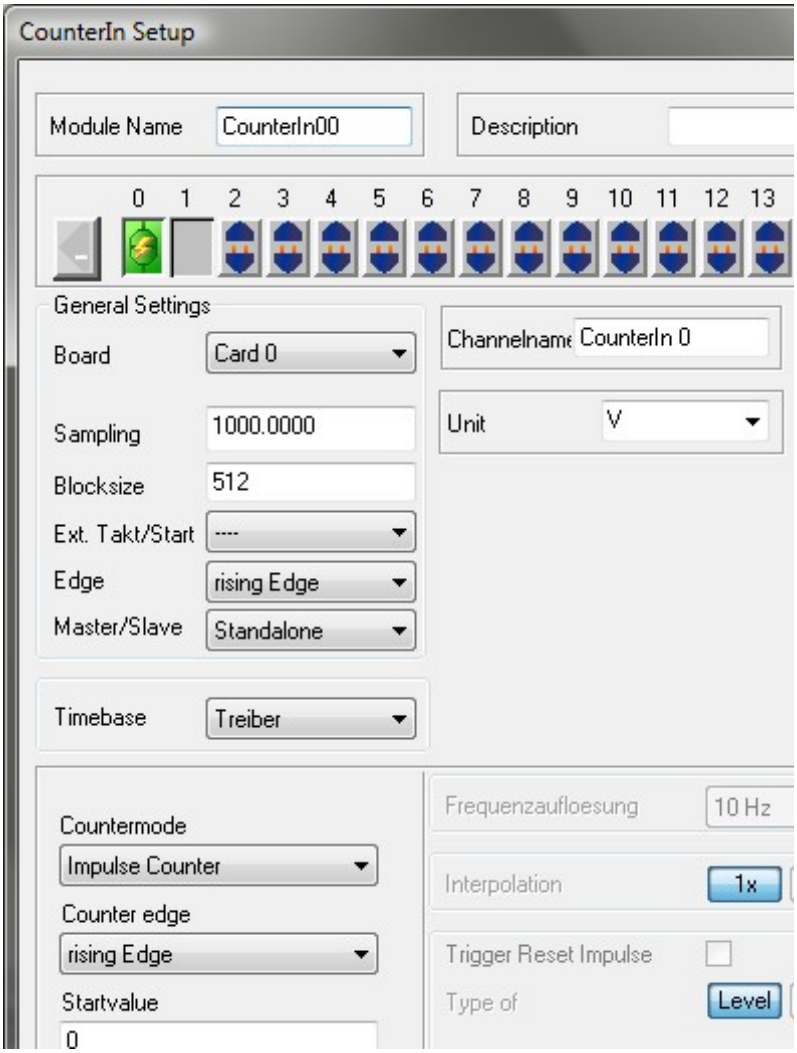
oriented association between analog and digitally measured values. Furthermore exact and quite fast sample rates are possible.
If digital signals are measured without using analog channels at the same time, digital signals are measured similar to the analog ones by specifying sample rate and block size.

### 5.2.5 Digital Output:




USB measurement cards reproduce digital signals asynchronously.
Digital channels can be programmed to input and output in groups of 4(8) channels. The channel groups are selected within the selection list “Channels”.

### 5.2.6 Measuring with Counters:




Counters are also measured synchronously to the analog channels.
Any available counting modes like frequency or pulse width measurement can be selected in the list box “Counter mode”. The list box “Clock flank” allows specifying if the counter values are taken at a rising or a falling edge. If digital signals are measured without measuring the analog signals at the same time, counter signals are measured similar to the analog signals by specifying sample rate and block size.

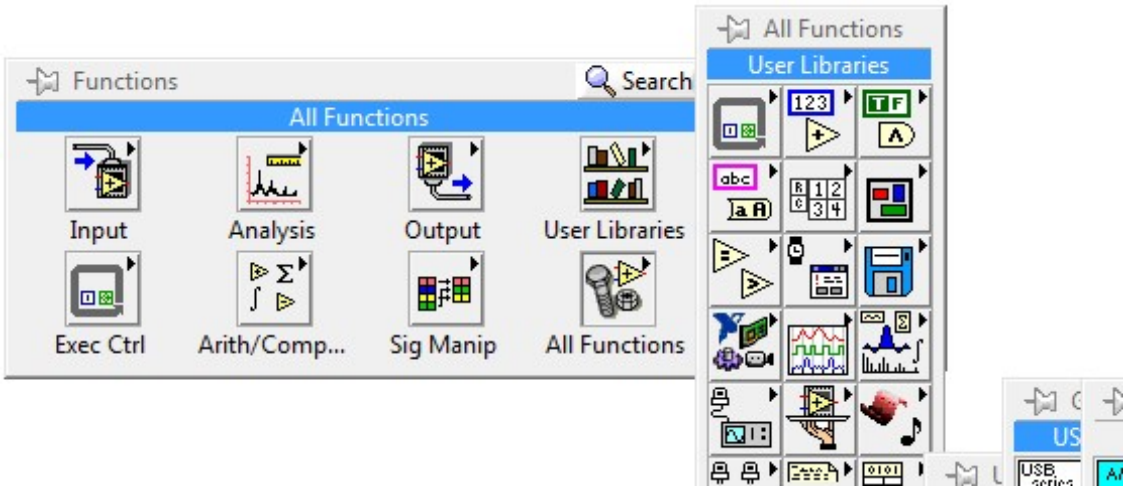
## 5.3 Multichoice USB Basic and LabVIEW

For the MultiChoice series LabView virtual instruments (VI's) are available which allow easy integration of measuring cards in measurement systems run with LabView. Only 32 bit operating systems are supported.

### 5.3.1 Driver installation

SETUP.EXE is provided to install the LabView driver. During the installation any necessary files are copied to the LabView directory. Because there is no standardized driver for LabView drivers – programming is performed graphically by the users instead - are installed as an additional function in the menu Functions->User Libraries.

Driver VIs can be found in the following menu:



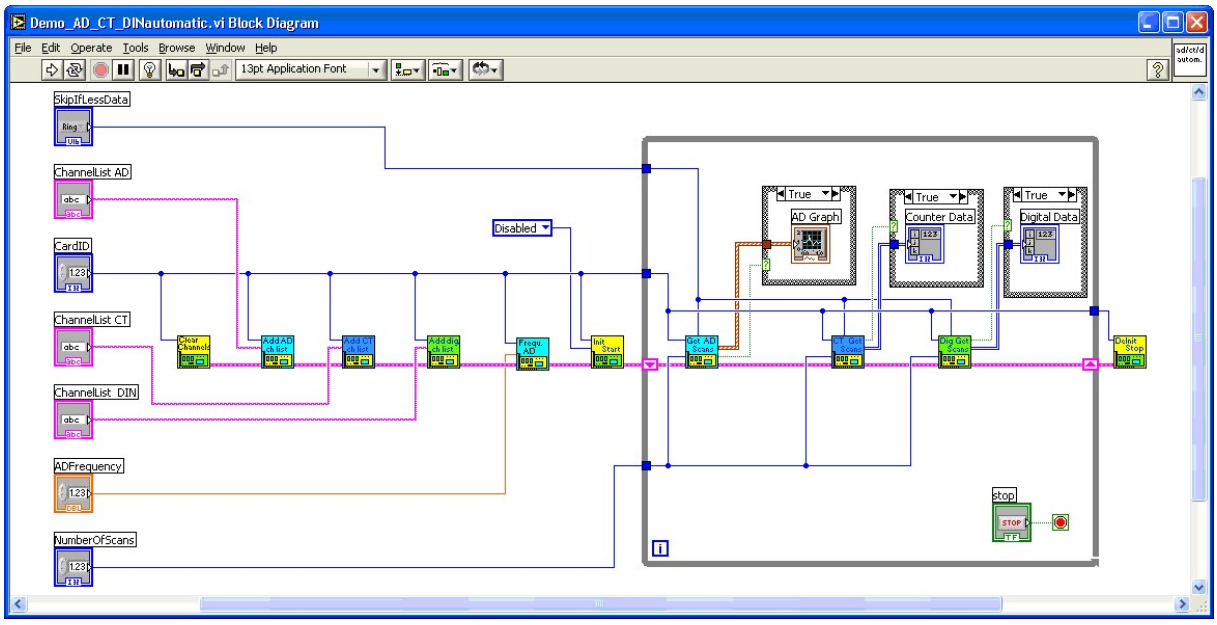

If working with simple VIs simple functions can be used without limits with MultiChoice USB-Basic cards. It is important to keep a certain order of calls to the VIs.

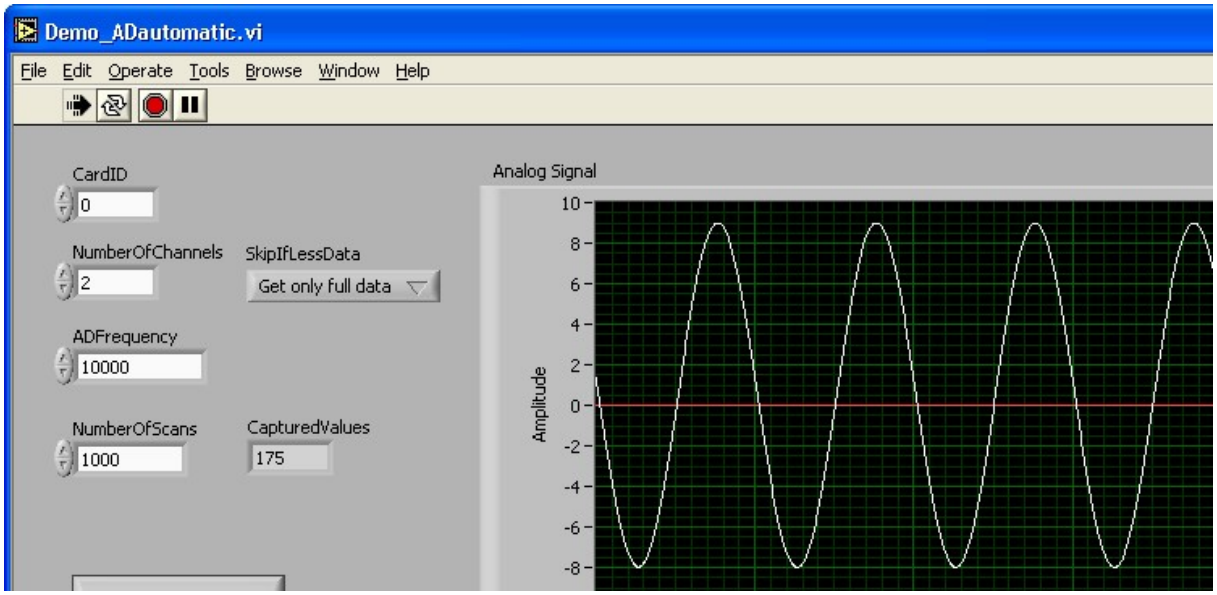
In the beginning the measurement is reset the channel lists by calling  .

Later calls of  respectively  and  certain channels can be configured for analog acquisition/output and counting. Afterwards calling  ,  and  sets the sample rate and the output frequency. Calling of  transmits the settings to the card and start the measurement. After the measurement was started, measured values are read from the buffer of the card within a loop.

The call  stops the measurement.

Digital output and manual analog acquisition can be performed at any time by calling the respective VIs.
Please refer to the LabView driver manual for more details about VIs.



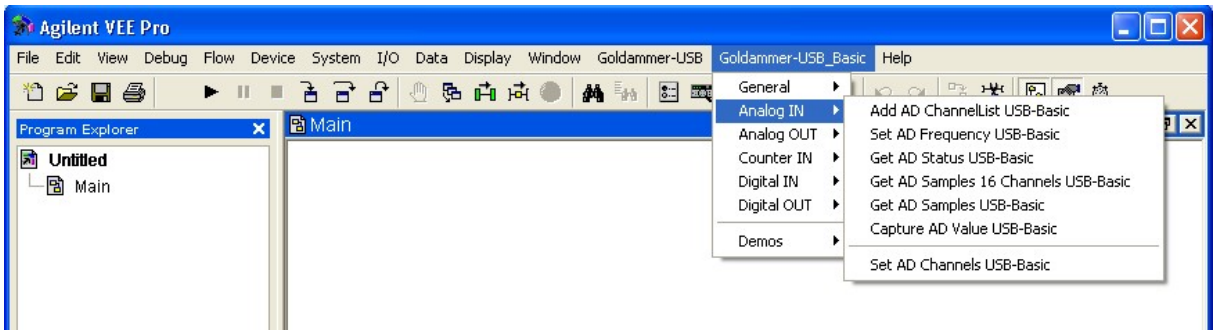



## 5.4 Multichoice USB Basic and VEE Pro

### 5.4.1 Driver Installation

Installation of the VEE driver is performed with SETUP.EXE. Any needed files are copied to the Agilent VEE directory during installation.

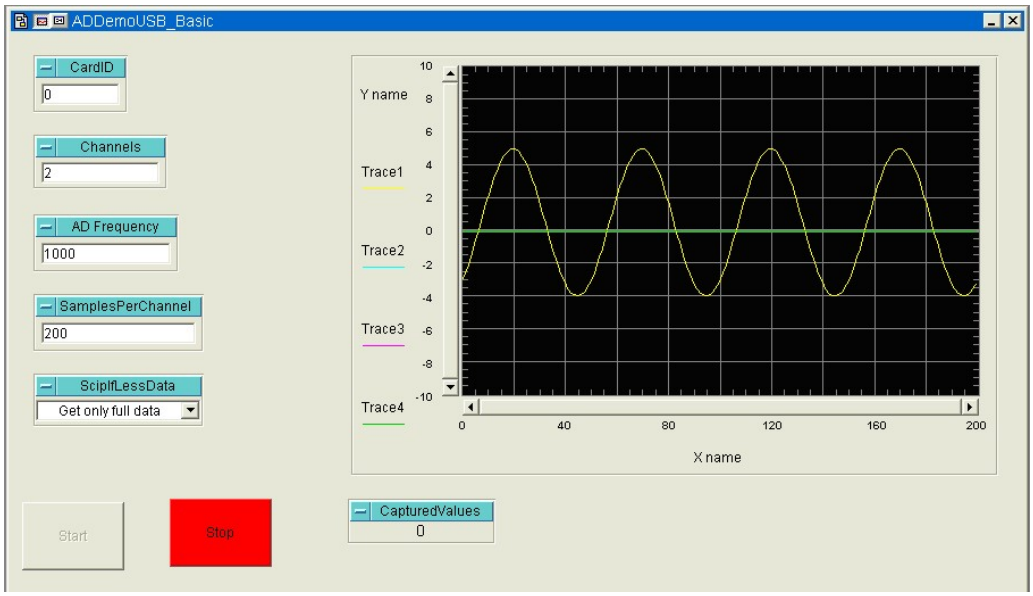
The driver is not installed as an acquisition driver but as an additional interface. The driver is offered to the user as a collection of schemes of which any acquisition and output application can be designed.




After installation of the driver additional menus “Goldammer-PCI” and/or “Goldammer-USB” are generated in the Agilent VEE menu.

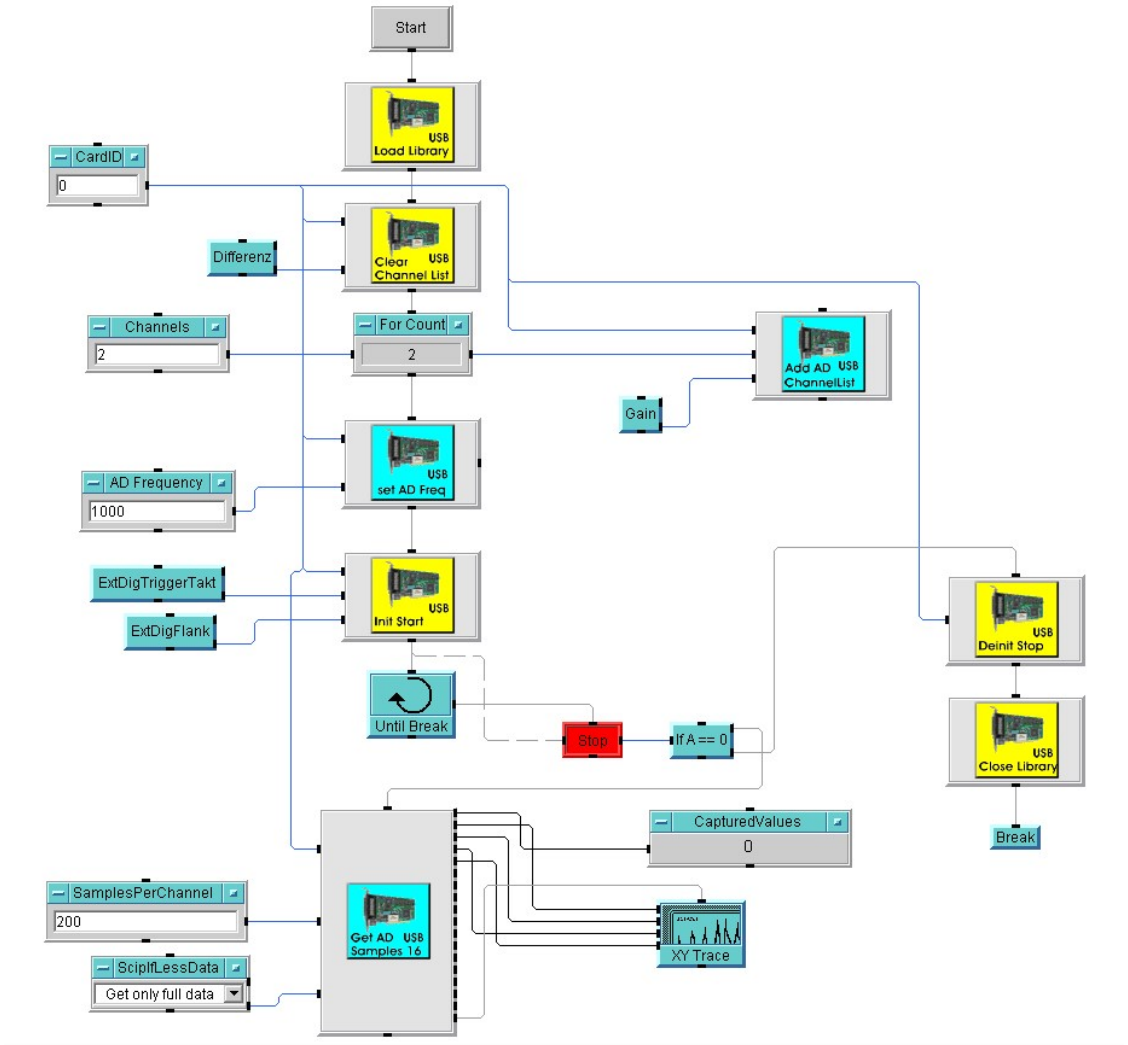
### 5.4.2 Measurements with VEE Pro

Right after starting the application „LoadLibrary“ function is called which in turn loads any functions from the DLL needed for the measurement.
Calling „ClearChannelList“ resets the channel list on the card.
„AddADChannelList and „AddDAChannelList“, or AddCTChannelList“ adds channels to the channel list on the card.
„SetADFrequency“, respectively „SetDAFrequency“, or „SetCTFrequency“ are used to set sample rate and output frequency for the measurement.
Calling „InitStart“ ends the configuration of the measurement and start the measurement.
Until now no more changes of the configuration for the measurement are allowed.
Acquisited data are buffered in the internal memory of the card until they are read with the function “GetADSamples“.
„GetADSamples“ is called within a loop until measurement is stopped.
Calling „DeinitStop“ ends the measurement.
The „CloseLibrary“ unloads the DLL.




Digital output and and manual acquisition and output can be performed without prior configuration. Respective calls can be made at any time.

Please refer to the Agilent-VEE driver manual for further details.



# 6 CE Conformance and FCC Rules

CE

This device was tested and found to comply in practical operation with the protection requirements of council directives (89/336/EWG) relating to safety and electromagnetic compatibility according to the standards EN 55022, and EN 61000-3.

FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

CE and FCC

These limits are designed to provide reasonable protection against interference in a residential area. This device generates and uses radio frequency energy and if not installed and used in accordance with the instructions, it may cause interference to radio or TV reception. If this unit does cause interference with TV or radio reception, you can try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the radio or TV receiver.
- Plug the equipment into a different wall outlet so that it is not on the same circuit as the radio or TV receiver.
- Consult the dealer or an experienced radio/TV technician for help.
- To ensure that the use of this product does not contribute to interference, and to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, it is necessary to use shielded I/O cables.

**Important**
The Federal Communications Commission points out expressively that changes or modifications to this equipment not expressly approved by the authority for compliance could void the user's authority to operate this equipment.

Disclaimer (Technical Changes)

**Important**
Any changes made to the software or the hardware of the device which are not approved with the written consent of „Soft & Hardware Entwicklung Goldammer GmbH" will not only void the warranty. This can also void the user's authority to operate the device. Soft & Hardware Entwicklung Goldammer GmbH is not liable by any means according to consequences which may arise of such changes.

•

## 6.1 Specifications Basic (G(0-E)C-1034)

Analog Inputs Cards 16bit Version (light version)

| | |
|---|---|
| Converter | AD7663AST |
| Number of inputs | 16/8 (light 8) |
| Resolution | 16 bit |
| Input voltage ranges | ±1,25V, ±2,5V, ±5V, ±10V |
| Gain | 1/2/4/8 |
| AD throughput | 250 kHz Multi Channel 2 |
| Precision of system | 0.009% = 1,8mV |
| AD Conversion time | 4 µs |
| Input impedance | 1 GΩ, 30 pF |
| Maximum input voltage in operation | ±35 V |
| BIAS current | ±40 nA |
| Non linearity | ±3 LSB |
| Digitalization error | ±3 LSB |
| Quantisation error | < ±1 LSB |
| Range error | adjustable |
| Zero error | adjustable |
| AD Zero drift | ±7 ppm / °C |
| Monotonicity | ±1,5 LSB |

## 6.2 Specifications Basic simultan (G(0-E)S-1034)

Analog Inputs Cards 16bit Version (light version)

| | |
|---|---|
| Converter | AD7656AST |
| Number of inputs | 12 (light 6) |
| Resolution | 16 bit |
| Input voltage ranges | ±5V, ±10V |
| Gain | 1/2 |
| AD throughput | 225 kHz per Channel |
| Precision of system | 0.009% = 1,8mV |
| AD Conversion time | 4 µs |
| Input impedance | 1 GΩ, 30 pF |
| Maximum input voltage in operation | ±35 V |
| BIAS current | ±40 nA |
| Non linearity | ±3 LSB |
| Digitalization error | ±3 LSB |
| Quantisation error | < ±1 LSB |
| Range error | adjustable |
| Zero error | adjustable |
| AD Zero drift | ±7 ppm / °C |
| Monotonicity | ±1,5 LSB |

## 6.3 Specifications Basic iDAS (G(0-E)I-1034)

Analog Inputs Cards 16bit Version (light version)

| | |
|---|---|
| Converter | ADAS3021 |
| Number of inputs | 16/8 (light 8) |
| Resolution | 16 bit |
| Input voltage ranges | ±12.28V;±10.24V; ±5.12V; ±2,56V; ±1,28V; ±0,64V |
| Gain | 1/2/4/8 |
| AD throughput | 2000 kHz (light=1000kHz) |
| Precision of system | 0.004% = 0,9mV |
| AD Conversion time | 1 µs |
| Input impedance | 500 MΩ, 5 pF |
| Maximum input voltage in operation | ±30 V |
| BIAS current | ±40 nA |
| Non linearity | ±0.5 LSB |
| Digitalization error | ±0.6 LSB |
| Quantisation error | < ±0.5 LSB |
| Range error | adjustable |
| Zero error | adjustable |
| AD Zero drift | ±0.1 ppm / °C |
| Monotonicity | ±1,5 LSB |

## 6.4 Specifications Basic simultan (G0M)-1034)

Analog Inputs Cards 16bit Version

| | |
|---|---|
| Converter | AD7671AST |
| Number of inputs | 2 |
| Resolution | 16 bit |
| Input voltage ranges | ±10V |
| Gain | 1 |
| AD throughput | 3 MHz per Channel |
| Precision of system | 0.01% = 1,8mV |
| AD Conversion time | 0,3 µs |
| Input impedance | 1 GΩ, 30 pF |
| Maximum input voltage in operation | ±35 V |
| BIAS current | ±40 nA |
| Non linearity | ±2,5 LSB |
| Digitalization error | ±2,5 LSB |
| Quantisation error | < ±2 LSB |
| Range error | adjustable |
| Zero error | adjustable |
| AD Zero drift | ±7 ppm / °C |
| Monotonicity | ±1,5 LSB |

## 6.5 Analog output G(0-E)C-1034-[0-3] D/A Converter (5)

| | |
|---|---|
| Converter | DAC7734 |
| Number of outputs | 4 |
| Resolution | 16 Bits |
| Output voltage ranges | ±10 V |
| DA throughput | 10 kHz, per channel |
| Output current | ±5 mA |
| Output impedance | 0.2 Ω |
| Non linearity | < ±3 LSB |
| Range error | < ±0.1 %, typ. |
| Zero error | < ±0.1 %, typ. |
| Settling time up to 0.012 % FSR | 5 µs, 20V step |
| Steepness | 10 V / µs |
| AD Zero drift | ±5 ppm / °C, typ. |
| Range drift | ±5 ppm / °C, typ. |
| Monotonocity | guaranteed |

## 6.6 Analog output G(0-E)C-1034-[4-6] D/A Converter (5)

| | |
|---|---|
| Converter | DAC8734 |
| Number of outputs | 4 |
| Resolution | 16 Bits |
| Output voltage ranges | ±10 V |
| DA throughput | 10 kHz, per channel |
| Output current | ±5 mA |
| Output impedance | 0.2 Ω |
| Non linearity | < ±3 LSB |
| Range error | < ±0.1 %, typ. |
| Zero error | < ±0.1 %, typ. |
| Settling time up to 0.012 % FSR | 5 µs, 20V step |
| Steepness | 10 V / µs |
| AD Zero drift | ±5 ppm / °C, typ. |
| Range drift | ±5 ppm / °C, typ. |
| Monotonocity | guaranteed |

## 6.7 Analog output G0D)1034-[0-3] D/A Converter (5)

| | |
|---|---|
| Converter | AD7664 |
| Number of outputs | (8) 16 |
| Resolution | 16 Bits |
| Output voltage ranges | ±10 V |
| DA throughput | 10 kHz, per channel |
| Output current | ±5 mA |
| Output impedance | 0.2 Ω |
| Non linearity | < ±3 LSB |
| Range error | < ±0.1 %, typ. |
| Zero error | < ±0.1 %, typ. |
| Settling time up to 0.012 % FSR | 5 µs, 20V step |
| Steepness | 10 V / µs |
| AD Zero drift | ±5 ppm / °C, typ. |
| Range drift | ±5 ppm / °C, typ. |
| Monotonocity | guaranteed |

## 6.8 Timer/Counter G(0-E)C-1034-[0-3] (7)

| | |
|---|---|
| Component | Cyclone |
| Number of counters | 2 (light *1) |
| Counter resolution | 32 Bit 10MHz |
| Counter modes | Event counting,<br>Frequency measurement (Frequency resolution 10Hz) |
| Logic High Input Voltage | 2.2 V |
| Logic Low Input Voltage | 0.4 V |
| Logic Input Current | ±330 µA |
| Logic High Output Voltage | 2.4 V min. |
| Logic Low Output Voltage | 0.4 V max. |
| Logic High Output Current | -5 mA max. |
| Logic Low Output Current | 5 mA max. |
| External input frequency | 10 MHz max. |
| Resolution 24 Bit | programmable |

## 6.9 Digital Inputs/Outputs G(0-E)C-1034-[0-3]

| | |
|---|---|
| Number of inputs | 16 (switchable in four Bit groups)<br>48 (switchable in 16 Bit groups) |
| Logic Family | LVCMOS |
| Logic Sense | High |
| Logic High Input Voltage | 2.0 V |
| Logic Low Input Voltage | 0.4 V |
| Logic High Input Current | 0.5 µA |
| Logic Low Input Current | 0.1 µA |
| Logic High Output Voltage | 3.1 V min. |
| Logic Low Output Voltage | 0.1 V max. |
| Logic High Output Current | -2,5 mA |
| Logic Low Output Current | 2,5 mA |
| Termination | None |
| Throughput | 500 kHz |
| Maximum input voltage in operation | +5 V |

## 6.10 Digital Inputs/Outputs optocoupled G(0-E)C-1034-[4-9]

| | |
|---|---|
| Number of inputs | 8 (light *4) |
| Logic High Input Voltage | 2.4 V – 30.0 V |
| Logic Low Input Voltage | 0.4 V |
| Logic High Input Current | 2mA |
| Number of outputs | 8 (light *4) |
| Logic High Output Voltage | 35 Voltage max. (TD62083) |
| Logic High Output Current | 60 mA |
| Throughput | 10 kHz |
| External power supply outputs | 2.4 V to 35 Volt, 60 mA |

## 6.11 External Trigger and Counter G(0-E)C-1034-[0-3]

| | |
|---|---|
| Input mode | Logic High |
| Logic Family | CMOS |
| Maximum input voltage in operation | +5 V |
| Logic High Input Voltage | 2.5 V |
| Logic Low Input Voltage | 0.4 V |
| Logic High Input Current | 2 mA |
| Logic Low Input Current | -0.1 µA |
| Min. Pulse Width High | 100 ns |
| Min. Pulse Width Low | 100 ns |
| Max. Pulse Width | to ∞ |

**6.12** External Trigger and Counter optoecoupled G(0-E)C-1034-[4-9]

| | |
|---|---|
| Input mode | Logic High |
| Logic High Input Voltage | 2.4 V – 30.0 V |
| Logic Low Input Voltage | 0.4 V |
| Logic High Input Current | 2mA |
| Min. Pulse Width High | 100 ns |
| Min. Pulse Width Low | 100 ns |
| Max. Pulse Width | to ∞ |
| Measuring with an incremental encoder 1x,2.4x Interpolation w. zero position detection | Resolution 32 Bit<br>time stamp 16 Bit |

**6.13** Miscellaneous USB G0C

| | |
|---|---|
| Power supply | G0C-1034-(8-9) supplied over USB-Port 330mA, no external power supply is needed.<br><br>G0C-1034-(0,1,2,3) +5,0 V; max. 470 mA<br>G0C-1034-(4,5,6) +5,0 V; max. 470 mA<br>Supplied over a power plug supply |
| Operating temperature range | 0 .. 70° C |
| Storage temperature range | -40 .. 85° C |
| Humidity | 95 %, noncondensing |
| Dimensions | G0C-1034-1,5 180x118x49 mm screw terminal<br>G0C-1034-0,4 180x118x64 mm BNC<br>G0C-1034-2,3,6 160x100x14 mm OEM<br>G0C-1034-8 120x118x49 mm screw terminal<br>G0C-1034-9 100x100x14 mm OEM |
| Weight | G0C-1034-0,4 1050 gr.<br>G0C-1034-1,6 810 gr.<br>G0C-1034-2,3 100 gr.<br>G0C-1034-8 600 gr.<br>G0C-1034-9 77 gr. |
| Bus system | USB 2.0, USB 1.1 compatible |

**6.14** Miscellaneous USB G0S simultan

| | |
|---|---|
| Power supply | G0S-1034-(8-9) 320mA, G0C-1034-(0,1,2,3) +5,0 V; max. 370 no external power supply is needed.<br>G0C-1034-(4,5,6) +5,0 V; max. 450 mA<br>Versorgung Supplied over a power plug supply |
| Operating temperature range | 0 bis 70° C |
| Storage temperature range | -40 bis 85° C |
| Humidity | 95 %, noncondensing |
| Dimensions | G0S-1034-1,5 180x118x49 mm screw terminal<br>G0S-1034-0,4 180x118x64 mm BNC<br>G0S-1034-2,3,6 160x100x14 mm OEM<br>G0S-1034-8 120x118x49 mm screw terminal<br>G0S-1034-9 100x100x14 mm OEM |
| Weight | G0S-1034-0,4 1050 gr.<br>G0S-1034-1,6 810 gr.<br>G0S-1034-2,3 100 gr.<br>G0S-1034-8 600 gr.<br>G0S-1034-9 75 gr. |
| Bus system | USB 2.0, USB 1.1 compatible |

**6.15** Miscellaneous USB G0I iDAS

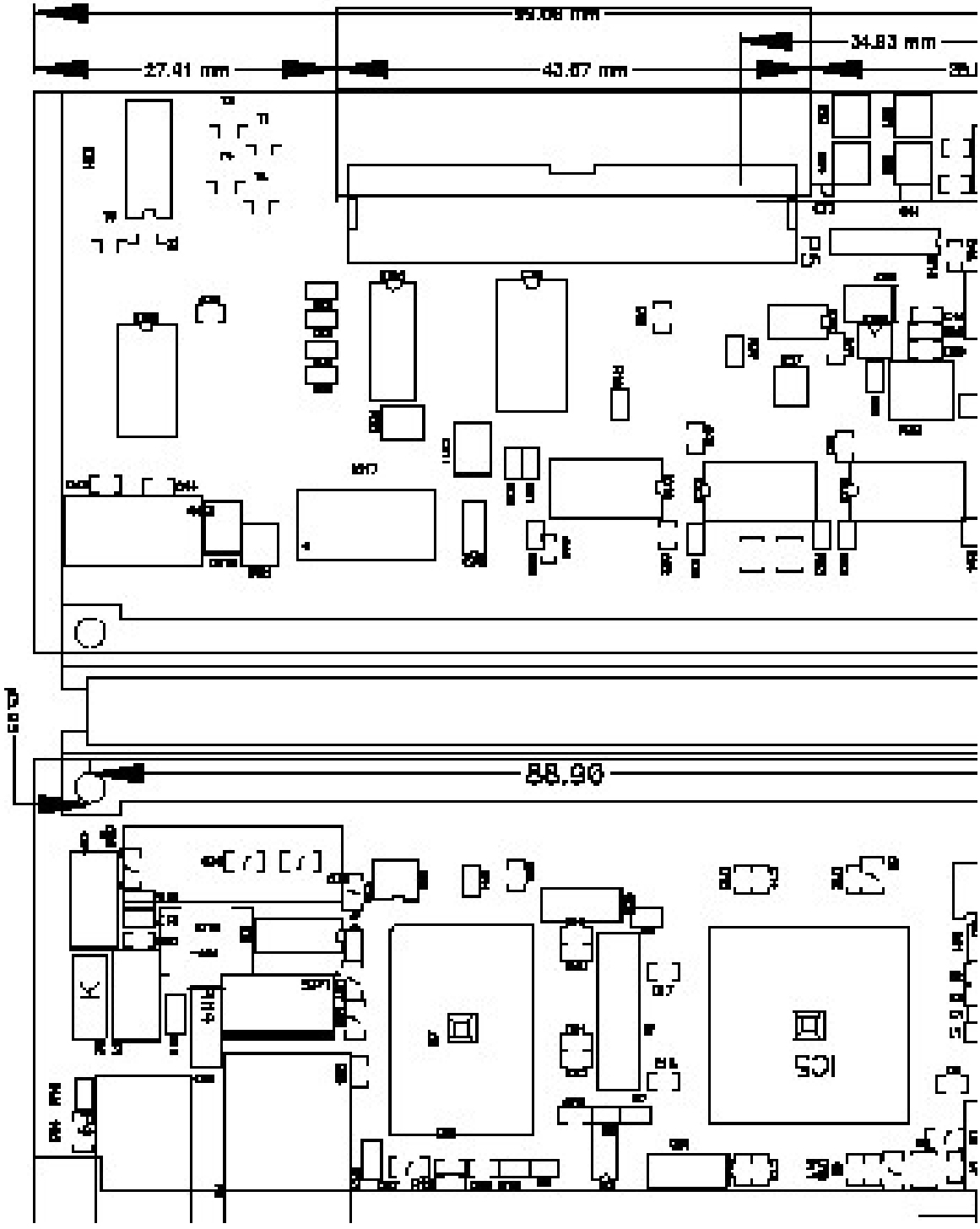
| | |
|---|---|
| Power supply | G0I-1034-(8-9) supplied over USB-Port 330mA, no external power supply is needed.<br><br>G0I-1034-(4,5,6) +5,0 V; max. 470 mA<br>no external power supply is needed. |
| Operating temperature range | 0 .. 70° C |
| Storage temperature range | -40 .. 85° C |
| Humidity | 95 %, noncondensing |
| Dimensions | G0C-1034-1,5 180x118x49 mm screw terminal<br>G0C-1034-0,4 180x118x64 mm BNC<br>G0C-1034-2,3,6 160x100x14 mm OEM<br>G0C-1034-8 120x118x49 mm screw terminal<br>G0C-1034-9 100x100x14 mm OEM |
| Weight | G0C-1034-0,4 1050 gr.<br>G0C-1034-1,6 810 gr.<br>G0C-1034-2,3 100 gr.<br>G0C-1034-8 600 gr.<br>G0C-1034-9 77 gr. |
| Bus system | USB 2.0, USB 1.1 compatible |

**6.16** Miscellaneous USB G0M

| | |
|---|---|
| Power supply | G0M-1034-(0,1,2,3) +5,0 V; max. 420<br>G0M-1034-(4,5,6) +5,0 V; max. 680 mA<br>Supplied over a power plug supply |
| Operating temperature range | 0 bis 70° C |
| Storage temperature range | -40 bis 85° C |
| Humidity | 95 %, noncondensing |
| Dimensions | G0M-1034-1,5 180x118x49 mm<br>Schraubklemmen<br>G0M-1034-0,4 180x118x64 mm BNC<br>G0M-1034-2,3,6 160x100x14 mm OEM |
| Weight | G0M-1034-0,4 1050 gr.<br>G0M-1034-1,6 810 gr.<br>G0M-1034-2,3 100 gr. |
| Bus system | USB 2.0, USB 1.1 compatible |

# 7 Dimension Drawing:

## 7.1 MultiChoice G0C-1034-9 OEM



**7.2**

## 7.3 MultiChoice G0C-1034-2 OEM