

MultiChoice *BASIC* USB



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Imprint

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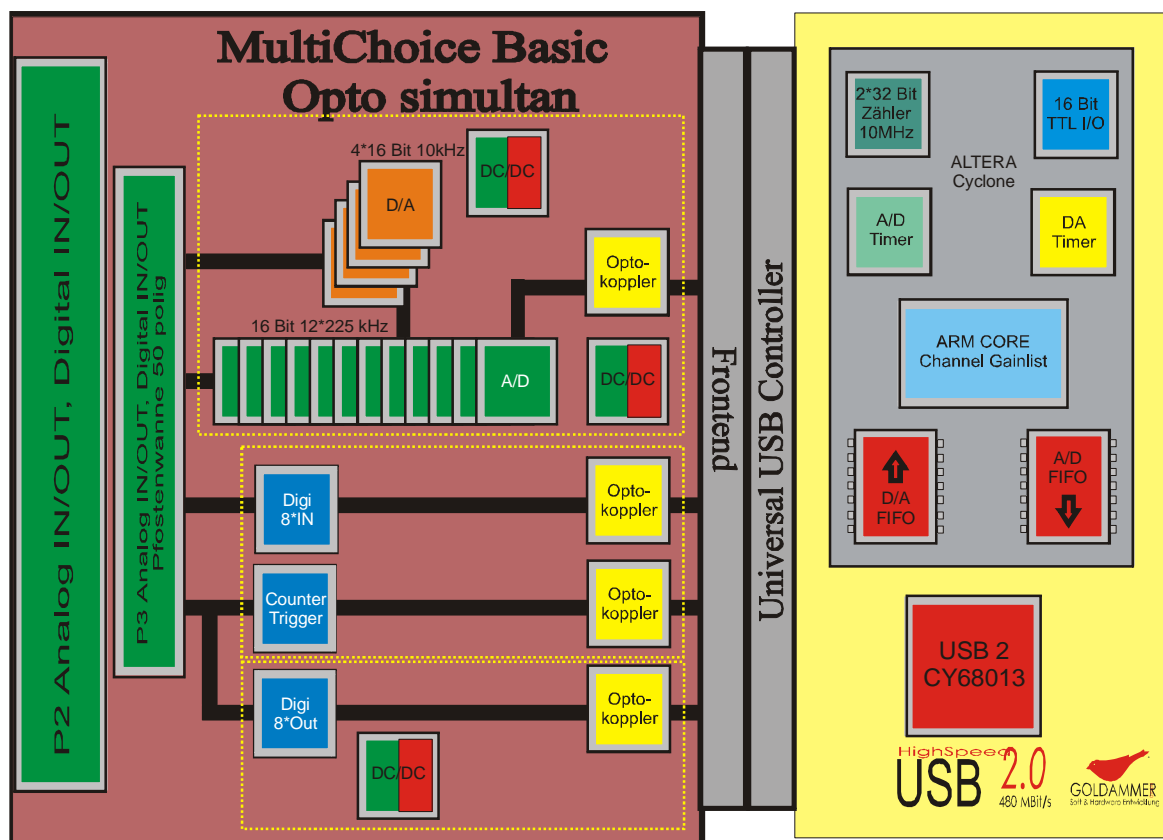
1 Introduction

1.1 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.

Unrivalled 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

1.2 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	4 Bit Out	1 * 32 Bit	(optocoupled)
					Ue. 2.4V-30V	Ua. 0-35V 60mA		
GOC-1034-6	16SE/8DI	16 Bit	250kHz	4*16 Bit	8 Bit In	8 Bit Out	2 * 32 Bit	(optocoupled)
					Ue. 2.4V-30V	Ua. 0-35V 60mA		
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								
Weidmüller Screw Terminals								
GOC-1034-8	8SE	16 Bit	150kHz		4 Bit In	4 Bit Out	1 * 32 Bit	(optocoupled)
					16 Bit TTL		2 * 32 Bit	
GOC-1034-1	16SE/8DI	16 Bit	250kHz	4*16 Bit	8 Bit In	8 Bit Out	2 * 32 Bit	(optocoupled)
					Ue. 2.4V-30V	Ua. 0-35V 60mA		
GOC-1034-5	16SE/8DI	16 Bit	250kHz	4*16 Bit				
Standard Version in rugged Aluminum Case								
Digital Inputs/Outputs are equipped with Weidmüller Screw Terminals								
Analog BNC connectors								
GOC-1034-0	16SE/8DI	16 Bit	250kHz	4*16 Bit	16 Bit TTL		2 * 32 Bit	
					8 Bit In	8 Bit Out	2 * 32 Bit	(optocoupled)
					Ue. 2.4V-30V	Ua. 0-35V 60mA		

1.2.1 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	4 Bit Out	1 * 32 Bit	(optocoupled)
GOS-1034-6	12SE	16 Bit	225kHz **	4*16 Bit	Ue. 2,4V-30V	Ua. 0-35V 60mA	2 * 32 Bit	(optocoupled)
GOM-1034-6	2SE	16 Bit	2500kHz **	4*16 Bit	8 Bit In	8 Bit Out	2 * 32 Bit	(optocoupled)
					Ue. 2,4V-30V,	Ua. 0-35V 60mA		
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								
Weidmüller Screw Terminals								
GOS-1034-8	8SE	16 Bit	225kHz **		4 Bit In	4 Bit Out	1 * 32 Bit	(optocoupled)
					Ue. 2,4V-30V,	Ua. 0-35V 60mA		
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	8 Bit Out	2 * 32 Bit	(optocoupled)
					Ue. 2,4V-30V,	Ua. 0-35V 60mA		
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	8 Bit Out	2 * 32 Bit	(optocoupled)
					Ue. 2,4V-30V,	Ua. 0-35V 60mA		
Standard Version in rugged Aluminum Case								
Digital Inputs/Outputs are equipped with Weidmüller Screw Terminals								
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	8 Bit Out	2 * 32 Bit	(optocoupled)
**Per Channel					Ue. 2,4V-30V,	Ua. 0-35V 60mA		

1.2.2 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 $\pm 10\text{V}$.

The outputs are available with resolutions of 16 bits (65535 quantifying steps).

1.2.3 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.

1.2.4 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.

1.2.5 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.

1.2.5.1 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.

Functional Overview

1.2.5.2 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 steps of 100 milliseconds. Within the time window the number of pulses of the frequency signal to determine is counted. The number of pulses can be read directly as frequency value shown in Hz and can be used for the display. The display shows the following with an input frequency of 12560 Hz depending on the setting of the reference frequency:

Resolution	Display
10 Hz	12560 Hz

1.2.6 External Trigger/External Clock

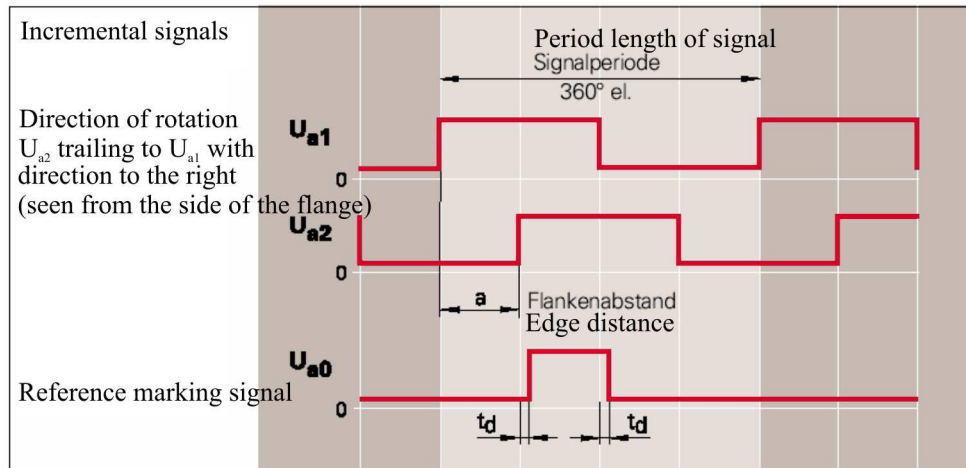
Measurement cards offer a digital input which allows starting of an external measurement and the generation of an external clock for the measurement. Externally started measurement is run after a change of the logical level (programmable high/low) while externally clocked measurements are edge started (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.

1.2.6.1 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.



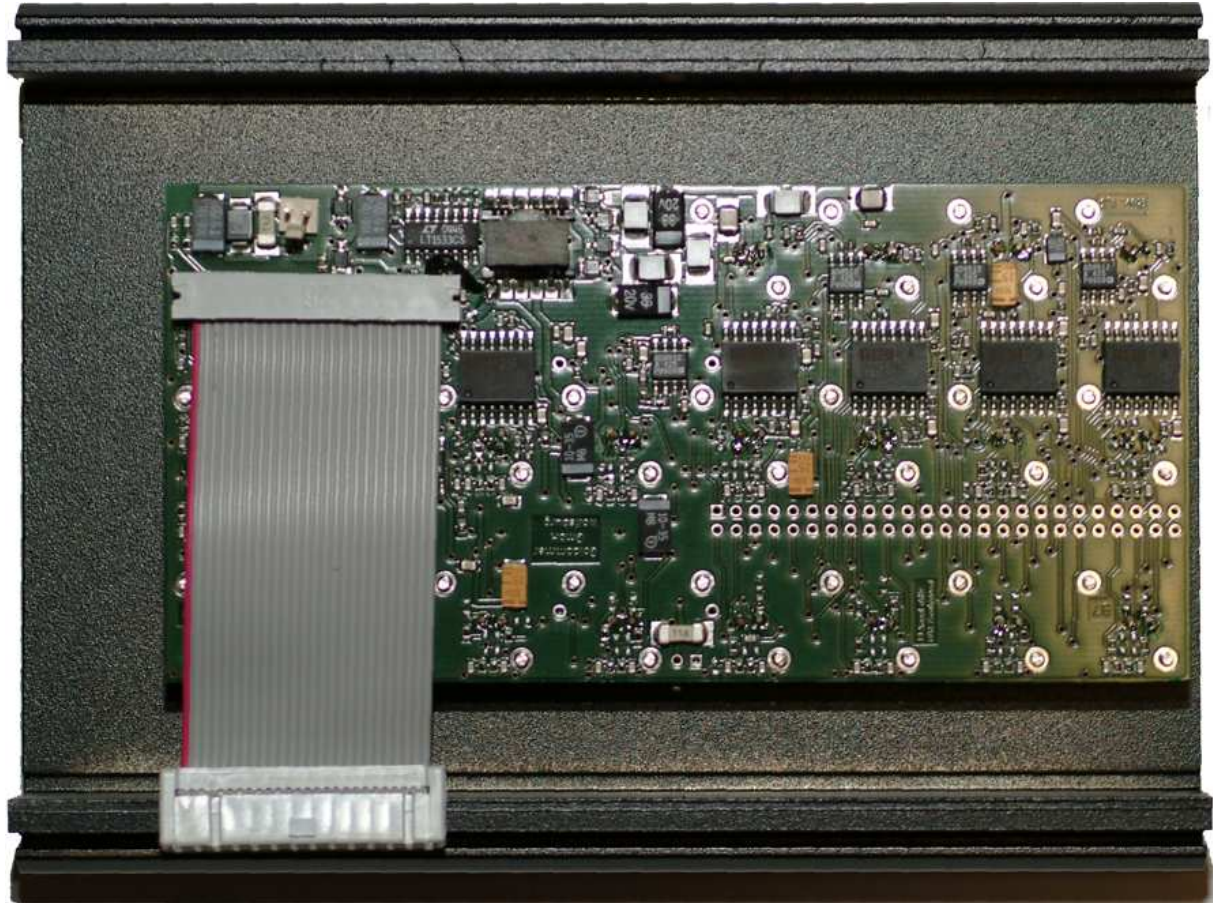
1.2.7 Master and Slave

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 adjusted 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 *G0C-1034-(4-6)* on the digital output channel *PB.7* and at cards of the type *G0C-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).

1.3 16 Active Differential Inputs

Any channel is equipped with an INA2128 instrumentation amplifier. The inputs are connected to ground over a 2.47 M Ω resistor. The frequency limitation of the inputs is set to 80 kHz.

An optional installable resistor provides additional gain settings.



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.

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.

1.4 Drivers and Applications

Measure cards and software for the PCI and the USB series are developed modular and are based on common sources.

According to a layer model only the lowest hardware specific layer is different. Any methods based upon them are identical.

This design makes actualization of drivers much easier and guaranties high levels of quality while offering its user's well known dialogs and interfaces.

This concept can be found throughout all software packages. Even the development of software for the programming interface of PCI and USB series are identical, any program developed by the user can be run on both series without any changes. The package of the MultiChoice series includes optimized drivers for Windows 98SE up to Windows 7 and high quality drivers for standard applications. the cards can be integrated into existent software systems if needed. It also contains not just a native Windows32 but also a .NET programming interface, which allows the use from every .NET language (C#, VisualBasic, F#) and from any application or programming environment, that allows using .NET objects, for example Matlab, Mathematica, Agilent VEE or LabView.

- operating systems
 - Windows 7 (32 Bit)
 - Windows Vista (32 Bit)
 - Windows ME/2000/XP (32 Bit)
 - Windows 98SE (für USB Cards)
- standard applicaitions
 - Agilent VEE
 - DIAdem
 - DASyLab
 - LabVIEW
 - Edas WIN
 - EVA Pro
- individual software solutions via
 - native Windows32 Programming Interface
 - dotNet Programming Interface

1.5 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.
-

1.6 Standard Measurement Software Solutions

To support common software solutions like DIAdem, DasyLab, LabView, EVApro and EdasWin the measuring cards are shipped with free-of-charge drivers. The included CDs represent the actual state at the time of the delivery. The most actual versions can be found at the Goldammer website (<http://www.goldammer.de>). They can be downloaded and installed.

1.7 MultiChoice and DIAdem

To use the card with DIAdem a perfected driver based on the GPI interface is available. It allows fast access to the basic functionality of the card and any of the options as well. The driver is configured completely in DIAdem which offers the best possible comfort and optimized integration into the DIAdem user interface.

1.8 MultiChoice and DasyLab

The DasyLab drivers are not used over the existing driver interface but as special modules aided by the so called extension interface. This allows working with up to four measuring cards per series (USB and PCI). Furthermore the driver interface is kept free for other drivers. This allows the system to be used to its maximum. DasyLab offers an easy user interface with hierarchically grouped submenus. The most common settings can be seen at a glance and the user is able to configure any other settings manually.

1.9 MultiChoice and LabView

The graphical measure and programming software LabView of National Instruments is supported by some simple and some complex virtual instruments (VI's). They allow easy integration of the PCI and USB series in any measuring tasks. The whole functionality can be controlled by the available VI's.

1.10 EdWin

EDWin is an easy to use measurement program. There is no need for programming because the desired measurement channels are listed in a table. An integrated measurement point list allows dragging & dropping of measurement channels into the list. Even a fast real time display of data is offered.

1.11 EVApro

The program EVApro of Bedo Elektronik GmbH allows programming and carrying out measuring tasks. The whole PCI and USB series cards are supported. Any further processing of the measured data is carried out in EVApro. The description of the measuring task is made in a text editor.

1.12 VEE Pro

Drivers are offered as a programming interface for Agilent Vee Pro. Provided sample schemes allow designing of customized measurement schemes.

2 Hardware/Software Installation

2.1 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 board's 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 ± 40 Volts should not exceeded under any circumstances.
- The maximum voltage value for digital inputs and inputs of counters is 5 Volts. Maximum input voltage of optocoupled digital versions is 35V.
- 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.

2.1.1 USB version

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.

After the driver was found Windows XP shows the message that the driver is not digitally signed. Please click on the button Install Driver and use this driver.

After the installation the driver is available system wide. It is not necessary to restart the system.

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. Windows XP stores the last version of the driver for each port. If you are going to actualize the driver you have to achieve this for all existent ports.

2.2 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 $5k\Omega$ 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, ...).

2.2.1 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.

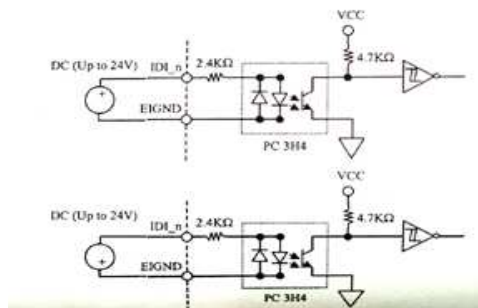
Weidmüller screw terminals are connected respectively. To use the dual ended mode please connect the negative route (K8-K15) with a 5 kΩ resistor to the cards ground. Connecting the digital signals is similar to the BNC version. The OEM version is equipped with two pin connectors (P3, P5). Aided by flat 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 G0C-1034-(8-9) offer four optocoupled inputs/outputs, while cards of the type G0C-1034-(0 + 4) offer eight optocoupled inputs/outputs.

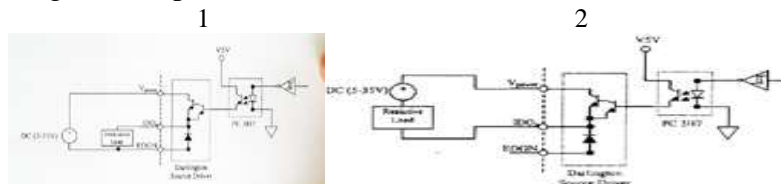
2.2.2 Optocoupled Inputs

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



2.2.3 Optocoupled Outputs

Cards of the type G0C-1034-(8-9) offer four optocoupled outputs, while cards of the type G0C-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.



3 Pin Assignment:

3.1 Pin Assignment G0C-1034-X

3.1.1 G0C-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 Incremental Counter/RST
Counter 0 Incremental Counter/PH0	Counter 0	Pin 15		Pin 34	Counter 1	Counter 1 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 Master-Clock
Ground	GND	Pin 24		Pin 25	GND	Ground

3.1.2 G0C-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 Incremental Counter/RST
Counter 0 Incremental Counter/PH0	Counter 0	Pin 31		Pin 32	Counter 1	Counter 1 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 Master-Clock
Ground	GND	Pin 49		Pin 50	GND	Ground

3.1.3 G0C-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

3.1.4 G0C-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin OPTO

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 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

3.1.5 G0C-1034-6 Connector P3 Pin Terminal 50-pin OEM OPTO

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

3.1.6 G0C-1034-8 Connector P2 Weidmüller 24-pin OPTO LIGHT

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 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/Slave Incremental Counter/PH0	Trigger	Pin 12		Pin 24	Counter 0	Counter 0 Incremental Counter/PH90

NC = Reserved

3.1.7 G0C-1034-9 Connector P3 Pin Terminal 26-pin OEM OPTO LIGHT

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 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/Slave Incremental Counter/PH0	Trigger	Pin 25		Pin 26	Counter 0	Counter 0 Incremental Counter/PH90

3.2 Pin Assignment G0S-1034-X

3.2.1 G0S-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 Incremental Counter/RST
Counter 0 Incremental Counter/PH0	Counter 0	Pin 15		Pin 34	Counter 1	Counter 1 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 Master-Clock
Ground	GND	Pin 24		Pin 25	GND	Ground

3.2.2 G0S-1034-[2,3] 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	GND	Pin 27		Pin 28	GND	Ground
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 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 Master-Clock
Ground	GND	Pin 49		Pin 50	GND	Ground

3.2.3 G0S-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

3.2.4 G0S-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin OPTO

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

3.2.5 G0S-1034-6 Connector P3 Pin Terminal 50-pin OEM OPTO

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

3.2.6 G0S-1034-8 Connector P2 Weidmüller 24-pin OPTO LIGHT

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/Slave Incremental Counter/PH0	Trigger	Pin 12		Pin 24	Counter 0	Counter 0 Incremental Counter/PH90

NC = Reserved

3.2.7 G0S-1034-9 Connector P3 Pin Terminal 26-pin OEM OPTO LIGHT

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/Slave Incremental Counter/PH0	Trigger	Pin 25		Pin 26	Counter 0	Counter 0 Incremental Counter/PH90

3.3 Pin Assignment G0M-1034-X

3.3.1 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 Incremental Counter/RST
Counter 0 Incremental Counter/PH0	Counter 0	Pin 15		Pin 34	Counter 1	Counter 1 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 Master-Clock
Ground	GND	Pin 24		Pin 25	GND	Ground

3.3.2 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 Incremental Counter/RST
Counter 0 Incremental Counter/PH0	Counter 0	Pin 31		Pin 32	Counter 1	Counter 1 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 Master-Clock
Ground	GND	Pin 49		Pin 50	GND	Ground

3.3.3 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

3.3.4 G0M-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin OPTO

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

3.3.5 G0M-1034-6 Connector P3 Pin Terminal 50-pin OEM OPTO

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

3.4 Connectorbelegungen G0C-1023-X UniversalCounter

3.4.1 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

3.4.2 G0C-1023-1 Connector P2 Weidmüller Screw Terminal 48-pin OPTO

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

3.4.3 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

3.4.4 G0C-1023-3 Connector P3 Pin Terminal 50-pin OEM OPTO

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

3.5 Pin Assignment G0C-1015-X Incremental Counter

3.5.1 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

3.5.2 G0C-1015-1 Connector P2 Weidmüller Screw Terminal 48-pin OPTO

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

3.6 Pin Assignment G0D-1034-X

3.6.1 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

3.6.2 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

3.7 Pin Assignment of external extensions and adapter units

3.7.1 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

3.7.2 G0S-1034-[4,5] Connector P2 Weidmüller Screw Terminal 48-pin OPTO

Connector Basic simultan highspped (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 (GOS-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:

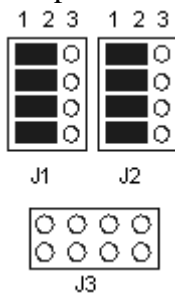
J1+ J2 set to dual ended,

J3 set

16 single ended channels

J1+ J2 set to single ended,

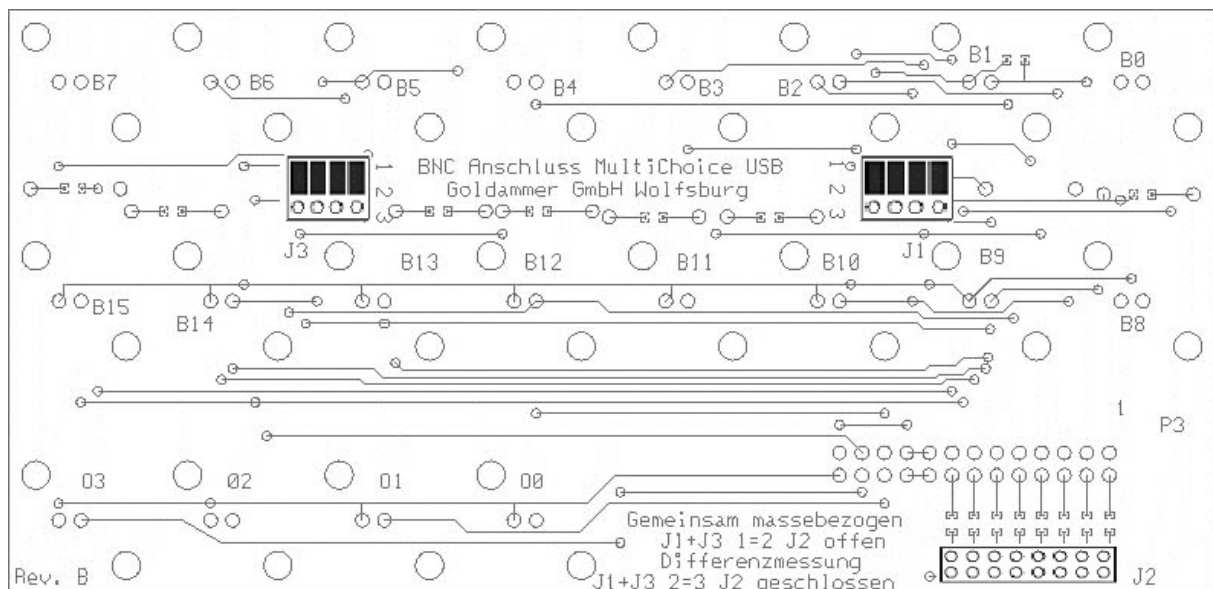
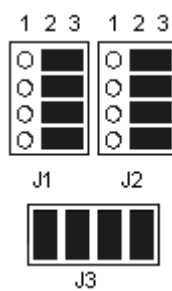
J3 open



8 dual ended channels:

J1+ J2 set to dual ended,

J3 set



4 Installation of Software

4.1 Installation of the Drivers of the DIAdem Versions 6, 7, 8, 9 and 10DIAdem 6,7,8,9 and 10.x

4.1.1 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

4.1.2 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.

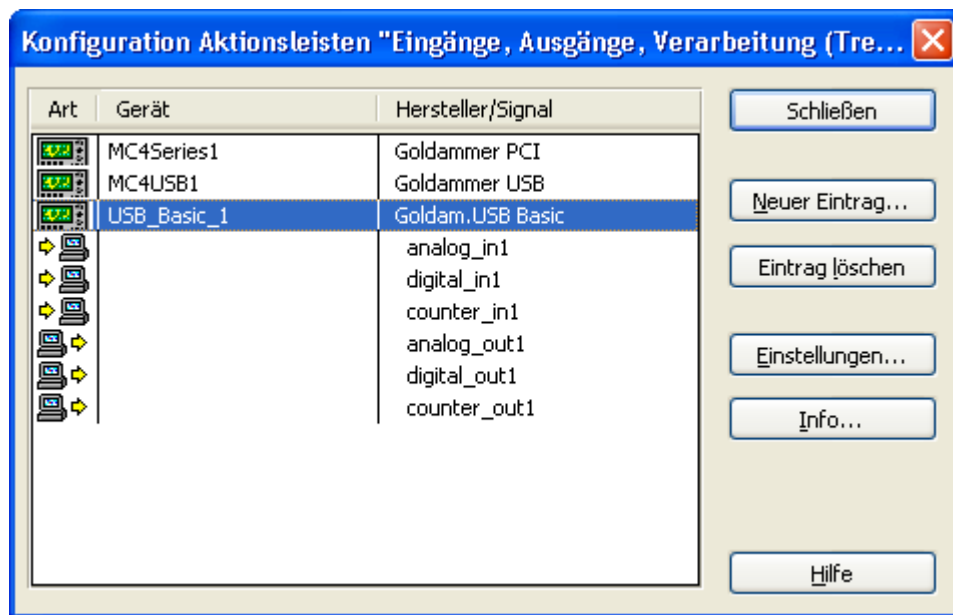
4.1.3 Registering the driver in DIAdem

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.

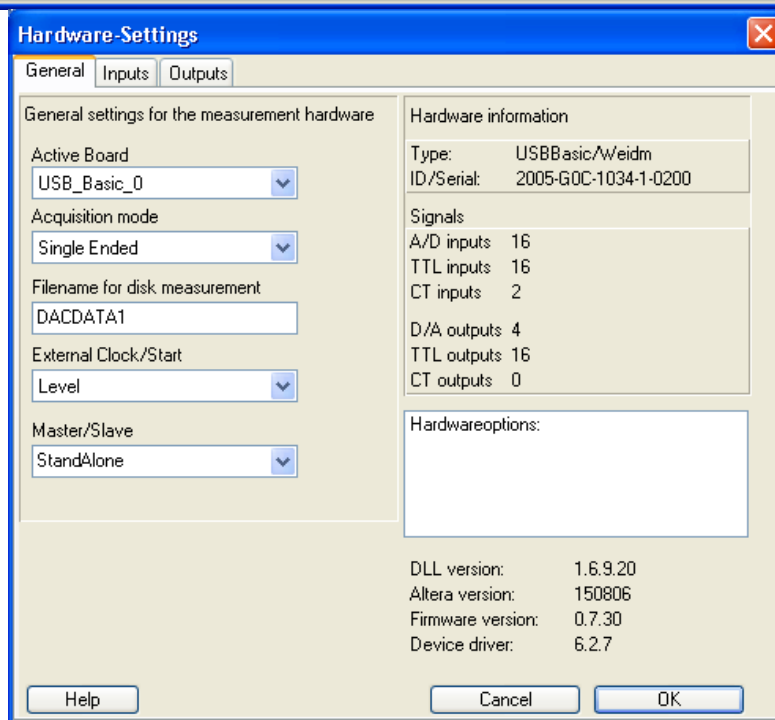
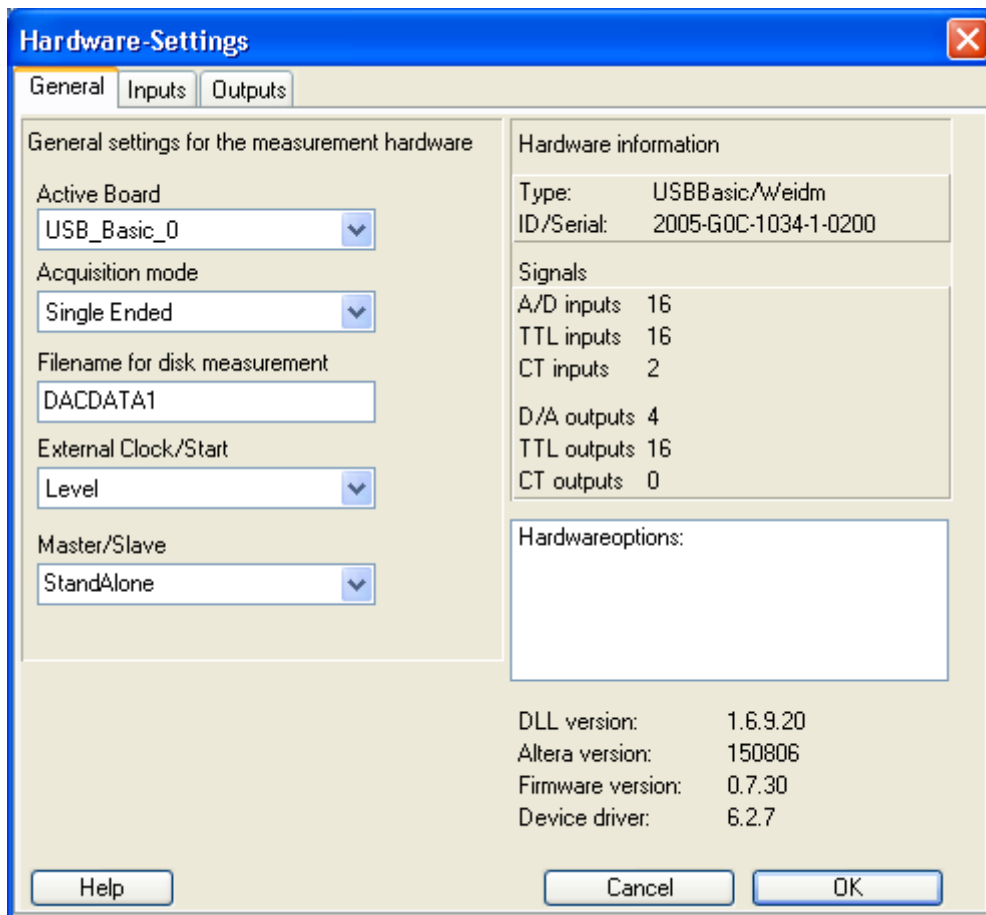
Please select „Goldam.USB Basic“ as manufacturer followed by the entry „UsbBasSeries1“.

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 [X]

General Inputs Outputs

Global settings for inputs

Select the input
analog_in1

Channelwise settings

Settings for channel

DLL_In2_1

AnalogIN gain: no gain Acquisition mode: bipolar

DigitalIN Bit-width: Bit

CounterIN Countermode: Impulse counter

Counter Inkrementalcounter

Flank: Edge 1 Hz

Up/Down: Up Counterresolution: 100ns

Startvalue: 0

Help Cancel OK

Hardware-Settings [X]

General Inputs Outputs

Global settings for inputs

Select the input
analog_in1

Channelwise settings

Settings for channel

DLL_In2_1

AnalogIN gain: no gain Acquisition mode: bipolar

DigitalIN Bit-width: Bit

CounterIN Countermode: Impulse counter

Counter Inkrementalcounter

Flank: Edge 1 Hz

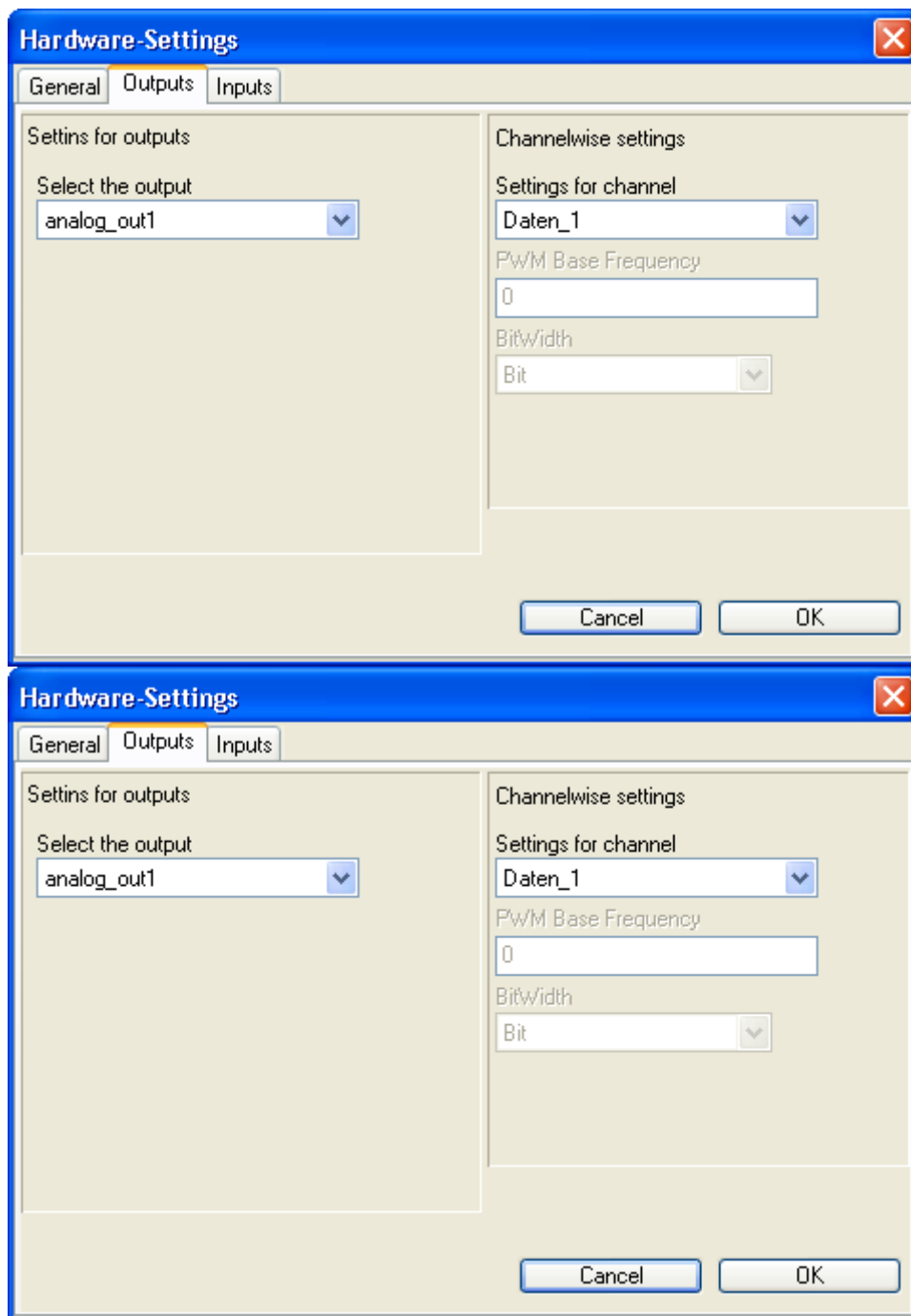
Up/Down: Up Counterresolution: 100ns

Startvalue: 0

Help Cancel OK

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.

4.1.3.1 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.

4.1.3.2 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.

4.2 Installation of DasyLab Driver

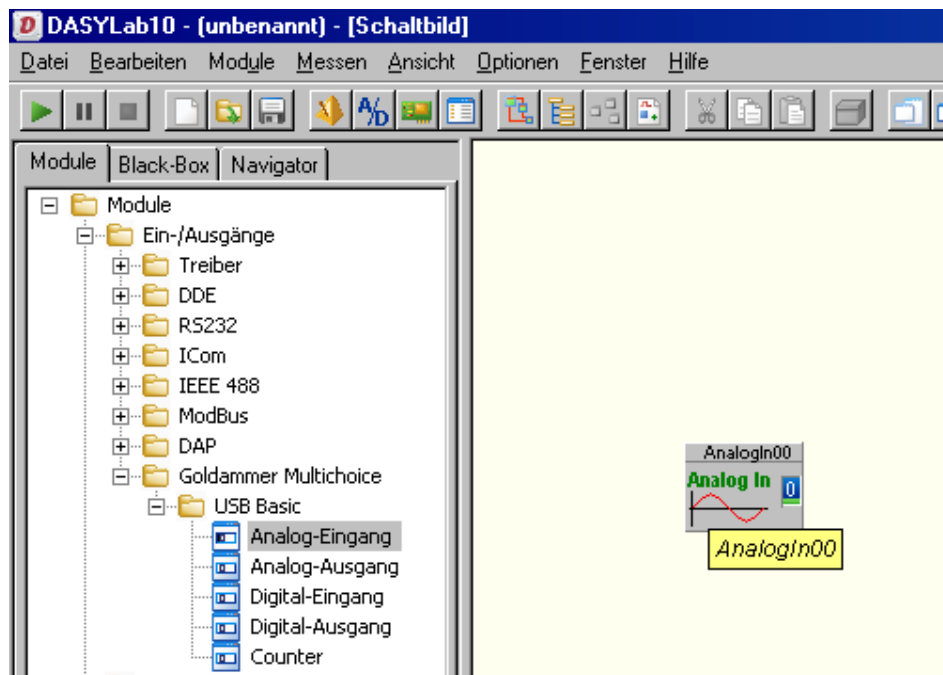
4.2.1 Driver Installation

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.

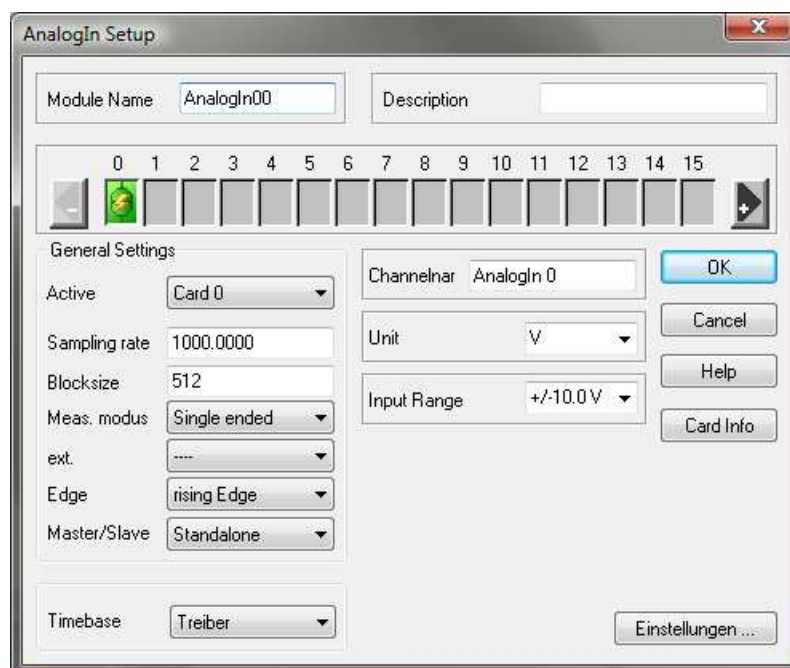
To keep the circuit diagrams configurable offline, nearly any options can be activated in the user interface. Error messages appear only at starting time if an invalid screwed terminal or a non existent option is tried to be used.

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.

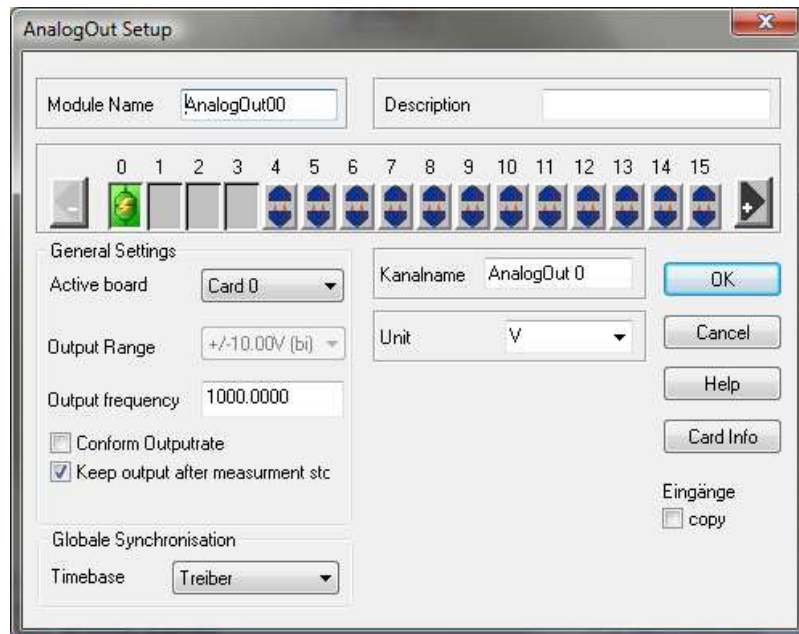
Because of limitations of DasyLab, where each block can consist of a maximum of 16 channels, for some signals like digital inputs or outputs the channel range of the block can be selected to cover more than 16 channels. A channel setting of 16..24 projects the set channels and parameters to the appropriate 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.

4.2.2 Analog Acquisition:



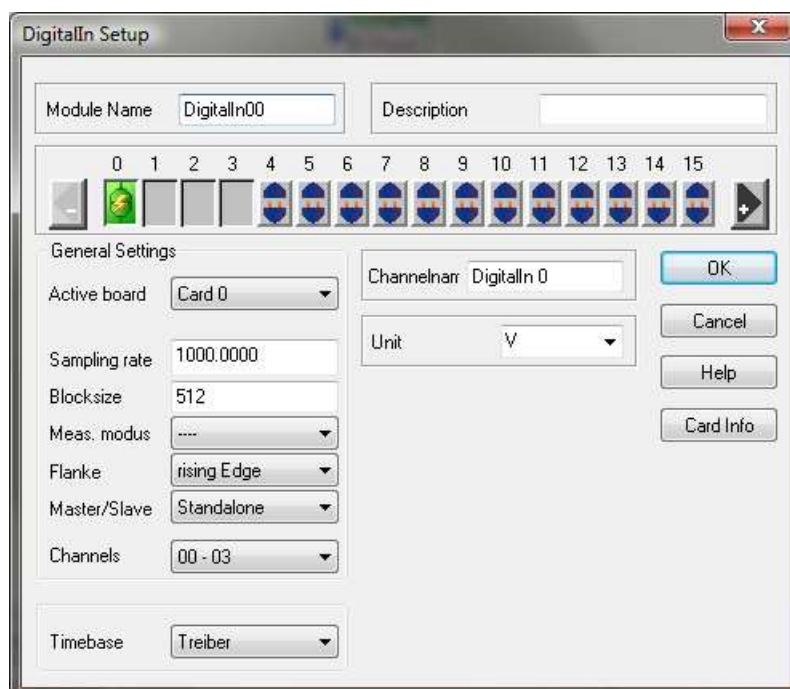
In some cases synchronization is done with parameters predefined for the default interface. If analog output is controlled of a generator it is necessary to set the output rate to a value identical to the global one of which the generator receives its time information. Otherwise no continuous output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

4.2.3 Analog Output:



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

4.2.4 Synchronous Digital Acquisition:

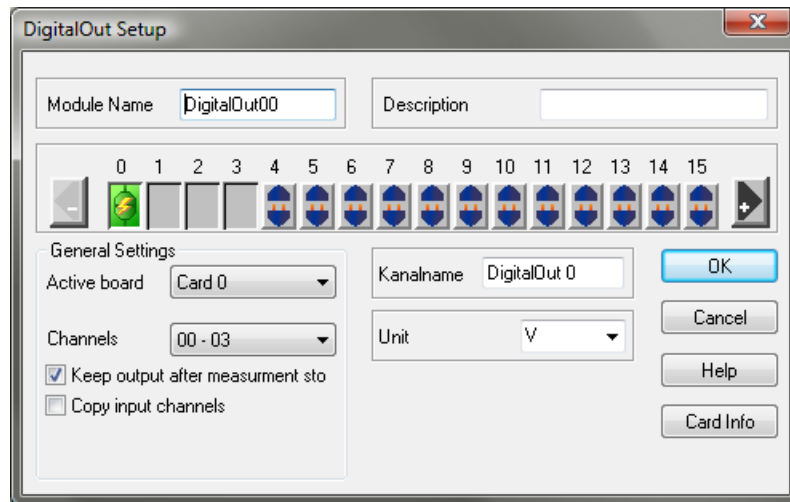


DasyLab drivers support the synchronous digital acquisition for USB Basic measurement cards. This means that digital channels are put into the list of analog channels and are treated identically. Therefore they are run with the same clock so it is possible to have an exact time

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.

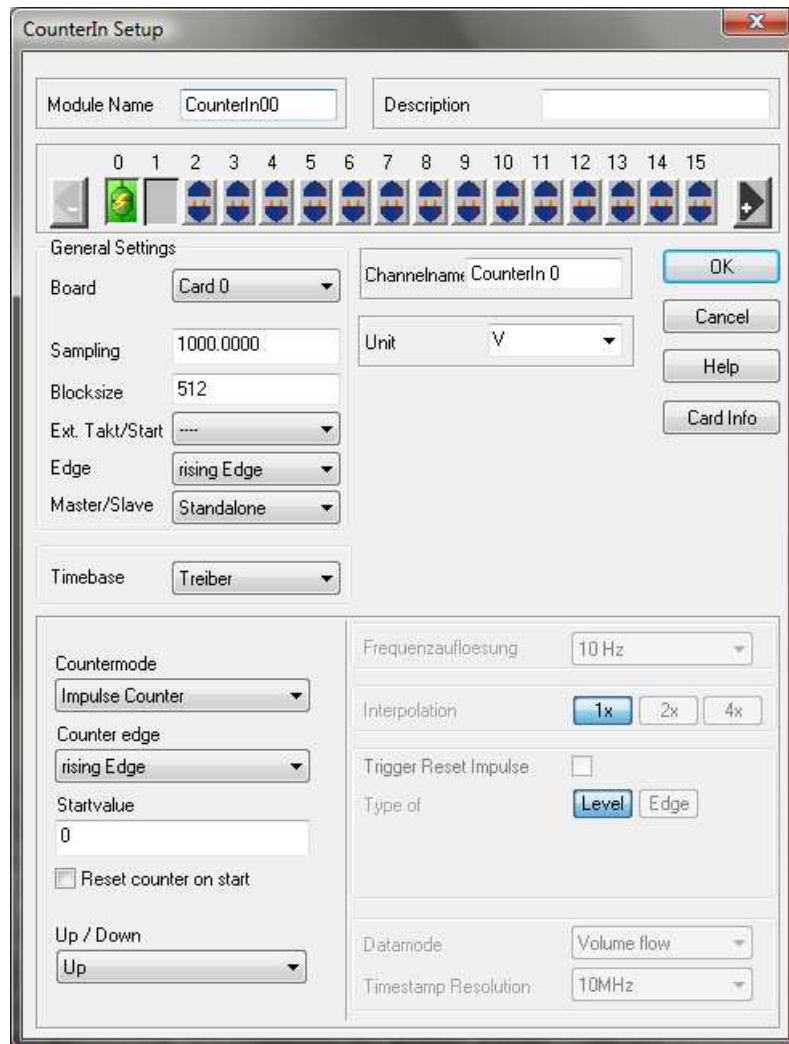
4.2.5 Digital Output:



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".

4.2.6 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.

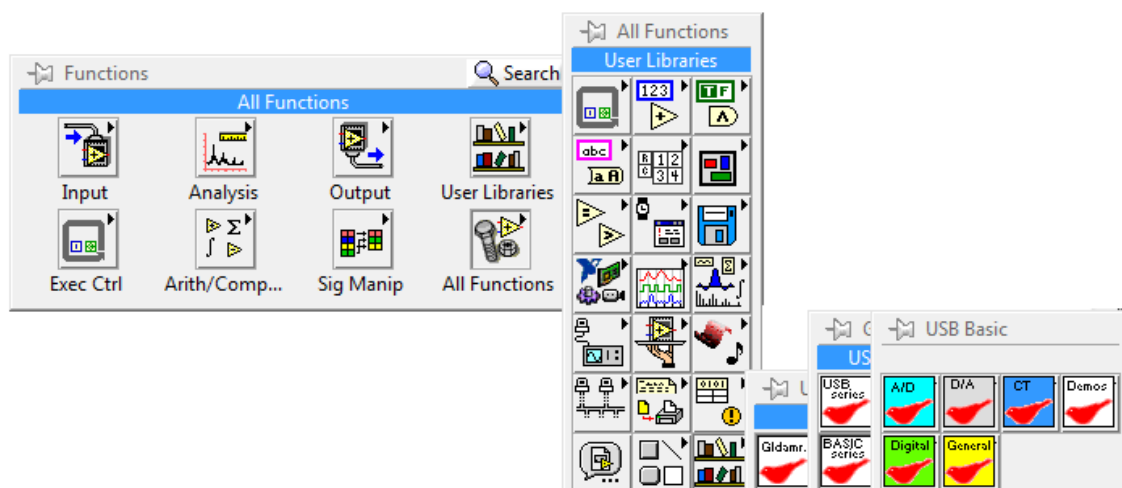
4.3 Multichoice USB Basic and LabVIEW

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.


4.3.1 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.

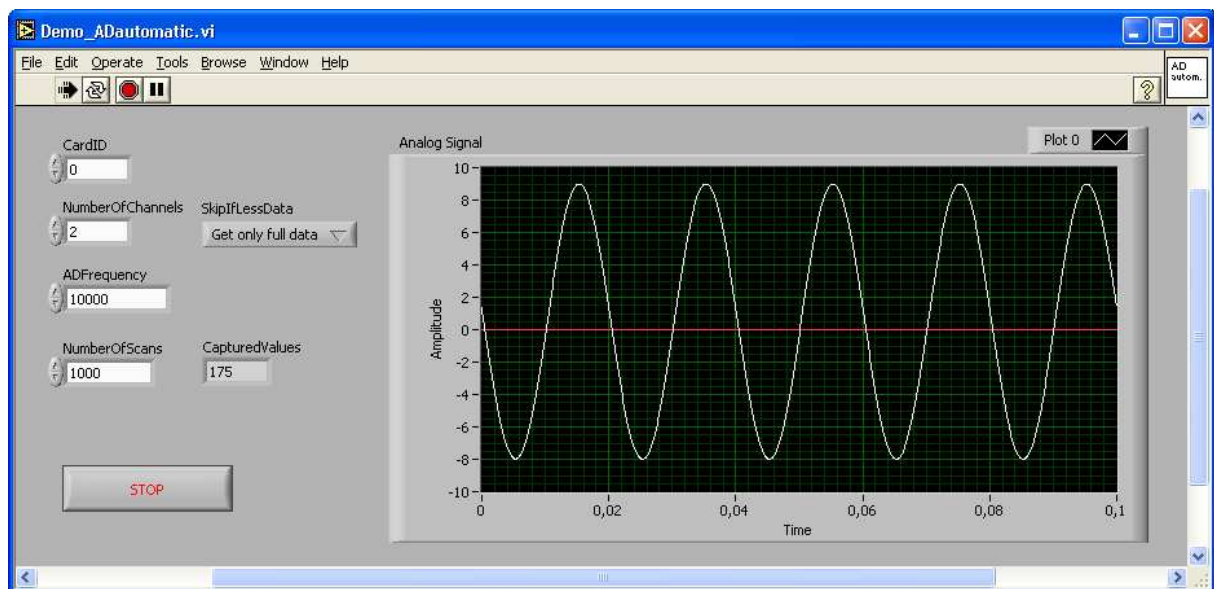
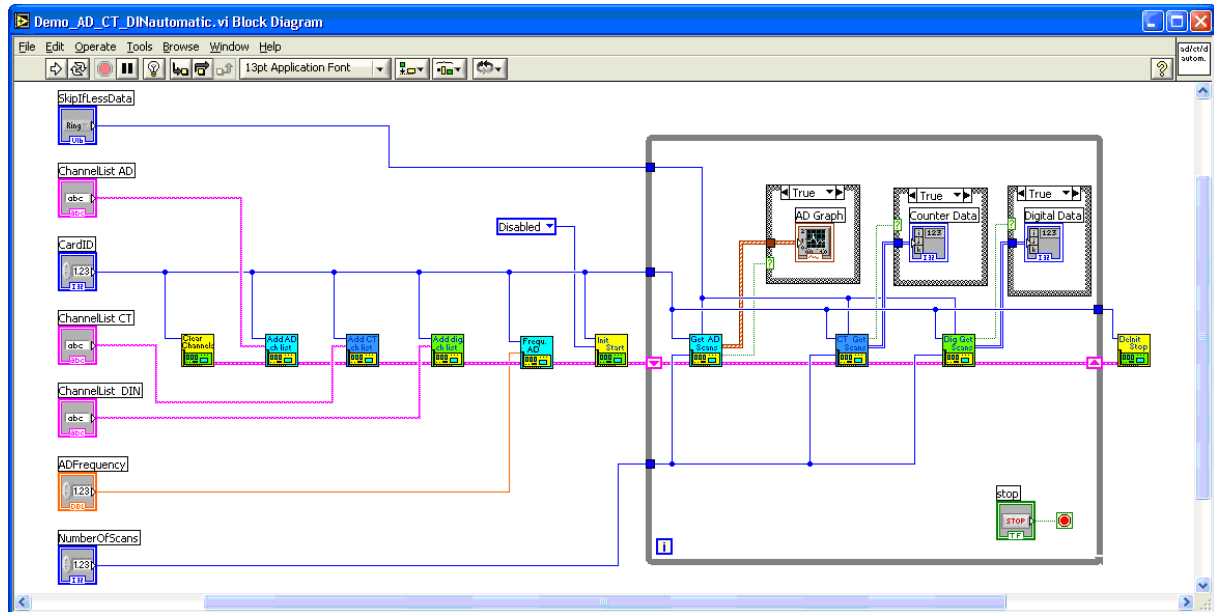
In the beginning the measurement is reset the channel lists by calling .

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.

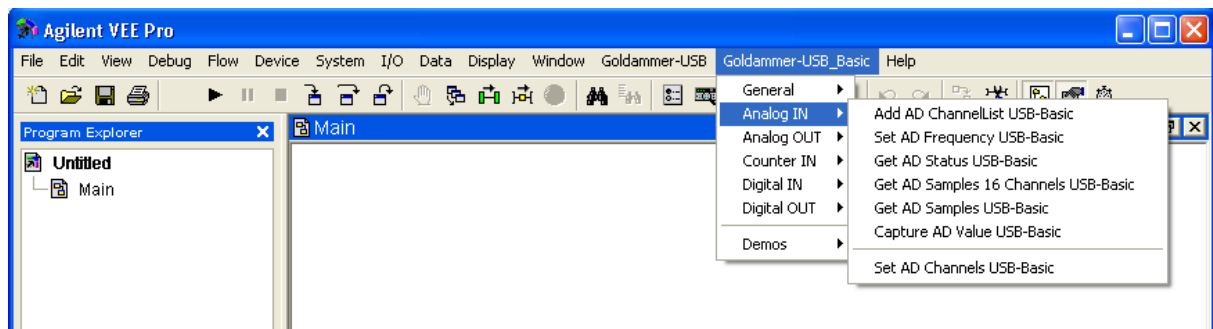


4.4 Multichoice USB Basic and VEE Pro

4.4.1 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.

4.4.2 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.

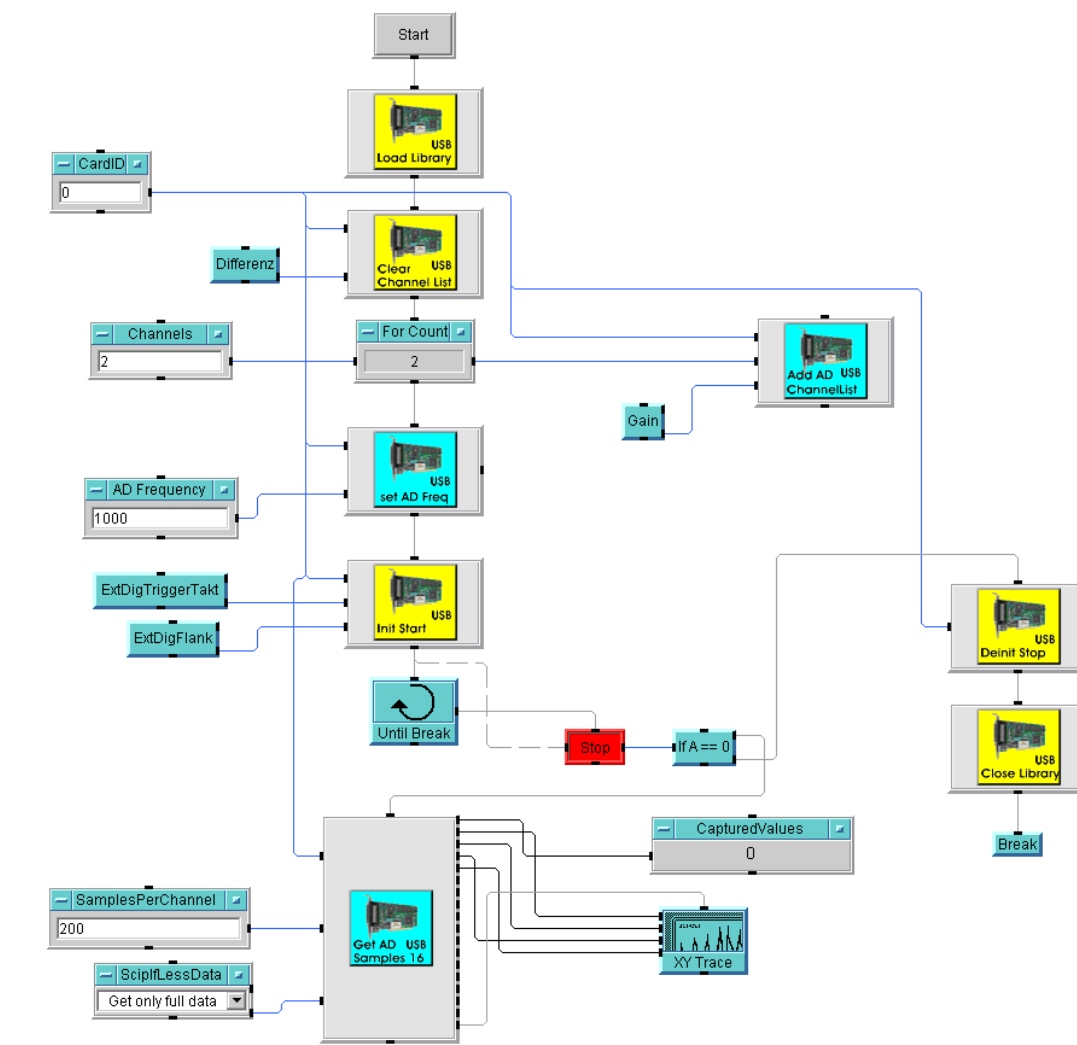
Acquired data are buffered in the internal memory of the card until they are read with the function “GetADSamples“.

„GetADSamples“ is called within a loop until measurement is stopped.

Calling „DeinitStop“ ends the measurement.

The „CloseLibrary“ unloads the DLL.

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



5 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.

6 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.

Specifications MultiChoice Basic (light)

6.1 Analog Inputs Cards 16bit Version

(light version)

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

DA Converter DAC7734 (5)

Number of outputs	(8) 16
Resolution	16 Bits
Output voltage ranges	$\pm 10\text{ V}$
DA throughput	1 kHz, 1 channel
Output current	$\pm 5\text{ mA}$
Output impedance	0.2 Ω
Non linearity	$< \pm 3\text{ LSB}$
Range error	$< \pm 0.1\%$, typ.
Zero error	$< \pm 0.1\%$, typ.
Settling time up to 0.012 % FSR	5 μs , 20V step
Steepness	10 V / μs
AD Zero drift	$\pm 5\text{ ppm} / ^\circ\text{C}$, typ.
Range drift	$\pm 5\text{ ppm} / ^\circ\text{C}$, typ.
Monotonocity	guaranteed

6.2 Timer/Counter (7)

Component	Cyclone
Number of counters	2 (light *1)
Counter resolution	32 Bit 10MHz
Counter modes	Event counting, Frequency measurement (Frequency resolution 10Hz)
Logic High Input Voltage	2.2 V
Logic Low Input Voltage	0.4 V
Logic Input Current	$\pm 330 \mu\text{A}$
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

6.3 Digital Inputs/Outputs

Number of inputs	16 (switchable in four Bit groups) 48 (switchable in 16 Bit groups)
Logic Family	LVC MOS
Logic Sense	High
Logic High Input Voltage	2.0 V
Logic Low Input Voltage	0.4 V
Logic High Input Current	$0.5 \mu\text{A}$
Logic Low Input Current	$0.1 \mu\text{A}$
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

6.4 Digital Inputs/Outputs **optocoupled**

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

6.5 External Trigger and Counter

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 μ A
Min. Pulse Width High	100 ns
Min. Pulse Width Low	100 ns
Max. Pulse Width	to ∞

6.6 External Trigger and Counter **optoeCoupled**

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 time stamp 16 Bit

6.7 Miscellaneous USB Version

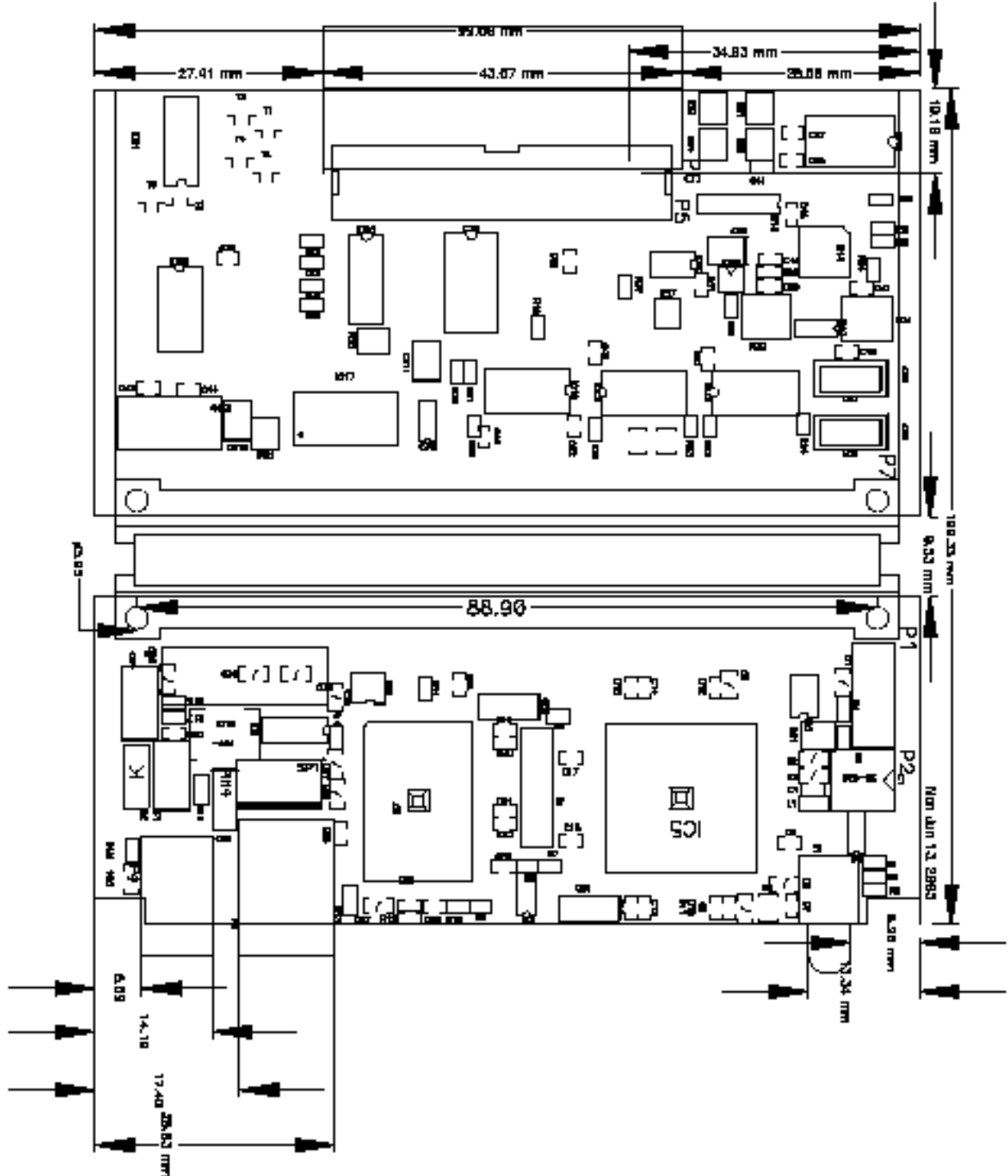
Power supply	G0C-1034-(8-9) supplied over USB-Port 330mA, no external power supply is needed. G0C-1034-(0,1,2,3) +5,4 V; max. 470 mA G0C-1034-(4,5,6) +5,4 V; max. 570 mA Supplied over a power plug supply
Operating temperature range	0 .. 70° C
Storage temperature range	-40 .. 85° C
Humidity	95 %, noncondensing
Dimensions	G0C-1034-1,5 180x118x49 mm screw terminal G0C-1034-0,4 180x118x64 mm BNC G0C-1034-2,3,6 160x100x14 mm OEM G0C-1034-8 120x118x49 mm screw terminal G0C-1034-9 100x100x14 mm OEM
Weight	G0C-1034-0,4 1050 gr. G0C-1034-1,6 810 gr. G0C-1034-2,3 100 gr. G0C-1034-8 600 gr. G0C-1034-9 77 gr.
Bus system	USB 2.0, USB 1.1 compatible

6.8 Miscellaneous USB simultan Version

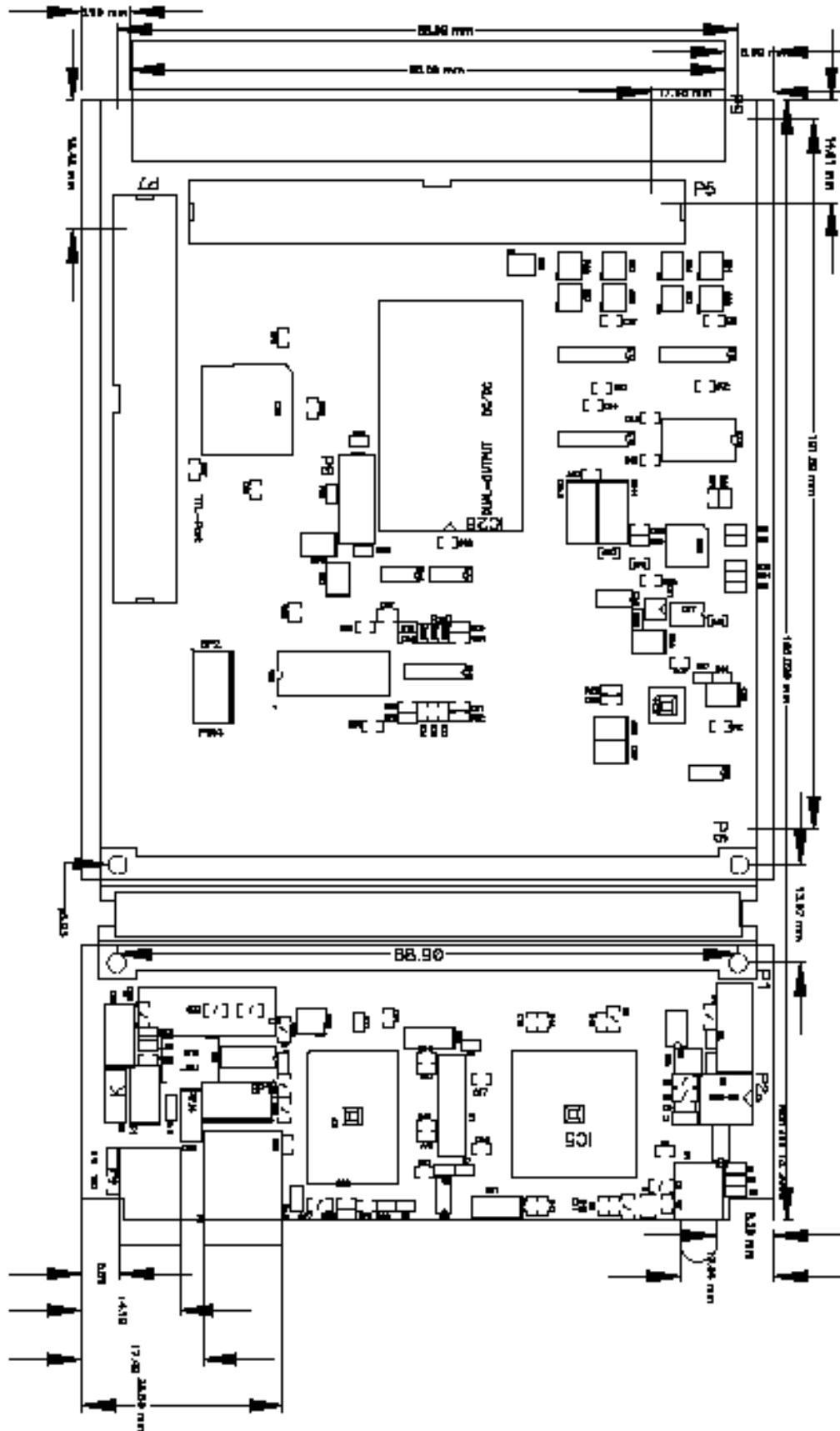
Power supply	G0S-1034-(8-9) 320mA, G0C-1034-(0,1,2,3) +5,0 V; max. 370 no external power supply is needed. G0C-1034-(4,5,6) +5,0 V; max. 450 mA Versorgung Supplied over a power plug supply
Operating temperature range	0 bis 70° C
Storage temperature range	-40 bis 85° C
Humidity	95 %, noncondensing
Dimensions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

7 Dimension Drawing:

7.1 MultiChoice Basic light OEM



7.2 MultiChoice Basic OEM



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