MultiChoice Basic Series



DASYLab DIAdem EdasWin LabVIEW LABWindows/CVI

Web: http://www.goldammer.de

Supported application software

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E.d.a.s.WinPlus M









API für C/C++, Delphi, Phython unter Windows Linux, MacOS und Android und für DotNET(C#, F#, VB.NET, IronPhython, ...)

Compact and powerful: The USB Basic Family

Our USB Basic series is available since 2005 and is used worldwide in a variety of measurement tasks. So far there are over 30 different versions of this map series and the product range is constantly expanding. This is made possible by their modular design:

The measurement boards consist of two components, the control board that contains a Cypress USB controller and an FPGA chip, which together bear the full control of the measurements and data transfer, as the front-end circuit board which is connected to the control unit.

Thus, the USB Basic are offered at a very reasonable price despite the high quality model diversity.

The front-ends are replaced by the-lich in different versions, the analog inputs are digitized for all modules with 250 kHz with a resolution of 16 bits. The modules offer a variety of signal inputs and outputs off. There are also measurement modules available with optocouplers, which provides electrical isolation of the module of all the connected signals. The opto-decoupled module all types of signals are isolated by their own circles with each other to ensure maximum fault and operating safety. The digital outputs that are used on the optocoupler modules are loaded at 30V with 60mA per output, so that a direct relay control can be realized. This means for the digital inputs / outputs that they each have their own masses (commons).

The counter trigger and the external clock input are also decoupled via a separate coupler.

The measuring systems are available in three variants. Two of the variants are supplied in a sturdy cast aluminum housing with either BNC or removable Weidmuller Screw, a third variant "OEM" includes the blanks with pin headers that by Eurocard format (100x160mm with Basic light: 100x100mm) very easily into existing systems can be integrated. By Post connector other systems such as filters, amplifiers or other components can be installed together with it in a compact body and delivered as a complete system additionally.

A flash chip on the measurement cards, as well as indivi-





dual identifiers of the modules identify the card automatically, so that when changing the modules or test kits available software and already created diagrams can still be used without having to make adjustments or corrections.

The measurement modules provide 16 analog inputs, 4 analog outputs, 2 counter inputs with switchable-ble counting modes and up to 48 digital inputs / outputs a plurality of signals.

The signals are simultaneously detected in a synchronous mode in order to ensure an exact temporal assignment of

the measurement values of various types of signals with each other. An asynchronous detection is also possible. The analog inputs with a voltage range of +/- 10 V and a programmable gain of each channel 1/2/4/8 capture with a resolution of 16 bit accuracy, also operate the analog outputs with 16-bit DAC converters in the range +/- 10V.

Detection functions at a glance



Analog acquisition:

The input signals are digitized in the GOC multiplexing method. The number of inputs is 16 mass-related or 8 differential input voltage ranges are Eingänge.Die \pm 1.25V \pm 2.5V, \pm 5V, \pm 10V.

For the GOS modules, the inputs are simultaneously sampled at 225kHz per channel (GOM 3MHz). The GOV-1034-0 provides 4 inputs with 24-bit 192kHz channel 2 and 3 can be switched as an analogue output and provides 24-bit 192kHz output rate. The inputs for direct connection offer IEPE accelerometers and microphones.



Analog output:

MultiChoice Basic provides four to 16 analog outputs, the output rate is 200 kHz per channel at a maximum resolution of 16 bits, depending on the type of card. Here, a current of \pm 5 mA can be issued. The GOV-1034-0 provides two outputs with 192 kHz and 24 bits.



Digital inputs / outputs:

The device types GOC-1034-0 to 1034-3-GOC have 16 to 48 TLL / outputs. The types GOC-1034-4 to 1034-6, have eight inputs with an input voltage range of 2.4V to 30V and eight outputs with a current capacity of 60mA per output. The outputs can directly drive 8 relays for controlling the relay is necessary in the range from + 5V to + 30V DC external power source.

Counter modes at a glance



pulse counting:

Counting pulses up to 32 bit values 4294967295 and a maximum frequency of approx. 10/60 MHz. It is possible to set an initial value. The counter can be used in up or in down mode.



frequency measurement:

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:

Reso	lution	Display
1	Hz	12563 Hz
10	Hz	12560 Hz
100	Hz	12600 Hz

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Period measurement:

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 10/60 MHz clock oscillator. This is the equivalent of a counter resolution of 100ns/20ns. 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 1kHz is fed into the counter the display shows 10000 which means 10000 * 100ns/20ns. 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

	10Mhz	50Mhz
32Bit	429,0000s	85,00000s
24Bit	1,67778s	0,33550s
16Bit	0,00655s	0,00131s
8Bit	0,00003s	

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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



Incremental counter:

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 1kHz and 100kHz. 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.



GOC-1023-1 8x Universalcounter Ue. 2.4 bis 30V



GOC-1023-3 8x Universalcounter Ue. 2.4 bis 30V



GOC-1015-1 6x Incrementalconter Ue. 2.4 bis 30V

The software

Special software for your measurement and control task

Also for all measurement chart series is uniformly the "Measurement Application Interface" (MAI), which is available in "native", ".NET" and "LabVIEW" available: The "native" version allows the use of all Goldammer cards in applications

for operating systems

- Windows (Intel 32&64 Bit)
- MacOS X (Intel 32&64 Bit),
- Debian Linux, including Ubuntu and other derivatives
- (Intel 32&64 Bit)
- Android (ARM 32 Bit)

be created, an extensive collection of examples in C ++ and Object Pascal (Delphi) is included, as is a wrapper for use in the scripting language Python. The API is for all versions 100% identical, so that when using a crossplatform IDE such as QT same source code can be used for all target computer. The pictured demo application "QTTestUSBBasic" is created and is available as open source project also as an example available. This is a QtCreator project that can be created without changes to the Windows, Mac OSX and Android app and all map features covers.

On Windows systems, also be used directly from Lab-VIEW VI library programs by including Express VI is possible and there is a .NETVariante of the MAI, which offers a more intuitive use as the native version. By ready extensions for And GUI data acquisition, the time required for the Your application development specialist software here minimized.

The use of MAIv2 for DotNET is not limited to dotnet languages such as C#, F#, VB.NET or IronPython, but also in other programming environments such as very easy in MATLAB, Mathematica, AgilentVEE or the Windows PowerShell. Also for the use of the MAIv2 for DotNET is an open source demo application. It's called "MAIRecorder" is re-alisiert as Visual Studio C # project and can be used by obtaining a license for the data acquisition Assembly "MAIExtensionDAQ" as finished data collection app.





LabVIEW: Our extensive VI library allows the Control of all map features in your applications (including sample collection)



The LabVIEW Express VI allows rapid Configuration of data collection in your application

The open-source testing program MAIRecorder demonstrates the simplicity of use of the MAI for DotNET in your C ${\ensuremath{\texttt{\#}}}$ measurement and control applications, and, in its original version, the opportunity to test all board features.



	MAI Rec	order : Connected Devices	
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Card Sariae	LISB-Basic-MultiChoice		
Model	USBBasic/PCM/BNC		
SerialNumber	2011-G0V-1034-0-02zz		
CardProducer	Goldammer GmbH		
CardSeller	http://www.goldammer.de		
Customer	2577 (Goldammer GmbH)		
DateOfPurchase	01.11.2011		
ADChannels	4		
ADSampleRate	192		
ADSampleWidth	32		
DAChannels	2		
DASampleRate	192		
DASampleWidth	32		
CTChannels	2		
CTSampleRate	100	Open Card .	
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Type: G0C-1034-5

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Output File AD Channels View						
RAW	10	К04	10	К08	10	K12
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In addition to the single-value acquisition and output the

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WAV View AD 3 DA 1 Config... loop back AD 01 to DA 01 to: no Outpu

graph display G0C-1034-5



Type: G0V-1034-0 : 4x PCM AD in, 2x Out

synchronous acquisition of all inputs is possible

Link for download MAIRecoder

settings dialog for G0V-1034-0

Use in standard software

In addition to the common use of all cards in Matlab and LabVIEW AgilentVEE via the interface MAIv2 (see above) are special drivers or plugins for popular measurement and control programs

- IPEmotion
- DASYLab
- ServiceLab
- DIADem
- LabWindowsCV
- EdasWin included.

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Analog data acquisition with a G0C-1034 in IPEmotion

Acquisition Modes

Single value acquisition

Each channel is recorded individually as required by selecting the corresponding channel number. The time base of the data obtained is provided by the measurement program. This feature is available for analog, digital and counterinputs.

Synchronousacquisitionwithinternaltimer

In the synchronous acquisition mode all channels in the channel list are sampled at each timing pulse in burst mode. Analog, counter and digital inputs are recorded synchronously.

Synchronous acquisition with external start

With an external start the measurement only starts recording when a programmable level (high / low) changes. I it will record all channels in the channel list in burst mode with the given sampling rate as synchronous acquisition with internal timer (see above).

Synchronous acquisition with external clock

With an external clock the all channels of the channel list are recorded in burst mode once per pulse on the external clock input.

Synchronous acquisition as Master/Slave

If two or more Goldammer devices are to record data independent of an external clock source but in sync with each other, use the operating mode Master / Slave. The card configured as a master in this case provides the clock for all slave devices (see connection diagram).



Analog data acquisition with a GOC-1034 in DasyLAB



The models and functions at a glance

samplerate D/A						digital in/out						syr	nc.	counter					ilva olat	niç ted		connection						
articelcode	analog in	resolution 16 Bit	250 kHz sum	225kHz per channel	D/A 16 Bit	4 Ue.2,4 V-30V	8 Ue.2,4 V-30V	4 Ua.0-35V 60mA	8 Ua.0-35V 60mA	4*4 16Bit TTL I/O	6*8 48Bit TTL I/O	master	slave	incremental (*)	without reset function	32 bit universacounter	pulse / frequency pulse width / period.	analog in/out	digtalinput	digitaloutput	counter triiger/clock	analog In/Out	BNC	Weidmüller	connector for ribbon cable	Digital I/O	Weidmüller	connector for ribbon cable
G0C-1034-0	16SE/8DI	•	٠		4							٠	•	1			2						•				•	
G0C-1034-1	16SE/8DI	•	•		4							٠	•	1			2							•			•	
G0C-1034-2	16SE/8DI	•	•		4							٠	•	1			2								•			•
G0C-1034-3	16SE/8DI	•	٠		4							٠	•	1			2								•			•
G0C-1034-4	16SE/8DI	•	•		4							٠	•	1			2	•	•	•	•		•	•			•	
G0C-1034-5	16SE/8DI	•	•		4							٠	•	1			2	•	•	•	•			•			•	
G0C-1034-6	16SE/8DI	•	•		4							•	•	1			2	•	•	•	•			•			•	
G0C-1034-8	8SE	•	•			•		•				•	•	1	•		1	•	•	•	•			•			•	
G0C-1034-9	8SE	•	•			•		•				٠	•	1	•		1	•	•	•	•				•			•
G0S-1034-0	12SE	•		•	4							٠	•	1			2						•				•	
G0S-1034-1	12SE	•		•	4							٠	•	1			2							•			•	
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G0D-1034-2					8																				•			
G0D-1034-3					16																				•			
G0C-1015-0													•	6			8										•	
G0C-1015-1													•	6			8										•	
G0C-1015-2													•	6			8				•							٠
G0C-1015-3													•	6			8				•							٠
G0C-1023-0												٠	•														•	
G0C-1023-1												٠	•														•	
G0C-1023-2												٠	•								•							٠
G0C-1023-3												٠	•								•							٠

The models and functions at a glance

			samp	digital in/out					sync. counter						ga ISC	lvai olat	niç ed		connection										
articelcode	analog in	resolution 16 Bit	250 kHz sum	225kHz per channel	D/A 16 Bit	4 Ue.2,4 V-30V	8 Ue.2,4 V-30V	4 Ua.0-35V 60mA	8 Ua.0-35V 60mA	4*4 16Bit TTL I/O	6*8 48Bit TTL I/O	master	slave	incremental (*)	without reset function	32 bit universacounter	pulse / frequency	pulse width / period.	analog in/out	digtalinput	digitaloutput	counter triiger/clock	analog In/Out	BNC	Weidmüller	connector for ribbon cable	Digital I/O	Weidmüller	connector for ribbon cable
G0M-1034-0	2SE		•		4																								
G0M-1034-1	2SE		•		4													H											
G0M-1034-2	2SE		•		4							•	٠	1			2									•			•
G0M-1034-3	2SE		٠		4							•	•	1			2									•			•
G0M-1034-4	2SE		•		4							•	•	1			2		•	•	•	•		•	•			•	
G0M-1034-5	2SE		•		4							•	•	1			2		•	•	•	•			•			•	
G0M-1034-6	2SE		•		4							•	•	1			2		•	•	•	•			•			•	
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		S	ample	erate	D/A						суі	nc.	(coun	nter		ł	galv sol	/ani ate	iç d			con	nec	tior	n	
articelcode	analog in	resolution 16 Bit	1000 kHz sum	2000kHz sum	D/A 16 Bit	4 Ue.2,4 V-30V	8 Ue.2,4 V-30V	4 Ua.0-35V 60mA	8 Ua.U-35V 60mA A*A 16Rit TTI 1/0	6*8 48Bit TTL I/O	master	slave	incremental (*)	without reset function	32 Bit universalzanler	pulse / trequency Ppulse width / period.	analog in/out	digtalinput	digitaloutput	counter triiger/clock	Analog In/Out	BNC	Weidmüller	connector for ribbon cable	Digital I/O	Weidmüller	connector for ribbon cable
G0I-1034-4	16SE/8DI	•		•	4		•		•		•	•	1		2		•	•	•	•		•	•			•	
G0I-1034-5	16SE/8DI	•		•	4		٠		•		•	•	1		2	2	•	•	•	•			•			•	
G0I-1034-6	16SE/8DI	•		•	4		•		•		•	•	1		2	-	•	•	•	•			•			•	
G0I-1034-8	8SE	•	•			•		•			•	•	1	•	1		•	•	•	•			•			•	
G0I-1034-9	8SE	•	•			•		•			•	•	1	•	1		•	•	•	•				•			•

Optional hard and software extensions

GOC-30C0-0 Clip for wall mounting of aluminium cases

GOC-30C0-1 Clip for wall mounting of aluminium cases

GOC-30D0-0 16 channel instrumentation amplifier

G0C-30D0-2 16-channel instrumentation amplifier with extended input voltage range ±50V

G0C-30D0-5 16-channel instrumentation amplifier with extended input voltage range ±50V

GOA-30E0-4 Automotive extension. Power supply: 9-60V DC / 10W (for GOA-30D0-x)

Your	address		

Company
Abteilung
Department
First name
Street
ZIP / City
Telefon
Telefax

e-mail

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