



Technical Data

USB-Counter 046

TTL / $\sim 1 V_{PP}$

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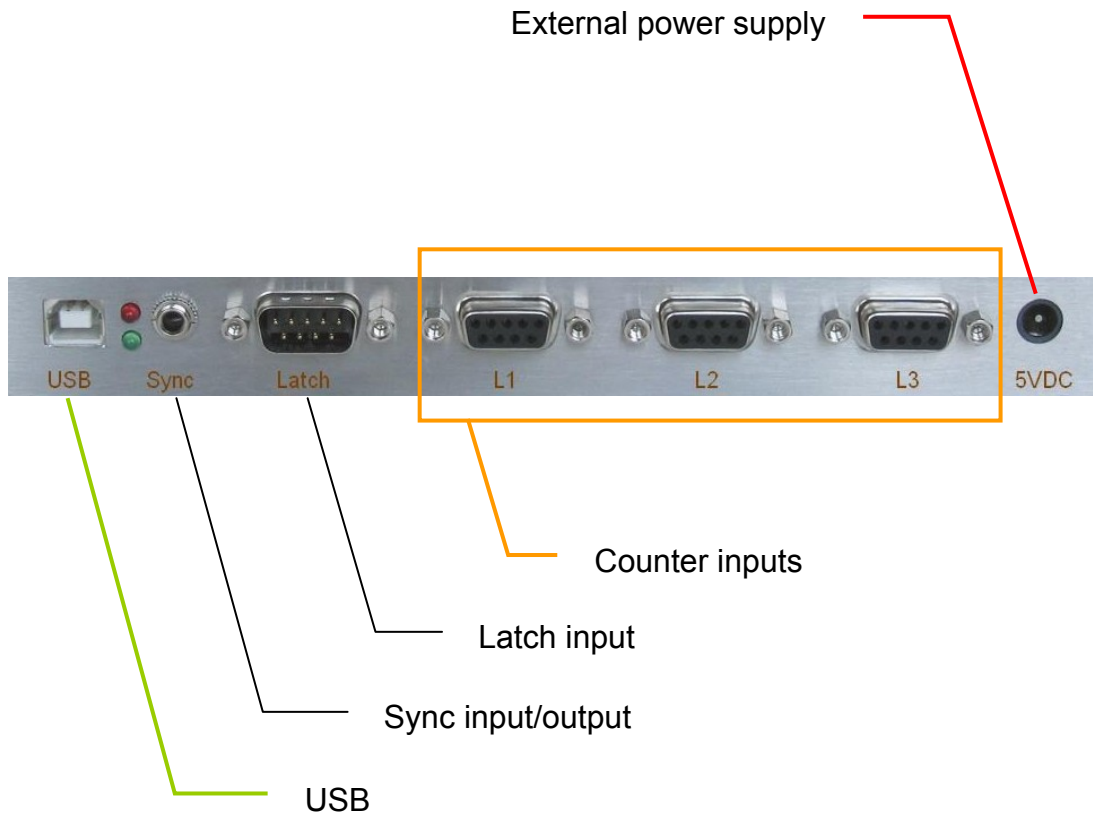
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1 Technical Data

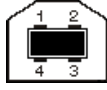
1.1 Connector layout



USB Counter connections

1.2 USB port 2.0

1.2.1 USB-B socket

PIN	Signal	Notes
1	+5 V	 USB-B socket
2	Data –	
3	Data +	
4	GND	



The unit can only be operated with USB hubs with external power supply (USB hub with power pack).



With USB devices the maximum cable length is 5 metres. The USB repeater cable is an “active extension cable” used to extend a USB connection. The USB repeater cable extends the cable length by another 5 metres. Up to 5 repeater cables can be connected with one another.

1.3 Sync input/Sync output (cascading)

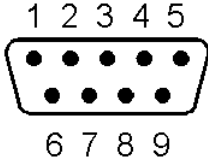
This input/output connects several USB Counters using a cable with a 3.5 mono phone jack.



3.5 mm mono phone jack

1.4 Latch input

1.4.1 Latch input (standard)

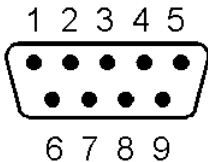
PIN	Signal	Notes
1	+Latch 1	 <p>9 pin sub D connector</p>
2	free	
3	+Latch 2	
4	free	
5	+Latch 3	
6	-Latch 1	
7	free	
8	-Latch 2	
9	-Latch 3	

The latch signal will be enabled if the voltage between +Latch and –Latch is + 5 V. Then the input signal is opto-decoupled and transmitted.

If the signal level is between 2 and 3 volts, any solder bridges on the counter module's circuit board must be removed.

There is no electrical connection between the individual latch inputs. If there is a common ground, -Latch 1, -Latch 2 and -Latch 3 must be connected to ground externally.

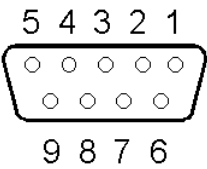
1.4.2 Latch input / volt-free (optional)

PIN	Signal	Notes
1	free	 <p>9 pin sub D connector</p>
2	Bridge to Pin 7	
3	free	
4	GND (volt-free)	
5	free	
6	Latch	
7	Bridge to Pin 2	
8	Probe	
9	free	

1.5 Signal inputs

The signal inputs L1 to L3 can be used either as TTL inputs or voltage inputs. Each signal input can be configured individually.

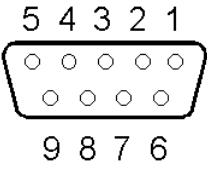
1.5.1 TTL input

Pin	Signal	Notes
1	$\overline{U_{a1}}$	 <p>9 pin sub D socket connector</p>
2	0 V	
3	$\overline{U_{a2}}$	
4	Shield *1)	
5	$\overline{U_{a0}}$ (Reference)	
6	U_{a1}	
7	+ 5 V	
8	U_{a2}	
9	U_{a0} (Reference)	

- Signal: $U_H \geq 2 \text{ V}$, $U_L \leq 0.8 \text{ V}$ (EIA Standard RS422)
- Signal division: Interpolation by factor 4
- Reference signals: $U_H \geq 2 \text{ V}$, $U_L \leq 0.8 \text{ V}$ (EIA Standard RS422)
- Counter width: 28 bits
- Input frequency: 0 - 1 MHz

*1) optional $\overline{U_{aS}}$ (Error)

1.5.2 Voltage input ($\sim 1 V_{PP}$)

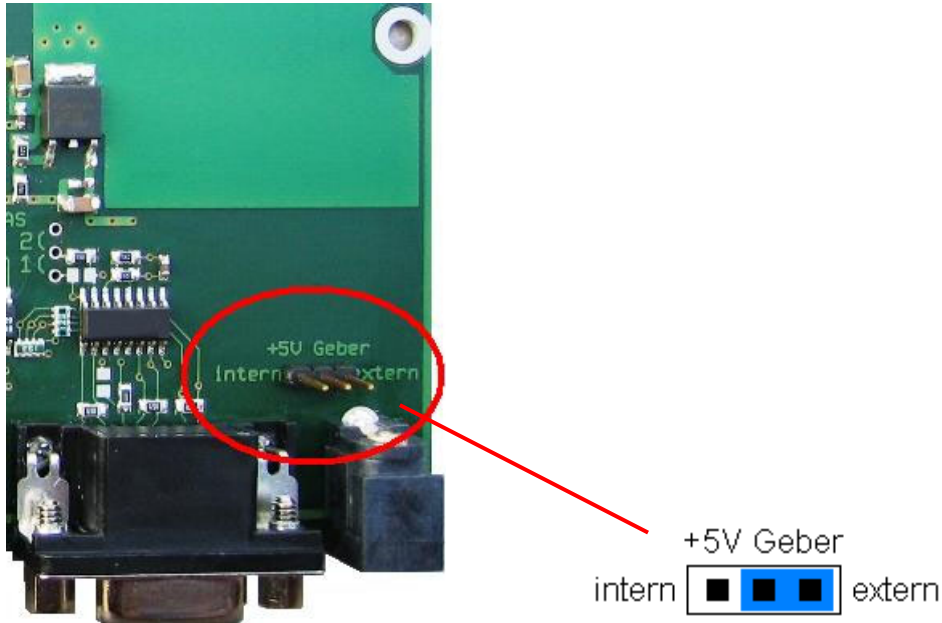
PIN	Signal	Notes
1	A-	 <p>9 pin sub D socket connector</p>
2	0 V	
3	B-	
4	Shield *1)	
5	R-	
6	A+	
7	+ 5 V	
8	B+	
9	R+	

- Signal: 0.6 – 1.2 V_{PP} , typ. 1 V_{PP} (sinusoidal)
- Signal division: Interpolation by factor 256
- Reference signals: 0.2 – 0.85 V_{PP}
- Counter width: 32 bits
- Phase angle A / B: $90^\circ \pm 10^\circ$
- Input frequency: 0 - 100 kHz

*1) optional $\overline{U_{aS}}$ ($\overline{\text{Error}}$)

1.6 Signal transmitters – external power supply

Signal transmitters can be powered externally using the DC socket with the jumper position on the USB Counter circuit board as shown below:



Jumper on the circuit board

Power supply	5 V DC
	The negative pole on the power pack can be earthed.

1.7 Mechanical and physical specifications

	Notes
Housing	Two-piece metal housing
Material	1 mm DC01, RAL 9005 / black (material subject to change)
Dimensions	Width: 200 mm Height: 33 mm Depth: 78 mm
Weight	ca. 0,455 kg (without cable)
Storage temperature	- 40° to + 70° C
Operating temperature	0° to + 45°C
Rel. humidity	15 – 95 % no dew
Power consumption	≅ 500 mA
USB cable length	≅ 5 m (max. 25 m with USB repeater cable)
Port	USB 2.0
Operating system	Windows XP/Vista or Windows 7