M=BUS Pro Fire and Measurement Box (FAM)

Ignites pyrotechnical devices such as airbags or seat belt pretensioners and records ignition current and voltage.

- Support of 4 or 8 fire channels
- Individually programmable timers
- High level of data security – automatically activated built-in backup system
- Operation independent from other M=BUS devices possible
- Squib recognition
- Resistance measuring
- Mechanical and electrical interlock

TECHNICAL SPECIFICATIONS

Supported channels	4 or 8
Supply voltage	18…22 VDC
Power consumption (unloaded)	13 W
Trigger	Trigger-Bus (RS 485), 5V-TTL compatible; insulated 300 V
Conformity	SAE J211 / ISO 6487
Resolution	16 bit
Sampling Rate	400 kHz
Max. recording time	300 ms Pre-trigger and delay: 60 ms Post-trigger and delay: 240 ms
DC-Ignition	12 V, adjustable current: 0.1…8 A in steps of 0.1 A @ 1 Ω
Ignition energy	280 mJ
Ignition delay (set per software)	Min. 0.01 ms in steps of 0.01 ms
Ignition pulse duration (set per software)	Min. 0.1 ms in steps of 0.01 ms
Communication	IEEE 802.3 i/u Ethernet 10 Mbit/s / 100 Mbit/s
Battery capacity	2,200 mAh, 3.7 VDC (Lithium-Polymer) Yearly maintenance mandatory
Data storage	SRAM 4 MB
Data storage time	2 weeks (battery buffered)
Dimensions (L x W x H)	80 mm x 136 mm x 40 mm

Weight	4 channel: 522 g; 8 channel: 622 g
Operating temperature	0…50 °C
Shockproof	200 G @ 10 ms 1,000 G @ 1 ms
Humidity range	10…70 % RH

Scope of supply

- M=BUS Pro FAM Box
- Connecting cable for M=BUS Pro Ethernet Gateway (0.3 m)
- Connecting cable for power, network and trigger (0.3 m)
- Network cable, Western/Lemo (3 m)
- Power supply with cable (3 m)
- Safety connector
- Trigger switch

Required equipment

- CrashSoft control software

Options

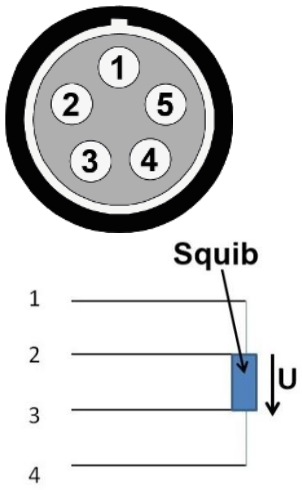
- M=BUS Pro Mounting Rail
- M=BUS Pro UPS
- M=BUS Pro Mounting Plate

PIN ASSIGNMENT

Pin	Description	Pin	Description
1	+ for anode of the LED in the release connector	3	Release input via bridge in the release connector (fire only)
2	- for cathode of the LED in the release connector	4	Release input via bridge in the release connector (fire only)

Figure 1: Pin assignment release connector for fire and safe (socket view, device)

Use this plug: LEMO FGG.0B.304…



Pin	Description	Pin	Description
1	Fire in/out -	4	Fire sense +-: Sense line to the + connection of the ignition tablet (to measure the ignition voltage)
2	Fire sense -: Sense line to the – connection of the ignition tablet (to measure the ignition voltage)	5	Fire in +
3	Fire out +: + connection of the ignition tablet		

Figure 2: Pin assignment ignition channel (socket view, device)
Use this plug: LEMO FGG.1B.305…

Current ramp-up time as a function of load resistance (Ohm) and selected current range (Ampere)

	With R = 1 Ω						With R = 10 Ω
Set current	1 A	2 A	3 A	4 A	5 A	6 A	1 A
Ø current ramp-up time per 1A	182 µs	68 µs	42 µs	31 µs	26 µs	21 µs	760 µs

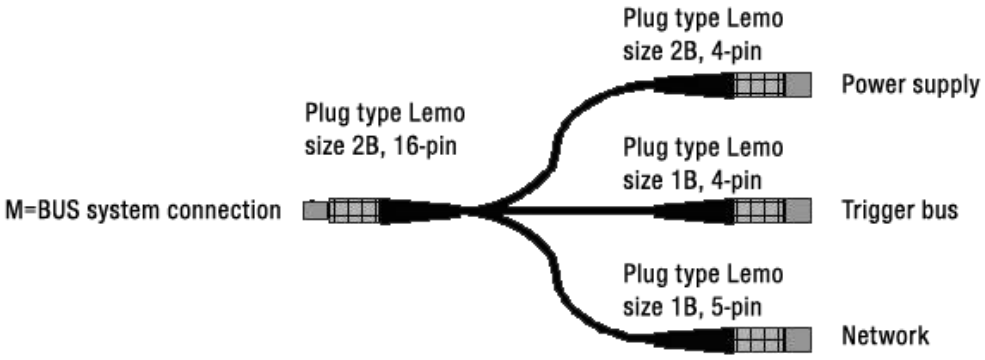
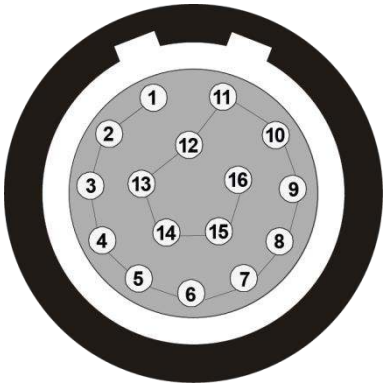


Figure 3: M=BUS Ethernet Gateway adapter cable



Pin	Description	Pin	Description
1	Network TX +	9	485 A
2	Network TX -	10	485 B
3	Network RX +	11	Supply +22 V
4	Network RX -	12	Supply +22 V
5	Trigger 5 V / 120 mA	13	Supply +22 V
6	Trigger signal B	14	Ground
7	Trigger signal A	15	Ground
8	Trigger isolated ground	16	Ground

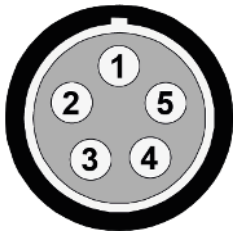
Figure 4: M=BUS system connection (socket view,device)
Use this plug: LEMO FGC.2B.316…

Pin	Description	Pin	Description
1	Supply +22 V	3	485 A
2	Ground	4	485 B

Figure 5: Pin assignment power (socket view, cable)
Use this plug: LEMO FGG.2B.304…

Pin	Description	Pin	Description
1	Trigger 5 V / 120 mA	3	Trigger signal A
2	Trigger signal B	4	Trigger isolated ground

Figure 6: Pin assignment trigger bus (socket view, cable)
Use this plug: LEMO FGG.1B.304…



Pin	Description	Pin	Description
1	Network TX +	4	Network RX -
2	Network TX -	5	Not connected
3	Network RX +		

Figure 7: Pin assignment network (socket view, cable)
Use this plug: LEMO FGG.1B.305…

TRIGGER BUS

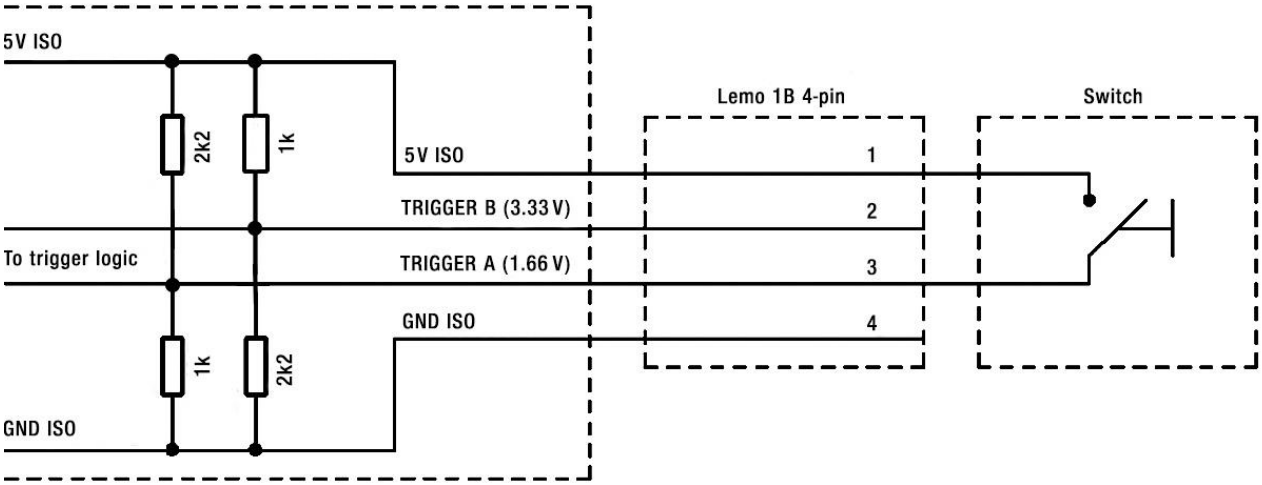


Figure 8: Schematic for trigger switch

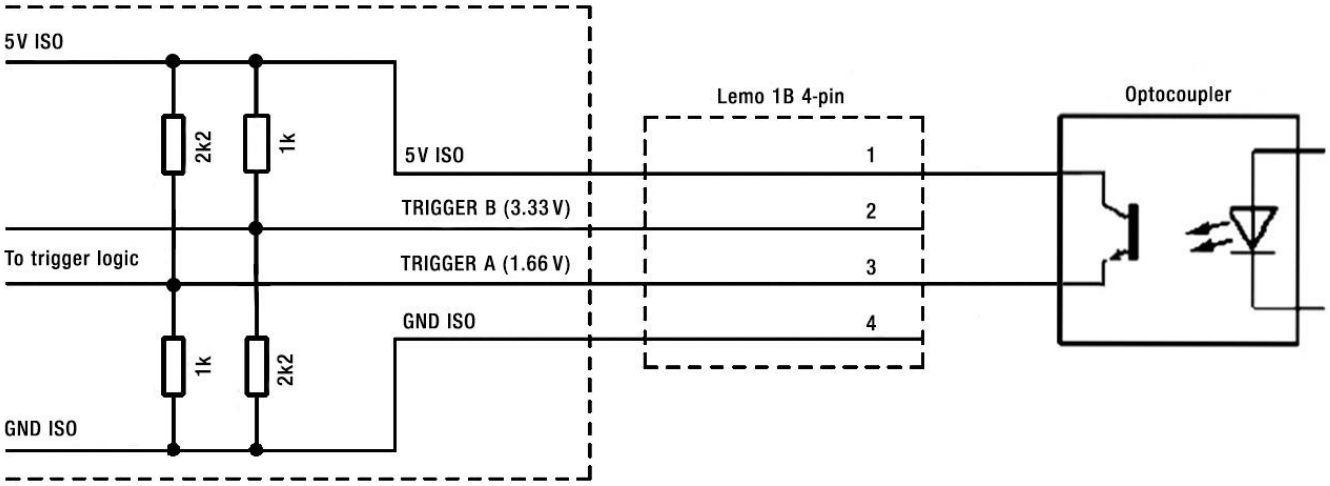


Figure 9: Schematic for optocoupler

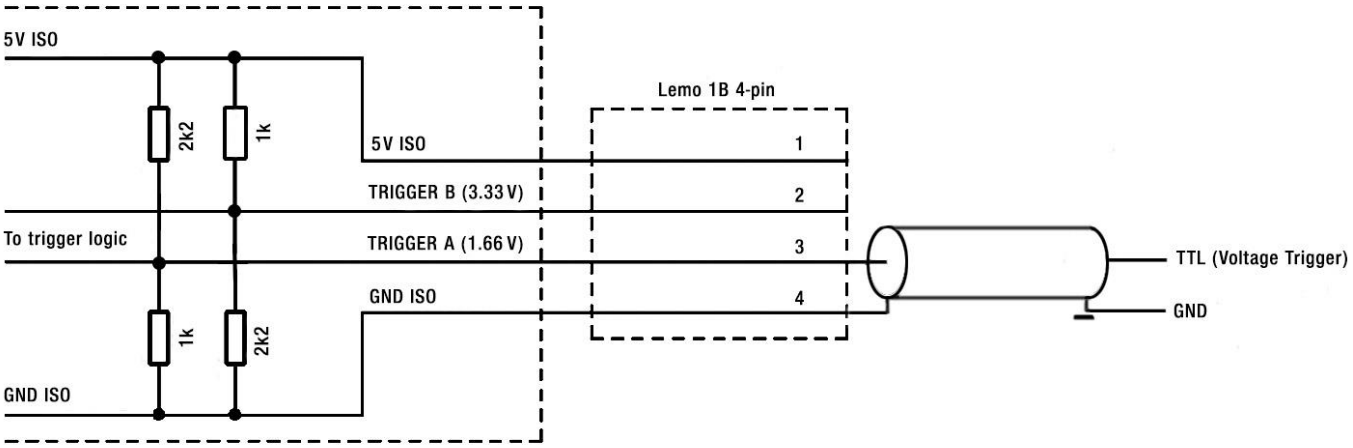


Figure 10: Schematic for TTL