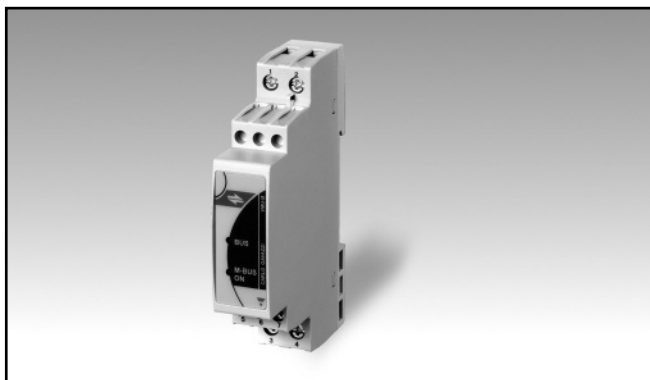


Energy Management BUS Adapter Type VMU-B 01



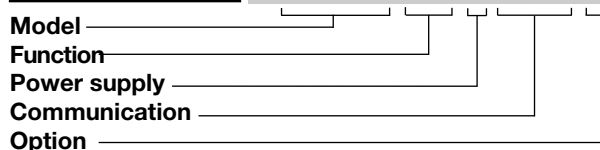
- RS485 (Modbus) to M-Bus communication adapter
- EM24-DIN, EM21-72D and EM33-DIN self recognition
- Front diagnostic LED's
- Universal 18 to 260 VAC/DC power supply
- Dimensions: 1-DIN module
- Protection degree (front): IP40

Product Description

Compact "Bus to port" communication adapter capable to convert one bus to another according to the "Type selection" below. The module is provided with universal power supply and is able to recognize and auto-set the

variable format and mapping according to the connected Carlo Gavazzi instrument. Housing for DIN-rail mounting, IP40 (front) protection degree.

How to order **VMU-B M1 U S1B1 X 01**



Type Selection

Function	Power supply	Communication	Option
M1: EM21-72D and EM24-DIN compatibility (*)	U: From 18 to 260VAC/DC (**)	S1B1: RS485 Modbus to M-Bus (*)	X: none

(*) as standard.
 (**) on request.

Communication

LED 1	LED 2	RS485
Amber. ON steady light: working communication on RS485 bus; Blinking light: not working communication on RS485 bus.	Green. When M-Bus communication is not available (during the instrument starting) the LED blinks according to the set baudrate: 300 bps: blinking, pause; 2400 bps: blinking, blinking, pause; 9600 bps: blinking, blinking, blinking, pause. ON steady light: NO M-bus communication with the VMU-B unit. ON blinking light: M-bus communication with the unit. Both AMBER and GREEN LED	Function Type Connections Addresses Protocol Boud-rate Data format Frame format
		OFF light: the module is not power supplied. Slave function One-drop, bidirectional 3-wire The wires are already screwed on the three screw terminals (wire length: 10 cm). Max. distance 1000 m 247, set automatically by the connected instrument downstream the bus. MODBUS/JBUS (RTU) According to the communication speed set in the connected meter. According to the connected instrument. According to the connected instrument, see table



Communication (cont.)

Special functions	“Converted variables” None	Boud-rate	300, 2400 (default), 9600 bits/s (set automatically by the M-Bus master)
Insulation	By means of optocouplers, 4000 VRMS between communication port to power supply input. No insulation between RS485 port and M-Bus communication port.	Data format	According to the connected instrument.
		Frame format	According to the connected instrument, see taable “Converted variables referred to the main meter”
M-Bus		Special functions	None
Function	Slave function	Insulation	By means of optocouplers, 4000 VRMS between communication port to power supply input. No insulation between RS485 port and M-Bus communication port.
Type	One-drop, bidirectional		
Connections	2-wire. Max. distance according to EN1434-3		
Addresses	247, set automatically by the connected instrument downstream the bus.		
Protocol	M-Bus		

General specifications

Operating temperature	-25°C to +55°C (-13°F to 131°F) (R.H. from 0 to 90% non-condensing @ 40°C)	Immunity to conducted disturbances	10V/m from 150KHz to 80MHz
Storage temperature	-30°C to +70°C (-22°F to 158°F) (R.H. < 90% non-condensing @ 40°C)	Surge Radio frequency suppression	2kV on power supply; According to CISPR 22
Installation category	Cat. III (IEC60664, EN60664)	Standard compliance	
Insulation (for 1 minute)	4000 VRMS between communication BUS and power supply	Safety	IEC60664, IEC61010-1 EN60664, EN61010-1
Dielectric strength	4000 VRMS for 1 minute	Approvals	CE
Noise rejection		Connections	Screw-type
CMRR	100 dB, 48 to 62 Hz	Cable cross-section area	Min. 2.5 mm ² , Max. 6 mm ² Min./Max. screws tightening torque: 0.5 Nm / 1.1 Nm Other terminals: 1.5 mm ² ; Min./Max. screws tightening torque: 0.4 Nm / 0.8 Nm
EMC	According to: EN61000-6-2 (industrial immunity) and EN61000-6-3 (light industry emission).	DIN Housing	
Electrostatic discharges	8kV air discharge;	Dimensions (WxHxD)	17.5 x 90 x 67.5 mm
Immunity to irradiated electromagnetic fields	Test with applied current: 10V/m from 80 to 2000MHz; Test without any applied current: 30V/m from 80 to 2000MHz;	Material	Nylon PA66, self-extinguishing: UL 94 V-0
	On current and voltage measuring input circuits: 4kV	Mounting	DIN-rail
Burst		Protection degree	
		Front	IP40
		Screw terminals	IP20
		Weight	Approx. 100 g (packing included)

Power supply specifications

Power supply

18 to 260 VAC/DC

Power consumption

≤ 3VA

Insulation between inputs and outputs

	RS485 port	M-Bus port	Power supply
RS485 port	-	0kV	4kV
M-Bus port	0kV	-	4kV
Power supply	4kV	4kV	-

Converted variables referred to the main meter

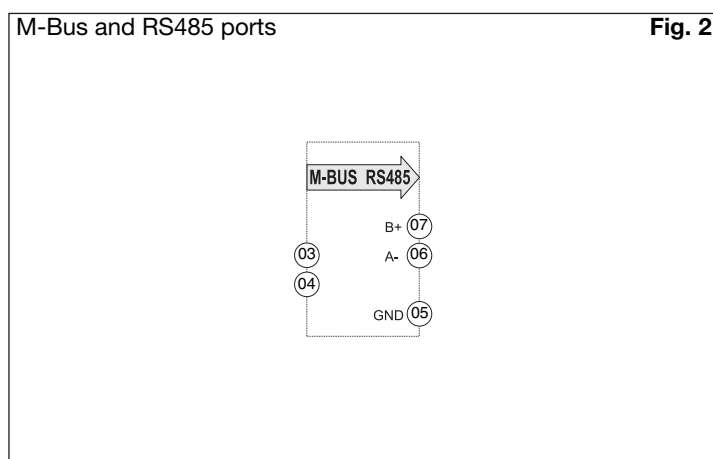
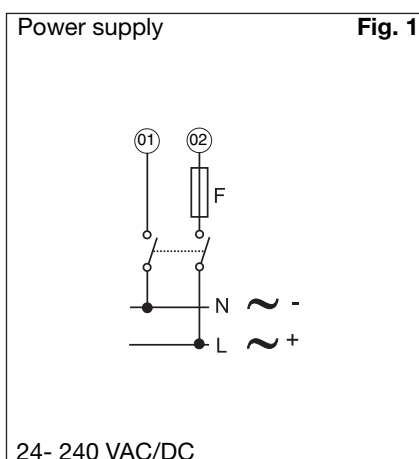
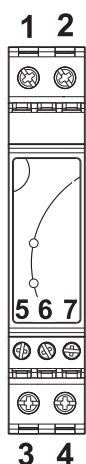
Meter: EM24-DIN							
Frame	Number	Variable	Data format	Frame	Number	Variable	Data format
1	1	kWh (+) TOT		1	10	kvarh (+) T1	
1	2	kvarh (+) TOT		1	11	kvarh (+) T2	
1	3	kWh (+) L1		1	12	kvarh (+) T3	
1	4	kWh (+) L2		1	13	kvarh (+) T4	
1	5	kWh (+) L3					
1	6	kWh (+) T1					
1	7	kWh (+) T2					
1	8	kWh (+) T3					
1	9	kWh (+) T4					
2	1	kWh (+) PAR		2	5	Counter 1	
2	2	kvarh (+) PAR		2	6	Counter 2	
2	3	kWh (-) TOT		2	7	Counter 3	
2	4	kvarh (-) TOT		2	8	Hour	
3	1	W L1		3	5	DMD W Σ	
3	2	W L2		3	6	DMD W Σ max	
3	3	W L3		3	7		
3	4	W Σ		3	8		
4	1	A L1		4	9	V L1-L2	
4	2	A L2		4	10	V L2-L3	
4	3	A L3		4	11	V L3-L1	
4	4	DMD A max		4	12	V L-L Σ	
4	5	V L1-N		4	13	Hz	
4	6	V L2-N					
4	7	V L3-N					
4	8	V L-N Σ					
5	1	VA L1		5	7	var L1	
5	2	VA L2		5	8	var L2	
5	3	VA L3		5	9	var L3	
5	4	VA Σ		5	10	var Σ	
5	5	DMD VA Σ		5	11	PF L1	
5	6	DMD VA Σ max		5	12	PF L2	
				5	13	PF L3	
				5	14	PF Σ	

Converted variables referred to the main meter

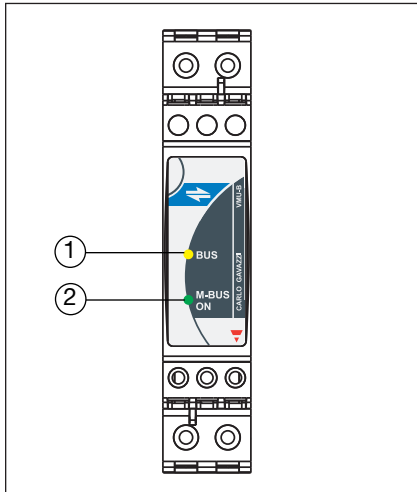
Meter: EM21-72D							
Frame	Number	Variable	Data format	Frame	Number	Variable	Data format
1	1	kWh (+) TOT		1	3	W L1	
1	2	kvarh (+) TOT		1	4	W L2	
1				1	5	W L3	
1				1	6	W Σ	
2	1	A L1		2	8	V L1-L2	
2	2	A L2		2	9	V L2-L3	
2	3	A L3		2	10	V L3-L1	
2	4	V L1-N		2	11	V L-L Σ	
2	5	V L2-N		2	12	Hz	
2	6	V L3-N					
2	7	V L-N Σ					
3	1	VA L1		3	9	PF L1	
3	2	VA L2		3	10	PF L2	
3	3	VA L3		3	11	PF L3	
3	4	VA Σ		3	12	PF Σ	
3	5	var L1		3	13	Phase sequence	
3	6	var L2		3			
3	7	var L3		3			
3	8	var Σ		3			

Meter: EM33 DIN							
Frame	Number	Variable	Data format	Frame	Number	Variable	Data format
1	1	kWh (+) TOT		1	3	W L1	
1	2	W Σ		1	4	W L2	
2	1	V L1-N		2	8	A L2	
2	2	V L2-N		2	9	A L3	
2	3	V L3-N		2	10	Phase sequence	
2	4	A L1					

Wiring diagrams



Frontal panel description



1. **Amber LED.** ON steady light: working communication on RS485 bus; Blinking light: not working communication on RS485 bus.
2. **Green LED.** When M-Bus communication is not available (during the instrument starting) the LED blinks according to the set baudrate: 300 bps: blinking, pause; 2400 bps: blinking, blinking, pause; 9600 bps: blinking, blinking, blinking, pause. ON steady light: NO M-bus communication with the VMU-B unit. ON blinking light: M-bus communication with the unit. Both AMBER and GREEN LED OFF light: the module is not power supplied.

Dimensions and panel cut-out

