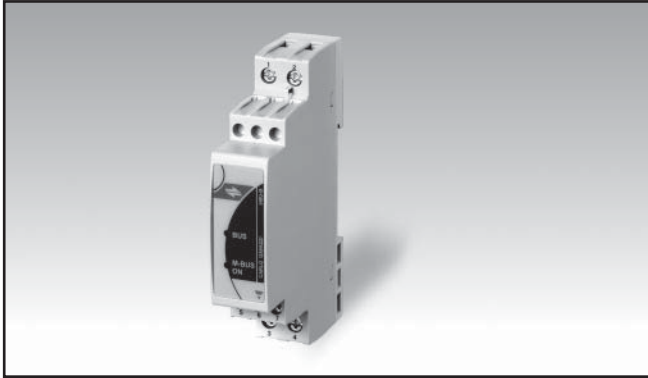


# Energy Management BUS Adapter Type VMU-B 01



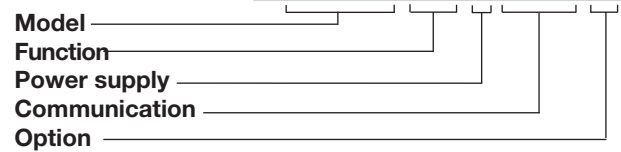
- RS485 (Modbus) to M-Bus communication adapter
- EM21-72D, EM24-DIN and EM33-DIN self recognition
- Front diagnostic LED's
- Universal 18 to 260 VAC/DC power supply
- Dimensions: 1-DIN module
- Protection degree (front): IP40

## 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
<b>M1:</b> EM21-72D, EM24-DIN and EM33-DIN compatibility (*)	<b>U:</b> From 18 to 260VAC/DC (*)	<b>S1B1:</b> RS485 Modbus to M-Bus (*)	<b>X:</b> none

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

## Communication

<b>LED 1</b>	Amber. ON steady light: working communication on RS485 bus; Blinking light: not working communication on RS485 bus.	<b>RS485 (energy meter)</b> Function Type Connections  Addresses  Protocol Baud-rate  Data format  Frame format	OFF light: the module is not power supplied.
<b>LED 2</b>	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		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) 9 600 bits/s in the connected energy meter. According to the connected instrument. According to the connected instrument, see table



## Communication (cont.)

Special functions Insulation	“Converted variables” None By means of optocouplers, 4000 VRMS between communication port to power supply input. No insulation between RS485 port and M-Bus communication port.	Baud-rate  Data format  Frame format	Standard: 2400 bits/s 300, 2400 and 9600 bits/s (set from M-Bus master). According to the connected instrument. According to the connected instrument, see table “Converted variables referred to the main meter” None
<b>M-Bus (adapter)</b> Function Type Connections  Addresses	Slave function One-drop, bidirectional 2-wire. Max. distance according to EN1434-3 Primary: 1 to 247, set in the connected instrument. Secondary: EM21 & EM24 "01020304"; EM33 end part of Sn (see label or display).	Special functions Insulation	By means of optocouplers, 4000 VRMS between communication port to power supply input. No insulation between RS485 port and M-Bus communication port.

## General specifications

<b>Operating temperature</b>	-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
<b>Storage temperature</b>	-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
<b>Installation category</b>	Cat. III (IEC60664, EN60664)	<b>Standard compliance</b> Safety	IEC60664, IEC61010-1 EN60664, EN61010-1
<b>Insulation (for 1 minute)</b>	4000 VRMS between communication BUS and power supply	<b>Approvals</b>	CE
<b>Dielectric strength</b>	4000 VRMS for 1 minute	<b>Connections</b> Cable cross-section area	Screw-type Min. 2.5 mm <sup>2</sup> , Max. 6 mm <sup>2</sup> Min./Max. screws tightening torque: 0.5 Nm / 1.1 Nm Other terminals: 1.5 mm <sup>2</sup> ; Min./Max. screws tightening torque: 0.4 Nm / 0.8 Nm
<b>Noise rejection</b> CMRR	100 dB, 48 to 62 Hz	<b>DIN Housing</b> Dimensions (WxHxD) Material	17.5 x 90 x 67.5 mm Nylon PA66, self-extinguishing: UL 94 V-0 DIN-rail
<b>EMC</b>  Electrostatic discharges Immunity to irradiated electromagnetic fields	According to: EN61000-6-2 (industrial immunity) and EN61000-6-3 (light industry emission). 8kV air discharge;  Test with applied current: 10V/m from 80 to 2000MHz; Test without any applied current: 30V/m from 80 to 2000MHz;	Mounting	
Burst	On current and voltage measuring input circuits: 4kV	<b>Protection degree</b> Front Screw terminals	IP40 IP20
		<b>Weight</b>	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

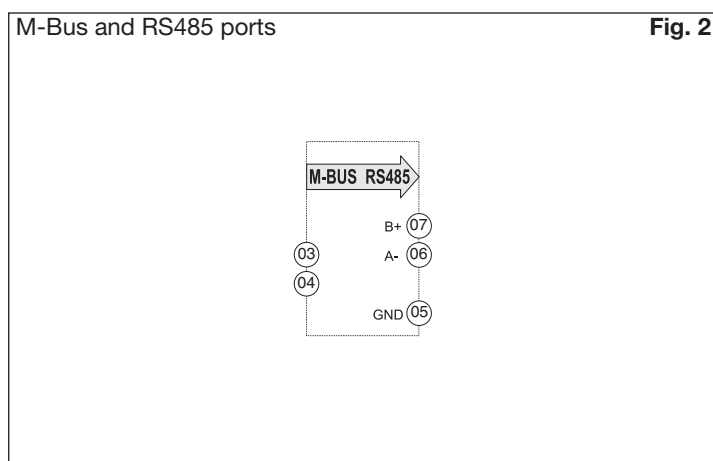
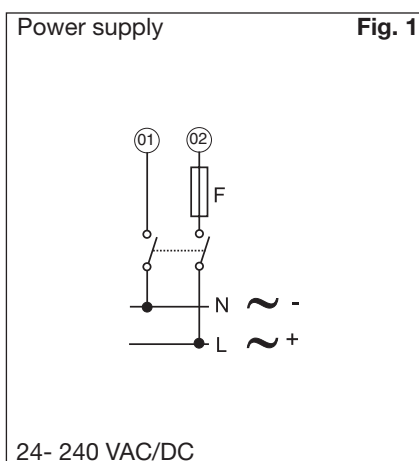
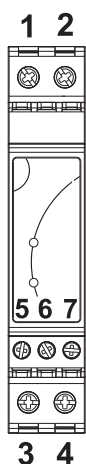
Meter: EM24-DIN							
Frame	Number	Variable	Data format	Frame	Number	Variable	Data format
1	1	kWh (+) TOT		1	10	kvarh (+) T1	
1	2	kvarh (+) TOT		1	11	kvarh (+) T2	
1	3	kWh (+) L1		1	12	kvarh (+) T3	
1	4	kWh (+) L2		1	13	kvarh (+) T4	
1	5	kWh (+) L3					
1	6	kWh (+) T1					
1	7	kWh (+) T2					
1	8	kWh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

## Converted variables referred to the main meter

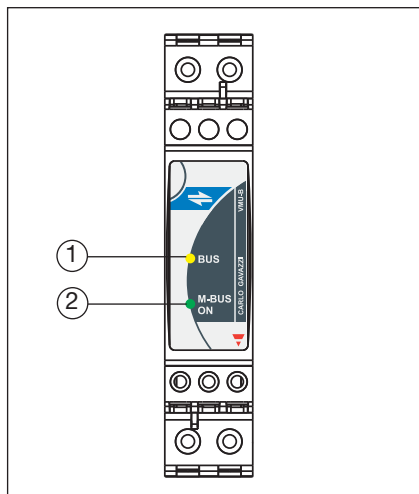
Meter: EM21-72D							
Frame	Number	Variable	Data format	Frame	Number	Variable	Data format
1	1	kWh (+) TOT		1	3	W L1	
1	2	kvarh (+) TOT		1	4	W L2	
1				1	5	W L3	
1				1	6	W $\Sigma$	
2	1	A L1		2	8	V L1-L2	
2	2	A L2		2	9	V L2-L3	
2	3	A L3		2	10	V L3-L1	
2	4	V L1-N		2	11	V L-L $\Sigma$	
2	5	V L2-N		2	12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

