



Features

- Remote stand-off analysis of gas leaks
- Quantification of gases in real time (s)
- Portable or stationary configurations
- Detection range: 30 m or 100 m with reflector
- External supply for stationary use: 15-32 VDC
- Digital and analog interfaces
- Weight: 1.5 kg

Description

The BM-V-1 provides an innovative tool to detect and quantify the presence of gases. Different from traditional sensors, the BM-V-1 provides a true stand-off detection schemes, able to analyze gas concentrations from a distance.

The true remote-detection schemes mean that installation is alignment free and in a back-reflection setup, with no need for long cables or complex mechanical constructions. This provides innovative means to monitor a large area with one single system or to provide measurement results from a safe distance of potentially hazardous gases.

The system is based on the Beamonics proprietary Remote TDLAS platform and is inherently both calibration-free and of low-maintenance. In addition, the system does not suffer from sensor-poisoning effects and can measure the entire range of very low background level concentrations all the way up to atmospheric saturation levels continuously.

Being highly energy-efficient, the system can be easily supplied by a standard DC power supply (15-32 VDC) or by external or internal batteries able to run for many hours, making it ideal both for temporary or permanent installations.

The BM-V-1 is delivered in an integration ready state with several digital and analogue interfaces, including USB, RS422, RS485, UART, PWM, Relay-controls, 4-20 mA and 0-10 V.

Detectable gases include CH₄, O₂, CO₂, CO, NO_x, HF, H₂S and HCl.

Dimensions (W x H x D): 180 mm x 150 mm x 90 mm.

Examples of gases

Gas	Detection precision (ppm•m) ^{a)}
O ₂	450
HF	0.03 - 0.8
CO	15 - 2 500
CO ₂	40 - 3 500
CH ₄	15
H ₂ S	25 - 300
NO	25 - 800

^{a)}Under standard test conditions: Range = 10 m, t = 0.5 s, P = 1 atm, T = 300 K

Class 1 Laser Product





Spectroscopy Characteristics

Parameter	Symbol	Min	Typical	Max
Detection range (m)	R	0.2		30
Ramp period	T_R	50 μ s	120 μ s	240 μ s
Temperature resolution			24 bits	
Temperature set stability			0.1 mK	
Ramp current resolution			Analog	
Laser current	I_R	0 mA		400 mA
Data sampling channels			1	
Data sampling resolution			24 bits	
Data sampling noise (V)			0.1 μ Vrms*	
Data sampling noise (ADU)			0.1*	

*1 s sampling time

Interfaces

Interface	Model	Mounted	Quantity
Core	ARM 7	Yes	2
EEPROM / F-RAM	FM24W256-G	Yes	2
RTC	32.768 kHz	Yes	1
USB	53398-0471 Communication, Data	Yes	2
USB	Mini USB, Firmware upgrade	Yes	2
SWD + TRACE	FTSH-110-01	Yes	1
RS-485	4 wire Full Duplex - protected	Yes	1
RS-485	4 wire Full Duplex - service data	Yes	1
Trig In	4-30 V	Yes	2
IO	0-12 V	Yes	2
IO Supply	12 V	Yes	1
User config relay	G6K-2F-5DC	Yes	2
Expansion connector	I ² C, SPI, GPIO, ADC, Loop Relay, Sync, GND, PWM, UART, Relay, IO, 5 V, 2.5 V, 12 V, PWR_IN, 4-20 mA, 0-10 V	Yes	3
Sync signals	Daisy chain configuration	Yes	2
Master clk in / out	73412-0110	Yes	2

Electrical Characteristics

Parameter	Symbol	Min	Typical	Max
Supply voltage	V_{in}	15 VDC*	24 VDC	32 VDC
Power consumption				5 W**
Piezo1 driver voltage	V_{pz}	0 V		71 V
Piezo2 driver voltage	V_{pz}	-50 V		50 V
TEC driver voltage			3.3 V	
TEC driver current		0 mA		1800 mA
TEC driver power		0 W		3.56 W
Comm. link length				100 m
Comm. link speed				3 Mbit/s

*degraded noise performance if $V_{in} < 15$ V

** 50 mA laser diode

