VLM500

Velocity and length measurement gauge

The optical non-contact operating VLM500 is a modern velocity and length measurement gauge in a compact housing. Based on the spatial filter principle the velocity is acquired continuously. The spatial filter is based on the filtering effect of grid-like structures (grid modulation) implemented by a CCD-Sensor. The resulting frequency is detected by the device. The frequency is proportional to the velocity of the object being measured. The length can be otained by integration. The object is illuminated by an integrated strong light source (LED). The light is reflected to the CCD-Sensor according to the surface morphology (granularity). Almost every surface can be measured that way. A fast adaption to the surface condition of the object is guaranteed by built-in control loops adjusting the exposure time and the brightness. According to the customer requirement the VLM500 can be equipped with several different industry interfaces or pulse outputs. The compactness and robstness of the gauge allows a space-saving and secure installation in facilities in various fields of the industry (metal, paper, wood, ceramic).

Key Features

- **Contactless optical**
- **Velocity up to 50 m/s**
- **Measuring uncertainty ±0.025 %**
- **Working distance:**
  170 mm / 185 mm / 240 mm
- **Slip free**
- **Nonwearing**
- **Nearly material independent**
- **High-Power illumination-LED**
- **No harmful LASER-light**
- **Robust and precise**
- **Insensitive against impurity**
- **Various interfaces**
- **Easy installation**
- **Nearly maintain free at a lifetime of > 15 years**
- **PC-Software for parameterization**
- **60 months warranty**
- **Made in Germany**

Applications

- Able to measure on almost all surfaces and materials (e.g. metal, paper, textiles, plastics, ceramic, wood, rubber)
- Suitable for various cases of applications (e.g. cutting, positioning, regulation, inspection, quality control)
- Applicable for a wide range of product profiles (e.g. strips, rails, plates, foils, tubes, cables, wires, robes, etc.)
- Length and speed measurement at winders, slitting lines, coating and inspection lines
- Velocity measurement in paper machines for example at paper pulp, web and paper
- Tube and profile length inspection and provision of velocity signals for testing purposes
- Velocity and cutting control for extruders

Options and accessory

- Add-on cards for digital interfaces (RS232, RS485/RS422, Fast Ethernet, PROFIBUS DP, Profinet, USB), for pulse output and analog output
- Delivery on demand with mounting accessory, linear guide, protection case, air purge nozzles, external counters and displays, light barriers, etc.

Technical Data

	VLM500A	VLM500D	VLM500L
Nominal distance and working range	185 ± 7,5 mm	240 ± 15 mm	170 ± 7.5 mm
Extended working range	185 ± 15 mm	240 ± 30 mm	170 ± 10 mm
Measuring range	0.6 … 1500 m/min	0.48 … 900 m/min	0.24 … 180 m/min
In extended working range	1.2 … 3000 m/min	0.96 … 1800 m/min	0.48 … 360 m/min
Measuring uncertainty [1]	±0.025 % at nominal working distance (±0.05 % in distance range and ±0.2 % in extended working range)		
Reproducibility [1]	±0.025 %		
Averaging-/Update-Time	> 0.2 ms with additional 1 … 32 times sliding averaging		
Length measuring range	Internal length range up to 1,000,000 km		
Detector / principle	CCD sensor / spatial filter with semiconductor grid as reference		
Illumination	White light LED (expected life span: > 5 years[2] , 70 % brightness after 50,000 hours of operation)		
Programming interface, isolated	USB, isolated (for parameter setting, data output and firmware update)		
Opto-isolated outputs [3]	ERROR	Error Signal	
	STATUS	Signal status	
Opto-isolated inputs [4]	TRIGGER 1, 2	External trigger signals	
	DIRECTION	External directional signal	
Pulse output (Encoder)	A/B, 2 phases 90°, resolution 8 ns, 0.2 Hz … 50 kHz Optionally as Open Collector (IPPL), 5V active(IP5V) or Push Pull (IPPP)		
State indicator (LED on top of the VLM500)	Signal (green), Error signal(red) , Communication (yellow), Forward(green), backward (green)		
Power supply, consumption	24 VDC, max. 25 W		
Temperature range	0 °C … 50 °C		
Protection class	IP 65		
EMC	Industrial standard in compliance with CE		
Weight, Housing dimensions	ca. 3.3 kg, 260 mm x 160 mm x 90 mm (Standard model without connections; L series without lens window		
Optional Add-On cards on demand:			
I232	RS232: opto-isolated, usable like programming interface		
I485, I422	RS485 or RS422: opto-isolated, bus-compatible, usable like programming interface		
IAUN	Analog interface, adjustable as 0 … 20 mA, 0 … 24 mA, 4 … 20 mA		
IFPB, IFFE, IFPN	Profibus DP, FastEthernet (Telnet), Profinet		
Standard scope of delivery	VLM500, power supply cable, connection cable, programming software (for Windows-PC), documentation		
Accessory (extract)			
Protective and cooling case CPC1	Mounting plate MPL	Cooling air supply AC5	

[1] DIN 1319 / ISO 3534, of measured length, test conditions: measuring length 10 m, active tracking, constant conditions in: temperature (20 °C), distance, velocity, illumination.

[2] Simple replacement by user.

[3] Optional open-collector or Push-Pull. Connections are isolated and short circuit proof.

[4] Opto isolated, short circuit proof, max. voltage 50 VDC, 36 VAC

[5] IP5V and IPPP provide output frequencies up to 4 MHz.

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