

MSE-V320

Velocity and length gauge

The MSE-V320 operates optically without contact. The device exploits the principle of a spatial filter by means of a CCD sensor. Spatial filter is the generic term used to describe a measuring principle for the optical determination of velocity and/or length of moving materials. The spatial filter is based on the filtering effect of grid-like structures (grid modulation). The function of the MSE-V320 can be described as follows:

The measurement object is imaged onto the CCD sensor by an objective. The CCD sensor is operated as an optical grid (no image acquisition). The measurement object is illuminated by an integrated light source (LED). When the object is moved, a signal frequency is generated due to the grid modulation. This frequency is proportional to the velocity at which the object is moving. The device measures the signal frequency and converts it into a velocity value. Several loop control circuits enable automatic adjustment to diverse materials.



Key Features

- Contactless
- Velocity up to 50 m/s
- Measuring uncertainty < 0,025 %
- Working distance:
170 mm / 185 mm / 240 mm
- Slip free
- Nonwearing
- Material independent
- High-Power illumination-LED
- No harmful LASER-light
- Robust and precise
- Insensitive against impurity
- Economical
- Various interfaces
- Easy installation
- Easy to maintain
- PC-Software for parameterization
- 60 month 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), for pulse output, analog output and automatic direction detection
- Delivery on demand with mounting accessory, linear guide unit, protection case, air purge nozzles, external counters and displays, light barriers, etc.

Technical Data

	MSE-V320A	MSE-V320D	MSE-V320L	MSE-V320V
Working distance and range	185 ± 7,5 mm	240 ± 15 mm	170 ± 7,5 mm	170 ± 7,5 mm
Extended working range	185 ± 15 mm	240 ± 30 mm	170 ± 10 mm	170 ± 10 mm
Measuring range	0.01 m/s ... 25 m/s	0.008 m/s ... 15 m/s	0.004 m/s ... 3.0 m/s	0.001 m/s ... 1.5 m/s
in extended working range	0.02 m/s ... 50 m/s	0.016 m/s ... 30 m/s	0.008 m/s ... 6.0 m/s	0.002 m/s ... 3.0 m/s
Max. Acceleration = $K_i \times v^2$ ⁵⁾	$K_i = 200 \text{ m}^{-1}$	$K_i = 290 \text{ m}^{-1}$	$K_i = 450 \text{ m}^{-1}$	$K_i = 900 \text{ m}^{-1}$
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	from 0.2 ms with additional 1 - 32 times sliding averaging			
Length measuring range	internal length range up to 400 km			
Detector / principle	CCD sensor / spatial filter with semiconductor grid as reference			
Illumination	white light LED (recommended maintenance interval ⁶⁾ : 24 months, expected life span: 70% brightness after 50,000 hours of operation)			
Programming interface ³⁾	RS232, opto-isolated (for parameter setting, data output and firmware update)			
Opto-isolated outputs ³⁾				
Function	OUT0:	VLM Error (Hardware Error)		
	OUT1, OUT2:	Pulse output with two phase pulse encoder emulation (A and B)		
	OUT3:	Standstill or signal status		
Frequency for pulse output	0.2 Hz ... 25 kHz (A/B 2 phases 90°, resolution 5 ns) (2 optional high resolution pulse outputs available, see below)			
Type / max. output current	NPN open emitter / 30 mA with AB3, optional with active push/pull (connection card AB4)			
Opto-isolated inputs ³⁾				
Function	IN0:	Standby		
	IN1:	External directional signal		
	IN2:	Trigger signal		
	(for signals 0 V/24 V, 0 mA/20 mA or ±20 mA, R _i approx. 1 kOhm)			
Voltage level	> 8 V for HIGH (switchable to > 3 V for IN1 and IN2)			
Input current	approx. 20 mA at 24 V			
Power supply	230 VAC / 50 Hz – 60 Hz optional 24 VDC			
Power consumption	< 20 W			
Temperature range	0 °C ... 50 °C			
Protection class	IP 65			
Weight ²⁾	approx. 5.8 kg			
EMC ⁴⁾	Industrial standard in compliance with CE			
Housing dimensions ²⁾	360 mm x 160 mm x 90 mm			
Optional Add-On cards:				
IF1 ⁷⁾	RS232 or RS485/RS422: opto-isolated, bus-compatible, usable like built-in programming interface			
IF3 ⁷⁾	2 pulse outputs up to 25 kHz, passive, Open Collector			
IF3-5V ⁷⁾	2 pulse outputs up to 2 MHz, active (up to 24 mA @ 5 V)			
IF3-PP ⁷⁾	2 pulse outputs up to 50 kHz, passive, Push-Pull			
IFProfi ⁷⁾	PROFIBUS DP			
IFFastEthernet ⁷⁾	Fast Ethernet			

¹⁾ DIN 1319 / ISO 3534, of measured length, test conditions: measuring length 10 m, with active tracking

²⁾ Standard model without connections; L and V series without objective window; other models available on request

³⁾ AB3 connections are short circuit proof, max. voltage 50 VDC, 36 VAC

⁴⁾ Tested by accredited institute

⁵⁾ v is the current speed in m/s

⁶⁾ Simple replacement by the user is possible

⁷⁾ This add-on card be additionally equipped with an analog output (0 mA to 20 mA or 4 mA to 20 mA, 16 Bit, opto-isolated)