



## DS250 / DS260 Safety Motion Monitor for Incremental Encoders / Sensors

- Monitoring of ramp, underspeed, overspeed, standstill and direction of rotation
- Wire monitoring of the sensor signals
- Up to SIL3/PLe with two independent non certified sensors (Version **DS250**)
- Up to SIL3/PLe with one equally certified sensor (Version **DS260**)
- Safety Functions equivalent to EN 61800-5-2 (SS1, SS2, SOS, SLS, SDI, SSM, SLI, SBC, STO, SMS)
- Inputs:
  - 2 incremental inputs (HTL differential/ HTL single ended/ RS422) (Version **DS250**)
  - 1 incremental input (HTL differential/ RS422) (Version **DS260**)
  - 8 control inputs (HTL, PNP)
- Outputs (safe):
  - 2 connected relay outputs, 2 closer (5 ... 250 VAC/ VDC)
  - 1 analogue output (4 ... 20 mA)
  - 4 x 2 control outputs (HTL, Push-Pull)
- Signal splitter (safe): 1 splitter output (HTL/ RS422)
- Mounting to 35 mm top hat rail (according to EN 60715)
- USB interface for simple parametrization by the OS operator surface
- Optional available display unit BG200

Technical Specifications:		
<b>Power supply:</b>	Input voltage:	18 ... 30 VDC
	Protective circuit:	reverse polarity protection
	Ripple:	max 10 % at 24 VDC
	Power consumption:	approx. 150 mA (unloaded), approx. 2000 mA (loaded)
	Protection:	external fuse (3.15 A, medium time-lag) necessary
	Connections:	screw terminal, 1.5 mm <sup>2</sup> / AWG 16
<b>Encoder supply:</b>	Number:	2
	Output voltage:	5 VDC / 24 VDC (approx. 2 VDC ... 3DVC less the input voltage)
	Output current:	max 200 mA per encoder
	Protective circuit:	short-circuit-proof
<b>Incremental inputs:</b>	Number of inputs:	2 Encoder (A, /A, B, /B, Z, /Z), (1 Encoder at DS260)
	Format:	HTL differential - $U_{Diff} = \min. 5V$ / HTL single ended - $U_H > 14V, U_L < 5V$ / RS422 - $U_{Diff} = \min. 1,5V$
	Frequency:	max 500 kHz
	Connections:	screw terminal, 1.5 mm <sup>2</sup> / AWG 16

Technical Specifications:								
<b>Control inputs:</b>	Number of inputs: 8 (single lane) or 4 (two-channel, inverse/homogeneous) Application: Control signals Signal level: HTL PNP (10 ... 30 V) Load: max. 15 mA Frequency: max. 1 kHz Connections: screw terminal, 1.5 mm <sup>2</sup> / AWG 16							
<b>Incremental output:</b> (safety related)	Splitter output: 1 Endcoder (A, /A, B, /B, Z, /Z) Format: HTL differential/ HTL single ended/ RS422 Frequency: max 500 kHz Connections: screw terminal, 1.5 mm <sup>2</sup> / AWG 16							
<b>Analogue output:</b> (safety related)	Current output: 4 ... 20 mA (load max. 270 Ohm) Resolution: 14 Bit Accuracy: ± 0,1% Connections: screw terminal, 1.5 mm <sup>2</sup> / AWG 16							
<b>Control outputs:</b> (safety related)	Number of outputs: 8 (single lane) or 4 (two-channel, inverse/homogeneous) Output voltage: HTL (approx. 2 ... 3 VDC less than input voltage) Output current: max 500 mA per output, shared max 1000 mA Switching characteristic: push-pull Protective circuit: short-circuit-proof Connections: screw terminal, 1.5 mm <sup>2</sup> / AWG 16							
<b>Relay output:</b> (safety related)	Number of relays: 1 double relay output, force-actuated (2x NO) Switching capability: 5 ... 250 VAC/ VDC Switching capacity: 5 mA ... 5 A Connections: screw terminal, 1.5 mm <sup>2</sup> / AWG 16							
<b>USB interface:</b>	Version / connection: USB 1.0 / Type B (female) Operating System: WIN7 /8 / 10 (tested with (1511 build 10586.104)							
<b>LEDs:</b>	Green / yellow: „ON“ / „ERROR“							
<b>Switches:</b>	DIL switch: 1 x 3-pin							
<b>Conformity and standards:</b>	MR 2006/42/EC: EN ISO 13849-1, EN 61508, EN 62061, EN 60947-5-1 EMC 2014/30/EU: EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61326-3-1, EN 61326-3-2 Vibration resistance: EN 60068-2-6 (sine, 7 g, 10 – 200 Hz, 20 cycles) Shock resistance: EN 60068-2-27 (half sine, 30 g, 11 ms, 3 shocks) EN 60068-2-27 (half sine, 17 g, 6 ms, 4000 shocks) RoHS ( II ) 2011/65/EU RoHS ( III ) 2015/863: EN IEC 63000							
<b>Safety characteristic data:</b>	Classification: Up to SIL3/PLe (depends on the used encoder/sensor arrangement) Approved Safety Function: Certification No.: 44 207 14018601 System structure: dual-channel System architecture: Cat. 3 / HFT = 1 DC <sub>u</sub> : 98,7 % SFF: 98,99 % MTTF: 156,5 Jahre PFH: 5,73 * 10 <sup>-6</sup> h <sup>-1</sup> λ <sub>u</sub> / λ <sub>d</sub> / λ <sub>o</sub> / λ <sub>s</sub> : 1,29 * 10 <sup>-6</sup> h <sup>-1</sup> / 5,3 * 10 <sup>-6</sup> h <sup>-1</sup> / 7,2 * 10 <sup>-6</sup> h <sup>-1</sup> / 9,22 * 10 <sup>-6</sup> h <sup>-1</sup> Safety functions: equivalent to EN 61800-5-2 for SS1, SS2, SOS, SLS, SDI, SSM, SLI, SBC, STO, SMS (depending on the used encoder input signals)							
<b>Classification test impulses:</b>	Classification: by ZVEI CB24I Class: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>drain:</td> <td>C1</td> <td></td> <td>source:</td> <td>C1</td> <td>C2</td> <td>C3</td> </tr> </table> Test Pulse Duration: max. 1 ms Test Pulse interval: min. 2,5 ms Input impedance: min. 18 kOhm Input capacity: max. 1 nF	drain:	C1		source:	C1	C2	C3
drain:	C1		source:	C1	C2	C3		
<b>Enclosure:</b>	Material: plastic Mounting: 35 mm top hat rail (according to EN 60715) Dimensions: 50 x 100 x 165 mm, 1,97 x 3,94 x 6,49 inch, (w x h x d) Protection class: IP20 Weight: ca. 400 g							
<b>Ambient temperature:</b>	Operation: -20 °C ... +55 °C / -4 °F ... +131 °F (without condensation) Storage: -25 °C ... +70 °C / -13 °F ... +158 °F (without condensation)							
<b>Maintenance:</b>	Interval: Switch on/off for at least 1 times a year (at continuous operation)							
<b>BG200 unit: (optional)</b>	Display / Operation: OLED-Display / Touch screen							