



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 SIL2/PLd 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:		
Power supply:	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 ² / AWG 16
Encoder supply:	Number:	2
	Output voltage:	5 VDC / 24 VDC (approx. 2 VDC ... 3VDC less the input voltage)
	Output current:	max 200 mA per encoder
	Protective circuit:	short-circuit-proof
Incremental inputs:	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 ² / AWG 16

Technical Specifications:													
Control inputs:	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 mm² / AWG 16											
Incremental output: (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 mm² / AWG 16											
Analogue output: (safety related)	Current output:	4 ... 20 mA (load max. 270 Ohm)											
	Resolution:	14 Bit											
	Accuracy:	± 0,1%											
	Connections:	screw terminal, 1.5 mm² / AWG 16											
Control outputs: (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 mm² / AWG 16											
Relay output: (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 mm² / AWG 16											
USB interface:	Version / connection:	USB 1.0 / Type B (female)											
	Operating System:	WIN7 /8 / 10 (tested with (1511 build 10586.104)											
LEDs:	Green / yellow:	„ON“ / „ERROR“											
Switches:	DIL switch:	1 x 3-pin											
Conformity and standards:	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											
Safety characteristic data:	Classification:	Up to SIL3/PLe (depends on the used encoder/sensor arrangement)											
	System structure:	dual-channel											
	System architecture:	Cat. 3 / HFT = 1											
	DC _e :	98,7 %											
	SFF:	98,99 %											
	MTTF _e :	156,5 Jahre											
	PFH:	5,73 * 10 ⁻⁶ h ⁻¹											
	λ _e / λ ₁ / λ ₂ / λ ₃ :	1,29 * 10 ⁻⁶ h ⁻¹ / 5,3 * 10 ⁻⁶ h ⁻¹ / 7,2 * 10 ⁻⁶ h ⁻¹ / 9,22 * 10 ⁻⁶ h ⁻¹											
	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)											
Classification test impulses:	Classification:	by ZVEI CB24I											
	Class:	<table border="1"><tr><td>drain:</td><td>C1</td><td></td><td>source:</td><td>C1</td><td>C2</td><td>C3</td></tr></table>					drain:	C1		source:	C1	C2	C3
	drain:	C1		source:	C1	C2	C3						
	Test Pulse Duration:	max. 1 ms											
	Test Pulse interval:	min. 2,5 ms											
	Input impedance:	min. 18 kOhm											
Input capacity:	max. 1 nF												
Enclosure:	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 For proper use, ensure that the device is installed in a housing or control cabinet with a protection class of at least IP54.											
	Weight:	ca. 400 g											
Ambient temperature:	Operation:	-20 °C ... +55 °C / -4 °F ... +131 °F (without condensation)											
	Storage:	-25 °C ... +70 °C / -13 °F ... +158 °F (without condensation)											
Maintenance:	Interval:	Switch on/off for at least 1 times a year (at continuous operation)											
BG200 unit: (optional)	Display / Operation:	OLED-Display / Touch screen											