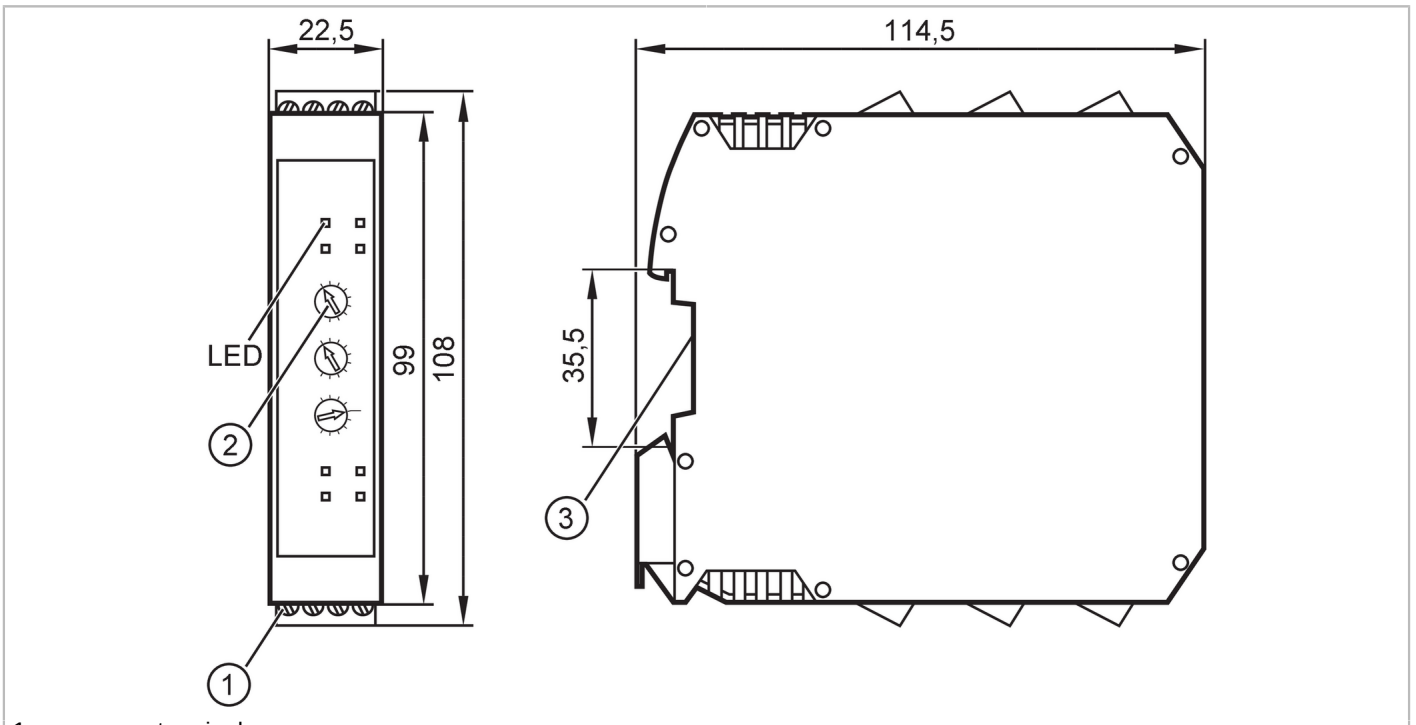
DU110S

Evaluation unit for safe speed monitoring

Safety underspeed Monitor



1 screw terminals
2 rotary switch
3 mounting on DIN rail

CE

Product characteristics		
Housing		rectangular
Dimensions	[mm]	108 x 22.5 x 114.5
Safety-related switching outputs		
Electrical design		relay; (Contacts potential-free)
Digital output		
Electrical design		PNP
Output function		1 x fault output "Fault"; 1 x Diagnostic output "Underspeed"
Application		
Design		housing for DIN rail mounting
Application		reliable evaluation of rotating and linear movements with regard to underspeed
Electrical data		
Operating voltage	[V]	19.2...28.8 DC; (incl. 5 % residual ripple)
Nominal voltage DC	[V]	24
Current consumption	[mA]	< 125
Protection class		II
Max. power-on delay time	[ms]	3000
Auxiliary energy for sensors DC	[V]	24; (≤ 70 mA , voltage drop relative to the operating voltage ≤ 2 V)
Inputs / outputs		
Number of inputs and outputs		Number of digital outputs: 2; Number of relay outputs: 2

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Inputs			
Input characteristics		S34, S43: "1": 6 mA / 24 V DC	
Input circuit of digital inputs		PNP	
Feedback circuit			
Current through feedback contacts	[mA]	< 100	
Outputs			
Number of digital outputs		2	
Number of relay outputs		2	
Feedback circuit			
Short-circuit proof		yes	
Safety-related switching outputs			
Electrical design		relay; (Contacts potential-free)	
Contact rating		6 A, 250 V AC / 24 V DC; (≥ 6 mA ; ohmic resistance)	
Type of short-circuit protection		The contacts are to be protected by means of external fuses with a nominal current of < 3.6 A	
Digital output			
Electrical design		PNP	
Output function		1 x fault output "Fault"; 1 x Diagnostic output "Underspeed"	
Max. current load per output	[mA]	20; (24 V DC, voltage drop relative to the supply voltage ≤ 2 V, non-safe)	
Short-circuit proof		yes	
Measuring/setting range			
Setting range Hz	[Hz]	0.5...990	
Setting range	[Imp/min]	10...49500	
Frequency range	[Hz]	< 2000; (pulse duration: 100 µs: > 500 Hz ; 150 µs: ≤ 500 Hz)	
Accuracy / deviations			
Hysteresis	[%]	5	
Notes on the accuracy / deviation		Permitted frequency difference between the inputs: ≤ 10 % (f > 100 Hz) / ≤ 20 % (f < 100 Hz)	
Response times			
Response time to safety request	[ms]	f sel ≥ 100 Hz:	t = 10,7 + 400 x (f sel ÷ f in)
		f sel < 100 Hz:	t = 14 + (4500 ÷ f in)
Risk time (response time for safety-related faults)	[ms]	5.5	
Legend		t :	Response time
		f sel :	set frequency (preset value)
		f in :	applied frequency (actual value)
Operating conditions			
Ambient temperature	[°C]	-40...55	
Note on ambient temperature		observe the free space for convection (see operating instructions)	
Storage temperature	[°C]	-40...70	
Max. relative air humidity	[%]	95	
Max. height above sea level	[m]	2000	
Protection		IP 20	

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Safety classification			
Complies with the requirements		ISO 13849-1 category 4, PL e	
		IEC 61508 SIL 3	
Mission time TM	[h]	≤175200	
Mission time TM (additional indication)		20 years	
PFH	[1/h]	DC13 (2 A), 24 V DC	7,69E-09
		AC15 (1 A), 230 V AC	8,25E-09
		AC15 (3 A), 230 V AC	9,15E-09
Hardware fault tolerance HFT		1; (Type B)	

Mechanical data		
Weight	[g]	343
Housing		rectangular
Type of mounting		mounting on DIN rail; (TH35 (EN 60715))
Dimensions	[mm]	108 x 22.5 x 114.5
Materials		housing: PA

Displays / operating elements		
Display	Voltage	1x LED, green
	release	1x LED, yellow
	configuration	1x LED, blue
	error	1x LED, red
	switching status	2x LED, green
	input signal	2x LED, yellow

Remarks	
Remarks	characteristic safety values for 1000 relay actuations / year
Pack quantity	1 pcs.

Electrical connection

screw terminals: 0.5...2.5 mm²; AWG 30...12

A1

1 (L+)	L+	
2 (S33)	L+	(US; Sensor supply)
3 (S35)	L-	(US; Sensor supply)
4 (S34)	IN	FI

A2

1 (L-)	L-	
2 (S44)	L+	(US; Sensor supply)
3 (S45)	L-	(US; Sensor supply)
4 (S43)	IN	FI

A3

1 (13)	OUT1	DO1 (NO) (relay)
2 (n.c.)	n.c.	
3 (n.c.)	n.c.	
4 (14)	OUT2	DO2 (NO) (relay)

C1

1 (Y3)	IN1	DI1 (PNP)
2 (Y4)	IN2	DI2 (NPN)
3 (Y5)	IN3	DI3
4 (Y6)	IN4	DI4

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C2		
1 (Y7)	OUT1	DO1
2 (Y8)	OUT2	DO2
3 (Y1)	OUT3	DO3
4 (Y2)	IN	DI

C3		
1 (23)	OUT1	DO1 (NO) (relay)
2 (n.c.)	n.c.	
3 (n.c.)	n.c.	
4 (24)	OUT2	DO2 (NO) (relay)

DI: digital input; DO: digital output; FI: frequency input