USER INSTRUCTIONS English

Current Monitoring Relay DG 35300

DRAGO AUTOMATION

Read these instructions before using the product and retain for future information.

DG 35300

► Before Startup

When operating the device, certain parts of the module can carry dangerous voltage! Ignoring the warnings can lead to serious injury and/or cause damage!

The device should only be installed and put into operation by qualified staff. The staff must have studied the warnings in these operating instructions thoroughly.

The device may not be put into operation if the housing is open.

In applications with high operating voltages sufficient distance and isolation as well as shock protection must be ensured.

Safe and trouble-free operation of this device can only be guaranteed if transport, storage and installation are carried out correctly and operation an maintenance are carried out with care.

Appropriate safety measures against electrostatic discharge (ESD) should be taken during range selection and assembly on the device.

► Short description

The configurable Current Monitoring Relay DG 35300 is used for limit monitoring and processing of DC and AC current signals and mV signals for current measuring with shunt resistors. A SPST relay or optionally an isolated, passive transistor switch (Open-Collector) is available at the output.

The Current Monitoring Relay monitors AC/DC current signals and mV signals for MIN and MAX Alarm and transmits the limit value message to the switching output.

The configuration is carried out via DIP switches or via the front programming interface (requires DZU 1201, see accessories). The monitoring relay has an adjustable switch-on delay, switch-off delay and a wiper function. Further settings such as latch function and window function are also possible.

Power can be supplied via the connection terminals or via the optional In-Rail-Connector (see accessories). The switching status and the device status are indicated by LEDs on the front panel. If the device is operated via the In-Rail Connector, a group message is available.

► Configuration via DIP switches

Select input signal and device configuration according to the table below. The operating modes MIN / MAX Alarm with hysteresis or Window with the two switching points Lower Limit and Upper Limit are available.

N/O / N/C Relay
N/O: Relay energized on alarm
N/C: Relay unenergized on alarm (preferred, device failure and supply interruption lead to alarm message)

Latch ON
The alarm message is stored. Reset with external reset contact or interruption of power supply.

On Delay
The alarm condition must be present continuously for the selected ON Delay time to trigger an alarm message. The reset is instantaneous.

Group message
ERROR: Only error message on In-Rail contact E.
ERROR + Alarm: Error message and alarm on the In-Rail contact E.

► Configuration via PC

For PC configuration you need the DRAGOset software and the DRAGO programming interface DZU1201 (see accessories). DRAGOset is available at: www.drago-automation.de

Connect the USB interface of the PC and the Modbus module to the programming interface. The connection socket of the Modbus module is located behind the front cover. In PC mode (all DIP switches OFF) you can configure the modules with or without external power supply.

Make sure all DIP switches are in the OFF position.
Follow the instructions of the DRAGOset software.

► Mounting, Electrical Connection

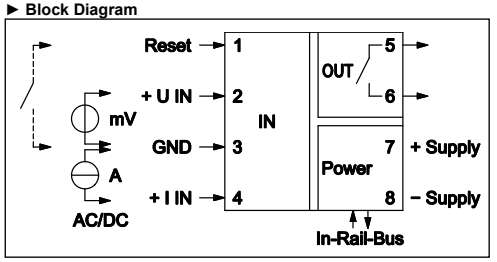
The transmitter is mounted on standard 35 mm DIN rail

► Technical Data

Input	Current Input	mV Input
Input signal[1]	0 … 5 A AC/DC	0 … 150 mV AC/DC
Monitoring range	0 … 5.5 A	0 … 165 mV
Input resistence	0.01 Ω	100 kΩ
Over load	< 10 A, (< 30 A for 1 s)	< 30 V
Output		
DG 35300 Relais (SPST)	250 V AC / 30 V DC / 2 A Recommended minimum load 300 mW / 5 V / 5 mA	
DG 35380 Transistor (Open-Collector)	36 V DC / 50 mA, Residual voltage < 1.5 V ated, not current limited	
Switching functions	Make contact, break contact, Normal, Latch	
Time function	On delay: Off, 1 s, 2 s, 3 s, 5 s, 10 s, 20 s, 30 s	
Response time	≤ 20 ms	
Switch state indicator	Yellow LED on front	
Group message	Group message at In-Rail-Connector E (supply circuit) at device failure and alarm	
General data		
Switching error	DC: < 0.2 % full scale AC: < 0.5 % full scale	
Temperature coefficient[2]	< 100 ppm/K	
Test voltage	3 kV, 50 Hz, 1 min. Input against output against power supply	
Working voltage[3] (basic insulation)	600 V AC/DC for overvoltage category II and contamination class 2 acc. to EN 61010-1	
Protection against dangerous body currents[3]	Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and output and power supply.	
Ambient temperature	Operation -25 °C to +70 °C (-13 to +158 °F) Transport and storage -40 °C to +85 °C (-40 to +185 °F)	
Power supply	24 V DC	16.8 V … 31.2 V, approx. 1.0 W
EMV[4]	EN 61326-1	
Construction	6.2 mm (0.244'') housing, protection type: IP 20 mounting on 35 mm DIN rail acc. to EN 60715	
Connection terminals (see order information)	- Screw terminals (plus-minus clamp screws) - Cage clamp terminals (Push-In)	
Weight	Approx. 70 g	

1) Factory setting: switching point = 3 A, hysteresis 10 %, MAX-alarm, normally open contact, time functions off
2) Average TC in specified operating temperature range
3) As far as relevant the standards and rules mentioned above are considered by development and production of our devices. In addition relevant assembly rules are to be considered by installation of our devices in other equipment's. For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent situated devices.
4) Minor deviations possible during interference

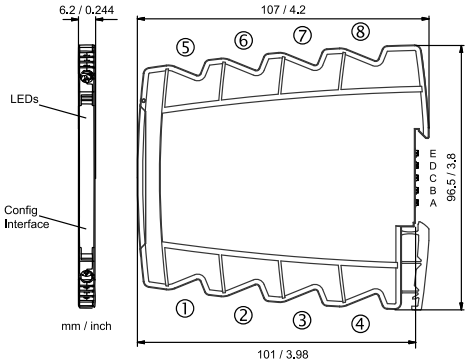
► Block Diagram



► Order Information

Current Monitoring Relay	Order No. Relay	Transistor
Screw terminals	DG 35300 S	DG 35380 S
Screw terminals, In-Rail-Bus	DG 35300 B	DG 35380 B
Push-In terminals	DG 35304 S	DG 35384 S
Push-In terminals, In-Rail-Bus	DG 35304 B	DG 35384 B

► Dimensions



► Connection data

Connection	Screw terminals	Push-In terminals
Wire cross-section stranded ferruled	0.5 mm² - 2.5 mm² AWG 20 - 14	0.5 mm² - 1.5 mm² AWG 20 - 16
Wire cross-section solid wire	0.5 mm² - 2.5 mm² AWG 20 - 14	0.5 mm² - 2.5 mm² AWG 20 - 14
Stripped length	8 mm / 0.3 in	8 mm / 0.3 in
Screw terminal torque	0.6 Nm / 5 lbf in	-

LIMITED WARRANTY
DRAGO Automation GmbH hereby warrants that the Product will be free from defects in materials or workmanship for a period of **five (5) years** from the date of delivery ("Limited Warranty"). This Limited Warranty is limited to repair or replacement at DRAGO's option and is effective only for the first end-user of the Product. This Limited Warranty applies only if the Product:

1. is installed according to the instructions furnished by DRAGO;
2. is connected to a proper power supply;
3. is not misused or abused; and
4. there is no evidence of tampering, mishandling, neglect, accidental damage, modification or repair without the approval of DRAGO or damage done to the Product by anyone other than DRAGO.

Delivery conditions are based upon the „GENERAL CONDITIONS FOR THE SUPPLY OF PRODUCTS AND SERVICES OF THE ELECTRICAL AND ELECTRONICS INDUSTRY" recommended by the Zentralverband Elektrotechnik- und Elektronikindustrie (ZVEI) e.V. .

Subject to change!

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Set the input and output ranges with DIP switches as indicated in the following table (● = ON, Factory settings: all switches in position OFF):

PC Mode all switches OFF

DIP S1						
1	2	3	4	5	6	
						DC Input
●						AC Input
		●				MIN Alarm
	●					MAX Alarm
	●	●				WINDOW
						5 A Input
			●			150 mV Input
						N/O Relay
				●		N/C Relay
						Latch OFF
					●	Latch ON

DIP S1				
7	8	9	10	ON Delay
				OFF
		●		1 s
	●			2 s
	●	●		3 s
●				5 s
●		●		10 s
●	●			20 s
●	●	●		30 s

		Group Message
		ERROR
	●	ERROR + Alarm

DIP S2			
1	2	3	Hysteresis
			OFF
		●	1 %
	●		5 %
	●	●	10 %
●			15 %
●		●	20 %
●	●		25 %
●	●	●	30 %

MIN or MAX Alarm with Hysteresis

DIP S2										DIP S2										DIP S2									
4	5	6	7	8	9	10	A	mV		4	5	6	7	8	9	10	A	mV		4	5	6	7	8	9	10	A	mV
							0.000	0			●		●		●	●	1.075	43		●		●		●	●		3.200	86
						●	0.025	1			●		●	●			1.100	44		●		●		●	●	●	3.250	87
					●		0.050	2			●		●	●		●	1.150	45		●		●	●				3.300	88
					●	●	0.075	3			●		●	●	●		1.200	46		●		●	●			●	3.350	90
				●			0.100	4			●		●	●	●	●	1.250	47		●		●	●		●		3.400	92
				●		●	0.125	5			●	●					1.300	48		●		●	●		●	●	3.450	94
				●	●		0.150	6			●	●				●	1.350	49		●		●	●	●			3.500	96
				●	●	●	0.175	7			●	●			●		1.400	50		●		●	●	●		●	3.550	98
			●				0.200	8			●	●			●	●	1.450	51		●		●	●	●	●		3.600	100
			●			●	0.225	9			●	●		●			1.500	52		●		●	●	●	●	●	3.650	102
			●		●		0.250	10			●	●		●		●	1.550	53		●	●						3.700	104
			●		●	●	0.275	11			●	●		●	●		1.600	54		●	●					●	3.750	106
			●	●			0.300	12			●	●		●	●	●	1.650	55		●	●				●		3.800	108
			●	●		●	0.325	13			●	●	●				1.700	56		●	●				●	●	3.850	110
			●	●	●		0.350	14			●	●	●			●	1.750	57		●	●			●			3.900	112
			●	●	●	●	0.375	15			●	●	●		●		1.800	58		●	●			●		●	3.950	114
		●					0.400	16			●	●	●		●	●	1.850	59		●	●			●	●		4.000	116
		●				●	0.425	17			●	●	●	●			1.900	60		●	●			●	●	●	4.050	118
		●			●		0.450	18			●	●	●	●		●	1.950	61		●	●		●				4.100	120
		●			●	●	0.475	19			●	●	●	●	●		2.000	62		●	●		●			●	4.150	122
		●		●			0.500	20			●	●	●	●	●	●	2.050	63		●	●		●		●		4.200	124
		●		●		●	0.525	21		●							2.100	64		●	●		●		●	●	4.250	126
		●		●	●		0.550	22		●						●	2.150	65		●	●		●	●			4.300	128
		●		●	●	●	0.575	23		●					●		2.200	66		●	●		●	●		●	4.350	130
		●	●				0.600	24		●					●	●	2.250	67		●	●		●	●	●		4.400	132
		●	●			●	0.625	25		●				●			2.300	68		●	●		●	●	●	●	4.450	134
		●	●		●		0.650	26		●				●		●	2.350	69		●	●	●					4.500	136
		●	●		●	●	0.675	27		●				●	●		2.400	70		●	●	●				●	4.550	138
		●	●	●			0.700	28		●				●	●	●	2.450	71		●	●	●			●		4.600	140
		●	●	●		●	0.725	29		●			●				2.500	72		●	●	●			●	●	4.650	142
		●	●	●	●		0.750	30		●			●			●	2.550	73		●	●	●		●			4.700	144
		●	●	●	●	●	0.775	31		●			●		●		2.600	74		●	●	●		●		●	4.750	146
	●						0.800	32		●			●		●	●	2.650	75		●	●	●		●	●		4.800	148
	●					●	0.825	33		●			●	●			2.700	76		●	●	●		●	●	●	4.850	150
	●				●		0.850	34		●			●	●		●	2.750	77		●	●	●	●				4.900	152
	●				●	●	0.875	35		●			●	●	●		2.800	78		●	●	●	●			●	5.000	154
	●			●			0.900	36		●			●	●	●	●	2.850	79		●	●	●	●		●		5.100	156
	●			●		●	0.925	37		●		●					2.900	80		●	●	●	●		●	●	5.200	158
	●			●	●		0.950	38		●		●				●	2.950	81		●	●	●	●	●			5.300	160
	●			●	●	●	0.975	39		●		●			●		3.000	82		●	●	●	●	●		●	5.400	162
	●		●				1.000	40		●		●			●	●	3.050	83		●	●	●	●	●	●		5.500	165
	●		●			●	1.025	41		●		●		●			3.100	84										
	●		●		●		1.050	42		●		●		●		●	3.150	85										

Window Function

DIP S2					Lower Limit									Upper Limit	
1	2	3	4	5	A	mV		6	7	8	9	10	A	mV
					0.000	0							0.100	3
				●	0.025	1						●	0.150	5
			●		0.050	2					●		0.200	8
			●	●	0.100	3					●	●	0.300	10
		●			0.150	5				●			0.400	12
		●		●	0.200	8				●		●	0.500	15
		●	●		0.300	10				●	●		0.600	18
		●	●	●	0.400	12				●	●	●	0.700	20
●					0.500	15		●					0.800	24
●				●	0.600	18		●				●	0.900	28
●			●		0.700	20		●			●		1.000	30
●			●	●	0.800	24		●			●	●	1.100	33
●		●			0.900	28		●		●			1.200	36
●		●		●	1.000	30		●		●		●	1.300	40
●		●	●		1.100	33		●		●	●		1.400	45
●		●	●	●	1.200	36		●		●	●	●	1.500	50
					1.300	40							1.750	55
				●	1.400	45						●	2.000	60
			●		1.500	50					●		2.250	65
			●	●	1.750	55					●	●	2.500	70
		●			2.000	60				●			2.750	80
		●		●	2.250	65				●		●	3.000	90
		●	●		2.500	70				●	●		3.250	95
		●	●	●	2.750	80				●	●	●	3.500	100
●					3.000	90		●					3.750	105
●				●	3.250	95		●				●	4.000	110
●			●		3.500	100		●			●		4.250	120
●			●	●	3.750	105		●			●	●	4.500	130
●		●			4.000	110		●		●			4.750	140
●		●		●	4.250	120		●		●		●	5.000	150
●		●	●		4.500	130		●		●	●		5.250	160
●		●	●	●	4.750	140		●		●	●	●	5.500	164

LED-indication

The Alarm Unit has a green, a red and a yellow LED on front panel.

Signaling	green	red	yellow
off	No power supply	Device function ok	Alarm not triggered
on	Power supply is connected	Device error, replacement necessary	Alarm triggered
blinking		Maintenance, configuration error	Delay time active
flashing		Alarm has been triggered and is being held → Waiting for confirmation / reset	