

Field Configurable Limit Alarm Modules



- ✓ **Models Available for Thermocouples, RTDs, DC and AC Voltage and Current**
- ✓ **Easy Field Configurable Ranges**
- ✓ **Adjustable Setpoints Programmable HI or LO and Failsafe or Non-Failsafe**

The DRG-AR Series modules are a family of DIN rail mount limit alarms with dual setpoints and two contact closure outputs. The field configurable input and alarm functions offer flexible setpoint capability. Modules are available for a variety of input types including thermocouples, RTDs, DC and AC current and voltages.

Each module can be set to a number of input ranges via an input selector switch. The alarm points and dead band are adjusted by potentiometers.

Diagnostic LEDs

All modules are equipped with 3 front panel LEDs. The first is a dual function LED labeled input. This green LED indicates line power and input signal status. Two red LEDs indicate the relay state for each setpoint. An illuminated red LED indicates the tripped condition.

Output

The DRG-AR Series modules are equipped with two SPDT relays, rated at 120 Vac or 28 Vdc at 5 amperes. Each of these relays is independently controlled by the field configurable setpoint and deadband.

Operation

The field configurable limit alarm setpoints can be configured for HI or LO, failsafe or non-failsafe operation. Each of the setpoints has a respective HI or LO deadband. In a tripped condition, the setpoint is exceeded and the appropriate red LED will illuminate. The trip will reset only when the process falls below the HI deadband or rises above the low deadband. In failsafe operation, the relay is energized when the process is below the HI setpoint or above the LO setpoint (opposite for non-fail-safe). In the fail-safe mode, a power failure results in an alarm state output.

Model	Input Type
DRG-AR-AC	AC Voltage and Current
DRG-AR-DC	DC Voltage and Current
DRG-AR-RTD	RTD
DRG-AR-TC	Thermocouple

Dynamic DeadBand

LSI circuitry in the DRG-AR Series prevents false trips by repeatedly sampling the input. The input must remain beyond the setpoint for 100 milliseconds to qualify as a valid trip condition. Likewise, the input must fall outside the deadband and remain there for 100 milliseconds to return the alarm to an untripped condition. This, effectively, results in a dynamic deadband.

Specifications

DRG-AR-AC

Range (Voltage Mode):

100 mV to 200 Vac

Impedance (Voltage Mode):

>100K Ω

Overload (Voltage Mode):

300 Vac, max.

Range (Current Mode):

10 mA to 100 mAAC

Impedance (Current Mode):

20 Ω , typical

Overcurrent (Current Mode):

200 mAAC

Overvoltage (Current Mode):

60V peak

Frequency Range:

40 to 400 Hz

Limit Differentials (Deadbands):

>50 mV/5 mA: 0.25% to 5% of span

<50 mV/5 mA: 1% to 5% of span

Setpoint Repeatability (Constant Temperature):

0.2% of full scale

DRG-AR-DC

Range (Voltage Mode):

10 mV to \pm 200 V

Impedance (Voltage Mode):

>100K Ω

Overload (Voltage Mode):

200 VRMS, max.

Range (Current Mode):

1 mA to \pm 100 mA

Impedance (Current Mode):

20 Ω , typical

Overcurrent (Current Mode):

170 mA RMS max.

Overvoltage (Current Mode):

60 Vdc

Limit Differentials (Deadbands):

>50 mV/5 mA: 0.25% to 5% of span

<50 mV/5 mA: 1% to 5% of span

Setpoint Repeatability

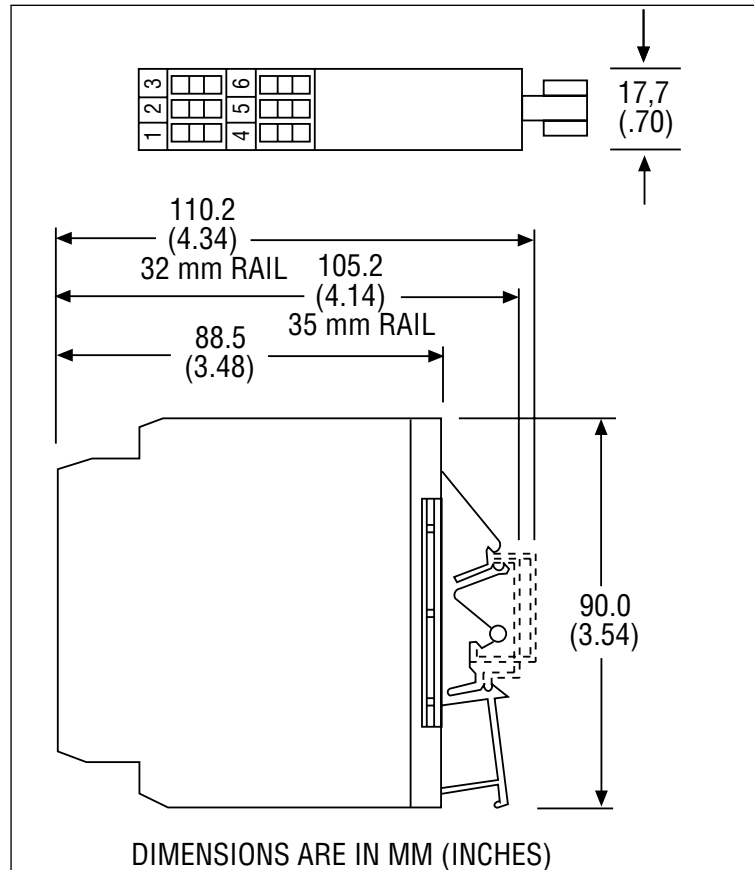
(constantTemp):

>50 mV/5 mA: 0.1% of full scale

<50 mV/5 mA: 0.2% of full scale

Excitation:

24 Vdc, 20 mA maximum



DRG-SC-RTD:

Sensor Types: RTD, Pt100, Pt500, Pt1000 ($\alpha = 0.00385$); Cu10, Cu100, Ni 120, Ni Fe 604

Sensor Connection: 3 wire

Range: See Range Table

Excitation Current: <2 mA for Pt100, Pt500, Pt1000; <5mA for Cu100, Ni 120 or Ni Fe 604

Lead Wire Resistance: 40% of base sensor resistance or 100 Ω (whichever is less), max. per lead

Lead Wire Effect: Less than 1% of the maximum input temperature span

Limit Differentials (Deadbands): 1.0 to 5% of span

Setpoint Repeatability (Constant Temperature): \pm 0.2% of full scale

DRG-SC-TC

Ranges: See Range Table

Bias Current (Burnout Detection): <1.5 microamp

Impedance: >1M Ω

Overvoltage: \pm 10 V differential

Limit Differentials (Deadbands): 0.25 to 5% of span

Setpoint Repeatability (Constant Temperature): 0.2% for temp > 0 $^{\circ}$ C. 0.3% for temp < 0 $^{\circ}$ C

SPECIFICATIONS COMMON TO ALL MODULES

Relay Contacts

2 SPDT (2 form C) Relays

1 Relay per setpoint

Current Rating: 120 Vac: 5A,

240 Vac: 2A, 28 Vdc: 5A

Material: Silver-Cadmium Oxide

Electrical Life: 10⁵ operations

Isolation: 1800 Vdc between input, contacts and power

RESPONSE TIME

Dynamic Deadband: Relay status will change when proper setpoint condition exists for 100 msec

Normal Mode (Analog Filtering): <250 msec, (10-90%)

Mounting: Standard 32mm or 35mm DIN rail

Wire Termination: Screw: Termination for 12-22 AWG

ESD Susceptibility: Meets IEC 801-2, Level 2 (4 KV)

Humidity (Non-Condensing):

Operating: 15 to 95% (@45 $^{\circ}$ C), Soak: 90% for 24 hours (@65 $^{\circ}$ C)

Temperature Range: Operating:

0 to 55 $^{\circ}$ C (32 to 131 $^{\circ}$ F), Storage: -25 to 70 $^{\circ}$ C (-13 to 158 $^{\circ}$ F)

Power: 9-30 Vdc, 1.5 W typical, 2.5 W max

AC Voltage or Current Input Limit Alarm

DRG-AR-AC



The DRG-AR-AC is a DIN rail mount, AC voltage or AC current input limit alarm with dual setpoints and two contact closure outputs. Input voltage spans from 100 mVac to 200 Vac and input current spans from 10 mAAC to 100 mAAC can be field configured. For current spans of 1 to 5 Amps a 0.1Ω (5 W) shunt resistor (Model# DRG-C006) is available.

Specifications

INPUT RANGES

Voltage: 100 mVAC, 200 mVac, 500 mVac, 1 Vac, 2 Vac, 5 Vac, 10 Vac, 20 Vac, 50 Vac, 100 Vac, 200 Vac

Current: 10 mAAC, 20 mAAC, 50 mAAC, 100 mAAC



To Order	
Model No.	Description
DRG-AR-AC	AC volt/current limit alarm

Each DRG-AR-DC is supplied with a complete user's manual.
Ordering Example: DRG-AR-AC with one DRN-PS-1000 power supply and RAIL-35-2 DIN rail.

Accessories

Model No.	Description
RAIL-35-1	35 mm (1.4") DIN rail, 1 m (3.3') length
RAIL-35-2	35 mm (1.4") DIN rail, 2 m (6.6') length
DRG-C006	0.1Ω, 5 W shunt resistor
DRN-PS-1000	DIN rail mount power supply, 95 to 240 Vac input, 24 Vdc @ 1 A output

Input Limit Alarm

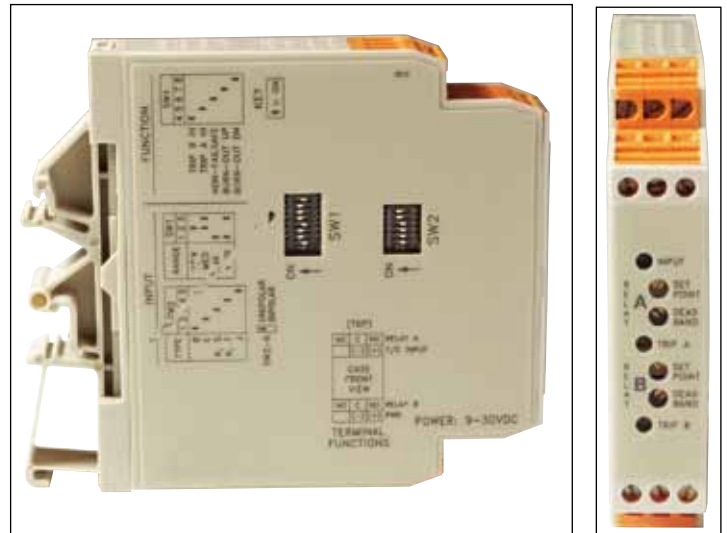
DRG-AR-RTD



The DRG-AR-RTD is a DIN rail mount, RTD input limit alarm with dual setpoints and two contact closure outputs. The module features up to 8 temperature ranges for each RTD type.

To Order	
Model No.	Description
DRG-AR-RTD	RTD input limit alarm

Each DRG-AR-RTD is supplied with a complete user's manual.
Ordering Example: DRG-AR-RTD with one DRN-PS-1000 power supply and RAIL-35-2 DIN rail.



Input Ranges

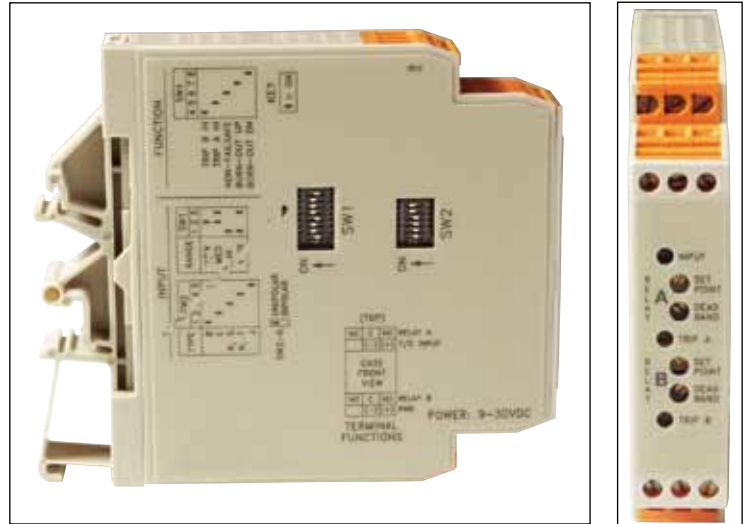
RTD Type	Temperature Ranges (°C)
Pt100, 500, 1000	0 to 50, -50 to 50, 0 to 100, -100 to 100, (a = 0.00385), 0 to 250, -200 to 250, 0 to 550, 0 to 850
Cu10	25 to 70, -30 to 70, 25 to 120, -70 to 120, 25 to 260, -200 to 260
Cu100	25 to 75, -25 to 75, 25 to 150, -100 to 150, 25 to 260, -200 to 260
Ni120	-30 to 30, -80 to 30, -30 to 100, -30 to 200, -30 to 320
NiFe604	-40 to 0, -40 to 50, -200 to 50, -200 to 100, -200 to 240

Thermocouple Input Limit Alarm

DRG-AR-TC



The DRG-AR-TC is a DIN rail mount, thermocouple input limit alarm with dual setpoints and two contact closure outputs. The module features up to six temperature ranges for each thermocouple type to ensure accuracy and maximize setpoint resolution. A bipolar switch is provided for temperature ranges below 0°C. The DRG-AR-TC is configurable as a single or dual setpoint alarm, with HI or LO trips, upscale or downscale burnout detection and failsafe or non-failsafe operation.



To Order	
Model No.	Description
DRG-AR-TC	Thermocouple input limit alarm

Each DRG-AR-TC is supplied with a complete user's manual.
Ordering Example: DRG-AR-TC with one DRN-PS-1000 power supply and RAIL-35-2 DIN rail.

Accessories

Model No.	Description
DRN-PS-1000	DIN rail mount power supply, 95 to 240 Vac input, 24 Vdc @ 1A output
RAIL-35-1	35 mm (1.4") DIN rail, 2 m (3.3') length
RAIL-35-2	35 mm (1.4") DIN rail, 2 m (6.6') length

Input Ranges

T/C	Temperature Ranges (°C)
B	0 to 1490, 0 to 1820
E	0 to 150, 0 to 290, 0 to 660, 0 to 1000, -270 to 150, -270 to 290
J	0 to 190, 0 to 350, 0 to 760, -210 to 190, -210 to 350
K	0 to 250, 0 to 480, 0 to 1280, 0 to 1372, -270 to 250, -270 to 480
R	0 to 970, 0 to 1690, 0 to 1760
S	0 to 1050, 0 to 1750
T	0 to 210, 0 to 390, -270 to 210, -270 to 390

DC Voltage and Current Input Limit Alarm

The DRG-AR-DC is a DIN rail mount, DC voltage and DC current input limit alarm with dual setpoints and two contact closure outputs. Input voltage spans from 10 mV to 200 V and input current spans from 1 mA to 100 mA can be field configured. Bipolar inputs are also accepted. The module also features 24 Vdc voltage source (isolated from line power) for transducer excitation.

DRG-AR-DC



Specifications

INPUT RANGES (UNIPOLAR & BIPOLAR)

Voltage: 10 mV, 20 mV, 50 mV, 100 mV, 200 mV, 500 mV, 1 V, 2 V, 5 V, 10 V, 20 V, 50 V, 100 V, 200 V
Current: 1 mA, 2 mA, 5 mA, 10 mA, 20 mA, 50 mA, 100 mA

To Order	
Model No.	Description
DRG-AR-DC	RTD input limit alarm

Each DRG-AR-DC is supplied with a complete user's manual.
Ordering Example: DRG-AR-DC with one DRN-PS-1000 power supply and RAIL-35-2 DIN rail.

