MOORE INDUSTRIES

RDA & TDA

DIN-Style RTD and T/C Alarms

November 1992 | Data Sheet 9.51

Description

Moore Industries' DIN-style temperature alarms accept all standard RTD (model RDA) and thermocouple (model TDA) inputs. When the temperature input value falls outside of a fully-adjustable preset limit, the alarms activate an alarm relay.

The RDA and TDA are offered in both single and dual alarm models. The dual alarm models allow configuration of two separate trip points per module (High/Low, High/High or Low/Low).

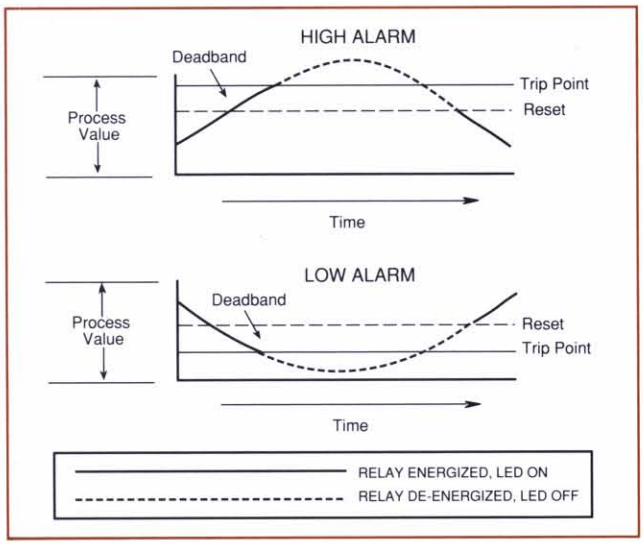
Trip point settings are configured via front panel potentiometers. To simplify this procedure, the upper and/or lower setting(s), as well as the input signal, can be displayed on a front panel indicator (LCD). High/Low selection is made with internal solderless jumpers. Bright LEDs, also located on the front panel, indicate when the unit is in an alarm condition (LED "ON" indicates relay is energized).

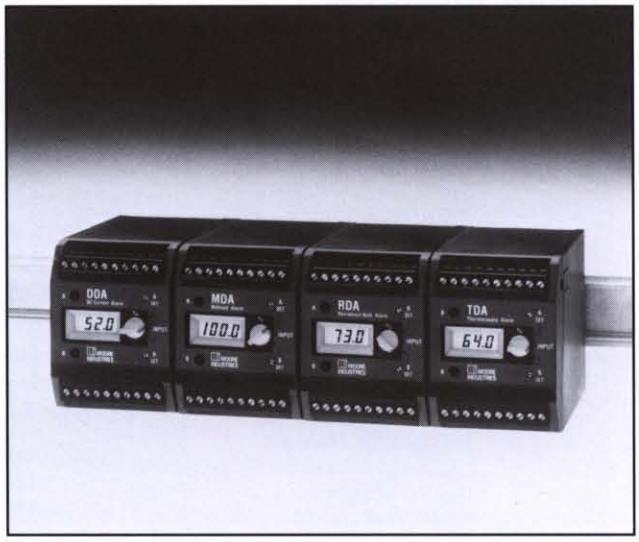
Available options include adjustable dead band, alarm response time delay, hermetically sealed relays, manual reset capabilities, and burnout alarm (TDA only). See the Specifications section for a complete listing of options.

Ordering Information

To order, use the bold face data from the Ordering Specifications section of the Specification Table on the back page. For assistance, refer to the model number example shown at the bottom of the table.

Figure 1. *Normal Failsafe High and Low Alarm Configuration*





The RDA and TDA DIN-style *rail-mount alarms are ideal for mounting in a control room or in a field-mounted enclosure.*

Features

- **Integral indicator.** Trip point values can be displayed on the integral display which greatly simplifies trip point configuration.
- **On-site monitoring of input.** The large, easy-to-read indicator displays the input value in percent of span.
- **Wide range of inputs.** Available models accept all standard RTD and thermocouple types.
- **RFI/EMI protection/complete isolation.** Complete input/output/power isolation and inherent RFI/EMI protection prevent false alarms from occurring in noisy environments.

Certifications

CSA General Location

RDA & TDA

DIN-Style RTD and T/C Alarms

Specifications

Characteristics

Performance

Display Accuracy: ±0.1% of input span; ±1 count to include repeatability, hysteresis, and adjustment resolution

Repeatability: Trip point repeats within ±0.1% of input span

Dead Band: 1% of input span (standard)

Signal Response: -3dB @ 5Hz typical (low pass)

Alarm Response: 50 milliseconds standard (input signal must be beyond trip point continuously for 50 milliseconds before an alarm state is output)

Burnout Protection (TDA only): Upscale/downscale drive jumper selectable; configured upscale standard (downscale with -DD option);100nA (nanoamps) maximum bias current including break detection

Performance (continued)

Isolation: 500Vac, input to output to power

RFI/EMI Effect: With field strengths of 10 volts per meter, at frequencies of 20-500 MHz, unit will not go into alarm status unless process variable is within ±1.0% of trip point

Ambient Temperature

Range: -18°C to +65°C (0° to 150°F)

Effect on amplifier: 0.018% of span/°C (±0.1%/°F) over above range

Reference Junction Compensation (TDA only): For ISA thermocouple types B, E, J, K, R, S and T and BS type N—±1°C, maximum error per 50°C ambient change

Adjustments

FRONT PANEL ADJUSTMENTS

Trip Points: Multiturn front panel potentiometers adjust over a range of -5% to 105% of span, typical

Adjustments (continued)

Input/Trip Point Viewing: Two- or three-position rotary switch allows selection of viewing Input, Trip A or Trip B on front panel LCD

INTERNAL ADJUSTMENTS

Type: Multiturn potentiometers

Zero: Adjustable to ±20% of span

Span: With full scale input, output is adjustable to 100%, ±20%

Indicators

Display: 3-1/2 digit LCD displays either Input, Trip A or Trip B as determined by rotary switch; display indicates from -5.0% to +105% of input span and is linear with respect to the input signal

Trip Point: LED(s) on front panel indicates alarm status for each trip point ("ON" LED indicates energized relay)

Weight 297 grams (10.5 ounces)

Ordering Specifications

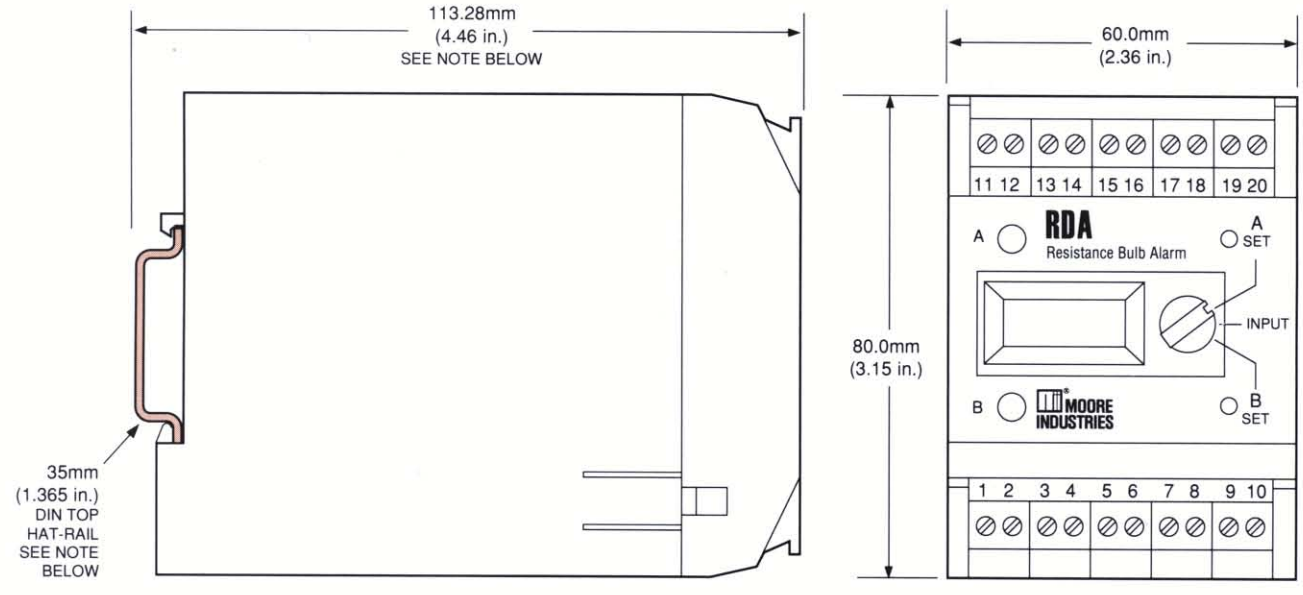
Unit	Input	Output	Power	Options	Housing
RDA RTD Alarm **TDA** T/C Alarm	See Table 2	Alarm Configuration (Single or Dual, High or Low Alarm, Failsafe or Non-Failsafe): **SH1** Single, High, Failsafe **SH2** Single, High, Non-Failsafe **SL1** Single, Low, Failsafe **SL2** Single, Low Non-Failsafe **DH1L1** Dual, High/Low, Failsafe **DH2L2** Dual, High/Low, Non-Failsafe **DH1H1** Dual, High/High, Failsafe **DH2H2** Dual, High/High, Non-Failsafe **DL1L1** Dual, Low/Low, Failsafe **DL2L2** Dual, Low/Low, Non-Failsafe (DPDT relays standard on single alarms, SPDT relays standard on dual alarms; relay contacts rated 5A @ 117Vac or 28Vdc or 2A @ 240Vac non-inductive or 28Vdc; all non-inductive loads, 50/60Hz)	**24DC** Accepts 18-30Vdc (1.0-1.5 watts, nominal)	**-AD** Adjustable deadband, 1-20%, nominal — available up to 100% **-AR** Alarm response time delay; Specify between 1-30 seconds (factory set) **-BA** Burn-out alarm (dual alarm TDA only) **-DD** Downscale drive with open input (TDA only) **-DPSTNO** DPST normally open relays (dual alarms) **-DPSTNC** DPST normally closed relays (dual alarms) **-DPSTNONC** DPST with one normally open and one normally closed contact per relay (dual alarms) **-EZ** Elevated zero (For TDA in millivolts within limits of published T/C tables; For RDA, 20 - 200 ohms) **-GR** Adapter for mounting on a DIN (50035-G32) G-rail **-HS** Hermetically sealed relays rated at 3A @ 28Vdc non-inductive or 1A @ 120Vac non-inductive, 50/60Hz **-MR** Manual reset —terminals provided; Pushbuttons must be supplied by user **-TSO** Transistor switch (opto-isolated) to drive external circuits; Ratings: 60Vdc max. and 60 mAdc max. (used in lieu of relay outputs)	**DIN** Thermoplastic DIN-style rail-mount housing with removable terminal blocks (35mm DIN Top Hat-rail)

When ordering, specify: Unit / Input / Output / Power / Options [Housing]

Model number example: RDA / 4W-25 / SH1 / 24DC / -AR5 -EZ100 [DIN]
TDA / K-25MV / DH1L1 / 24DC / -DD [DIN]

Table 1. *Input Types*

RDA	TDA
(Specify RTD type and input span in ohms change with a value for elevated zero) RTD Type: **2W** 2-wire **3W** 3-wire **4W** 4-wire Input Span: **5** ohms change **10** ohms change **25** ohms change **50** ohms change **100** ohms change **200** ohms change **400** ohms change Elevated Zero: 100 ohms (0°C) and 93.3 ohms (0°F) standard (RTD excitation, 1mA maximum)	(Specify thermocouple type and input span in millivolts change) Ranges (from standard thermocouples; input impedance 1 megohm min.): **5MV** change **10MV** change **25MV** change **50MV** change **75MV** change



NOTE
1. Add 16.76mm (.66 in.) to dimensional length for -GR option.

Figure 2. *Outline and Installation Dimensions*

Table 2. *RDA and TDA DIN-Style Alarm Terminal Designations*

Unit	1	2	3	4	5, 6	7, 8	9, 10	11	12	13	14	15	16	17	18	19	20
RDA SINGLE/DPDT	A	D	C	B	NOT USED		MR	DC	DCC	NO1	CM1	NC1	NO2	CM2	NC2		
SINGLE/SWITCH OUT	A	D	C	B			MR	DC	DCC	+TSO	–TSO						
DUAL/SPDT	A	D	C	B		BMR	AMR	DC	DCC	ANO	ACM	ANC	BNO	BCM	BNC		
DUAL/SWITCH OUT	A	D	C	B		BMR	AMR	DC	DCC	+ATSO	–ATSO			+BTSO	–BTSO		
DUAL/DPST/NO	A	D	C	B		BMR	AMR	DC	DCC	ANO1	ACM1	ANO2	ACM2	BNO1	BCM1	BNO2	BCM2
DUAL/DPST/NC	A	D	C	B		BMR	AMR	DC	DCC	ANC1	ACM1	ANC2	ACM2	BNC1	BCM1	BNC2	BCM2
DUAL/DPST/NONC	A	D	C	B		BMR	AMR	DC	DCC	ANO1	ACM1	ANC2	ACM2	BNO1	BCM1	BNC2	BCM2
TDA SINGLE/DPDT	+IN	TCR	TCR	–IN	NOT USED		MR	DC	DCC	NO1	CM1	NC1	NO2	CM2	NC2		
SINGLE/SWITCH OUT	+IN	TCR	TCR	–IN			MR	DC	DCC	+TSO	–TSO						
DUAL/SPDT	+IN	TCR	TCR	–IN		BMR	AMR	DC	DCC	ANO	ACM	ANC	BNO	BCM	BNC		
DUAL/SWITCH OUT	+IN	TCR	TCR	–IN		BMR	AMR	DC	DCC	+ATSO	–ATSO			+BTSO	–BTSO		
DUAL/DPST/NO	+IN	TCR	TCR	–IN		BMR	AMR	DC	DCC	ANO1	ACM1	ANO2	ACM2	BNO1	BCM1	BNO2	BCM2
DUAL/DPST/NC	+IN	TCR	TCR	–IN		BMR	AMR	DC	DCC	ANC1	ACM1	ANC2	ACM2	BNC1	BCM1	BNC2	BCM2
DUAL/DPST/NONC	+IN	TCR	TCR	–IN		BMR	AMR	DC	DCC	ANO1	ACM1	ANC2	ACM2	BNO1	BCM1	BNC2	BCM2

Table 3. *Key To Abbreviations*

Abbreviation	Description
1 (suffix)	Contact set 1
2 (suffix)	Contact set 2
A (prefix)	Relay 1, dual alarm
B (prefix)	Relay 2, dual alarm
A, B, C, D	RTD inputs
CM	Common
IN	Input signal
MR	Manual reset
NC	Relay contact, normally closed
NO	Relay contact, normally open
DC	+DC power input
DCC	-DC power input
TCR	Temperature compensating resistor
TSO	Transistor switch output

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