

Auxiliary Powered, Dual Setpoint, Alarms

**DPADMA, DPADCV, DPADMV
DPAAVX, DPAACX, DPARTD, DPATCX
DPAPOT, DPARES, DPAMAS, DPADRT**



The DPA series alarms provide two trip points for signal monitoring.

- Models available to suit most plant based measurements
- Two independent alarm channels
- LED status indication
- Dual SPDT relay outputs
- High or Low alarms in any combination
- High repeatability
- Front panel deadband and setpoint adjustments
- Full Isolation to 1.5kV (ac and dc)
- AC or DC powered
- Removable, screw-type, terminal blocks
- Compact metal housing



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DPA Series



The inputs can be taken from any floating or grounded signal source according to the model selected.

The trip set points and hysteresis (deadband) are adjusted from the front panel. You can select High/Low operation for each setpoint by using solderless jumpers.

Alarms can be generated when power is lost to the instrument by selecting normally energised operation for one or both of the output relays (using internal solderless jumpers).



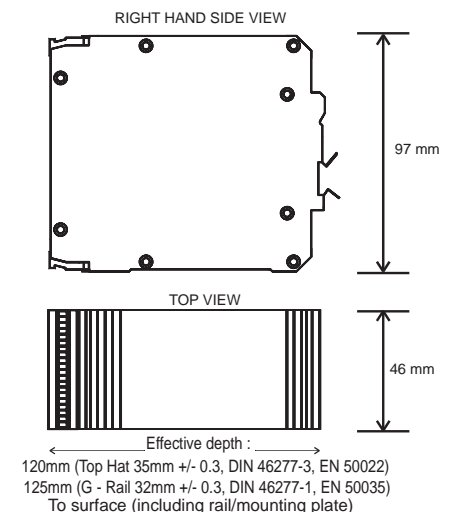
General Technical Data

Output	
Type	SPDT relay contacts internally set to normally energised (NE) or normally de-energised (ND) operation
Rating	3A at 240Vac, 3A at 24Vdc/110Vac
Power Supply	
Type	AC or DC powered
AC	110Vac at 47-63Hz (permissible range 100-132Vac) or 240Vac at 47-63Hz (permissible range 200-264Vac)
DC	24Vdc \pm 10% or 48Vdc \pm 10% Note other DC voltages are available on request
Universal AC/DC	See /CPS option below
Power Usage	AC 3VA 3W at 24Vdc
Adjustments	
Type	20-turn potentiometers
Set-point	0-100% of maximum input
Deadband	1 to 25% of maximum input
General	
Repeatability	\pm 0.05% of span
Temperature drift	< 0.04% span/ $^{\circ}$ C
Long term drift	0.1% per 10,000 hours
Overall response	300-800mS
Insulation Co-ordination	
Ports	Input / Power Supply / Relay Channel One / Relay Channel Two / Case
Rated Insulation Voltage	300Veff
Overvoltage Category	III
Impulse Withstand	4kV (1.2 / 50)
Isolation	2 kV (between ports)
Environmental Conditions	
Operating temperature	0 to 60 $^{\circ}$ C
Storage temperature	-25 to +70 $^{\circ}$ C
Pollution Degree	2
Relative humidity	10-90% (non-condensing)
Housing	
Type	Registered Design Anodised Aluminium Enclosure
Dimensions	See diagram
Weight	0.4kg
Connection type	Plug in terminal blocks with screw connections
Options	
CPS Universal Power Supply	90-270Vac and 90-300Vdc (Specify voltage)
HO High offset	For offset > span
Approvals	
DPA (48Vdc and 24Vdc Powered only)	 E205105  LV Directive EMC
Standard	
CAN/CSA C22.2 No. 142-M1987, 1st Edition UL508, 17th Edition EN50178:1998 BS EN 61326:1998 + A2	

DPA Series Connections

Terminal	Signal	
1	See individual models	Input signals
2		
3		
4		
5	Not Used	
6		
7		
8		
9	Neutral (-)	Power supply
10	Live (+)	
11	Normally Closed	Alarm channel one (Relay Contacts)
12	Common	
13	Normally Open	
14	Normally Closed	Alarm channel two (Relay Contacts)
15	Common	
16	Normally Open	
Case	Earthing is via a stud on lower side of case	

Dimension drawing





DPADMA DC milliamps

- For DC milliamp signals
- Low input impedance
- Accepts bipolar inputs
- Power for active input devices

DPADMV DC millivolts

- For DC millivolt signals
- High input impedance
- Accepts bipolar inputs

DPADCV DC voltage

- For DC voltage signals
- High input impedance
- Accepts bipolar inputs

Technical Data

Inputs	DC milliamps	DC millivolts (< 500mV)	DC voltage (>500mV)
Input Type	DC milliamps	DC millivolts (< 500mV)	DC voltage (>500mV)
Standard ranges	0-1mA into 100Ω 1-5mA into 22Ω 0-10mA into 10Ω 0-50mA into 10Ω 4-12mA into 10Ω 12-20mA into 10Ω 0-20mA into 10Ω 4-20mA into 10Ω -20 to +20mA into 10Ω Note: other ranges are available on request.	As ordered	0-1V into 10MΩ 0-5V into 500KΩ 0-10V into 1MΩ 0-20V into 2MΩ 1-5V into 500KΩ 2-10V into 1MΩ -10V to +10V into 2MΩ Note: other ranges are available on request
Input Impedance	From 10Ω (see above)	10 MΩ	Up to 2MΩ (see above)
Input span range	20μA to 500mA	8 to 100mVdc	0.1 to 300Vdc (see also HV option)
Input offset range	0-500% of span (see HO option)	0-500% of span (see HO option)	0-500% of span (see HO option)
Options			
HO High Offset	For zero value > span	For zero value > span	For zero value > span
HV High voltage option			For spans > 60V

Input Connections

Terminal	Signal	Terminal	Signal	Terminal	Signal
1	24Vdc (out)	1	Not Used	1	Not Used
2	Signal +	2	Signal +	2	Signal +
3	Not Used	3	Not Used	3	Not Used
4	Signal -	4	Signal -	4	Signal -

Ordering Information

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
(Model 1/2 - See key below)		(Model 1/2 - See key below)		(Model 1/2 - See key below)	
DPADMA 4-20mA/24Vdc	7940011294	DPADMV 0-100mV/24Vdc	7940017849	DPADCV 0-10Vdc/24Vdc	7940011718
		DPADMV 0-10mV/24Vdc	7940017848	DPADCV 1-5V/24Vdc	7940012970

Note: For other ranges please specify DPADMA 1/2/3/4/5/6 where:

- 1 = Input current range
- 2 = Power Supply Voltage
- 3 = Trip 1 Low (L) /High (H)
- 4 = Relay coil 1 energisation NE/ND
- 5 = Trip 2 Low (L) /High (H)
- 6 = Relay coil 2 energisation NE/ND

Default is 3 = L, 4 = NE, 5 = H, 6 = NE

Note: For other ranges please specify DPADMV 1/2/3/4/5/6 where:

- 1 = Input current range
- 2 = Power Supply Voltage
- 3 = Trip 1 Low (L) /High (H)
- 4 = Relay coil 1 energisation NE/ND
- 5 = Trip 2 Low (L) /High (H)
- 6 = Relay coil 2 energisation NE/ND

Default is 3 = L, 4 = NE, 5 = H, 6 = NE

Note: For other ranges please specify DPADCV 1/2/3/4/5/6 where:

- 1 = Input current range
- 2 = Power Supply Voltage
- 3 = Trip 1 Low (L) /High (H)
- 4 = Relay coil 1 energisation NE/ND
- 5 = Trip 2 Low (L) /High (H)
- 6 = Relay coil 2 energisation NE/ND

Default is 3 = L, 4 = NE, 5 = H, 6 = NE



DPAAVX AC voltage

- Class 0.5 device
- High performance, precision rectified, input circuit
- High Impedance Inputs

DPAACX AC current

- Low input circuit burden
- Class 0.5 device

Technical Data

Inputs

Input Type	AC Voltage
Input frequency range	47-63Hz
Standard ranges	1V to 300V (see HV option)
Input Impedance	Dependant on input >1MΩ
Input span range	8mV to 250Vac (see also HV option)
Input offset	0-500% of span (see HO option)

General

Instrument Class	0.5
Input response	250mS (from a 10-90% of span)
Trip response	Typically 150mS
Weight	0.5kg
Isolation	1.5kVrms for 60s (AC and DC)

Options

/HV High voltage input	For input voltages > 60Vac
/HO High offset input	For offset > span

Inputs

Input Type	AC Voltage
Input frequency range	47-63Hz
Standard ranges	1V to 300V (see HV option)
Input Impedance	Dependant on input >1MΩ
Input span range	8mV to 250Vac (see also HV option)
Input offset	0-500% of span (see HO option)

General

Instrument Class	0.5
Input response	250mS (from a 10-90% of span)
Trip response	Typically 150mS
Weight	0.5kg
Isolation	1.5kVrms for 60s (AC and DC)

Options

/HV High voltage input	For input voltages > 60Vac
/HO High offset input	For offset > span

Inputs

Input Type	AC Current
Input frequency range	47-63Hz
Standard ranges	0-1A or 0-5A other ranges please consult factory
Input Impedance	Dependant on input >1MΩ
Input span range	8mV to 250Vac (see also HV option)
Input offset	0-500% of span (see HO option)

General

Instrument Class	0.5
Input response	250mS (from a 10-90% of span)
Trip response	Typically 150mS
Weight	0.5kg
Isolation	3kVrms for 60s (AC and DC)

Options

/HV High voltage input	For input voltages > 60Vac
/HO High offset input	For offset > span

Input Connections

Terminal	Signal
1	AC Voltage
2	AC Voltage
3	Not used
4	

Terminal	Signal
2	CT Input
3	
4	
5	

Ordering Information

Type	Cat. No.
(Model 1/2 - See key below)	
DPAAVX 0-125Vac/24Vdc	7940017847

Type	Cat. No.
(Model 1/2 - See key below)	
DPAACX 0-1A/24Vdc	7940017844
DPAACX/0-5A/24Vdc	7940017845

Note: For other ranges please specify DPAAVX 1/2/3/4/5/6 where:

- 1 = Input current range
- 2 = Power Supply Voltage
- 3 = Trip 1 Low (L) /High (H)
- 4 = Relay coil 1 energisation NE/ND
- 5 = Trip 2 Low (L) /High (H)
- 6 = Relay coil 2 energisation NE/ND

Default is 3 = L, 4 = NE, 5 = H, 6 = NE

Note: For other ranges please specify DPAACX 1/2/3/4/5/6 where:

- 1 = Input current range
- 2 = Power Supply Voltage
- 3 = Trip 1 Low (L) /High (H)
- 4 = Relay coil 1 energisation NE/ND
- 5 = Trip 2 Low (L) /High (H)
- 6 = Relay coil 2 energisation NE/ND

Default is 3 = L, 4 = NE, 5 = H, 6 = NE



DPARTD Temperature (RTD)

- 2-wire or 3-wire RTD inputs
- Automatic lead length compensation

DPATCX Temperature (T/C)

- Accepts most common thermocouple types
- Automatic cold junction compensation
- Selectable upscale or downscale burnout

Technical Data

Inputs

Input Type	2 or 3-wire PT100 RTD Resistance
Standard ranges	-100 to 0°C -50 to 0°C -25 to 25°C 0 to 50°C 0 to 100°C 0 to 150°C 0 to 200°C 0 to 250°C 0 to 300°C 0 to 400°C 0 to 500°C Other ranges and RTD types on request
Input Impedance	
Burnout action	Sets any high alarms (upscale)
Excitation current	0.5mA (constant current)

General

Lead length compensation	Lead length compensation reduces the effect of equal changes in lead length by a factor of 100 or more.
Cold Junction Compensation	

Options

DS Downscale burnout	
US Upscale burnout	

Input Connections

Terminal	Signal
1	Not used
2	A
3	B
4	B _{sense}

Ordering Information

Type	Cat. No.
(Model 1/2/3 - See key below)	
DPARTD PT100/0-100C/24Vdc	7940014900
DPARTD PT100/0-200C/24Vdc	7940017852
DPARTD PT100/0-50C/24Vdc	7940014212

Note: For other ranges please specify DPARTD 1/2/3/4/5/6/7 where:
 1 = Input RTD type
 2 = Temperature range
 3 = Power Supply Voltage
 4 = Trip 1 Low (L) /High (H)
 5 = Relay coil 1 energisation NE/ND
 6 = Trip 2 Low (L) /High (H)
 7 = Relay coil 2 energisation NE/ND

Default is 4 = L, 5 = NE, 6 = H, 7 = NE

Inputs

Input Type	Thermocouple temperature
Standard ranges	B, E, J, K, N, R, S, & T mV Span range 8-80mV
Input Impedance	10 MΩ
Burnout action	Upscale or Downscale (Internally selectable)
Excitation current	

General

Lead length compensation	
Cold Junction Compensation	Automatic

Options

DS Downscale burnout	will trigger Low alarms if T/C burns out
US Upscale burnout	will trigger high alarms if T/C burns out

Input Connections

Terminal	Signal
1	Not used
2	Signal +
3	Signal -
4	Not used

Ordering Information

Type	Cat. No.
(Model 1/2/3 - See key below)	
DPATCX K/0-1000C/24Vdc	7940017853

Note: For other ranges please specify DPATCX 1/2/3/4/5/6/7 where:
 1 = Thermocouple type
 2 = Temperature range
 3 = Power Supply Voltage
 4 = Trip 1 Low (L) /High (H)
 5 = Relay coil 1 energisation NE/ND
 6 = Trip 2 Low (L) /High (H)
 7 = Relay coil 2 energisation NE/ND

Default is 4 = L, 5 = NE, 6 = H, 7 = NE



DPAPOT Position

- Provides position alarms (from slidewire/potentiometer inputs)
- Independent of device end-to-end resistance

DPARES Resistance

- Available to suit a wide range of resistances

Technical Data

Inputs	
Input Type	
Input Ranges	

3-wire potentiometer or slidewire wiper position
10Ω to 1MΩ (end to end) Note: input measures percentage travel and is independent of potentiometer end to end resistance within these ranges

2-wire resistance
20Ω to 100kΩ As ordered

Input Connections

Terminal	Signal
1	Not used
2	Wiper
3	B (100% travel)
4	A (0% travel)

Terminal	Signal
1	Not used
2	A
3	Not used
4	B

Ordering Information

Type	Cat. No.
(Model 1/2/3 - See key below)	
DPAPOT 10KOhm/0-100%/24Vdc	7940017851
DPAPOT 1KOhm/0-100%/24Vdc	7940017850

Type	Cat. No.
(Model 1/2 - See key below)	
DPARES 0-1KOhm/24Vdc	7940017917

Note: For other ranges please specify DPAPOT 1/2/3/4/5/6/7 where:

- 1 = Potentiometer end-end resistance
- 2 = Input range as % of travel
- 3 = Power Supply Voltage
- 4 = Trip 1 Low (L) /High (H)
- 5 = Relay coil 1 energisation NE/ND
- 6 = Trip 2 Low (L) /High (H)
- 7 = Relay coil 2 energisation NE/ND

Default is 4 = L, 5 = NE, 6 = H, 7 = NE

Note: For other ranges please specify DPARES 1/2/3/4/5/6 where:

- 1 = Input resistance (Ω's)
- 2 = Power Supply Voltage
- 3 = Trip 1 Low (L) /High (H)
- 4 = Relay coil 1 energisation NE/ND
- 5 = Trip 2 Low (L) /High (H)
- 6 = Relay coil 2 energisation NE/ND

Default is 3 = L, 4 = NE, 5 = H, 6 = NE



DPAMAS

Differential mA

- Monitors the difference between two current loop signals
- Low input impedance
- Power for active input devices

DPADRT

Differential Resistance

- Monitors the difference in resistance between two resistance elements

Technical Data

Inputs

Input Type	Two DC milliamp inputs (of the same type)
Standard ranges	0-20mA 4-20mA Note: other ranges are available on request.
Input Impedance	10Ω
Span range	
Input offset	
R2 range	

Inputs

Input Type	Two DC milliamp inputs (of the same type)
Standard ranges	0-20mA 4-20mA Note: other ranges are available on request.
Input Impedance	10Ω
Span range	
Input offset	
R2 range	

Inputs

Input Type	Two resistance legs R1 & R2 in 2-wire configuration with R1>R2
Standard ranges	As ordered
Input Impedance	
Span range	(R1-R2) 20Ω-100kΩ
Input offset	0-100% of input span
R2 range	0-1000% of input span

General

Transfer Function	Output α A-B
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General

Transfer Function	Output α A-B
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General

Transfer Function	Output α R1-R2
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Options

HO High Offset	
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Options

HO High Offset	
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Options

HO High Offset	For offsets > span
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Input Connections

Terminal	Signal
1	Not used
2	Current source A +
3	Current source B +
4	Common

Terminal	Signal
1	Not used
2	R ₁
3	R ₂
4	Common -

Ordering Information

Type	Cat. No.
(Model 1/2/3 - See key below)	
DPAMAS 4-20mA/24Vdc	7940016144

Type	Cat. No.
(Model 1/2/3 - See key below)	
DPADRT 200Ωhm/ 20-400Ωhm/24Vdc	7940017919

Note: For other ranges please specify DPAMAS 1/2/3/4/5/6/7 where:

- 1 = Input current range (for both inputs)
- 2 = Power Supply Voltage
- 3 = Trip 1 Low (L) /High (H)
- 4 = Relay coil 1 energisation NE/ND
- 5 = Trip 2 Low (L) /High (H)
- 6 = Relay coil 2 energisation NE/ND

Default is 3 = L, 4 = NE, 5 = H, 6 = NE

Note: For other ranges please specify DPADRT 1/2/3/4/5/6/7 where:

- 1 = R2 minimum value (Ω's)
- 2 = R1-R2 range (Ω's)
- 3 = Power Supply Voltage
- 4 = Trip 1 Low (L) /High (H)
- 5 = Relay coil 1 energisation NE/ND
- 6 = Trip 2 Low (L) /High (H)
- 7 = Relay coil 2 energisation NE/ND

Default is 4 = L, 5 = NE, 6 = H, 7 = NE