

# DSCP81



## Configurable Voltage/Current Input Signal Conditioners, DIN-mount

### DESCRIPTION

The isolated DSCP81 signal conditioner is designed for measuring voltages up to  $\pm 1000\text{VDC}$  and currents up to  $\pm 100\text{mA}$ . The input type, measurement range, and other features are software configurable. A PC with RS-232C serial port, the DSCX-787 and DSCX-587 interface cables, and the DSCX-557 configuration software are required to program the DSCP81.

The DSCP81 can interface to either a current or voltage input and provide a current or voltage output (Figure 1). The input filter characteristics, input and output ranges, input signal linearization, signal inversion, and optional alarm relay output are all software configurable by the user. The input signal may be linearized using up to 50 points of interpolation. Optionally, the user may specify all configurable parameters.

Two models are available offering wide-range power supply connection: 24 to 60VDC/AC, and 85 to 230VDC/AC. The DSCX-557 configuration software allows query, print-out and saving of configuration settings, display of input measurement value, and display of interpolation table points.

### FEATURES

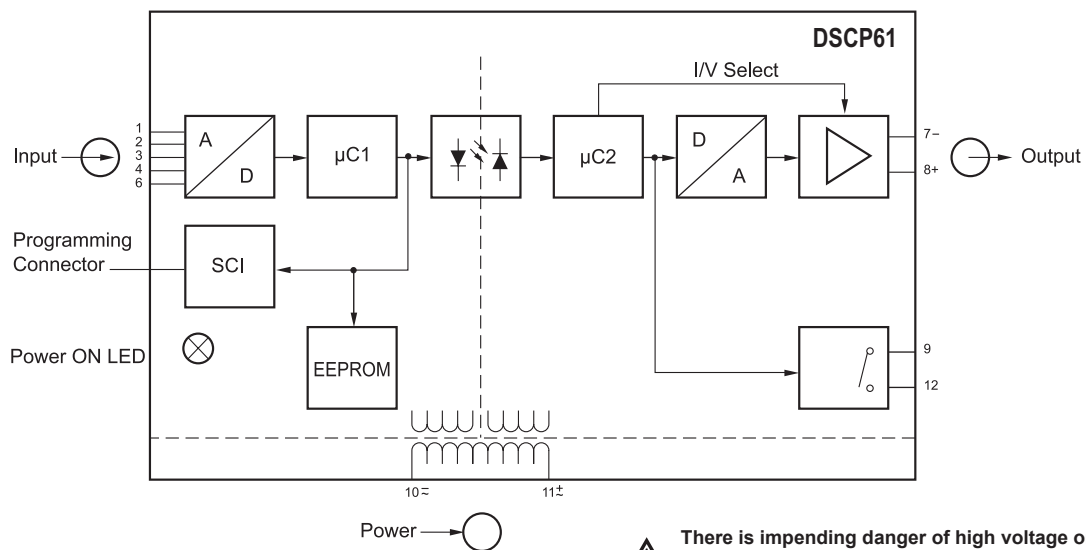
- Interfaces to Voltages up to  $\pm 1000\text{VDC}$  and Currents up to  $\pm 100\text{mA}$
- Software Configurable Input Type and Range
- Software Configurable Filter
- 3700Vrms Transformer Isolation
- Supply Voltage of 24-60VDC/AC or 85-230VDC/AC
- Alarm Relay Output
- Mounts on Standard DIN-rail
- $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  Operating Temperature
- CE Compliant

### BENEFITS

- Provides Isolation Between Inputs and Outputs
- Reduces Noise
- Prevents Ground Loops
- High Degree of Accuracy

### APPLICATIONS

- Data Acquisition
- Test and Measurement
- Control Systems



**⚠ There is impending danger of high voltage on any DSCP81 connections from high input voltage or high power supply voltage.**

DSCP81 Block Diagram

**Specifications** Typical\* at  $T_A = +25^\circ\text{C}$  and 24VDC or 230VAC  $\pm 10\%$  Supply Voltage

Module	DSCP81
Input Range, Voltage Input Resistance	-1000VDC to +1000VDC (max) Configurable 1M $\Omega$ ( $V_{IN} \leq \pm 1.7V$ ), 540k $\Omega$ ( $V_{IN} > \pm 1.7V$ to $\leq \pm 100V$ ), 5.5M $\Omega$ ( $V_{IN} > \pm 100V$ to $\pm 1000V$ )
Input Range, Current Input Resistance	-100mA to +100mA (max) Configurable 1k $\Omega$ ( $I_{IN} = -1.5mA$ to $+1.5mA$ ), 15.4 $\Omega$ ( $I_{IN} = -100mA$ to $+100mA$ )
Output Range, Voltage V Limit Under Overload Short Circuit Current External Resistance	-10V to +10V (max) Configurable Approx. $\pm 11V$ $\leq 60mA$ $R_{EXT}$ (min) (k $\Omega$ ) $\geq V_{EV}/10mA$ Note: $V_{EV}$ = Output Voltage End Value
Output Range, Current Output Load Voltage Current Limit Under Overload Open-Circuit Voltage External Resistance	-20mA to +20mA (max) Configurable 12V Approx. $\pm 22mA$ $< 16V$ $R_{EXT}$ (max) (k $\Omega$ ) = $12V/I_{EV}$ Note: $I_{EV}$ = Output Current End Value
Output Ripple (Voltage or Current)	$< 0.5\%$ p-p
CMV, Input to Output & Relay CMV, Power Supply to Input & Output	3700Vrms, 1 minute 3700Vrms, 1 minute
CMV, Power Supply to Relay CMV, Output to Relay Mains Ripple Suppression Input Filter	2300Vrms, 1 minute 2300Vrms, 1 minute Configurable to 50 or 60Hz Configurable, see Table 1
Accuracy <sup>(1)</sup> Output Stability	$\pm 0.1\%$ Span (typ), $\pm 0.2\%$ Span (max) 100ppm/ $^\circ\text{C}$
Linearization	Configurable; Linear, Custom, $x^{1/2}$ , $x^{3/2}$ , $x^{5/2}$
Alarm Relay Material Contact Rating	SPST Isolated Contact Gold Flashed Silver Alloy AC: $\leq 2A$ at 250V (500VA), DC: $\leq 2A$ at 125V (60W)
Mode of Action	Configurable; Alarm and Power Loss (see Table 2 Feature 6)
Trip Point Type	Configurable; Inactive, Low, High (see Table 2 Feature 7)
Trip Point Setting	Configurable, -10 to 110% Input Span (see Table 2 Feature 7)
Trip Point Hysteresis	Configurable, 0 to 100% Input Span (see Table 2 Feature 7)
Energize/De-energize Delay	Configurable, 0.01 to 1000s (see Table 2 Feature 8)
Visible Alarm	Front Panel Green LED flashes "ON"
Power Supply Voltage	24-60VDC/AC or 85-230VDC/AC; 45 to 400Hz AC
Tolerance Power Consumption	DC $-15\%$ to $+33\%$ , AC $\pm 15\%$ DC $\leq 1.2W$ , AC $\leq 2.5VA$
Mechanical Dimensions (h)(w)(d)	2.72" x 0.69" x 4.49" (69.2mm x 17.5mm x 114mm)
Housing Material	Lexan 940, Flammability Class V-0 According to UL 94
Mounting	DIN EN 50022 -35x7.5 or -35x15
Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions Immunity	-25 $^\circ\text{C}$ to +55 $^\circ\text{C}$ -40 $^\circ\text{C}$ to +70 $^\circ\text{C}$ 0 to 75% Noncondensing EN50081-2 (Radiated, Conducted) EN50082-2 (ESD, RF, EFT)

**Table 1: Configurable Input Filter Settings**

Response Time (63%) [s]		Response Time <sup>(4)</sup> (99%) [s]	
50Hz	60Hz	50Hz	60Hz
0.04	0.03	0.08	0.07
0.06	0.05	0.17	0.14
0.10	0.08	0.36	0.30
0.18	0.15	0.72	0.60
0.34	0.28	1.5	1.2
0.66	0.55	3.0	2.5
1.3	1.1	6.0	5.0
2.6	2.2	12	10
5.1	4.3	24	20
10.3	8.6	48	40
20.5	17	94	80
41	34	190	160
82	68	380	315
160	140	750	630
330	270	1500	1260

**NOTES:**

\*Contact factory or your local Dataforth sales office for maximum values.

(1) Includes linearity and repeatability errors at reference conditions.

(2) Shipped as 4-20mA input, 4-20mA output, linearization = linear, input filter = 80ms, ripple suppression = 60Hz, alarm function = inactive.

(3) Downloadable from website.

(4) Configuration software allows selection of the (99%) values.

**Ordering Information**

Model	Input Range/Description	Output Range
DSCP81-01 (Standard Configuration <sup>(2)</sup> )	User Configurable V or I Input, 24 to 60VDC/AC Power	User Configurable V or I Output
DSCP81-02 (Standard Configuration <sup>(2)</sup> )	User Configurable V or I Input, 85 to 230VDC/AC Power	User Configurable V or I Output

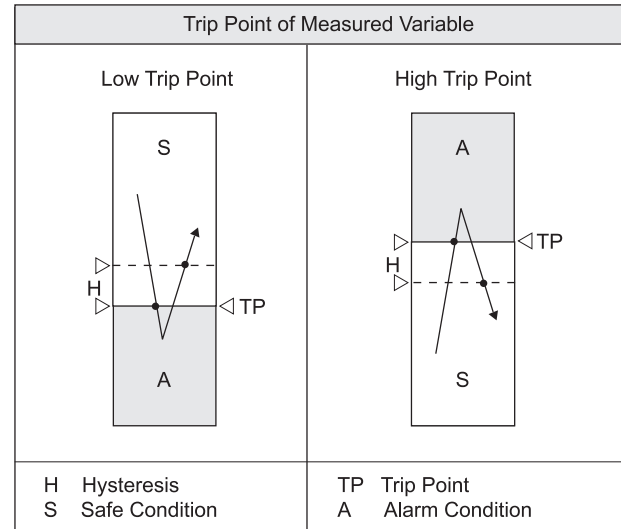
**Accessories**

Model	Description
DSCX-787	PC-interface Cable
DSCX-587	Module-interface Cable
DSCX-557 <sup>(3)</sup>	Configuration Software

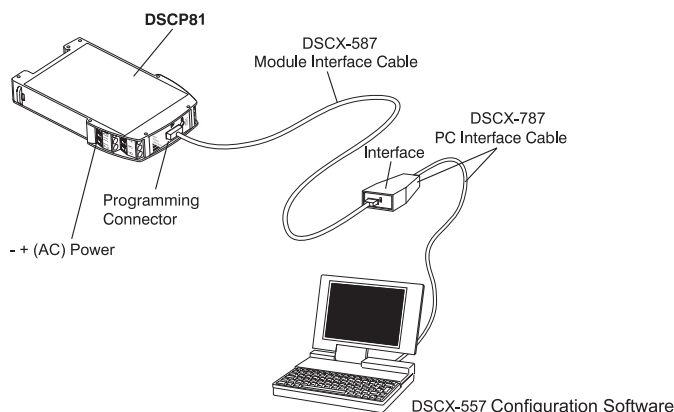
**Figure 1: Switching Function by Trip Point Type**

Alarm Relay Features <sup>(1)</sup>	
Trip Point Type	Configurable as Low or High or Inactive
Trip Point Adjustment	Configurable Between -10 and 110% <sup>(2)</sup>
Hysteresis	Configurable Between >0 and 100% <sup>(2)</sup>
Energize/De-energize Delays	Configurable Between 0 and 1000s
Relay Contact Position	Configurable
Front Panel Display	Green Led "On" Flashes When the Limit Value is Exceeded

NOTES:  
 (1) Refer to Table 2 for connections  
 (2) In relation to the analog input span


**Table 2: Input Range and Associated Connection Diagram**

Measuring Mode/Application	DC Voltage			DC Current
Measuring Range Limits	$\leq \pm 1.7V$	$> \pm 1.7$ to $\leq \pm 100V$	$> \pm 100$ to $\pm 1000V$	$\leq \pm 100$ mA
⊖ ⊕ = Input Signal 				⊖ ⊕ = Input Signal 
⊕ ⊖ = Output Signal ⊕ ⊖ K = Output Contact ⊖ ⊕ = Power Supply				

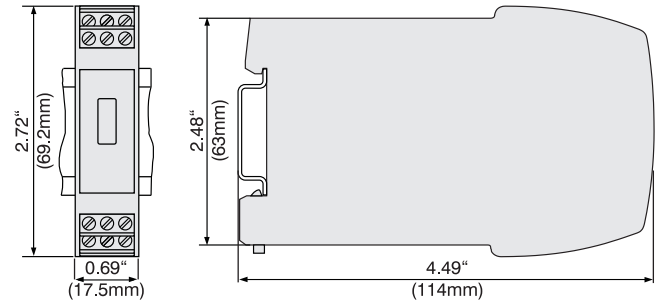
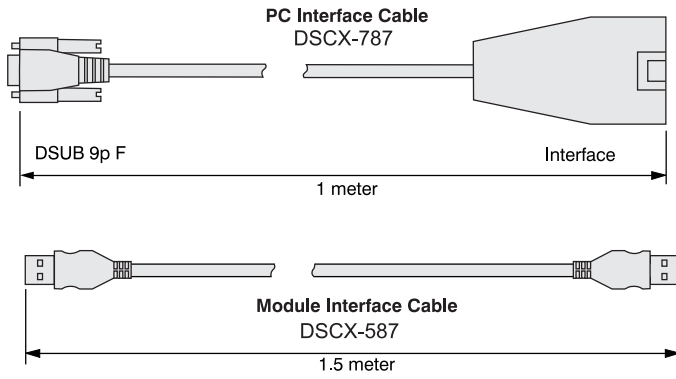
**Figure 2: Configuring the DSCP81**


A PC, DSCX-787 PC interface cable, DSCX-587 module interface cable, and DSCX-557 configuration software are required to program the DSCP81. Power must be connected to the DSCP81 for configuration. The DSCX-557 configuration software is downloadable from the website.

**IMPORTANT!**

- DO NOT** connect the DSCX-587 module interface cable to the DSCP81 programming connector when >253V is applied to the DSCP81 input.
- The DSCX-587 module interface cable must first be connected to the DSCX-787 cable before it is connected to the DSCP81.
- The programming connector on the DSCP81 is DC connected to the DSCP81 input circuit. **DO NOT** touch any metal parts of the plug or socket if an input voltage >24V is connected to the DSCP81.

**Figure 3: Product Dimensions**



DSCP81 Clipped onto a Top-Hat Rail (35 x 15mm or 35 x 17mm, acc. to EN 50022).