Product Specification Sheet Model: MS3705

Slim Plug-In Alarm Setter with Isolated Dual Output

DESCRIPTION

The MS3705 is a slim, plug-in alarm setter that compares the levels of DC current or voltage signals with two set-points (upper and lower limits) and outputs two independent isolated relay contact closure signals.

ORDERING CODE

MS3705 - □ - □ □ □

Model

Power Supply

A: 100 to 240V AC (50 to 60Hz)
D: 24V DC **P**: 100 to 240V DC

Input

A: 4 to 20mA DC
D: 0 to 20mA DC
3: 0 to 1V DC
4: 0 to 10V DC
5: 0 to 5V DC
6: 1 to 5V DC

Relay Activation Modes for Output 1&2

Mode of operation for each channel can be selected from the following:

	Input < Set Value	Input > Set Value
H:	Relay not activated	Relay activated
L:	Relay activated	Relay not activated

Note: The mode of operation cannot be changed by any user.

Options

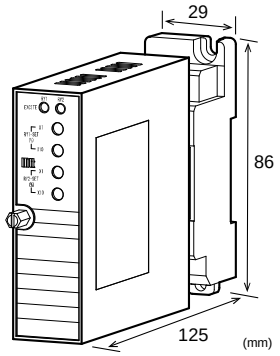
No code: None
/K: Fast response (0 to 90% response time: 100ms max.)
/X: Others (Special order)
* For non-standard options, ask MTT for availability.

ORDERING INFORMATION

To place an order, please use the ordering code format as shown above.
(e.g.) MS3705-A-6HL

* The factory default trip point for both channels is 50% of input span.

Other Ordering Examples:
For an option code of "X": MS3705-A-6HL/X (Response time constant: T = 50ms with 90% setting)
For specific trip points*: MS3705-A-6HL
Trip point for Output 1: 40%
Trip point for Output 2: 70%
* Specify trip points in % within the range of 0 to 99% of input span.
Note: If you wish to include multiple options in your order, specify the option codes in series (e.g. /KX).



SPECIFICATIONS

●POWER SECTION

Power Requirements	100 to 240V AC: 85 to 264V AC (47 to 63Hz) 24V DC: 24V DC±10% 100 to 240V DC: 85 to 264V DC		
Power Sensitivity	Better than ±0.1% of span for each power supply range		
Power Line Fuse	160mA fuse is installed (standard).		
Power Consumption			
Power	100-240V AC 6.5VA max	24V DC 2.0W max	100-240V DC 8.4W max

●INPUT SECTION

Input Resistance		
Voltage Input (DC)	With power:	1MΩ min.
	Without power:	10kΩ min.
Current Input (DC)	4 to 20mA (std.)	250Ω
Allowable Input Voltage		
Voltage Input Model	30V DC max., continuous.	
Current Input Model	40mA DC max., continuous.	

●OUTPUT SECTION

Output Signal	Two independent form C relay contact closure signals
Trip Points	
Setting	Through the front-accessible rotary switch.
Range	0 to 99% of span (in steps of 1%).
Accuracy	±0.5% of span.
Hysteresis	1.0%±0.3% of span
Relay Indicator	The red LED lights up when the relay is activated.
Relay Activation without Power	COM and NC are closed for each output.
Relay Start-up Limitation	The relay gets ready for action about 2 seconds after power-up.

●PERFORMANCE

Temperature Effect	Better than ±0.15% of span per 10°C change in ambient.
Response Time	150ms max. (0 to 90%) with a step input at 100%.
Isolation	Isolation between input, output 1, output 2, power, and ground.
Insulation Resistance	100MΩ min. (@ 500V DC) between input, output 1, output 2, power, and ground.
Dielectric Strength	Input / Output 1 / Output 2 / [Power, Ground]: 2000V AC for 1 minute (Cutoff current: 0.5mA) Power / Ground: 2000V AC for 1 minute (Cutoff current: 5.0mA)
Relay Contact	
Rated Load	5A 125V AC, 5A 30V DC
Maximum Allowable Voltage	250V AC, 30V DC
Maximum Allowable Current	5A (NO) / 3A (NC)
Electrical Life	5A, 250V AC (NO): 50×10^3 cycles (Frequency: 1,800 cycles/h) 5A, 30V DC (NO): 100×10^3 cycles (Frequency: 1,800 cycles/h)
Mechanical Life	5×10^6 cycles (Frequency: 18,000 cycles/h)
Surge Withstand Capability	Tested as per ANSI/IEEE C37.90.1-1989.
Operating Environment	Ambient temperature: -5 to 55°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-10 to 60°C

●PHYSICAL

Installation	Wall/DIN rail mounting
Wiring	M3.5 screw terminal connection (with a power terminal block cover & drop-proof screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W29 × H86 × D125mm (including the mounting screw and socket)
Weight	Main unit: 130g max. Socket: 80g max.

●MATERIALS

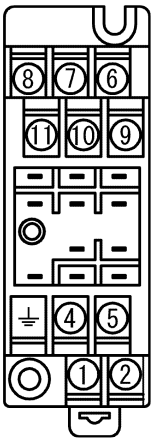
Housing	ABS resin (UL 94V-0)
Terminal Block	PBT resin (UL 94V-0)
Terminal Block Cover	PC resin (UL 94V-2)
DIN Rail Stopper	PP resin (UL 94HB)
Screw Terminal	Nickel-plated steel
Contacts Material and Finish	Brass with 0.2μm gold plating
Printed Circuit Board	Glass fabric epoxy resin (FR-4: UL 94V-0)
Conformal Coating	HumiSeal® 1A27NS (Polyurethane)

* HumiSeal® is a registered trademark of Chase Corporation.

●STANDARDS CONFORMITY

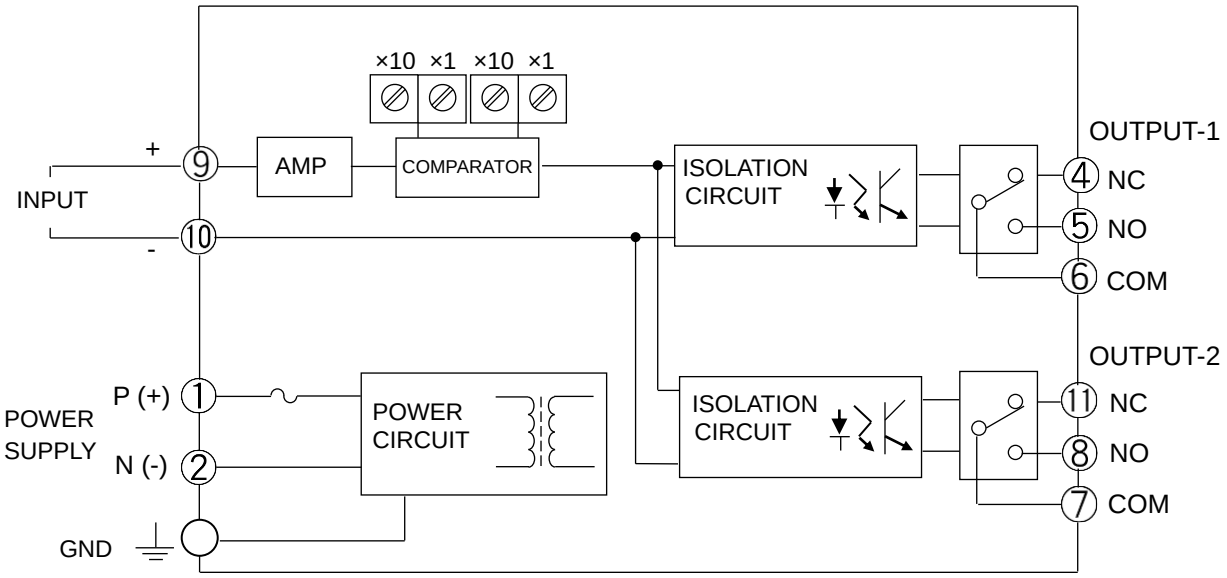
EC Directive Conformity	EMC Directive (2014/30/EU) EN61326-1: 2013 Low Voltage Directive (2014/35/EU) IEC61010-1/EN61010-1: 2010 Installation Category II Pollution Degree 2 Maximum operating voltage 300V Reinforced insulation between [input/output/GND] and power.

TERMINAL ASSIGNMENT



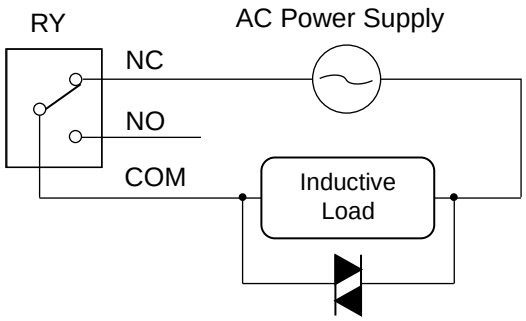
①	P (+)	POWER
②	N (-)	
⏚	GND	
④	NC OUT 1	
⑤	NO OUT 1	
⑥	COM OUT 1	
⑦	COM OUT 2	
⑧	NO OUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	NC OUT 2	

BLOCK DIAGRAM



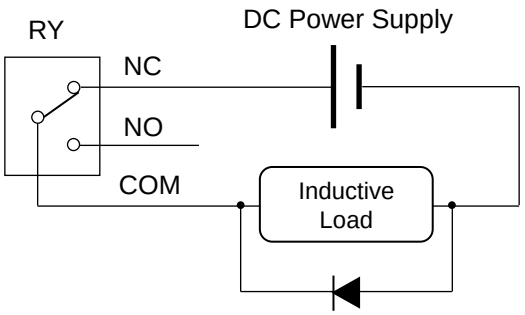
When an inductive load, such as an electric motor, is connected to the output, a relay contact protection circuit must be connected across the load.

Example of AC Power Connection:



Protection Circuit
(Varistor, CR circuit, etc.)

Example of DC Power Connection:



Protection Circuit
(Diode, Varistor, CR circuit, etc.)