Slim Plug-In Pulse to Relay Contact Converter with Isolated Dual Output

DESCRIPTION

The MS3759 is a slim, plug-in pulse to relay contact converter that converts dry contact signals including open collector or wet contact signals into relay contact (form A or C contact) signals and provides an isolated dual output.

ORDERING CODE

MS3759 - □ - □ □

Model

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

Input
- **O1**: Switch-selectable between dry contact / open collector and wet contact (Pull-up: Approx. 13V, 3.3kΩ)
- **O2**: Switch-selectable between dry contact / open collector and wet contact (Pull-up: Approx. 24V, 6.2kΩ)

Outputs 1&2
- **5**: Form A contact (Photo MOS FET relay)
- **No code**: Form C contact (Mechanical relay)

Options
- **No code**: None
- **/X**: 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.) MS3759-A-O15

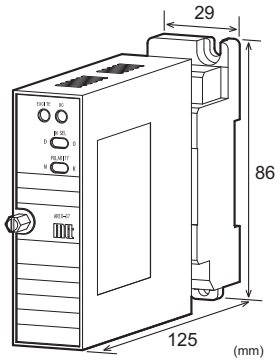
* The default settings are as follows:
Input: Wet contact, Relay activation: NORMAL

Other Ordering Examples:
For an option code of "X": MS3759-D-O25/X (Relay start-up limitation: 5 sec.)
For a specific input setting: MS3759-A-O15 (Input: Dry contact or open collector)
For a specific relay activation: MS3759-D-O15 (Relay activation: REVERSE)

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 4.5VA max	24V DC 1.5W max	100-240V DC 2.0W max



SPECIFICATIONS

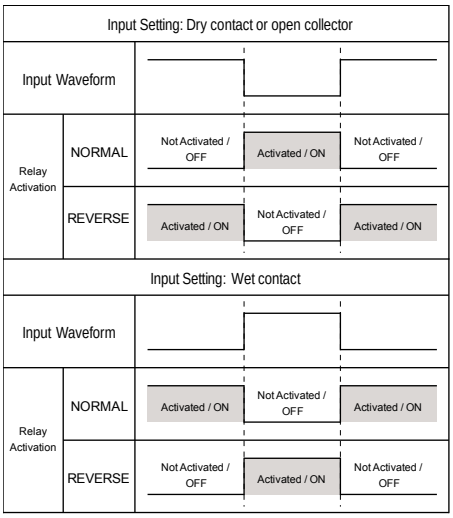
●INPUT SECTION

Input Signal	Dry contact or open collector: Pull-up: Input code "O1": Approx. 13V, 3.3kΩ Input code "O2": Approx. 24V, 6.2kΩ Wet contact: High voltage level: 5 to 30V DC Low voltage level: 0 to 1V DC (Input is selectable between the dry contact and wet contact using the front-accessible switch.)
Input Setting Indicator LED	Green LED is ON when the wet contact is selected.
Input Resistance	With power: 1MΩ min. (5V DC input) Without power: 10kΩ min.
Allowable Input Voltage	30V DC max., continuous.
Threshold Voltage	Approx. 2V
Maximum Frequency	1Hz
Input Pulse Width	30ms min.

●OUTPUT SECTION

Output Signal	Two independent relay contact closure signals: Form A contact (Photo MOS FET relay) Form C contact (Mechanical relay)
Output Indicator	Red LED is ON when the relay is activated.
Relay Activation without Power	Form A contact: OFF Form C contact: NC and COM are closed; NO and COM are open.
Relay Start-up Limitation	The relay gets ready for action about 2 seconds after power-up.

Output Operation



*Relay Activation: Form C / A contact

●PERFORMANCE

Response Time	30ms max.
Isolation	4-way isolation between input, output [Output 1/Output 2], power, and ground.
Insulation Resistance	100MΩ min. between input, output [Output 1/Output 2], power, and ground.
Dielectric Strength	Input / Output [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) Output 1 / Output 2: 500V AC for 1 minute (Cutoff current: 0.5mA)
Relay Contact	
Form A contact:	
Maximum Load Voltage	350V (Peak AC/DC)
Maximum Continuous Load Current	120mA (Peak AC/DC)
Off-state Leakage Current	1μA max.
ON resistance	50Ω max. (Load current 120mA)
Form C contact:	
Maximum Allowable Voltage	250V AC, 220V DC
Maximum Allowable Current	2A
Maximum Allowable Power	125VA, 30W
Minimum Applicable Load	10μA, 10mV DC
Electrical Life	0.1A, 50V DC (Resistive load): 10^6 cycles at 85°C, 5Hz. 10mA, 10V DC (Resistive load): 10^6 cycles at 85°C, 2Hz.
Mechanical Life	100×10^6 cycles
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

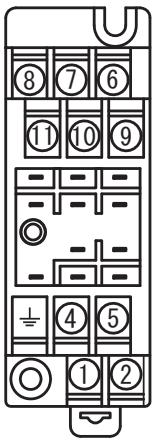
Installation	Wall/DIN rail mounting
Wiring	M3.5 screw terminal connection (with a power terminal block cover & drop-out prevention screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W29 × H86 × D125mm (including the mounting screw and socket)
Weight	Main unit: 120g max. Socket: 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)
Anti-Humidity Coating	HumiSeal® 1A27NS (Polyurethane)

* HumiSeal® is a registered trademark of Chase Corporation.

TERMINAL ASSIGNMENT



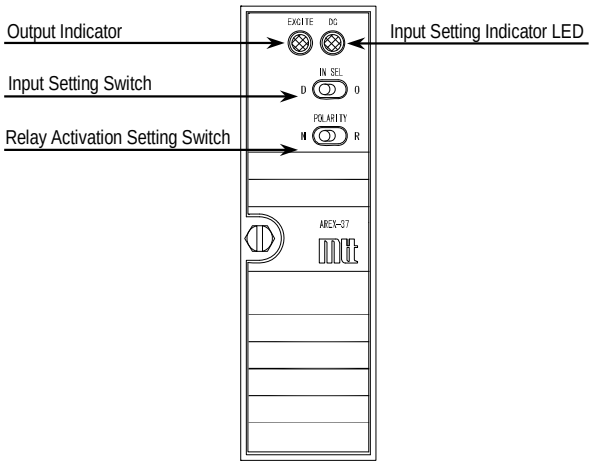
Output of Form A Contact

①	P (+)	POWER
②	N (-)	
⏚	GND	
④	NC	
⑤	OUT 1	
⑥	OUT 1	
⑦	OUT 2	
⑧	OUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	NC	

Output of Form C Contact

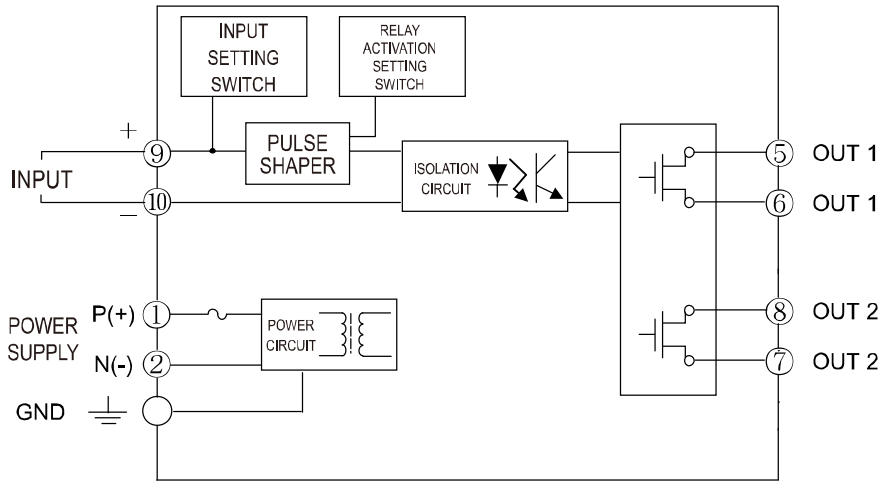
①	P (+)	POWER
②	N (-)	
⏚	GND	
④	NC OUT 1	
⑤	NO OUT 1	
⑥	COM OUT 1	
⑦	COM OUT 2	
⑧	NO OUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	NC OUT 2	

FRONT VIEW

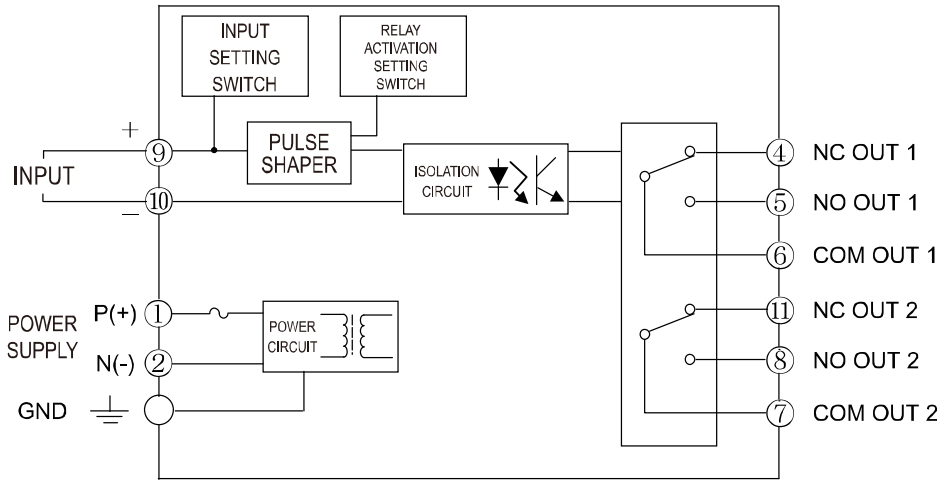


BLOCK DIAGRAM

FORM A CONTACT

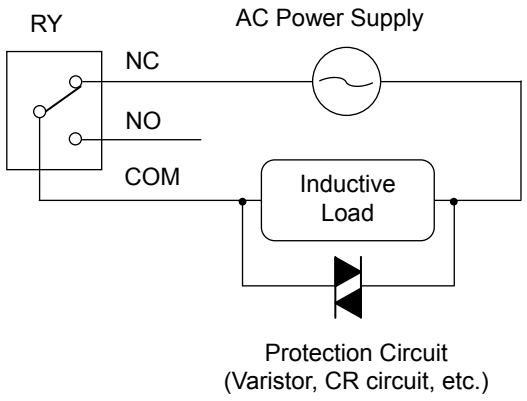


FORM C CONTACT

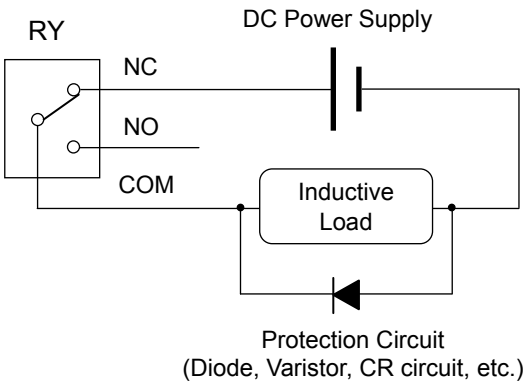


Note: When an inductive load, such as an electric motor, is connected to the output, a relay contact protection circuit must be connected across the load.

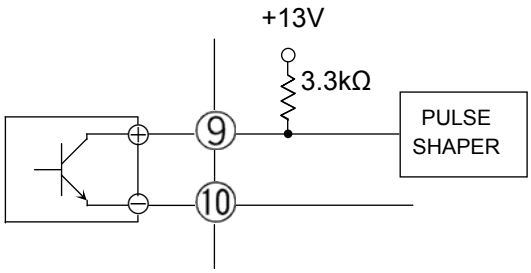
Example of AC Power Connection:



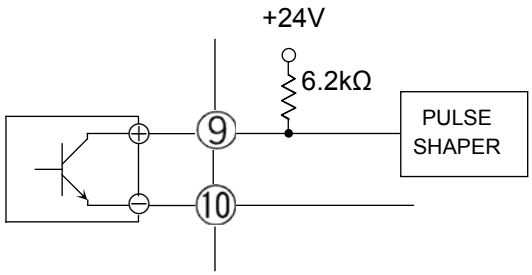
Example of DC Power Connection:



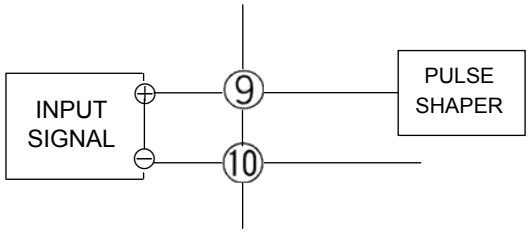
For dry contact or open collector input:
(Pull-up: Approx. 13V, 3.3kΩ)



For dry contact or open collector input:
(Pull-up: Approx. 24V, 6.2kΩ)



For wet contact input:



RATED LOAD CURVE FOR CONTACT (FORM C CONTACT)