DCS Input/Output Relay Card Series

I/O RELAY CARD
(with loopback test function)

MODEL **38N**

The 38N series I/O Relay Cards easily and quickly standardize and facilitate installation of the DCS relay board. Loopback test function simplifies startup and maintenance. The Standard Rack (Nest) model 38N can accept at the maximum of 16 channels of inputs and outputs.

- Input and output on one card
- Output ON/OFF switch and LED indicating relay status
- Test switch provided for checking DCS operation
- Fuse provided to each channel for electromagnetic valve
- Output current capacity 3A
- Output can be jumper selectable: voltage output for electromagnetic valve or dry contact output.

< STANDARD RACK (nest) >

MODEL & SUFFIX CODE SELECTION

38N–B❑❑

MODEL
CONNECTOR
H1 : Hitachi DCS connector
Y1 : Yokogawa KS2 cable use connector
OPTIONS
Mounting
: Rack mounting, standard (blank)
/W : Surface mounting

ORDERING INFORMATION

Specify code number. (e.g. 38N-BH1)

GENERAL SPECIFICATIONS

Construction: metal plates assembly; angle bracket mounting; JIS or EIA standard rack
Capacity: 16 positions
Painting: black
Power input: supplied to I/O cards collectively
Output: front accessed DCS connector and screw terminals; one fuse alarm output for all 16 channels
Screw terminal material: nickel-plated brass (torque 0.8 N·m)

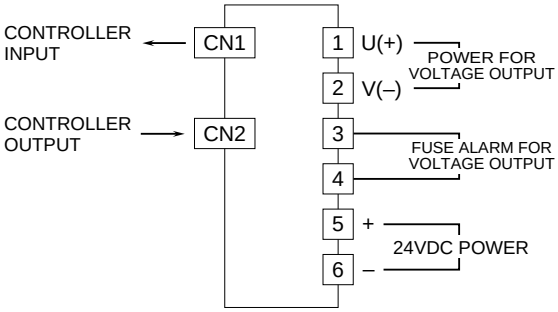
INSTALLATION

Power input: 24V DC ±10% (ripple 10% p-p max.)
Operating temperature: -5 to +55°C (23 to 131°F)
Operating humidity: 30 to 90% RH (non-condensing)
Mounting: rack or surface
Dimensions: W480×H149×D131 mm (18.90"×5.87"×5.16")
Weight: 2.5 kg (5.5 lbs)

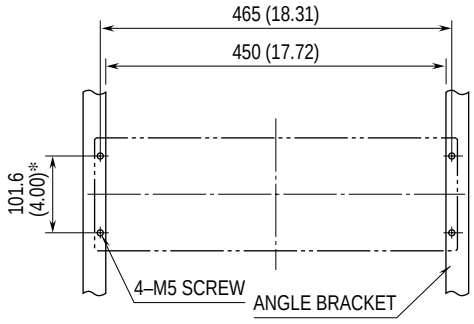
PERFORMANCE

Insulation resistance: ≥100MΩ with 500V DC
Dielectric strength: 1000V AC @1 minute

TERMINAL CONNECTION



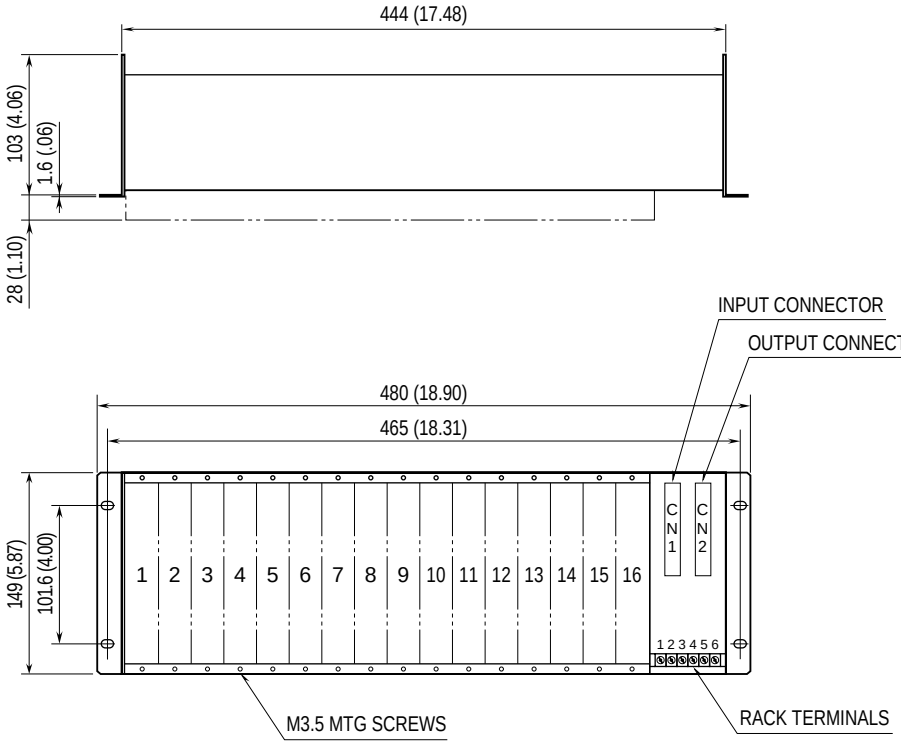
MOUNTING REQUIREMENTS mm (inch)



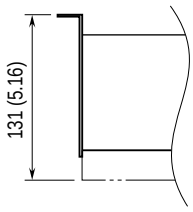
Observe an appropriate wiring space below.
*100 (3.94) for JIS standard

EXTERNAL DIMENSIONS mm (inch)

■**RACK (standard)**



■**SURFACE (option /W)**



HITACHI DCS

■**38N-BH1**: Hitachi DCS connector
Amphenol 57, 36-pin

•Connector Pin Assignments

CN1: input
CN2: output

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	ch. 1 +	9	ch. 9 +
2	ch. 2 +	10	ch.10 +
3	ch. 3 +	11	ch.11 +
4	ch. 4 +	12	ch.12 +
5	ch. 5 +	13	ch.13 +
6	ch. 6 +	14	ch.14 +
7	ch. 7 +	15	ch.15 +
8	ch. 8 +	16	ch.16 +
19	COM –	27	COM –
17, 18, 20 – 26, 28 – 36: Unused			

Pin assignments are the same for both CN1 and CN2.

YOKOGAWA DCS

■**38N-BY1**: Yokogawa DCS connector
PS-40PE-D4LT1-PN1

•Location for ST card

CN1: input (KS2 cable use)
CN2: output (KS2 cable use)

38-RACK LOCATION NO.															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ST2 / ST3 / ST4 CARD INPUT / OUTPUT NO.															

Pin assignments are the same for both CN1 and CN2.

DISCONTINUED MODEL

Replaced with Model 38N2-2

MODEL & SUFFIX CODE SELECTION

38N–2

MODEL

INPUT

Dry contact or open collector

OUTPUT

Voltage or dry contact (jumper selectable)

FUNCTION

2 : Test circuit

ORDERING INFORMATION

Specify code number. (e.g. 38N-2)

GENERAL SPECIFICATIONS

Construction: rack mounted; terminal access via screw terminals at the front and via connector at the rear

Connection

Input: M3.5 screw terminals

DCS I/O: card-edge connector

Output: M3.5 screw terminals

Power input: supplied from card-edge connector

Screw terminal material: nickel-plated steel (torque 0.8 N·m)

Fuse: 0.5A

Alarm contact: dry contact output at the screw terminal when the fuse is blown

Isolation: input or power to output

Test switch: LED provided

INPUT

■**CONTACT INPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 20mA

■**DCS STATUS OUTPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 20mA

OUTPUT

■**ELECTROMAGNETIC VALVE**: voltage contact

Rated load: 120V AC @0.5A (cosø=1)
24V DC @0.5A (resistive load)

Load current: 8A max. for the total of 16 channels

■**DRY CONTACT**: dry contact (electromagnetic valve or dry contact selectable with the jumper on the PCB)

Rated load: 120V AC @3A (cosø=1)
24V DC @3A (resistive load)

Relay protection: For maximum relay life with inductive loads (e.g. coil), external protection including noise quenching is recommended.

■**DCS STATUS INPUT**: relay contact

Rated load: 30V DC @3A (resistive load)

INSTALLATION

Power input: 24V DC ±10%, approx. 35mA (ripple 10% p-p max.)

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90% RH (non-condensing)

Mounting: Standard Rack 38N-B❑

Dimensions: W23×H149×D102 mm (0.91"×5.87"×4.02")

Weight: 150 g (0.33 lbs)

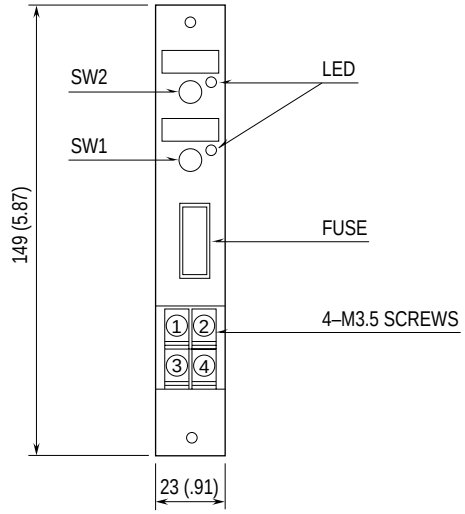
PERFORMANCE

Insulation resistance: ≥100MΩ with 500V DC

Dielectric strength: 1000V AC @1 minute

Relay life: mechanical life 5×10^7 cycles
electrical life 10^5 cycles
(30 cycles/min. at rated load)

FRONT VIEW mm (inch)

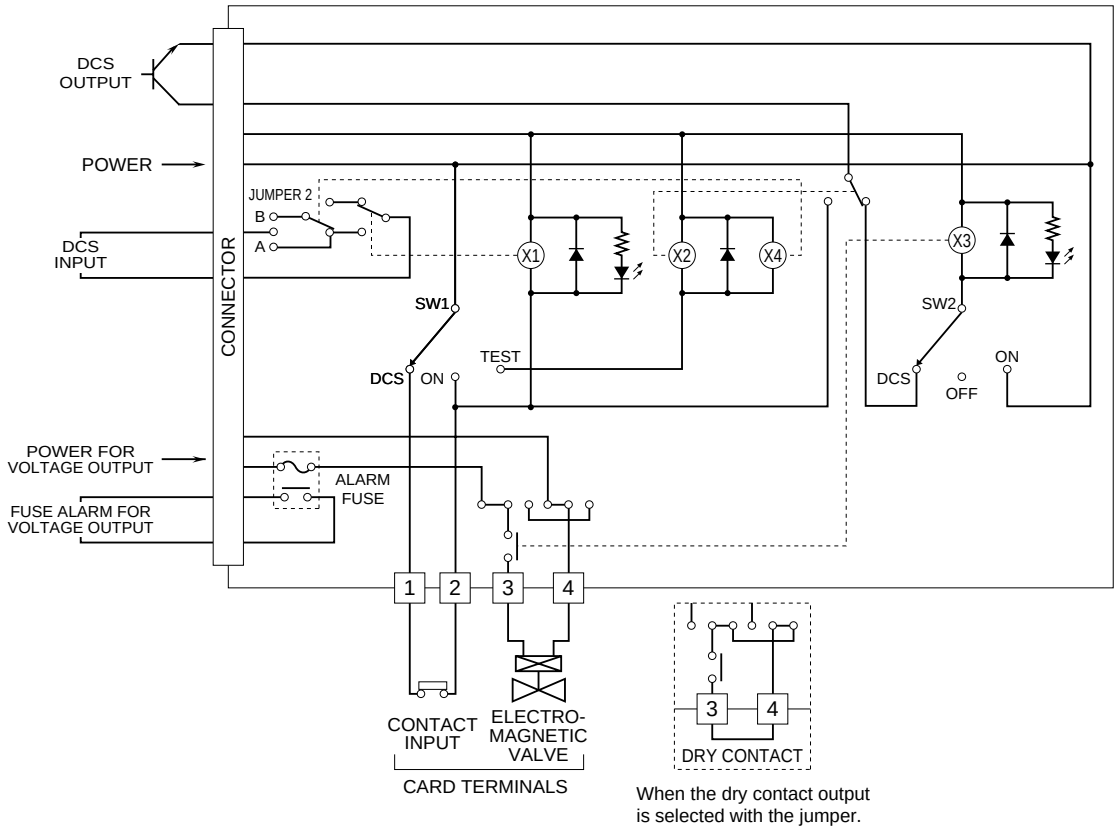


OPERATIONS

INPUT				OUTPUT				
SW2 STATUS	SW1 STATUS	DCS OUTPUT	INPUT	LED (IN)	DCS INPUT		LED (OUT)	OUTPUT
					CONTACT A*	CONTACT B*		
DCS	DCS	ON	ON	ON	ON	ON	ON	ON
			OFF	OFF	OFF	OFF	ON	ON
		OFF	ON	ON	ON	ON	OFF	OFF
			OFF	OFF	OFF	OFF	OFF	OFF
	ON	ON	ON / OFF	ON	ON	ON	ON	ON
		OFF	ON / OFF	ON	ON	ON	OFF	OFF
	TEST	ON	ON / OFF	ON	ON	OFF	OFF	OFF
		OFF	ON / OFF	OFF	OFF	ON	OFF	OFF
OFF	N/A						OFF	OFF
ON	N/A						ON	ON

*Selectable with a jumper.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



When the dry contact output is selected with the jumper.

Specifications subject to change without notice.

< LOOPBACK I/O RELAY CARD >

MODEL & SUFFIX CODE SELECTION

38N2–2

MODEL

INPUT

Dry contact or open collector

OUTPUT

Voltage or dry contact (jumper selectable)

FUNCTION

2 : Test circuit

ORDERING INFORMATION

Specify code number. (e.g. 38N2-2)

GENERAL SPECIFICATIONS

Construction: rack mounted; terminal access via screw terminals at the front and via connector at the rear

Connection

Input: M3.5 screw terminals

DCS I/O: card-edge connector

Output: M3.5 screw terminals

Power input: supplied from card-edge connector

Screw terminal material: nickel-plated steel (torque 0.8 N·m)

Fuse: 0.5A

Alarm contact: dry contact output at the screw terminal when the fuse is blown

Isolation: DCS input to power or DCS output or contact input to electromagnetic valve output (or dry contact output) to alarm output

Test switch: LED provided

INPUT

■**CONTACT INPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 25mA

■**DCS STATUS OUTPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 25mA

OUTPUT

■**ELECTROMAGNETIC VALVE**: voltage contact

Rated load: 120V AC @0.5A (cosø=1)
24V DC @0.5A (resistive load)

Load current: 8A max. for the total of 16 channels

■**DRY CONTACT**: dry contact (electromagnetic valve or dry contact selectable with the jumper on the PCB)

Rated load: 120V AC @3A (cosø=1)
24V DC @3A (resistive load)

Relay protection: For maximum relay life with inductive loads (e.g. coil), external protection including noise quenching is recommended.

■**DCS STATUS INPUT**: relay contact

Rated load: 30V DC @3A (resistive load)

INSTALLATION

Power input: 24V DC ±10%, approx. 65mA (ripple 10% p-p max.)

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90% RH (non-condensing)

Mounting: Standard Rack 38N-B❑

Dimensions: W23×H149×D102 mm (0.91"×5.87"×4.02")

Weight: 150 g (0.33 lbs)

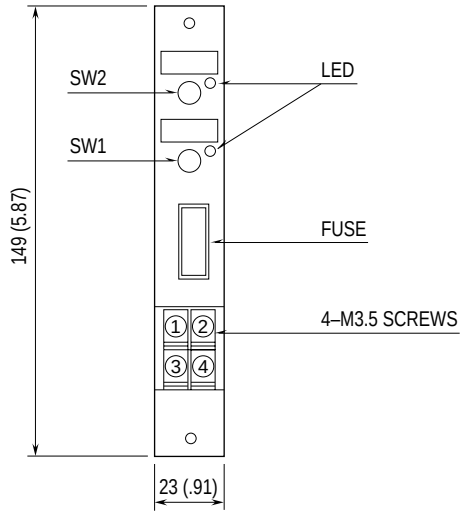
PERFORMANCE

Insulation resistance: ≥100MΩ with 500V DC

Dielectric strength: 1000V AC @1 minute

Relay life: mechanical life 5×10^7 cycles
electrical life 10^5 cycles
(30 cycles/min. at rated load)

FRONT VIEW mm (inch)

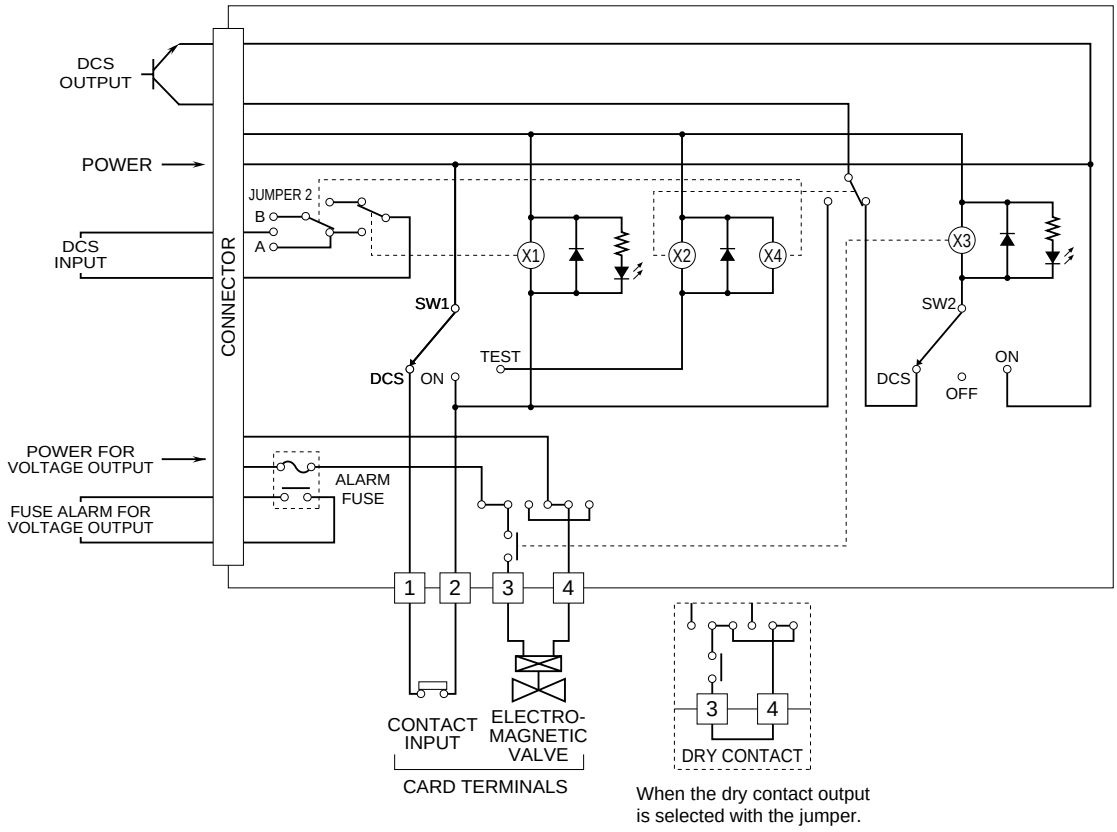


OPERATIONS

INPUT				OUTPUT				
SW2 STATUS	SW1 STATUS	DCS OUTPUT	INPUT	LED (IN)	DCS INPUT		LED (OUT)	OUTPUT
					CONTACT A*	CONTACT B*		
DCS	DCS	ON	ON	ON	ON	ON	ON	ON
			OFF	OFF	OFF	OFF	ON	ON
		OFF	ON	ON	ON	ON	OFF	OFF
			OFF	OFF	OFF	OFF	OFF	OFF
	ON	ON	ON / OFF	ON	ON	ON	ON	ON
		OFF	ON / OFF	ON	ON	ON	OFF	OFF
	TEST	ON	ON / OFF	ON	ON	OFF	OFF	OFF
		OFF	ON / OFF	OFF	OFF	ON	OFF	OFF
OFF	N/A						OFF	OFF
ON	N/A						ON	ON

*Selectable with a jumper.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



When the dry contact output is selected with the jumper.

DISCONTINUED MODEL

Replaced with Model 38N2-3

MODEL & SUFFIX CODE SELECTION

38N–3

MODEL

INPUT

Dry contact or open collector

OUTPUT

Relay contact

FUNCTION

3 : Motor drive use

ORDERING INFORMATION

Specify code number. (e.g. 38N-3)

GENERAL SPECIFICATIONS

Construction: rack mounted; terminal access via screw terminals at the front and via connector at the rear

Connection

Input: M3.5 screw terminals

DCS I/O: card-edge connector

Output: M3.5 screw terminals

Power input: supplied from card-edge connector

Screw terminal material: nickel-plated steel (torque 0.8 N·m)

Isolation: DCS output or power or feedback input to motor drive to DCS input

Indicator LED: orange light turns on when the motor is started up.
red light turns on when the feedback input is turned on.

INPUT

■**FEEDBACK INPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 25mA

■**DCS STATUS OUTPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 50mA

OUTPUT

■**MOTOR DRIVE OUTPUT**: relay contact

Rated load: 250V AC @3A (cosø=1)
30V DC @3A (resistive load)

Relay protection: For maximum relay life with inductive loads (e.g. coil), external protection including noise quenching is recommended.

■**DCS STATUS INPUT**: relay contact

Rated load: 30V DC @3A (resistive load)

INSTALLATION

Power input: 24V DC ±10%, approx. 80mA
(ripple 10% p-p max.)

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90% RH (non-condensing)

Mounting: Standard Rack 38N-B❑

Dimensions: W23×H149×D102 mm
(0.91"×5.87"×4.02")

Weight: 150 g (0.33 lbs)

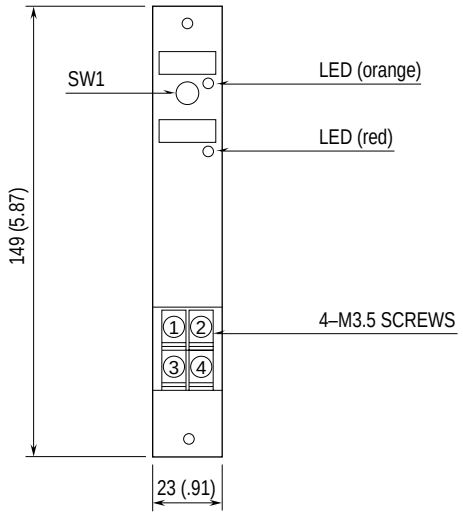
PERFORMANCE

Insulation resistance: ≥100MΩ with 500V DC

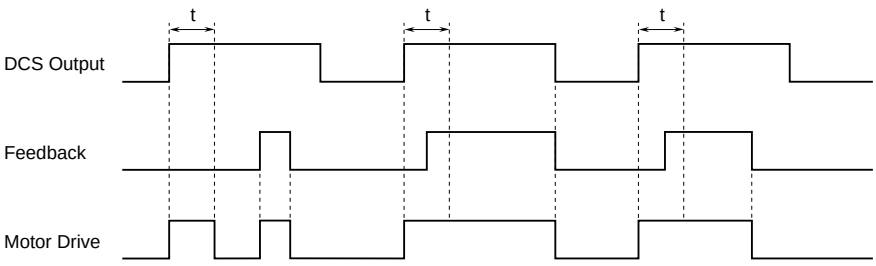
Dielectric strength: 1000V AC @1 minute

Relay life: mechanical life 5×10^7 cycles
electrical life 10^5 cycles
(30 cycles/min. at rated load)

FRONT VIEW mm (inch)

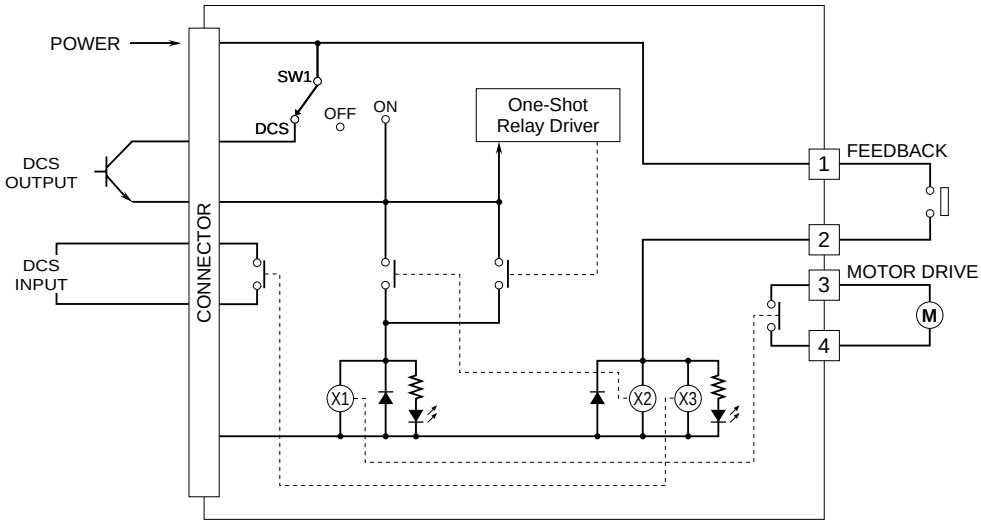


OPERATIONS



t = 2.5 to 5 sec.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



<MOTOR DRIVE I/O RELAY CARD >

MODEL & SUFFIX CODE SELECTION

38N2–3

MODEL

INPUT

Dry contact or open collector

OUTPUT

Relay contact

FUNCTION

3 : Motor drive use

ORDERING INFORMATION

Specify code number. (e.g. 38N2-3)

GENERAL SPECIFICATIONS

Construction: rack mounted; terminal access via screw terminals at the front and via connector at the rear

Connection

Input: M3.5 screw terminals

DCS I/O: card-edge connector

Output: M3.5 screw terminals

Power input: supplied from card-edge connector

Screw terminal material: nickel-plated steel (torque 0.8 N·m)

Isolation: DCS output or power or feedback input to motor drive to DCS input

Indicator LED: orange light turns on when the motor is started up.
red light turns on when the feedback input is turned on.

INPUT

■**FEEDBACK INPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 35mA

■**DCS STATUS OUTPUT**: dry contact or open collector

Contact detecting: 24V DC, approx. 60mA

OUTPUT

■**MOTOR DRIVE OUTPUT**: relay contact

Rated load: 250V AC @3A (cosø=1)
30V DC @3A (resistive load)

Relay protection: For maximum relay life with inductive loads (e.g. coil), external protection including noise quenching is recommended.

■**DCS STATUS INPUT**: relay contact

Rated load: 30V DC @3A (resistive load)

INSTALLATION

Power input: 24V DC ±10%, approx. 95mA
(ripple 10% p-p max.)

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90% RH (non-condensing)

Mounting: Standard Rack 38N-B❑

Dimensions: W23×H149×D102 mm
(0.91"×5.87"×4.02")

Weight: 150 g (0.33 lbs)

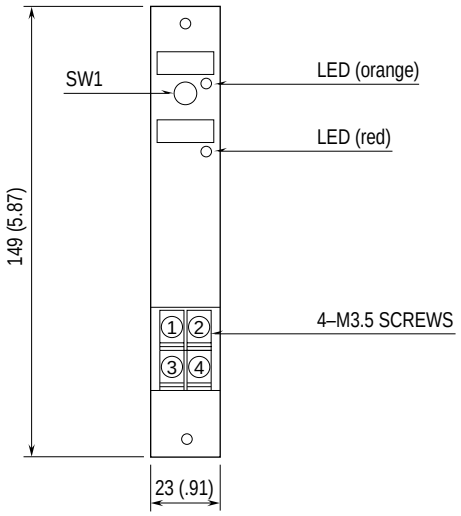
PERFORMANCE

Insulation resistance: ≥100MΩ with 500V DC

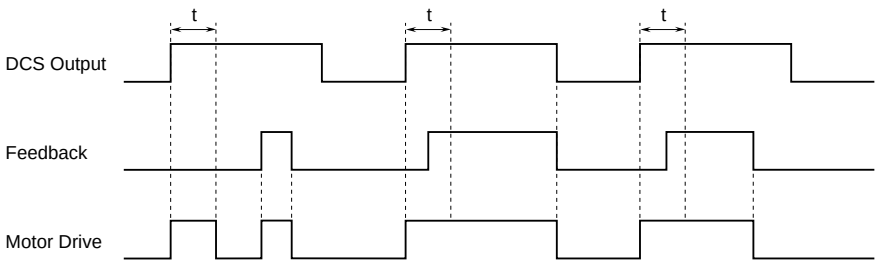
Dielectric strength: 1000V AC @1 minute

Relay life: mechanical life 5×10^7 cycles
electrical life 10^5 cycles
(30 cycles/min. at rated load)

FRONT VIEW mm (inch)



OPERATIONS



t = 2.5 to 5 sec.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

