

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 $\pm 10\%$ (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")

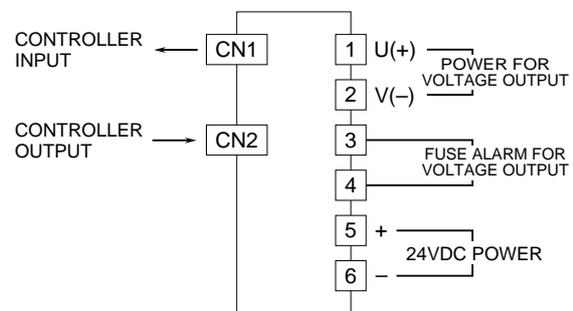
Weight: 2.5 kg (5.5 lbs)

PERFORMANCE

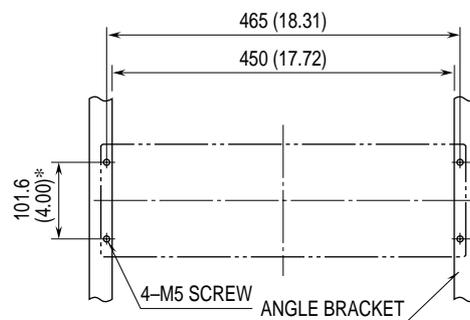
Insulation resistance: $\geq 100\text{M}\Omega$ with 500V DC

Dielectric strength: 1000V AC @1 minute

TERMINAL CONNECTION



MOUNTING REQUIREMENTS mm (inch)

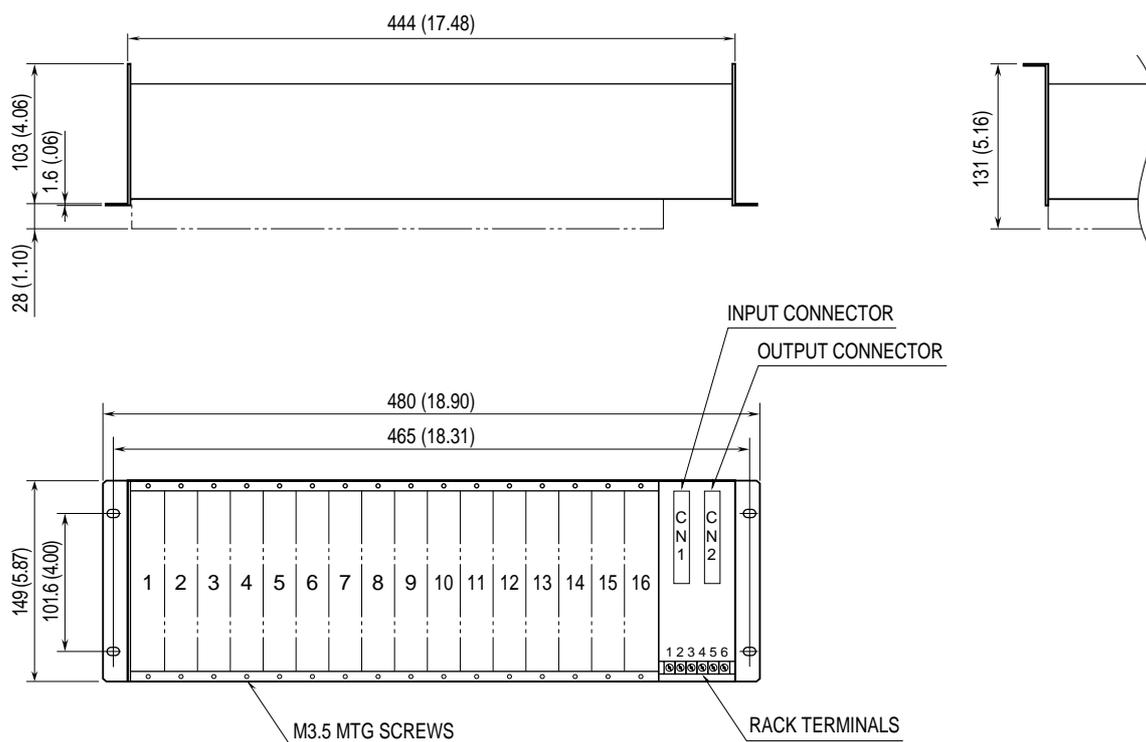


Observe an appropriate wiring space below.
 *100 (3.94) for JIS standard

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.

< LOOPBACK I/O RELAY CARD >

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 (cosφ=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 (cosφ=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

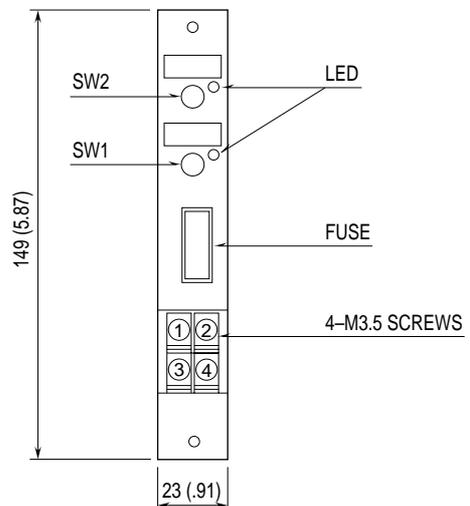
Dielectric strength: 1000V AC @1 minute

Relay life: mechanical life 5 × 10⁷ cycles

electrical life 10⁵ cycles

(30 cycles/min. at rated load)

FRONT VIEW mm (inch)

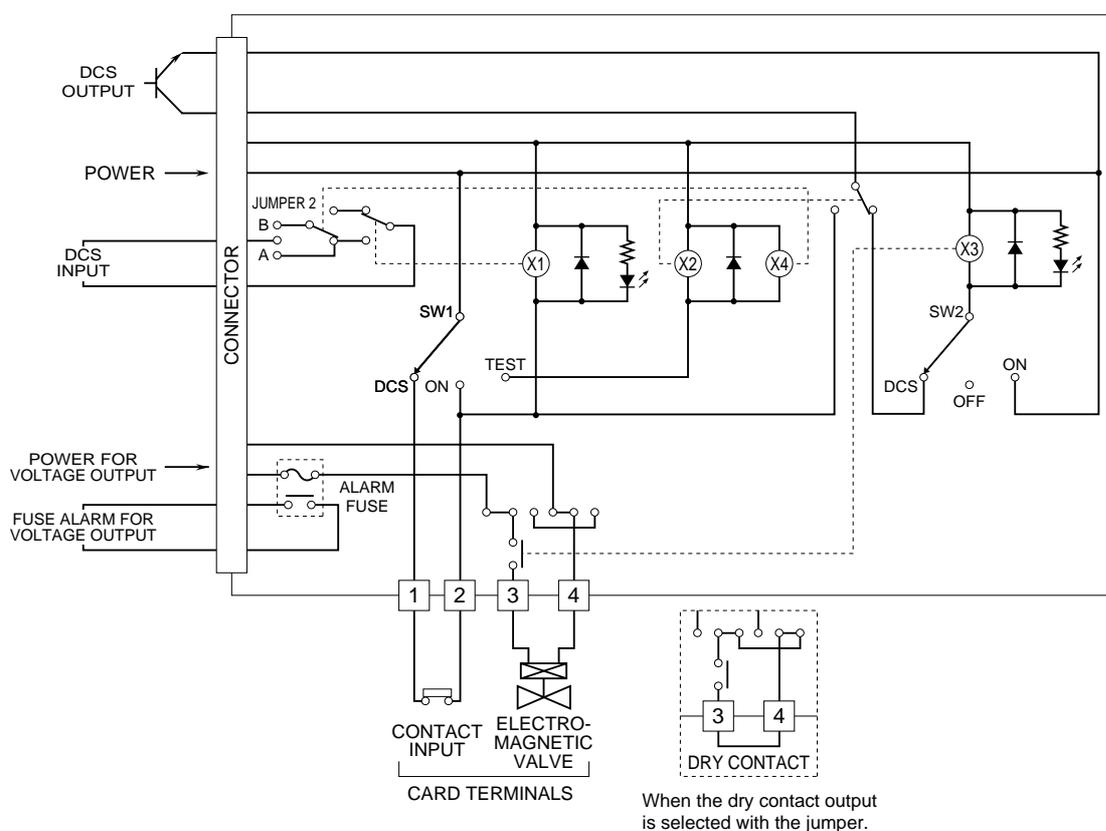


OPERATIONS

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	ON	ON	ON	ON	OFF	OFF
		ON	ON / OFF	ON	ON	ON	ON	ON
		OFF	ON / OFF	ON	ON	ON	OFF	OFF
	TEST	ON	ON / OFF	ON	ON	ON	OFF	OFF
		OFF	ON / OFF	OFF	OFF	OFF	ON	OFF
OFF	N/A						OFF	OFF
ON	N/A						ON	ON

*Selectable with a jumper.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



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 (cosφ=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 (cosφ=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)

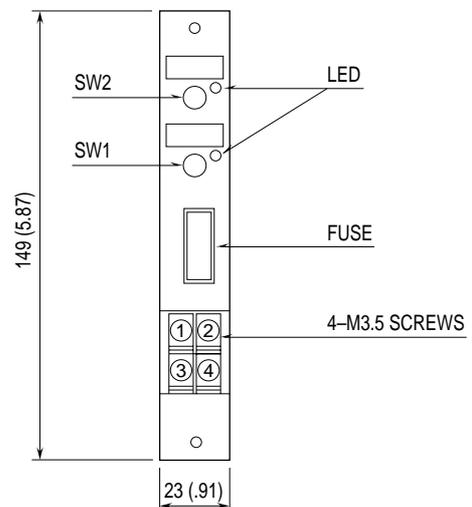
PERFORMANCE

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)

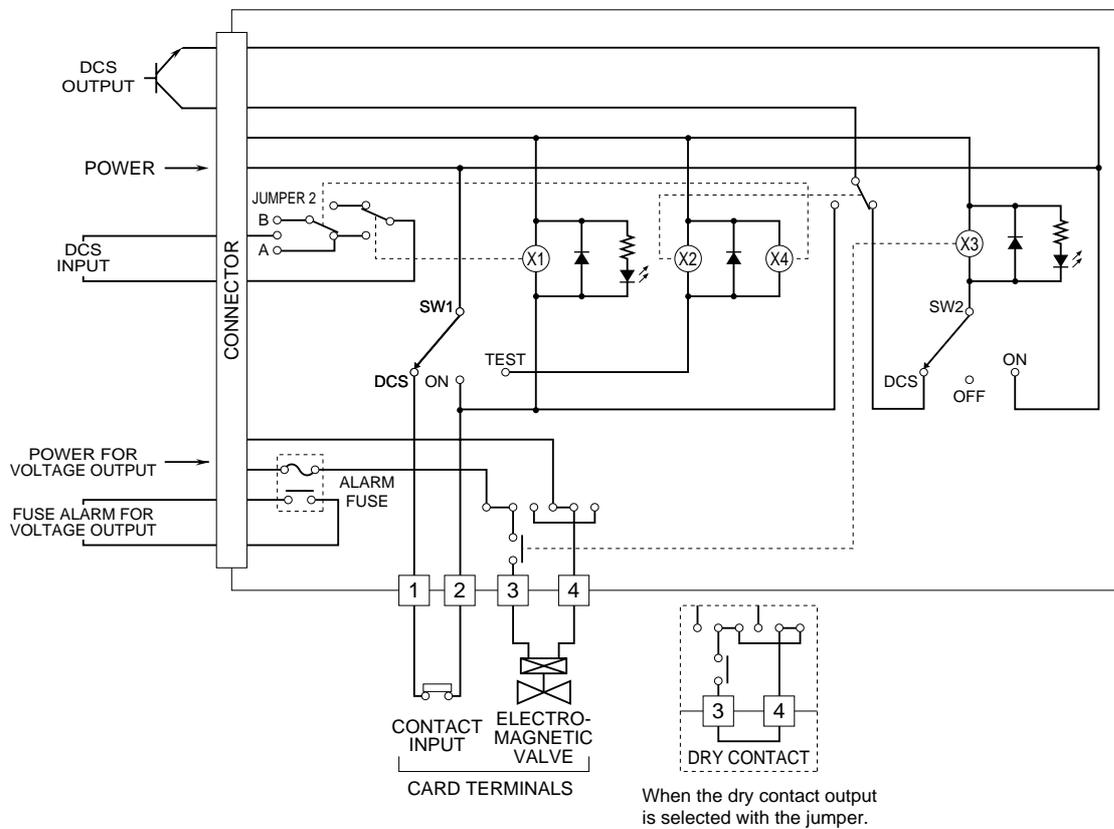


OPERATIONS

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	ON	ON	ON	ON	OFF	OFF
		ON	ON / OFF	ON	ON	ON	ON	ON
		OFF	ON / OFF	ON	ON	ON	OFF	OFF
	TEST	ON	ON / OFF	ON	ON	ON	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



Specifications subject to change without notice.

<MOTOR DRIVE I/O RELAY CARD >

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 (cosφ=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)

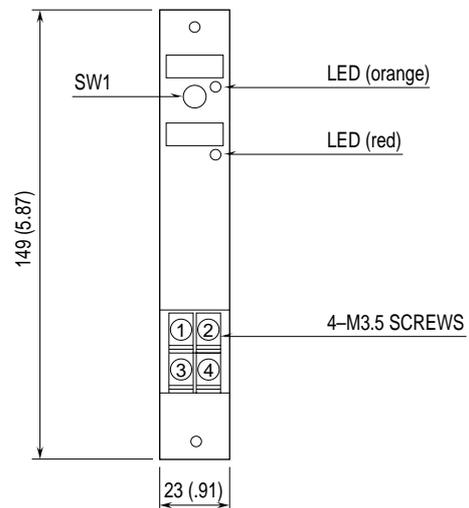
PERFORMANCE

Insulation resistance: ≥100MΩ with 500V DC

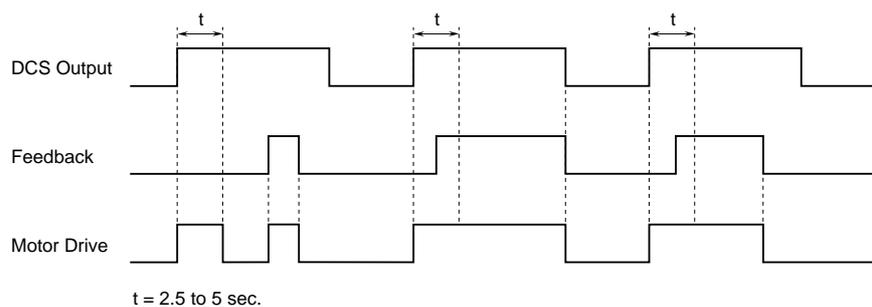
Dielectric strength: 1000V AC @1 minute

Relay life: mechanical life 5 × 10⁷ cycles
 electrical life 10⁵ cycles
 (30 cycles/min. at rated load)

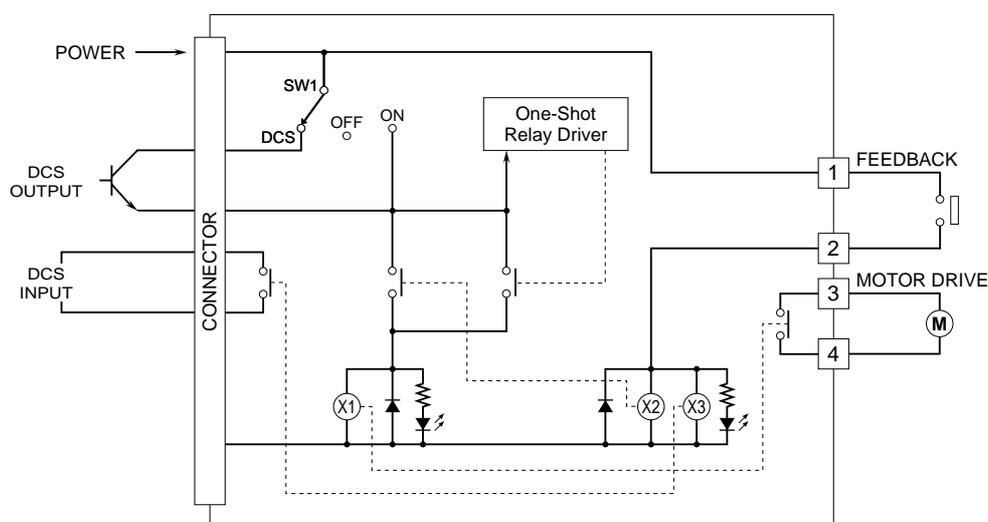
FRONT VIEW mm (inch)



OPERATIONS



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



<MOTOR DRIVE I/O RELAY CARD >

MODEL & SUFFIX CODE SELECTION

MODEL _____ **38N2-3**
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 (cos ϕ =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 \pm 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)

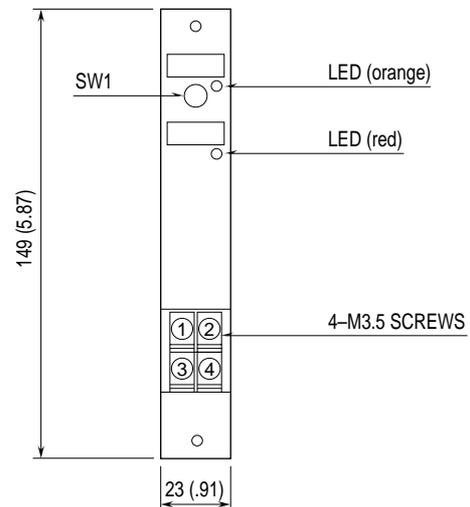
PERFORMANCE

Insulation resistance: \geq 100M Ω with 500V DC

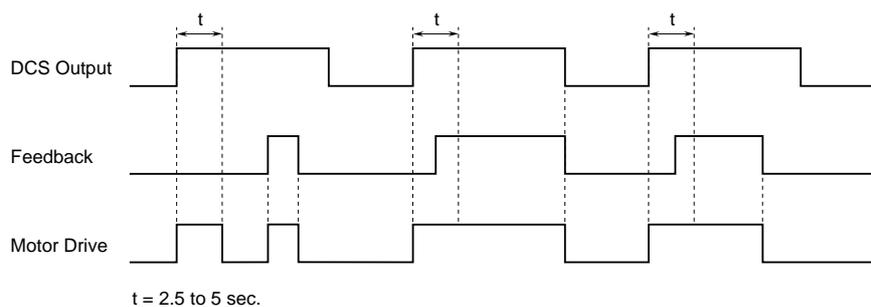
Dielectric strength: 1000V AC @1 minute

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

FRONT VIEW mm (inch)



OPERATIONS



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

