

## INDEX

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## 16-Channel Digital Input Module

Masibus Digital Input Field Interface Board has 16 channels that accepts various types of AC/DC Wet voltages and potential free contacts with common External Field Excitation supply and converts them to isolated Open Collector/24V Digital output with external System side Excitation supply.

### APPLICATION

- Translate and isolate AC/DC Field voltages to 24V signals
- Protect expensive control systems against field faults
- Digital field interface for PLC/DCS/SCADA systems
- Output compatible with source/Sink system side modules

### SPECIFICATION

#### Input

|                                 |                                                |
|---------------------------------|------------------------------------------------|
| No. of Channels & Type          | 16 Channel Digital Input (AC/DC) (Factory Set) |
| Input Range                     | Refer Table 1                                  |
| On State Voltage ( $V_{on}$ )   | <b>Refer Table 1</b>                           |
| Off State Voltage ( $V_{off}$ ) | Refer Table 1                                  |
| I/P connection                  | MKDS connector                                 |

#### Output

|                      |                                                  |
|----------------------|--------------------------------------------------|
| Output Type          | <b>Open collector, source or sink</b>            |
| Nominal/Max. Voltage | 24V/28V DC                                       |
| Nominal/Max. Current | <b>5mA/50mA</b>                                  |
| Output ON status LED | Green                                            |
| O/P connection       | 25 pin D-sub male connector/20 pin FRC connector |
| Supply               | 24VDC                                            |

#### Power supply

|           |                                        |
|-----------|----------------------------------------|
| Isolation | 1.5KV AC between field and system side |
|-----------|----------------------------------------|

#### Environmental

|                          |                            |
|--------------------------|----------------------------|
| Operating temperature    | Operating at 0 to 50°C     |
| Relative humidity        | 30 to 95% RH non- condense |
| Environmental Protection | Conformal Coating on PCB   |

#### Physical

|                  |                              |
|------------------|------------------------------|
| Mounting Type    | DIN Rail (35 mm width)       |
| Profile Material | PVC                          |
| Dimensions       | 200mm(L) x 90mm(W) x 60mm(D) |
| Weight           | Approx 250 gm                |

#### Terminal Detail

|                     |                                    |
|---------------------|------------------------------------|
| Terminal Block      | UL, CSA standard                   |
| Terminal Cable Size | Up to 2.5mm <sup>2</sup> conductor |

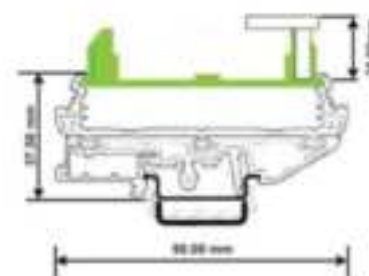
### 16-CHANNEL DIGITAL INPUT MODULE



- AC / DC Voltage Input Range
- Output open collector (Source or Sink)
- Signal healthy indication for each channel

### Dimension

225(L) x 90(W) x 90(D)



**All Dimension in mm.**

| Voltage Category | Operating voltage | Number of input | On state voltage ( $V_{on}$ ) | Nominal Input Current | Off state voltage ( $V_{off}$ ) | Response Time  |
|------------------|-------------------|-----------------|-------------------------------|-----------------------|---------------------------------|----------------|
| 12V(DC)          | 7-15V(DC)         | 16              | $\geq 7V(DC)$                 | 3mA at 12 VDC         | $\leq 4V(DC)$                   | $\leq 2mSec$   |
| 24V(DC)          | 15-30V(DC)        | 16              | $\geq 15V(DC)$                | 3mA at 24 VDC         | $\leq 5V(DC)$                   | $\leq 2mSec$   |
| 48V(DC)          | 30-55V(DC)        | 16              | $\geq 30V(DC)$                | 3.2mA at 48 VDC       | $\leq 9V(DC)$                   | $\leq 2mSec$   |
| 110V(DC)         | 70-132V(DC)       | 16              | $\geq 75V(DC)$                | 2mA at 110VDC         | $\leq 30V(DC)$                  | $\leq 15mSec$  |
| 220V(DC)         | 110-250V(DC)      | 16              | $\geq 110V(DC)$               | 2mA at 220VDC         | $\leq 50V(DC)$                  | $\leq 20mSec$  |
| 110V(AC)         | 70-132V(AC)       | 16              | $\geq 70V(AC)$                | 12 mA at 120VAC       | $\leq 30V(AC)$                  | $\leq 100mSec$ |
| 230V(AC)         | 110-265V(AC)      | 16              | $\geq 110V(AC)$               | 12 mA at 230VAC       | $\leq 50V(AC)$                  | $\leq 100mSec$ |

## SAFETY AND WARNING

As MAS-DI-16-D with front panel potentiometer calibration, must not be exposed to heavy shocks or vibration which may cause SCM to get out of calibration.

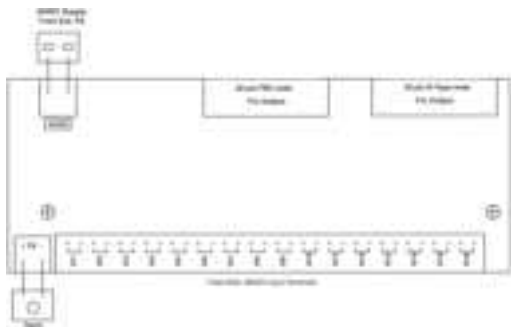
To avoid Electrostatic Discharge (ESD) to the SCM, which may cause permanent damage, always ground yourself by touching some ground equipment.

Before installation or beginning of any troubleshooting procedures the power to all equipment must be switched off and isolated. Units suspected of being faulty must be disconnected and removed first and brought to a properly equipped workshop for testing and repair.

Component replacement and internal adjustments must be made by a company person only. Wiring must be carried out by personnel, who have basic electrical knowledge and practical experience.

All wiring must confirm to appropriate standards of good practice and local codes and regulations. Wiring must be suitable for voltage, current, and temperature rating of the system. Beware not to over-tighten the terminal screws.

## CONNECTION



Connect rated power at terminal where 24VDC+ & 24VDC- described in wiring diagram.

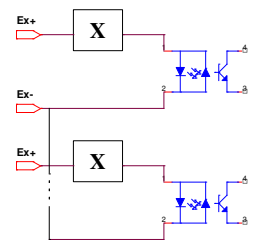
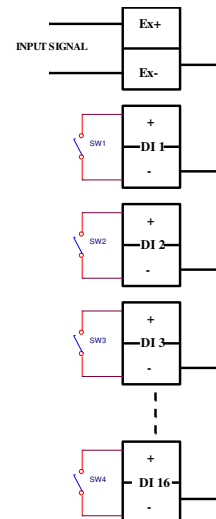
Field Input/output Terminals:

Connect input between terminal where Input+ & Input- for particular channel for Input & take output from 25 pin D type PCB mounted male connector or from terminal where Output+ & Output- described in Connection Details.

## Output Connection Details for 25 Pin D type

| Terminals | 25 pin D-Type Connector | 20 pin FRC Connector |
|-----------|-------------------------|----------------------|
| 1         | DI 16                   | DI 16                |
| 2         | DI 15                   | DI 15                |
| 3         | DI 14                   | DI 14                |
| 4         | DI 13                   | DI 13                |
| 5         | DI 12                   | DI 12                |
| 6         | DI 11                   | DI 11                |
| 7         | DI 10                   | DI 10                |
| 8         | DI 9                    | DI 9                 |
| 9         | DI 8                    | DI 8                 |
| 10        | DI 7                    | DI 7                 |
| 11        | DI 6                    | DI 6                 |
| 12        | DI 5                    | DI 5                 |
| 13        | DI 4                    | DI 4                 |
| 14        | DI 3                    | DI 3                 |
| 15        | DI 2                    | DI 2                 |
| 16        | DI 1                    | DI 1                 |
| 17        | NC                      | NC                   |
| 18        | NC                      | NC                   |
| 19        | NC                      | +24V                 |
| 20        | NC                      | GND                  |
| 21        | NC                      |                      |
| 22        | NC                      |                      |
| 23        | NC                      |                      |
| 24        | +24V                    |                      |
| 25        | GND                     |                      |

## BLOCK DIAGRAM



Where X = Filtering Circuit (AC Input)  
Attenuation circuit (DC Input)

## INSTALLATION

### Mounting:

Place the module with the DIN rail guide way on the **bottom edge** of the DIN rail and then snap it **downwards**.

The housing is mounted on the DIN rail by swiveling it into place.

The Horizontal mounting arrangement Shown here, allows good vertical air circulation. It is also recommended to keep adequate gap between two SCM.

### Removal:

Release the snap-on catch using a screwdriver and then detach the module from the **bottom edge** of the DIN Rail.

## TROUBLE SHOOTING

### ⚠ Unit Not Turning ON?

Check connections and supply applied.

### ⚠ Not getting proper output.

Check connections and supply applied or any loose connections

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## ORDERING CODE

| Model No          | INPUT TYPE | Input Voltage |        | Output Type |        | Output Protection |           | Output Connection |        |
|-------------------|------------|---------------|--------|-------------|--------|-------------------|-----------|-------------------|--------|
| MAS-DI-16-D-XXXXX | X          | X             |        | X           |        | X                 |           | X                 |        |
|                   | AC         | 1             | 230VAC | 0           | SOURCE | 0                 | NON FUSE  | 0                 | D-TYPE |
|                   |            | 2             | 110VAC | 1           | SINK   | 1                 | WITH FUSE | 1                 | FRC    |
|                   | DC         | 1             | 220VDC |             |        |                   |           |                   |        |
|                   |            | 2             | 110VDC |             |        |                   |           |                   |        |
|                   |            | 3             | 48VDC  |             |        |                   |           |                   |        |
|                   |            | 4             | 24VDC  |             |        |                   |           |                   |        |
|                   |            | 5             | 12VDC  |             |        |                   |           |                   |        |

| CABLE ORDERING CODE |                    |           |
|---------------------|--------------------|-----------|
| Model               | Input Type & Range |           |
| m-PC-D25F-LG        | XX                 |           |
|                     | C                  | 2.5 Meter |
|                     | D                  | 3.0 Meter |
|                     | E                  | 3.5 Meter |
|                     | F                  | 5.0 Meter |
|                     | G                  | 7.0 Meter |
|                     | S                  | Special   |

Note: 20 Core 0.14mm<sup>2</sup> with DB 25 Female connector at one end and lug at another end.