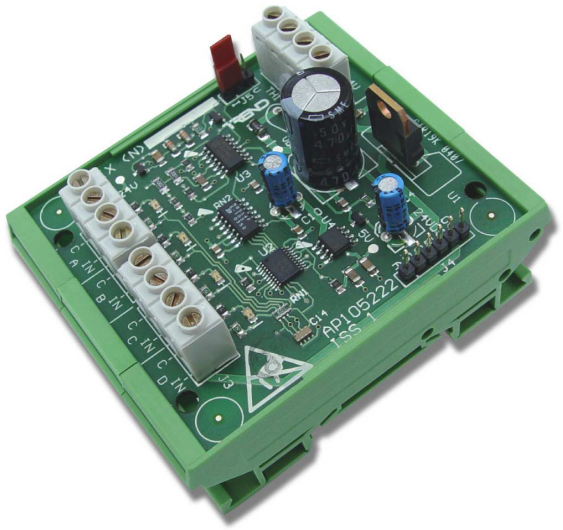
Data Sheet

# 4DIX (24 Vac/dc)
# Four Digital Input Expander Module



## 4DIX (24 Vac/dc) Four Digital Input Expander Module

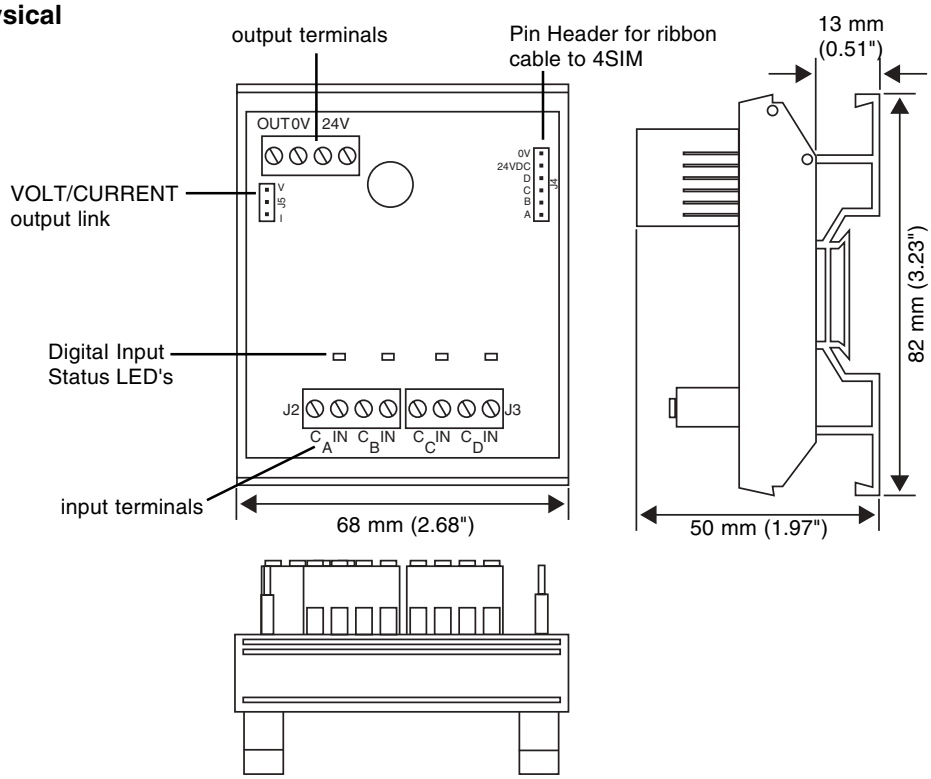
## Description

The Digital Input Expander allows 4 volt free inputs to be monitored by a single analogue input channel. The resultant analogue value can be decoded by the A to D Function Module in an IQ controller to produce internal digital status bits for alarm monitoring or other status input applications. A pin header allows quick connection to a 4SIM which provides switched mains voltage isolation for applications where volt free contacts are not available. Wiring is facilitated by rising cage clamp type terminals, and a supply loop terminal aids wiring to additional modules.

## Features

- 4 to 1 expansion on heavily used controller.
- Voltage or current output signal to IQ, link selectable.
- Monitoring of digital inputs that do not require rapid response.
- Standard DIN rail mounting.
- Rising cage clamp terminals.
- Input status monitoring by LED.
- Quick connection to 4SIM, if required.
- 24 Vac/dc.

## Physical

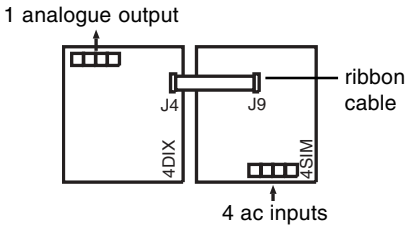


## FUNCTIONALITY

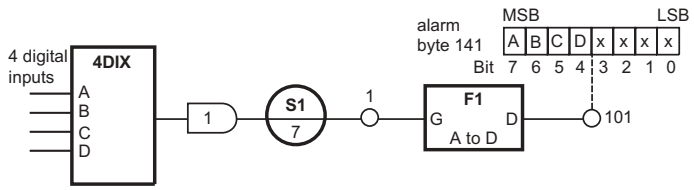
**Operation:** The 4DIX converts 4 digital input (volt free contacts) into one analogue signal. This can be used to increase the input capability of an IQ controller. The resulting analogue channel can be split back into 4 digital signals within the controller (see strategy below).

**Output Signal:** A two position link header can be used to select either a voltage (0 to 10 V) or current (0 to 20 mA) output signal. The IQ input channel must be set appropriately.

**4DIX/4SIM:** The 4DIX may be used in conjunction with a 4SIM module to allow four ac voltage switched inputs to be monitored by a single analogue input channel.
This is facilitated by making the connection between J4 on the 4DIX to the appropriate pin header (J9) on the 4SIM using the 6 way ribbon cable supplied with the 4SIM; this cable also supplies the 24 Vdc to the 4SIM.




**Strategy:** A strategy similar to that shown below should be set up in the controller. The strategy below is described more fully in the IQ Configuration Reference Manual.




The sensor scaling should be set as shown in specification section.

**Mounting:** The 4DIX is designed to be mounted on a standard DIN rail.

**Power connection:** The 4DIX's power connection is made to a 24 Vdc (e.g. IQ's auxiliary supply) or 24 Vac isolated supply using the 0V and 24 V connectors.

**Connectors:** 1 part screw terminals for 0.5 to 2.5mm$^2$ cross section area (14 to 20 AWG) cable are used for inputs, outputs, and power connection. All terminals are rising cage clamp type.

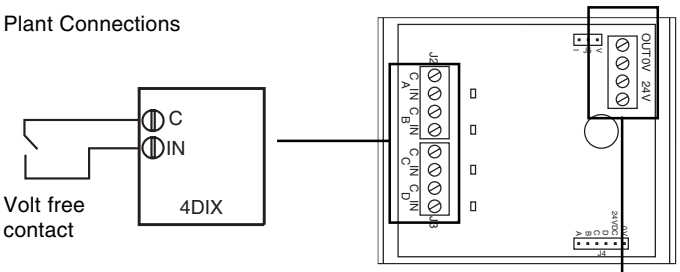
## INSTALLATION

The 4DIX should be installed inside a protective case close to the IQ controller. The procedure involves:

mount 4DIX in panel
set 4DIX output signal (V or I) if required
switch off power to controller
set IQ analogue input channel to match 4DIX output signal
wire 4DIX to controller
ensure plant supply is switched off
wire plant input to 4DIX
close panel
configure IQ (see strategy above)
switch on IQ
switch on 24 V supply to 4DIX
switch on plant supply
check 4DIX operation

### CONNECTIONS

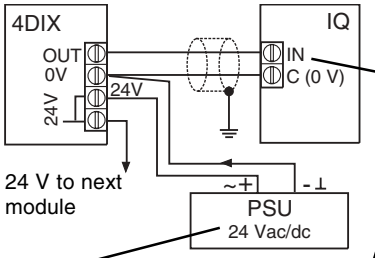
Plant Connections




IQ Connections

*Note that the controller 24 Vdc auxiliary supply or an external 24 Vac or dc supply should be used to supply the 4DIX. However, the IQ3xcite's 24 Vdc terminal in an input channel terminal group is able to supply the 4DIX in voltage mode.*

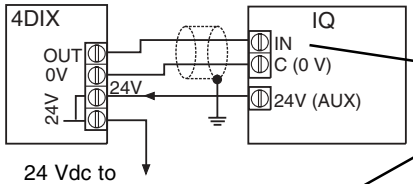
24 Vac/dc external supply or IQ auxiliary supply




Analogue input channel linked as below

*Note that external 24 V supply should be isolated or earthed to IQ earth; **ensure correct polarity***

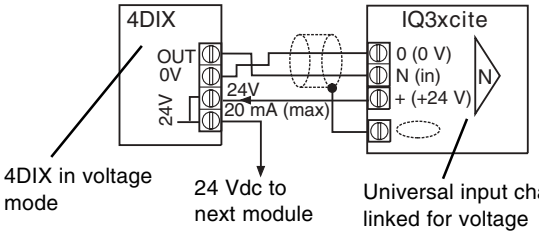
| 4 DIX output mode linking | IQ analogue input channel linking | 24 V current (max.) | |
|---|---|---|---|
| | | 24 Vac | 24 Vdc |
| Current I | External powered current $I_x$ | 90 mA | 40 mA |
| Voltage V | Voltage V | 48 mA | 20 mA |




Analogue input channel linked as below

| 4 DIX output mode linking | IQ analogue input channel linking | 24 V current (max.) | |
|---|---|---|---|
| | | 24 Vac | 24 Vdc |
| Current I | External powered current $I_x$ | 90 mA | 40 mA |
| Voltage V | Voltage V | 48 mA | 20 mA |

4DIX in voltage mode connected to IQ3xcite




The installation procedure is covered by 4DIX (24 Vac/dc) Installation Instructions TG200651.

## ORDER CODE

**4DIX** 4 digital input expander module for DIN rail mounting.

# SPECIFICATIONS

## Electrical

| | |
|---|---|
| Supply voltage | :24 Vdc or Vac ±20% |
| Supply current | :maximum |
| 24 Vac supply | :90 mA (I mode), 42 mA max (V mode) |
| 24 Vdc supply | :40 mA (I mode), 20 mA max (V mode) |
| Input channels | :4 off, volt free contact switching 24 Vdc |
| Input threshold | :upper 12 V max (ON) level<br>lower 4.5 V min (OFF) level |
| Distance | :maximum distance of 4DIX from controller 25 m (27 yards) (I mode) 1000 m (1090 yards) (V mode) |
| Output | :mode selectable by link header current/voltage (I/V) |
| I | :0 to 20 mA, maximum resistance of load 250 Ω |
| V | :0 to 10 Vdc, maximum current 1 mA |
| LED | :Single LED per input channel, LED ON indicates contact closed. |

**IQ Scaling**

Link input channel to match 4DIX output signal mode (I/V), and set up the sensor type module to match the 4DIX output signal mode.

It is recommended to use SET (software tool) for the setting of sensor type modules. For all IQ2 series controllers with firmware version 2.1 or greater, or IQ3 series controllers, the following SET Unique Sensor References should be used:

Current I Mode: **4DIX I**
Voltage V Mode: **4DIXV**

If not using SET, use the following table for all IQ2 series controllers of firmware version 2.1 or greater or IQ3 controllers; for all other IQ controllers see Sensor Scaling Reference Card TB100521A.

Use sensor type scaling mode 5, characterise, with the input type set to 2 (current), or 0 (volts) as appropriate and the table below:

| Mode | Y | E | U | L | P | $I_1$ | $I_2$ | $O_1$ | $O_2$ |
|---|---|---|---|---|---|---|---|---|---|
| I | 2 | 3 | 270 | -1 | 2 | 0 | 20 | 0 | 268.25 |
| V | 0 | 3 | 270 | -1 | 2 | 0 | 10 | 0 | 268.25 |

## Mechanical

| | |
|---|---|
| Dimensions | :82 mm (3.23") x 68 mm (2.68") x 50 mm (1.97"). |
| Connector | :Single part with rising cage clamp terminals for 0.5 to 2.5 $mm^2$ cross section area (14 to 20 AWG) cable. |
| DIN rail | :Top hat profile (DIN46277-3, EN50022, BS5584:1978). |

## Environmental

| | |
|---|---|
| Safety | :EN61010 |
| Ambient Limits | |
| storage | :-10 °C (14 °F) to +70 °C (158 °F) |
| operating | :-10 °C (14 °F) to +50 °C (122 °F) |
| humidity | : 0 to 90 %RH non-condensing |
| Version | :4DIX(N)<br>Board:AP105222 |



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