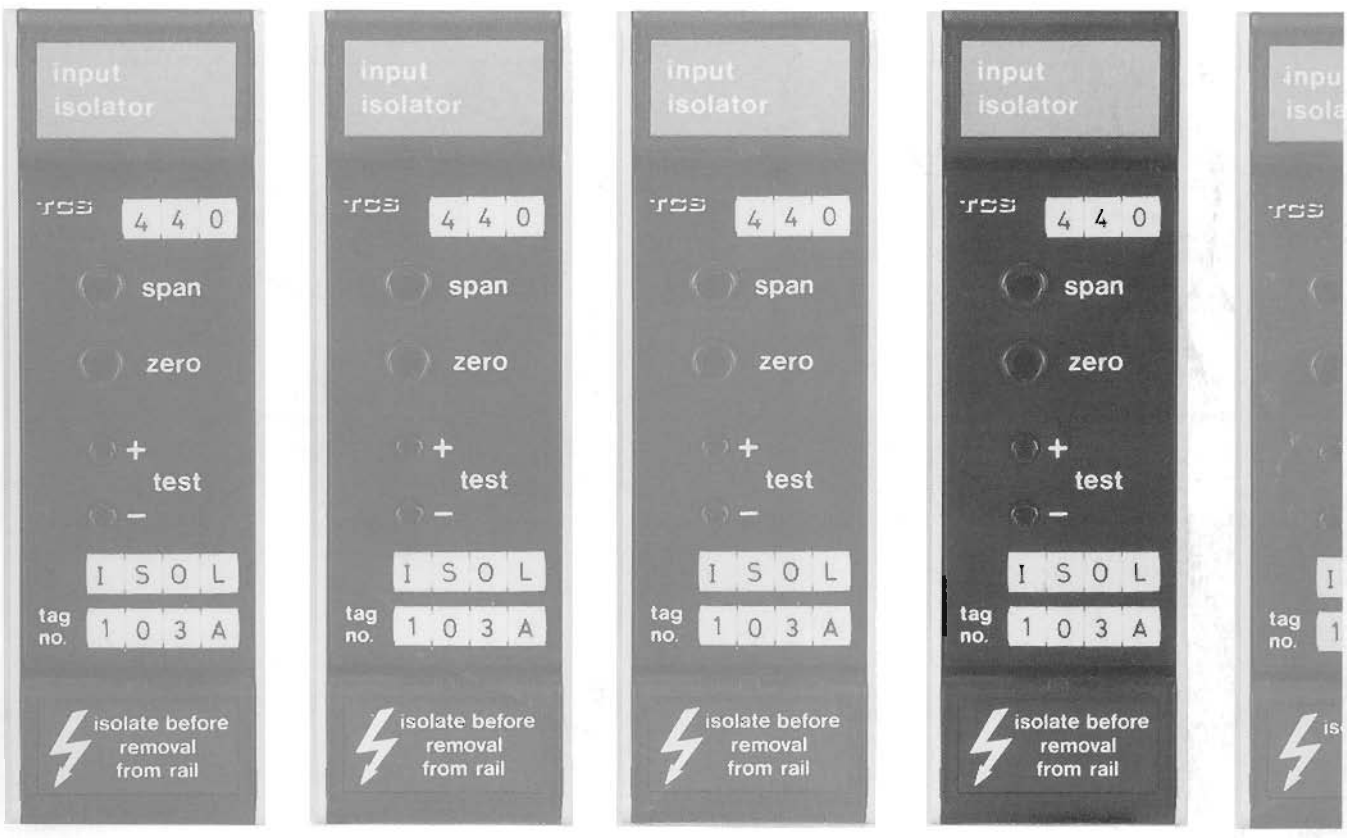
high level input isolator

system 6000

D011
D022



product specification

Star features

- **High output drive**
- **Low signal loading**
- **High accuracy and stability**
- **Flexible input power supply**
- **3 port galvanic isolation: input/power supply/output**
- **Standard high level signals: 0–10V, 1–5V or 4–20mA**
- **Simplifies configuration of larger systems**
- **Direct DIN rail mounting**
- **Clear plant and system labelling**

Functional description

The function of this instrument is to take a high level signal (4–20mA, 1–5V or 0 – 10V), galvanically isolate it and provide a high level buffered output (either 4–20mA, 1–5V or 0–10V). Typical application considerations therefore include:–

Signal translation –
e.g. A 0–10V to 4–20mA converter.

Signal isolation –
e.g. Either for breaking ground loops or where the input drive may become live (250V AC r.m.s.)

Another useful feature of this instrument is the isolation of the power supply from both the signal input and output. This allows the power source to be simply connected between units without any interference with the signal reference levels.

Input break protection is provided If the input signal becomes open-circuit the action of the output may be defined:–

UP – The output is driven above full scale (> 20mA or > 10V)
DOWN – The output is driven below 'zero' (< 4mA or < 0V).

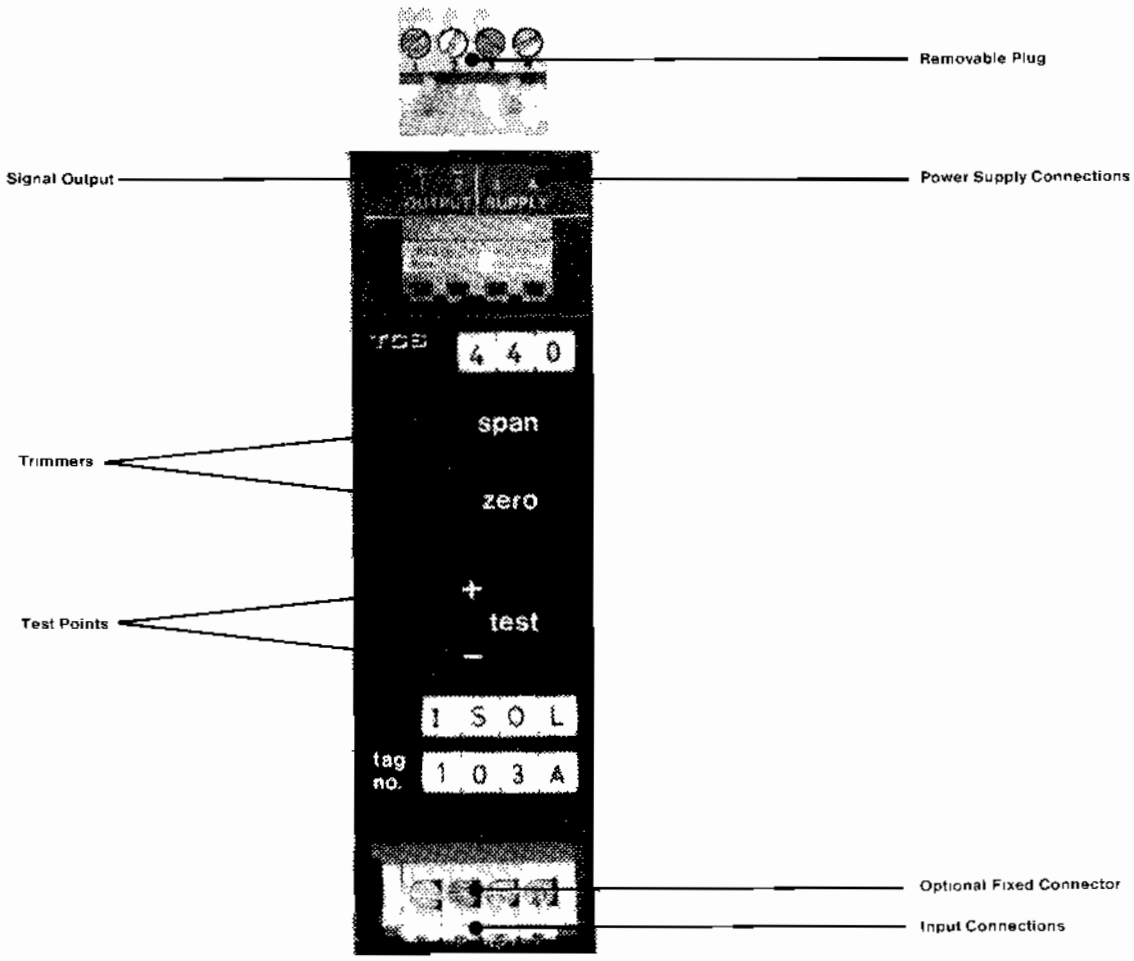
The break protection circuit works by driving 200nA out of the input. Even with 10 units in parallel being driven from a single Burden resistor the injected total. 2µA, would only contribute 0.0125% of span in a 4–20mA signal However the option of disabling the break protection is available (option 'NONE').

A high stability internal burden resistor (250Ω) may be fitted internally across the input of the D01X (Option B). This is to allow direct measurement of 4–20mA signals. This option excludes the other break protection options as it inherently provides down scale break protection

The internal power supply has been designed so that the instrument may be powered from a wide range of low voltage supplies. The supply, nominally 24V, may be either AC or DC.

The test points and trimmers are located on the output circuit. For voltage outputs the test points carry the signal directly but are protected by a 1kΩ series resistor. For current outputs the test points are across a 10Ω resistor in series with the current loop giving 40–200mV.

The sensitivity of the gain trim is about ± 10% of span and that of the offset about ± 1.5% of span.



External features

The power supply and input connections are made with the plug-in terminal block at the top of the instrument. The same connector system is available at the input for the plant connections (option PS). There is also an option available for a fixed terminal block (option TB) as shown in the diagram above For routine maintenance, test points and trimmers are available through the fascia.

Connection and installation

The pin numbering is 1 to 4, left to right, on the top connector, and 5 to 8, left to right on the bottom

PIN	FUNCTION
1	Output + ve
2	Output – ve
3	Supply
4	Supply
5	Not used
6	Input – ve
7	Input + ve
8	Not used

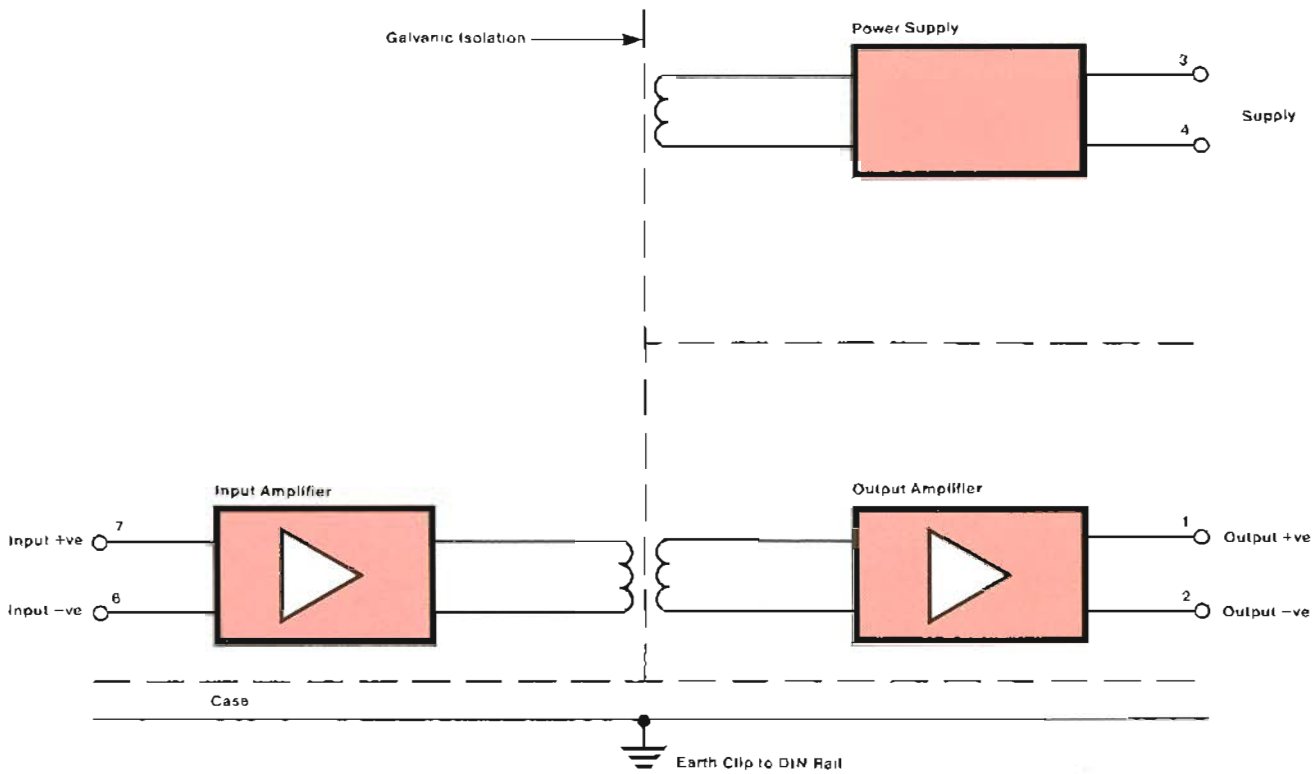
The instrument may be powered from either an AC or DC source. The DC supply voltage is nominally 24V (20–35V). The AC supply voltage range is 18–26V AC r m s. Internally the power supply circuit is galvanically isolated from the other circuits. This means that the power source may float but it is recommended that the power circuit is earthed at a suitable point in the system, where this is possible

The voltage outputs can drive up to 20mA. The current outputs can drive up to 15V (i.e. 750Ω).

The three circuits – power supply, input and output – are electrically isolated from each other and from the case, to simplify system design, by allowing the system designer to choose the points at which he defines the potential of these components of his system

The internal operating voltages constitute no electric shock hazard. However, if the output is allowed to become live, care must be taken to earth the case. To facilitate this, an earth spring is provided at the back of the box connecting onto the DIN rail. There are parts available which are specifically designed to provide an earth for the rail

The mounting of the instrument is directly to the 'top hat' cross section DIN rail (type T35) To install, the unit is rolled down until it clips into position. To remove, a screwdriver is used to release the spring catch.



Labelling

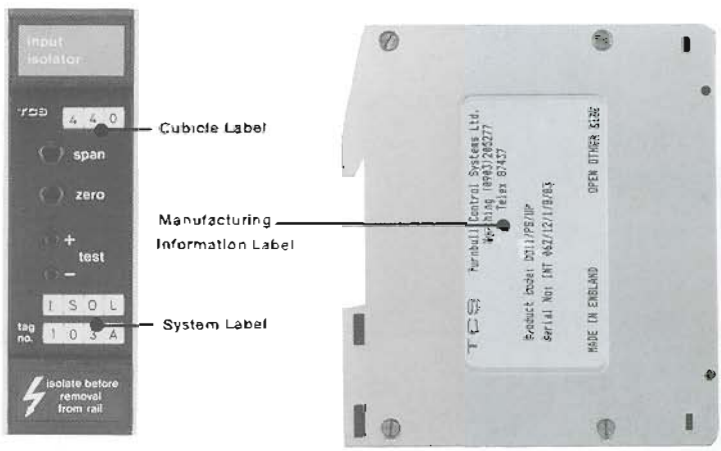
Two labelling areas are provided on the fascia. These labels are made up with Dekafix* markers. The use of this labelling system ensures that the label is legible and may be transferred if the instrument is replaced or the system reconfigured.

The upper label, three markers, is provided for system identification and will normally indicate the position of the instrument within the housing.

The lower label, eight markers, is provided for functional identification or tag number.

These positions will normally be supplied with blank markers but particular labelling may be specified within a system order.

There is a printed label on the side of the box with manufacturing information and the order code.



* Dekafix is a registered trade name of Klippon Electricals Ltd.

Performance

Power supply

Range	20–35V DC 18–26V AC r.m.s.
Current drain	
D0XX/I	32mA + 1.7mA/mA of output
D0XX/V	40mA + 1 7mA/mA of output

Input

D01X Span	1–5V
D02X Span	0–10V
Input loading due to break protection	200nA
Other input loading	10nA

Output

Span	1–5V
Drive capability	0–10V −0.3V–20mA
Span	4–20mA
Drive capability	0–15V

Isolation

INPUT to OUTPUT and POWER SUPPLY	250V AC r.m.s. 250V DC (2kV TEST)
OUTPUT to POWER SUPPLY	60V AC r.m.s. 60V DC (500V TEST)

Transfer

Overall accuracy	0.2% of span
Comprising: Stability	0.1%
Linearity	0.05%
Calibration	0.05% (from factory)
Common mode rejection (50Hz–5kHz)	120dB
Frequency response	25Hz
Operating range for specification	0–50°C

Test points

D0X1/I	40–200MV (10Ω)
D0X2/V	0–10V (1kΩ)
D0X1/V	1–5V (1kΩ)

Front adjustments

Span	20% of span
Offset	3% of span

Ordering information

Input Isolator		D0XX
INPUT	1 – 5V (4 – 20mA) 0–10V	D01X D02X
OUTPUT	1–5V 0–10V 4–20mA	D0X1/V D0X2/V D0X1/I
PLANT CONNECTOR		
Plug and socket		PS
Terminal block		TB
BREAK PROTECTION		UP DOWN
Output drive		NONE
BURDEN RESISTOR		
D01X only 250Ω burden resistor across i/p		B

Example. D012/V/TB/UP

Details

Overall dimensions in mm of housings:

Width	:	35
Height	:	110
Depth	:	97

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Interface Products

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