

Dual Input Frequency Counter Timer Batch Control Pulse Totaliser Display IDU-280

Function: The IDU-280 is a panel mounting digital process indicator designed to accept two universal AC frequency or pulse inputs. The IDU-280 is ideal for timing, counting, batch control and rate, measurement and display. The IDU-280 has a bright 6 digit red LED display and can totalise to 12 digits. The indicators come as standard with: a transducer excitation supply; two logic inputs; an analogue re-transmitting output; an RS422/485 communications interface and a universal mains power input. The software comes with many features including: Pulse Totalisation; Pulse Rate; Frequency Measurement; Up/Down Counting; Batch Control; Position Measurement and General Timing. Additional features using the front panel pushbuttons or the logic inputs include: display zero/reset; display hold; count start/stop; lamp test;

display max; display rate and many more. Options include: two alarm relay outputs, or, four TTL logic outputs; low voltage DC/AC power supply input; and green LED display.

Features on the IDU-280 are as follows:

Dual Universal Input

The IDU-280 can be directly connected to most popular process sensors including AC magnetic pickups and pulse output devices. All input types can be scaled to display values in the users preferred engineering units. The user can select to use the internal crystal controlled clock or calibrate to an external known standard. Transducer excitation is provided as standard, giving 5 or 12 Volt DC.

User configurable functions on the inputs are as follows:

De-bounce: For use with contact closure inputs to inhibit multiple counts caused by contact bounce - selectable between 2 and 250mS. De-bounce is normally turned off for all sensor types except contact closure.

Invert: Allows the input signals to be inverted - Enabled ON = (invert).

Scale and Linearise: Allows the input count, frequency or time to be converted into engineering units. This feature also allows an eight point user linearisation to be applied to compensate for non-linear sensor output signals.

Pre-scaler (for totalising values): This feature allows the totalled values to be in different engineering units (or resolution) than the real time measured value.

Serial Communications

The IDU-280 comes equipped with an isolated RS422/485 serial communications interface. This allows computer based systems to read values (e.g. the measured value) and to write values (e.g. Alarm set-points) to and from the instrument(s). The IDU-280 comes with three protocols including the widely used MODBUS™ RTU.

Analogue Re-transmitting Output

The user programmable analogue output allows the IDU-280 to transmit the measured value to other devices such as data loggers or chart recorders. The isolated analogue output can be scaled for any portion of the display range and is configurable for 4 to 20mA, 0 to 20mA or 0 to 10 Volt signal. The output can be configured to re-transmit frequency, rate, time or totalled (6 Least Significant Digits) values.

Digital Status (Logic) Inputs / Front Panel Function Keys

The IDU-280 has two logic inputs and five front panel pushbuttons provided as standard. The pushbuttons allow the user to set up the indicator via a simple password protected menu. A Windows™ compatible software program is also available for set-up, configuration storage and downloading to and from the IDU-280. In addition two of the pushbuttons can be individually programmed by the user to give operator level access to some of the functions listed below. The two logic inputs allow remote control of these indicator functions via external devices such as switches or PLCs. The inputs may be activated by volt free contacts or open collector TTL signals and can be individually programmed by the user to perform one or more of the following functions: Display Zero / Reset (to a pre-set value); Display Hold; Count Start / Stop; Display Maximum (Peak); Display Minimum (Valley); Display Average; Alarm Acknowledge; Alarm Inhibit; Display Most / Least Significant Totalled Value; Display Rate / Total Toggle; Display Test (Lights all display segments); Analogue Output Hold; and Keyboard Inhibit (the last two are only available using the status inputs).

Alarm and Batch Control Outputs Option

The IDU-280 can be fitted with either two changeover relay outputs or four open collector TTL outputs. Set-points can be set at the time of configuration (which can be password protected) or can be adjusted using the buttons on the front panel. Each alarm can be used in High, Low or Deviation mode. Outputs can be configured to give a pulse output (user selectable time period) or to energise or de-energise in the alarm condition or when the batch (count) value is reached. Outputs can be latching and have independent delay times which can be set for both on and off conditions.

APPLICATIONS FOR THE IDU-280

Batch Counter Control Functions

The IDU-280 can be configured in four different ways with either single or dual outputs for controlling Batching applications.

Mode 0 - Output 1 ON - Output 2 ON - Manual Reset Counter and both Outputs

When the "Trigger" signal is turned ON, outputs 1 & 2 are turned OFF and the IDU-280 counts (in Engineering Units) from a pre-set reset value. When the Batch set-point 1 is reached, output 1 is turned ON and the counts continue to be accumulated. When the Batch set-point 2 is reached, output 2 is turned ON as well and the counts are still accumulated. The unit is now awaiting the next "Trigger" signal (which must be turned OFF and then ON again).

Mode 1 - Output 1 ON - Output 1 OFF and Output 2 ON - Manual Reset Counter and Output 2

When the "Trigger" signal is turned ON, outputs 1 & 2 are turned OFF and the IDU-280 counts (in Engineering Units) from a pre-set reset value. When the Batch set-point 1 is reached, output 1 is turned ON and the counts continue to be accumulated. When the Batch set-point 2 is reached, output 2 is turned ON and output 1 is turned OFF and the counts are still accumulated. The unit is now awaiting the next "Trigger" signal (which must be turned OFF and then ON again).

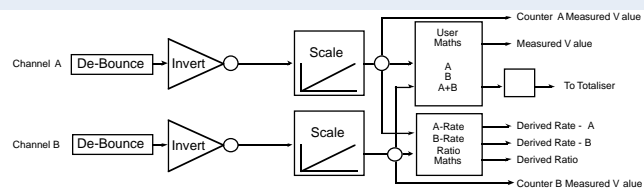
Mode 2 - Output 1 ON - Output 2 ON - Automatic Reset Counter and both Outputs

When the "Trigger" signal is turned ON, outputs 1 & 2 are turned OFF and the IDU-280 counts (in Engineering Units) from a pre-set reset value. When the Batch set-point 1 is reached, output 1 is turned ON and the counts continue to be accumulated. When the Batch set-point 2 is reached, output 2 is turned ON as well and the counts are still accumulated. If the "Trigger" signal is still in the ON position the IDU-280 will automatically, after a 0.1second delay, re-trigger the count to the pre-set reset value without the need to manually toggle it.

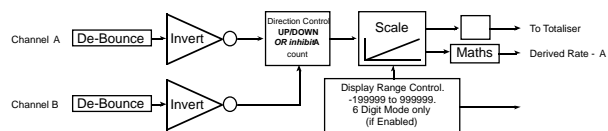
Mode 3 - Output 1 ON - Output 1 OFF and Output 2 ON - Automatic Reset Counter and Output 2

When the "Trigger" signal is turned ON, outputs 1 & 2 are turned OFF and the IDU-280 counts (in Engineering Units) from a pre-set reset value. When the Batch set-point 1 is reached, output 1 is turned ON and the counts continue to be accumulated. When the Batch set-point 2 is reached, output 2 is turned ON and output 1 is turned OFF and the counts are accumulated. If the "Trigger" signal is still in the ON position the IDU-280 will automatically, after a 0.1second delay, re-trigger the count to the pre-set reset value without the need to manually toggle it.

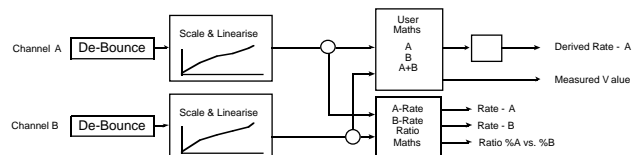
Two Channel Counting



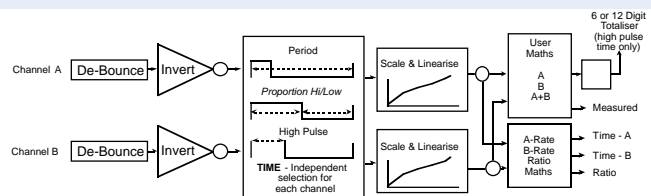
Counting on Channel A, direction controlled by the State of Channel B (or Phase of Encoder)



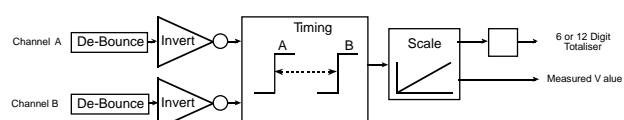
Dual Channel Frequency Measurement



Timing of Period, Pulses and Cumulative Time



Timing of Edges between



SPECIFICATIONS

INPUTS:

2 universal inputs each user configurable for

- 1) AC magnetic pick-ups
- 2) Contact Closure
- 3) TTL Logic
- 4) NPN / PNP

Range

0 to 150 KHz

Isolation

No isolation between channels. Isolated from all other inputs and outputs with the exception of the status inputs and the excitation supply.

Linearisation

8 point user linearisation (per channel) for frequency and timing modes.

DISPLAYS:

Display

6 digit High Brightness Red LEDs
Option: Green LEDs

Digit Size

14.2mm

Full Scale Range

-199999 to 999999

Decimal Point

Programmable to any location

Display Update

Selectable: 2, 4 or 10 updates per second
- also dependent on input rate (timer modes)

OUTPUTS:

ISOLATED ANALOGUE RE-TRANSMITTING OUTPUT

Output Type:

User selectable 0 to 10 Volt dc, 0 to 20mA or 4 to 20mA

Maximum Voltage output:

11 Volts dc @ 22mA

Maximum Current output:

22mA @ 18 Volt dc

Load: 900 ohm maximum

Isolation: 500V dc / Peak ac

Temperature drift:

< 150ppm per °C

Accuracy: better than 0.2%

of span 0.1% typical

Resolution: 0.05% (5mV or 0.01mA)

This feature includes a programmable output damping filter and user scaling to any displayable or maths derived value.

OPTIONAL DIGITAL OUTPUTS

Relay Alarms

2 x Single Pole Changeover contacts rated at 1 Amp at 250 Volt AC
5 Amps at 30 Volt DC

TTL Outputs

4 x TTL Open Collector

Outputs can be energised or de-energised in the alarm condition

SUPPLY:

Power Supply Voltage

Universal mains power:

90 to 265 Volt AC 50/60 Hz

Option: 10 to 32 Volt dc / ac

Power Required

20VA nominal

Transducer Supply

5 or 12 Volt dc at 100mA

max - not isolated from input signals

MEASUREMENT MODES:

- 1) Count (6 or 12 digit) and totalisation
- 2) Up/Down count dependent on the phase or state of Channel B
- 3) Frequency and timing measurement with integrated totalisation

Scaling to engineering units for all modes (e.g. Pulse rate to RPM, Time period to MPH or KPH, etc.)

COMMUNICATIONS:

Serial Communications

Type: RS422 / 485

2 or 4 wire multidrop

Isolation: 500V dc / Peak ac

Speed: 1200, 2400, 4800 or 9600 baud

Parity: Odd, Even or None

Stop Bits: 1 or 2

Protocols: MODBUS™ RTU

(J-BUS), MODBUS™ ASCII,

and, DTPI

GENERAL:

Time Base / Measurement

Accuracy

Better than 100 ppm

Resolution

Selectable for real time and totalled values

Common/Series Mode

Rejection

>150dB / >70dB at 50/60 Hz

Operating/Storage

Temperature/RH

+10 to +50°C /

-10 to +70°C /

10 to 95% RH non-condensing

Safety

EN61010

Protection Level

Fascia panel to IP65

Weight

Mains or Low Voltage

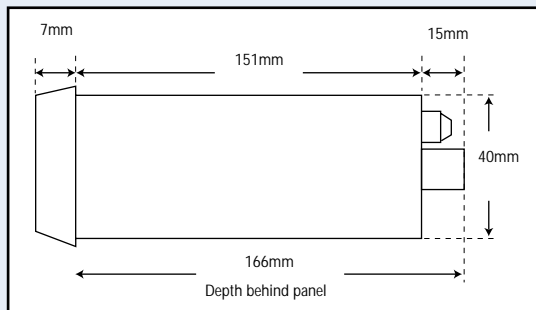
powered

0.4 Kg (max) net

0.55 Kg including handbook,

labels and packaging

MECHANICAL DETAILS



Dimensions (mm):

48(H) x 96(W) x 173(D)

Panel Cut-out (mm):

44(H) x 92(W)

Depth Behind Panel (mm):

166mm including terminals

ORDERING DETAILS

- (a) Give identification code, i.e. IDU-280
- (b) Give details of power supply, i.e. 90 to 265 Volt AC

- (c) Specify if Green LED display required
- (d) Specify if alarms required and if so which type, i.e. 2 alarm relays