IDM

Intrinsically Safe Digital Monitor

Description

The Intrinsically Safe Digital Monitor (IDM) provides optical isolation between two separate intrinsically safe Ex ia circuit configurations, or an intrinsically safe circuit to a non-intrinsically safe [Ex ia] circuit configuration. Its digital output switches state when the input signal, a standard 4 to 20mA current input or a 9 to 30VDC voltage input, is above or below a set point configured by the user.

Typical uses of the IDM include interfacing relays and solenoids to intrinsically safe current loops or intrinsically safe switch circuits.

Features

- DIN Rail Mounting
- Certified Intrinsically Safe – Ex ia or [Ex ia]
- Optical Isolation

Operation and Setting

CURRENT MODE

In Current Mode the input current signal is connected to the "I+" terminal and common return terminal "Com".

The IDM has a rotary switch which is used to select the "set point" for the analogue input to de-activate the output (non-inverted mode) or activate the output (inverted mode).

The inverting mode is selected by a two position link on the front panel.

When the link is in the non-inverted position "Norm", the output switches ON when I+ > 4mA and switches OFF when I+ > Set Point. The opposite applies when in the inverted position "Inv"; the output switches OFF when I+ > 4mA and switches ON when I+ > Set Point.

The rotary switch allows the "Set Point" to be set at predefined levels (see table) but this can trimmed by fitting a suitable external resistor to the two terminals above the rotary switch.

VOLTAGE MODE

In Voltage Mode, the input voltage signal is connected to the "V+" input terminal and common return terminal "Com".

NOTE: Rotary Switch must be set to 'F' for this mode.

When the link is in the non-inverted position "Norm": the output switches OFF when input V+ < Voltage Set Point and switches ON when input V+ > Voltage Set Point.

The opposite applies when in the inverted position "Inv": the output switches ON when input V+ < Voltage Set Point and switches OFF when input V+ > Voltage Set Point.

Current Mode: Set Point Adjustment:

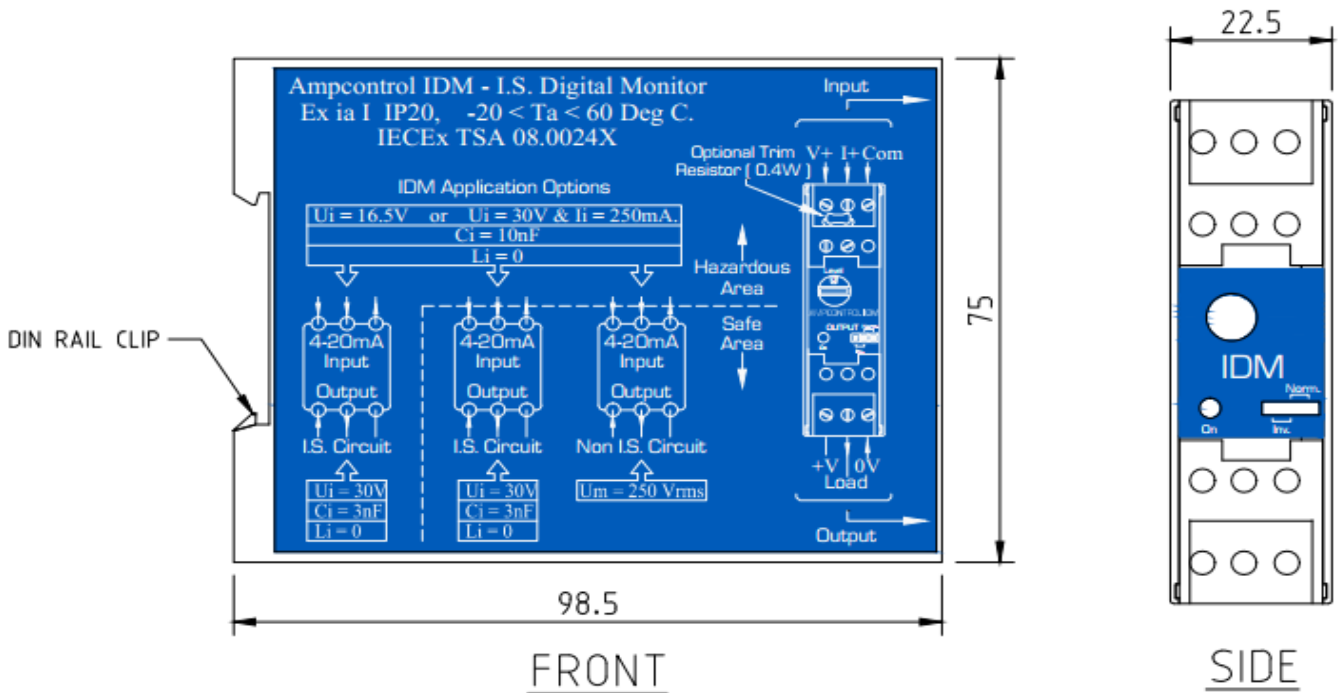| Rotary Switch Position	Typical Set Point (mA DC)	Rotary Switch Position	Typical Set Point (mA DC)
0	5	8	13
1	6	9	14
2	7	A	15
3	8	B	16
4	9	C	17
5	10	F	18
6	11	E	19
7	12	F	20

MOUNTING

The IDM is ideal for both safe and hazardous areas, although if installation is required in a hazardous area both input and output circuits must be intrinsically safe, and the IDM must be installed into an appropriate enclosure suitable for Group I applications with a minimum ingress protection of IP54.

The IDM is supplied in a DIN rail mount enclosure made of robust polycarbonate with an ingress protection rating of IP20.

IDM Technical Datasheet
IDMB003 Rev 1
30/10/2014

ampcontrolgroup.com
customerservice@ampcontrolgroup.com
1300 267 373

Electrical Connection & Dimensional Drawing

FRONT

SIDE

Electrical Specifications	
Current loop impedance	Typical 65Ω
Minimum current loop voltage	4V (loop current A x 65Ω + 2.04V)
Voltage input impedance	>14kΩ
Maximum input signal voltage	30VDC
Maximum input signal current	25mA
Maximum output supply voltage	30VDC
Maximum output load current	Typical 160mA to 180mA
Output load voltage drop	Typical 1.5V@180mA ; Typical 0.5V@50mA
Voltage Set Point (fixed, Rotary=F)	Typical 9VDC to 10VDC
Mechanical/Environmental Specifications	
Ingress Protection	IP20
Housing Material	PC (30% GV), RAL7032, UL 94V-1
Operating Temperature	-20°C to +60°C
Humidity	0-95% RH, non-condensing
Approval & Certification	
IECEx TSA 08.0024X	

Intrinsically Safe Certification Parameters (Please refer to Certificate of Conformity IECEx TSA 08.0024X for all conditions of safe use)

Input Parameters	Terminals		
	Input: J3 (V+), J5 (I+), J7 (Com)		Output: J4 (V+), J6 (LOAD), J8 (0V)
Maximum Supply Voltage (Um)	N/A		250V
Maximum Input Voltage (Ui)	16.5 V	30 V	30V
Maximum Input Current (Ii)	Not Critical	250 mA	Not Critical
Internal Capacitance (Ci)	10 nF		3 nF
Internal Inductance (Li)	0 mH		0 mH

Ordering Information	
Part Number	Description
112247	IDM – Intrinsically Safe Digital Monitor

DISCLAIMER

While every effort has been made to assure the accuracy of this document at the date of issue, Ampcontrol assumes no liability resulting from any omissions or errors in this document, and reserves the right to revise content at any time.