IQ240

Panel Mount Load Cell Indicator

Data sheet – English 1.01

- 14 Segment LED Displays
- 0-10V, +-10V, 0-20mA, 4-20mA Analog Re-Transmission
- 4 or 6 Wire Load Cells
- 5V or 10V Excitation
- High Resolution ADC
- High Resolution DAC
- RTU ASCII Modbus™ Communications
- Auto Zero Function
- Field upgradeable Firmware
- Scale Motion Indication
- Advanced Digital Filtering
- RTC Option
- Tare Function
- 4 Alarm Setpoints
- Gross/Net Function
- RS232 & RS485

Introduction

The IQ240 panel mount load cell indicator is a precision digital indicator for load cell and strain gauge applications.

The high bright 6-digit 14 segment LED displays make for easy setup and readability. A simple menu system with built in help hints allows for easy configuration of display and load cell settings. The load cell calibration can be done directly from the load cell calibration certificate or from using known weights.

A universal mains switch mode power supply (85-264VAC) is provided as standard but an optional low voltage (10-30VDC) isolated power supply or a high voltage (25-70VDC) isolated power supply can be installed.

The IQ240 contains precision front end circuitry for high accuracy and stability. The load cell bridge excitation voltage can be field selectable for 5VDC or 10VDC and provides for a Kelvin sensed feedback to compensate for cable loss. The IQ240 can power up to 4x350Ω load cells at 10V excitation. The IQ240 can interface to both 4-wire and 6-wire load cells.

RS232 communications is supplied as standard with the MODBUS™ RTU and MODBUS™ ASCII protocol. A simple ASCII out protocol is also provided for serial printing and communicating to large displays. A second communication RS485 interface can be added in conjunction with the standard RS232 interface.

The IQ240 also includes advanced features such as auto-zero tracking, user input linearisation, max/min recording, programmable front push buttons, programmable digital inputs, security menu lockout, motion indication, advanced digital filtering, plus many more to provide a all in one precision load cell indicator.

1 - Features

- 4 or 6 wire load cell / strain gauge input
- Field jumper selectable 5V or 10V load cell / bridge excitation voltage (Kelvin force sense excitation voltage to compensate for cable loss)
- Can power up to 4x350Ω load cells at 10V excitation voltage
- High precision 22bit ADC front end circuitry
- -199999 to +999999 display counts
- High bright 6-digit 14 segment LED displays for easy setup and calibration
- Easy calibration either from the load cell calibration certificate or by using known weights
- RS232 communications standard (MODBUS™ RTU/ASCII and an Infiniteq ASCII out protocol)
- Type 4X, NEMA 4X front panel. 96X48 ABS/Polycarbonate enclosure
- Universal mains switch mode power supply (85-264VAC) standard with built in EMI and fuse protection
- 2x Programmable digital inputs (pull up or pull down field jumper selectable)
- 3x Programmable front panel push buttons
- 16 Point lineariser provided as standard
- Auto-zero tracking function provided as standard
- Selectable/adjustable advanced digital filtering
- Motion indication and Net front panel LED status
- Up to 4 front panel LED indicators for alarm set point status (Mechanical or solid-state option required)
- Max/Min recording provided as standard
- Built in menu help hints
- Field upgradable firmware via the RS232 interface
- 1 Year Warranty

Additional hardware options include:

- Up to 4 Mechanical (FORM-C) or solid state (FORM-A) alarm set points
- Analog output (0/4-20mA, 0-10V, +-10V)
- Second communication RS485 interface
- RTC (Real Time clock) option for time and date stamping
- Low voltage 10-30VDC Isolated power supply
- High voltage 25-70VDC Isolated power supply

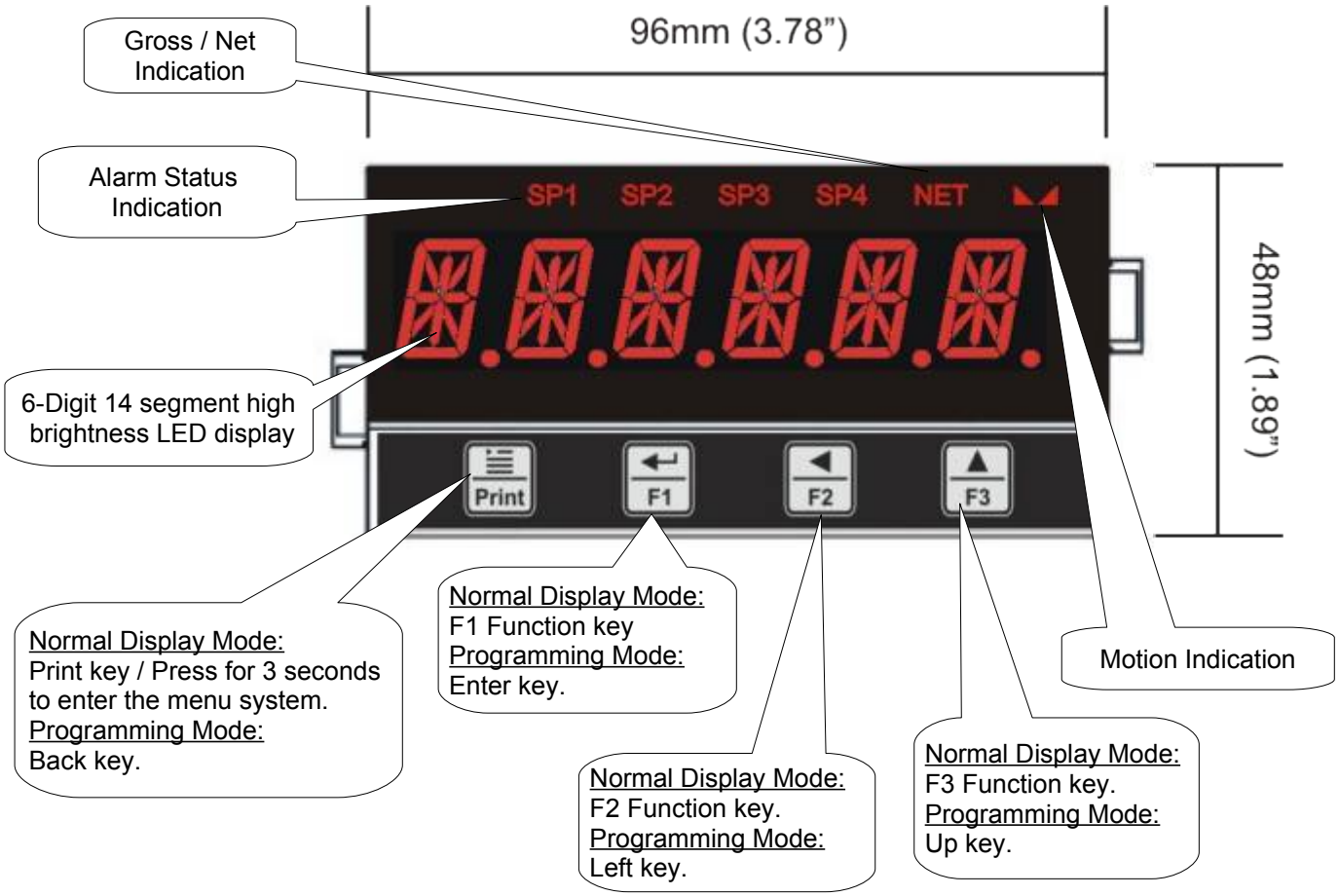
2 - Specifications

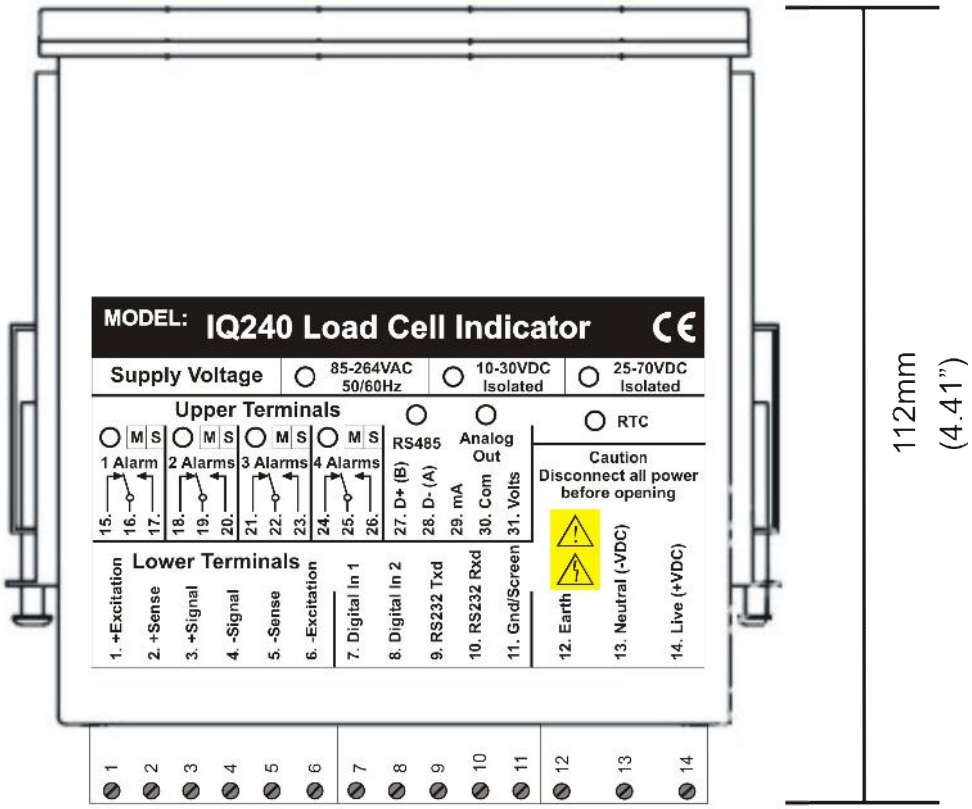
General:	
Display	6-Digit, 13.8mm (0.543") 14 segment high brightness red LED
Display range	-199999 to +999999
Display decimal point	0 to 0.00000
Status LEDS	6 LEDs total (SP1 to SP4, Net & Motion)
Digital Inputs	2 Programmable digital inputs Built in hysteresis, filter and input over voltage protection Maximum input voltage <30VDC Input logic is field jumper selectable (Pull up, sinking inputs) - 10kΩ internal resistor to 5V (Pull down, sourcing inputs) – 10kΩ internal resistor to common Active/Non-Active input trigger: <1.9V Non-Active/Active input trigger: >2.3V
Keypad	4 keys total, 3 programmable keys
Memory storage	Non-volatile EEPROM, 100000 write cycles minimum
Warm up time	15 minutes
Power Requirements:	
AC Power Supply	85-264VAC, 50/60Hz or 120-370VDC Isolation: 3000VAC/1min
DC Power Supply, 10-30VDC (Optional)	10-30VDC input Reverse and over voltage protected Isolation: >1000V/1min
DC Power Supply, 20-70VDC (Optional)	25-70VDC input Reverse and over voltage protected Isolation: >1000V/1min
Power Consumption	<10W (Depending on options selected)
Fuse (Built in)	2A Slow Blow (Wickmann 3721200000) RS components part number 226-6599
Environmental:	
Operating temperature	-10°C to 50°C (14°F to 122°F)
Storage temperature	-40°C to 80°C (-40°F to 176°F)
Operating and storage humidity	<85% RH non-condensing
Enclosure:	
Overall Dimensions	96x48x112mm (LxHxD) (3.78x1.89x4.41") (Depth includes connectors)
Mounting	92x45mm (3.62x1.77")
Enclosure Material	Rear ABS plastic, Front Polycarbonate
Front Facia Rating	IP65, with o-ring supplied as standard
Wiring connections	Removable terminal blocks
Input:	
ADC Resolution	22 bit Delta-sigma
Input range	-20mV to +35mV
Conversion rate	12 updates/second
Filter	Moving average digital filter with programmable input step detection
Increment size	1, 2, 5, 10, 20, 50, 100, 200
Input Impedance	20 MΩ
CMRR	>-110dB
Linearity	<0.01% of full scale
Accuracy	0.05% of full scale
Calibration method	From the load cell calibration certificate or from using known weights

Load cell connection	4 or 6 wire connection + shield (Sense included)
Load Cell Excitation:	
Excitation Voltage (Sense included)	Field jumper selectable 5V or 10V Bipolar output (+-2.5V or +-5V), referenced to common
Excitation current	Max. 125mA Up to 4x350Ω load cells or 8x1000Ω load cells
Cable compensation	4 wire Kelvin force sense feedback
Cable compensation resistance	<= 10Ω
Analog Out: (Optional)	
Ranges (Selectable through menu)	0-20mA 4-20mA 0-10V +-10V
DAC Resolution	16 Bit
Update rate	12 updates/second
Current output compliance (maximum load)	500Ω (Current is source, not sink)
Voltage output compliance (minimum load)	1kΩ
Current open loop detection	Display flashes “mA.Loop” error message
Linearity	<0.02% of full scale
Accuracy	0.05% of full scale
Communications:	
Protocol	MODBUS RTU MODBUS ASCII ASCII In (Infiniteq Protocol) ASCII Out (Infiniteq Protocol)
RS232 Communications (Standard)	Baud rate: 1200,2400,4800,9600,19200,38400,57600,115200 Data bits: 7 or 8 bits Parity: Odd, Even or None Stop bits: 1 or 2 stop bits Non isolated
RS485 Communications (Optional)	Baud rate: 1200,2400,4800,9600,19200,38400,57600,115200 Data bits: 7 or 8 bits Parity: Odd, Even or None Stop bits: 1 or 2 stop bits Internal 120Ω field jumper selectable termination resistor Max 32 instruments per line
SetPoints: (Optional, Up to 4 can be fitted) **Electro-mechanical Relays:**	
Contact rating	2A@240VAC or 30VDC (Resistive load)
Isolation to input circuitry	>1000Vrms for 1 minute
Type	FORM-C (Change over contact (NO/NC))
Life expectancy	>100K cycles min. at full load rating. External RC snubber extends relay life for operation with inductive loads
Solid-State Relays (SSR):	
Contact rating	120mA@400VAC/DC
Isolation to input circuitry	>1000Vrms for 1 minute
Type	FORM-A (Normally open)
RTC (Real Time Clock): (Optional)	
Battery	CR2032
Accuracy	Better then 3 seconds per day (Temperature dependent)

3 - Installation

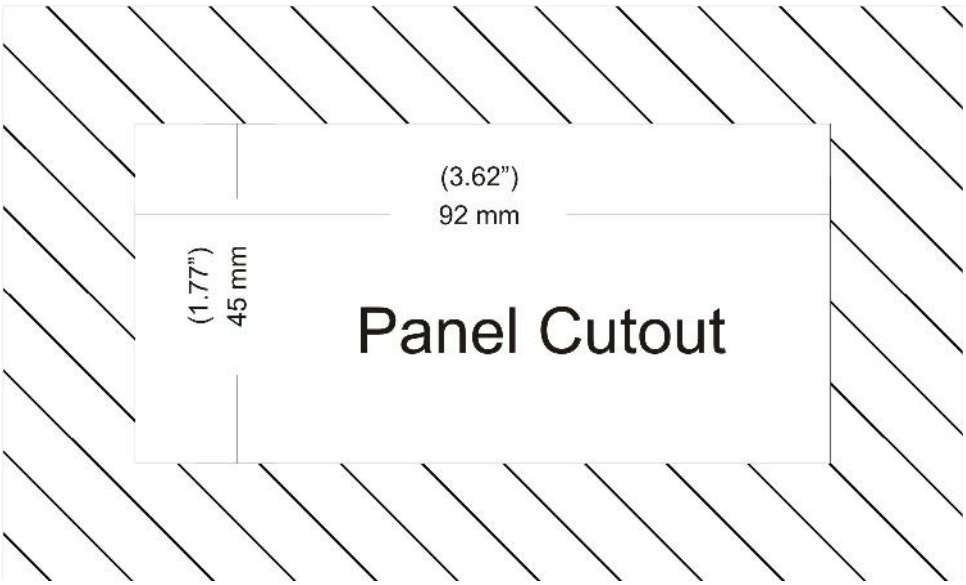
3.1 - Dimensions & Front panel layout



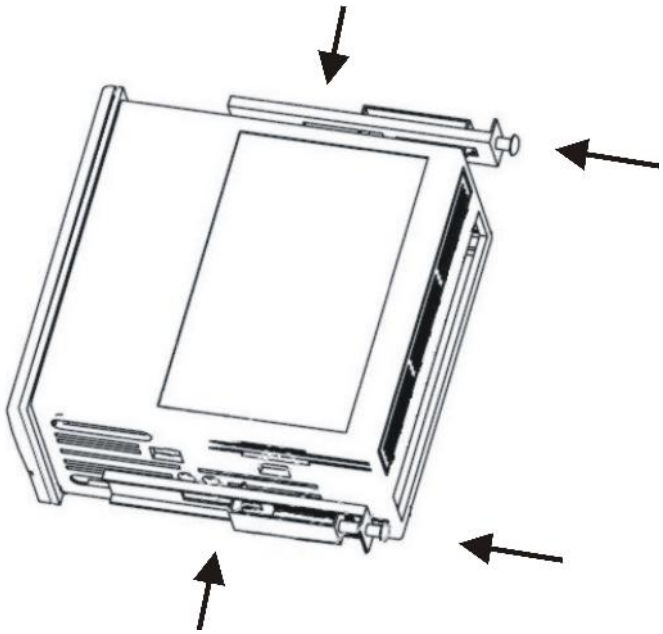


3.2 - Panel Cutout

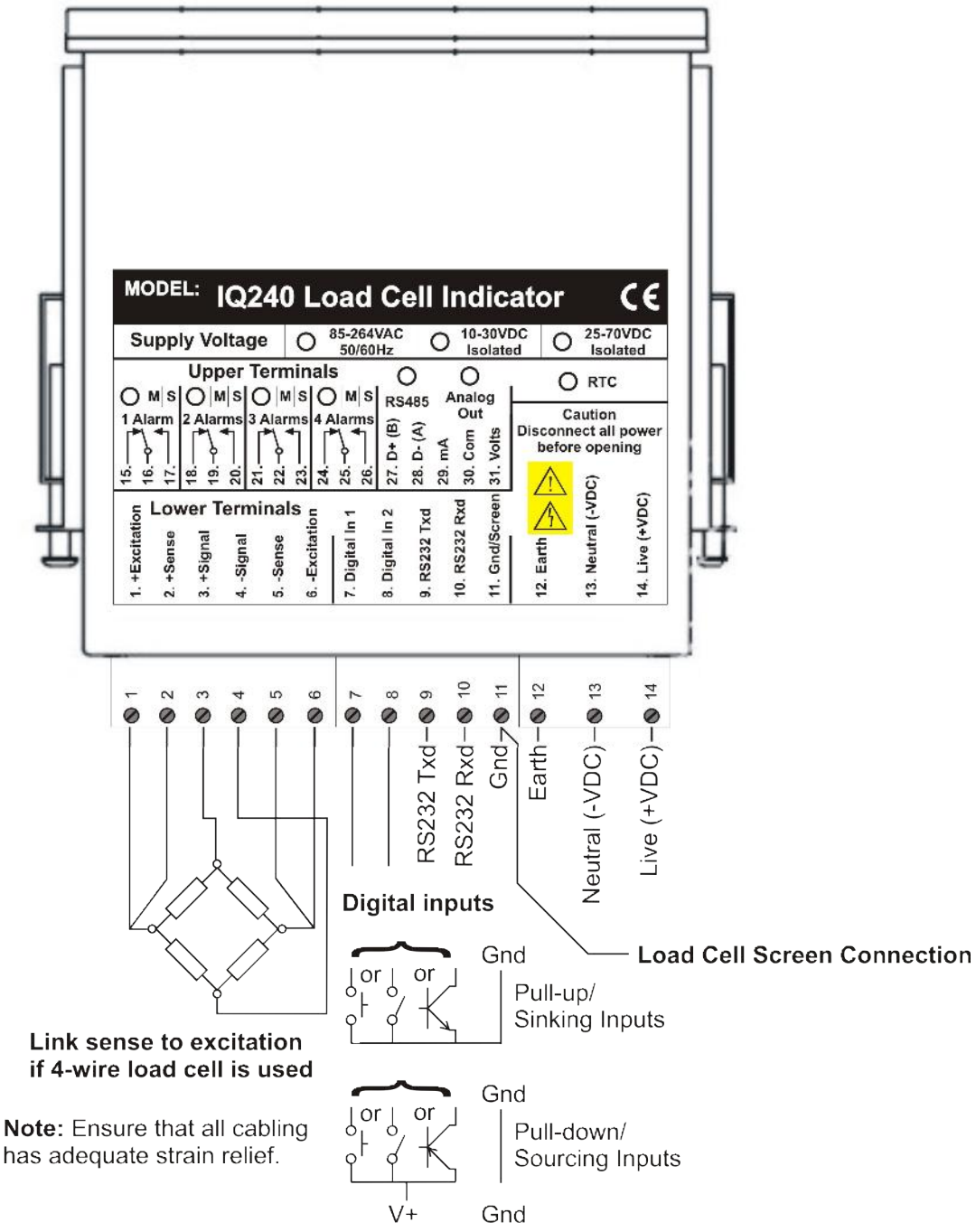
A rectangular cutout measuring 92x45mm (3.62”x1.77”) must be made in the mounting enclosure. The IQ240 instrument should preferably be mounted in a grounded metal enclosure.



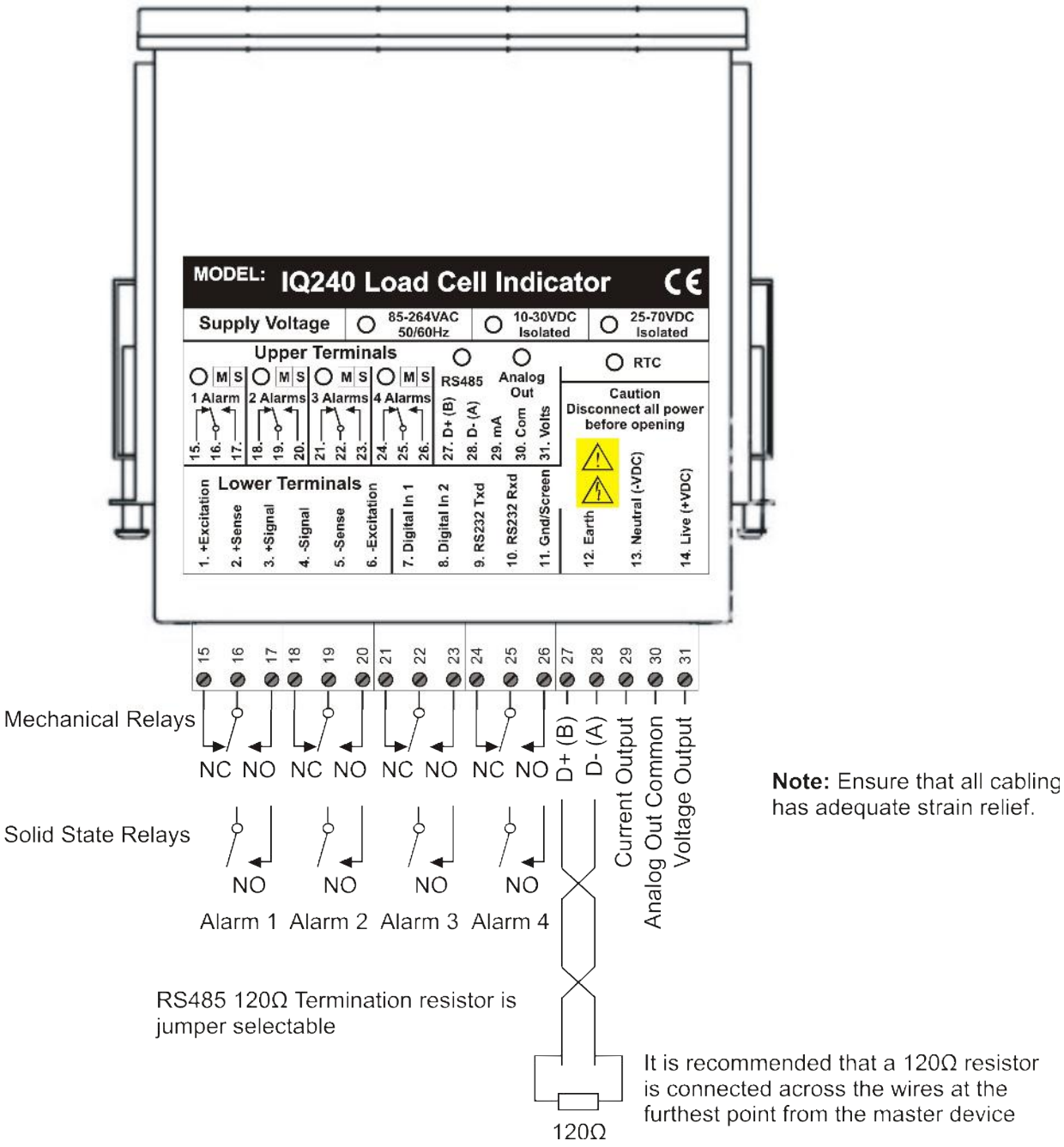
The supplied o-ring must be attached to the front cover to provide sealing between the indicator and the mounting enclosure. The two supplied fastening metal side clips must be attached to either side as in the diagram below. Do not over tighten the screws.



3.3 - Hardware Connection (Lower Terminals)



3.4 - Hardware Connection (Upper Terminals – Option PCB)



Note: Ensure that all cabling has adequate strain relief.

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5 - Warranty

This product carries a warranty for a period of one year from date of purchase against faulty workmanship or defective materials, provided there is no evidence that the unit has been mishandled or misused. Warranty is limited to the replacement of faulty components and includes the cost of labor. Shipping costs are for the account of the purchaser.

Note: Product warranty excludes damages caused by unprotected, unsuitable or incorrectly wired electrical supplies and or sensors, and damage caused by inductive loads.

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