

# IQ810

## DIN Rail Mount Load Cell Indicator

Operating Manual – English 1.00



14 Segment  
LED Displays



0-10V  
0-20mA  
4-20mA Analog  
Re-Transmission



4 or 6 Wire  
Load Cells



5VDC  
Excitation



High Resolution  
ADC



High Resolution  
DAC



RTU  
ASCII Modbus™  
Communications



Auto Zero  
Function



Field upgradeable  
Firmware



Scale Motion  
Indication



Advanced  
Digital Filtering



RS232  
&  
RS485



Tare  
Function



2 Alarm  
Setpoints



Gross/Net  
Function

## Introduction

The IQ810 DIN rail 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 is easily accomplished 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 IQ810 contains precision front end circuitry for high accuracy and stability. The ratiometric ADC circuitry automatically compensates for temperature drift and excitation voltage variances due to cable loss. The load cell excitation voltage is 5VDC and can interface with both 4 wire and 6 wire load cells. The IQ810 can power up to 6x350Ω load cells.

RS232 and RS485 communications is supplied as standard with the MODBUS™ RTU and MODBUS™ ASCII protocols. A simple ASCII out protocol is also provided for serial printing and communicating to large displays. The IQ810 also contains 2 programmable mechanical relays and analog retransmission for generating a precise 0/4-20mA or 0-10V analog output signal.

The IQ810 also includes advanced features such as auto-zero tracking, user input linearisation, max/min recording, programmable front push buttons, 2x programmable digital inputs, security menu lockout, motion indication, advanced digital filtering, automatic offset calibration plus many more to provide a all in one precision load cell indicator.

# 1 Features

- High bright 6-digit 14 segment LED displays for easy setup and calibration
- 4 or 6 wire load cell / strain gauge input
- Can power up to 6x350Ω load cells at +5VDC excitation voltage
- High precision 24 bit ratiometric ADC front end circuitry
- -199999 to +999999 display counts
- DIN Rail mount ABS enclosure
- Easy calibration using known weights
- 16 Bit Analog output (0/4-20mA or 0-10V)
- 2x Mechanical setpoints
- RS232 communications (MODBUS™ RTU/ASCII and an Infiniteq ASCII out protocol)
- RS485 communications (MODBUS™ RTU/ASCII and an Infiniteq ASCII out protocol)
- 2x Programmable digital inputs (pull up or pull down field jumper selectable)
- 3x Programmable front panel push buttons
- Universal mains switch mode power supply (85-264VAC) standard with built in EMI and fuse protection
- 16 Point lineariser
- Auto-zero tracking function
- Automatic offset calibration
- Tare function
- Gross/Net function
- Selectable/adjustable advanced digital filtering
- 2 Alarm, Motion indication and Net front panel LED status
- Max/Min recording
- Security menu lockout
- Built in menu help hints
- Field upgradable firmware via the RS232 interface
- 1 Year Warranty

Optional hardware includes:

- Low voltage 10-30VDC Isolated power supply
- High voltage 25-70VDC Isolated power supply

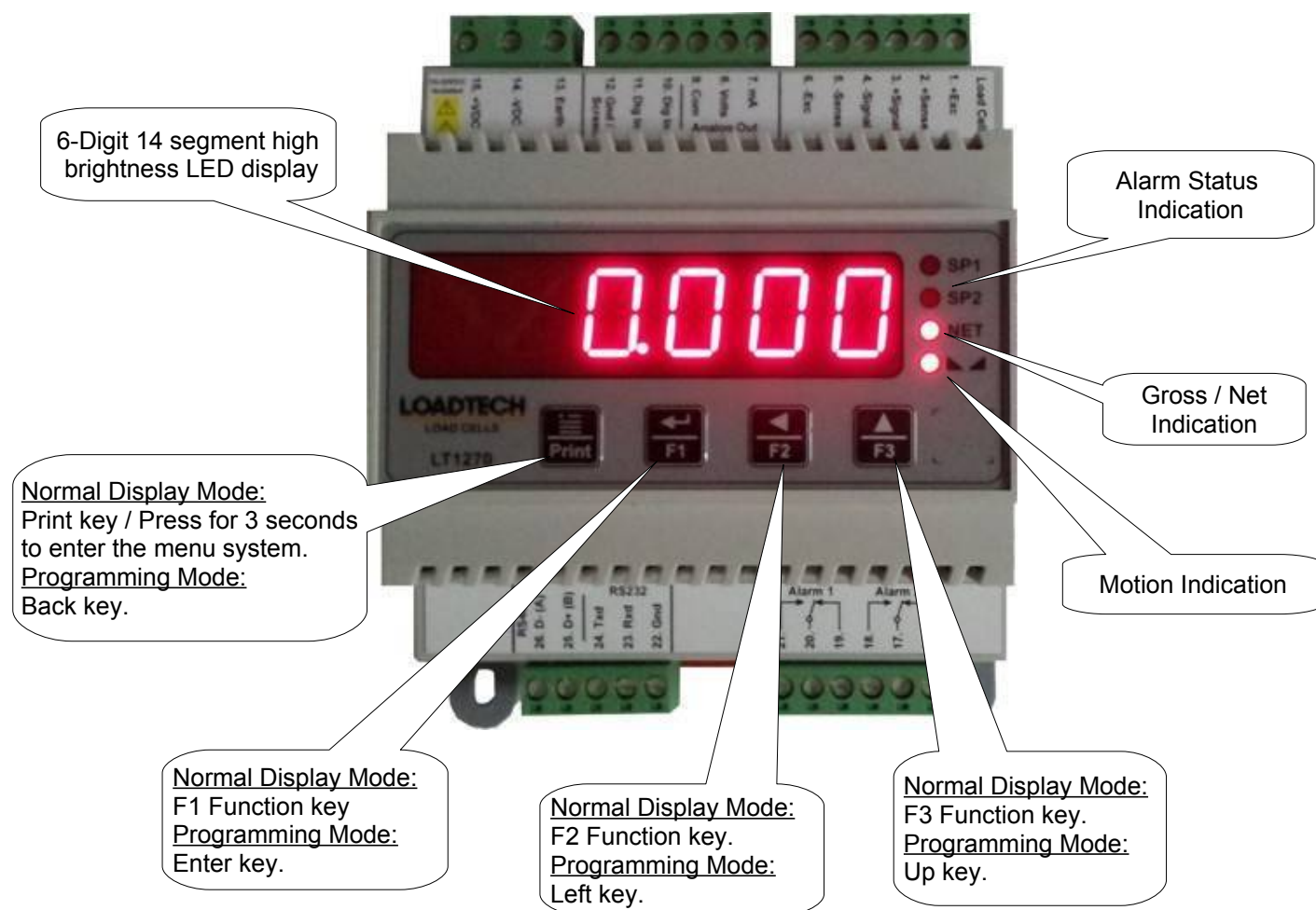
## 2 Specifications

<b>General:</b>	
<b>Display</b>	6-Digit, 13.8mm (0.543") 14 segment high brightness red LED
<b>Display range</b>	-199999 to +999999
<b>Display decimal point</b>	0 to 0.00000
<b>Status LEDs</b>	4 red LEDs total (SP1, SP2, Net & Motion)
<b>Digital Inputs</b>	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
<b>Keypad</b>	4 keys total, 3 programmable keys
<b>Memory storage</b>	Non-volatile EEPROM, 100000 write cycles minimum
<b>Warm up time</b>	15 minutes
<b>Power Requirements:</b>	
<b>AC Power Supply</b>	85-264VAC, 50/60Hz or 120-370VDC Isolation: 3000VAC/1min
<b>DC Power Supply, 10-30VDC (Optional)</b>	10-30VDC input Reverse and over voltage protected Isolation: >1000V/1min
<b>DC Power Supply, 20-70VDC (Optional)</b>	25-70VDC input Reverse and over voltage protected Isolation: >1000V/1min
<b>Power Consumption</b>	<8W
<b>Fuse (Built in)</b>	2A Slow Blow (Wickmann 3721200000) RS components part number 226-6599
<b>Environmental:</b>	
<b>Operating temperature</b>	-10°C to 50°C (14°F to 122°F)
<b>Storage temperature</b>	-40°C to 80°C (-40°F to 176°F)
<b>Operating and storage humidity</b>	<85% RH non-condensing
<b>Enclosure:</b>	
<b>Overall Dimensions</b>	102x132x57mm (LxHxD) (4.02x5.2x2.24")
<b>Mounting</b>	Din Rail Mount (See mounting drawing)
<b>Enclosure Material</b>	ABS plastic
<b>Front Facia Rating</b>	IP20
<b>Wiring connections</b>	Removable terminal blocks
<b>Input:</b>	
<b>ADC Resolution</b>	24 bit Delta-sigma, Ratiometric
<b>Input range</b>	+/-19mV
<b>Conversion rate</b>	10 updates/second
<b>Filter</b>	Moving average digital filter with programmable input step detection
<b>Increment size</b>	1, 2, 5, 10, 20, 50, 100, 200
<b>Input Impedance</b>	>100 MΩ
<b>CMRR</b>	>-110dB
<b>Linearity</b>	<0.01% of full scale
<b>Accuracy</b>	0.05% of full scale
<b>Calibration method</b>	Using known weights
<b>Load cell connection</b>	4 or 6 wire connection + shield (Sense included)

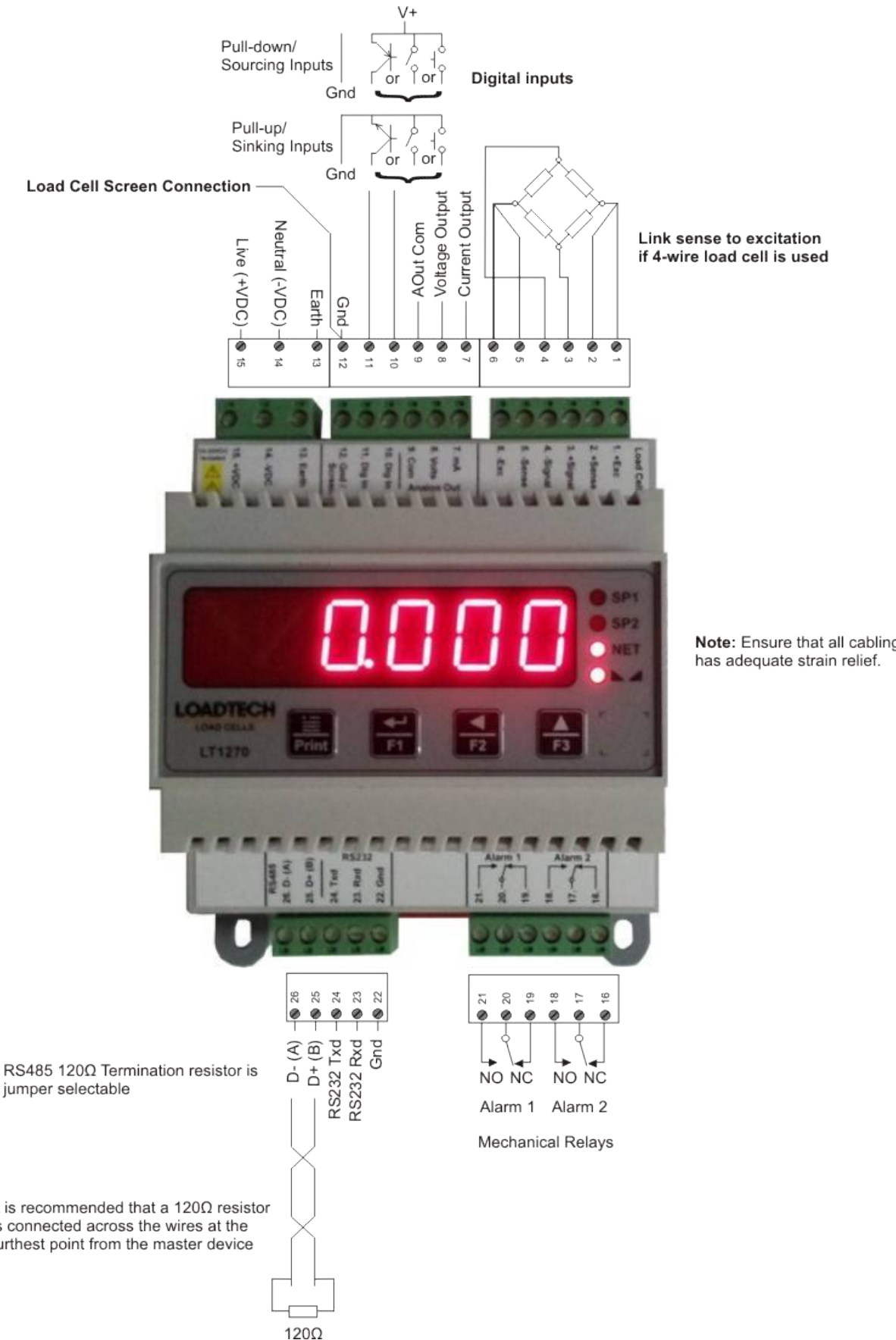
<b>Load Cell Excitation:</b>	
<b>Excitation Voltage (Sense included)</b>	+5VDC fixed
<b>Excitation current</b>	Max. 90mA Up to 6x350Ω load cells or 10x1000Ω load cells
<b>Cable compensation</b>	Ratiometric
<b>Analog Out:</b>	
<b>Ranges (Selectable through menu)</b>	0-20mA 4-20mA 0-10V
<b>DAC Resolution</b>	16 Bit
<b>Update rate</b>	10 updates/second
<b>Current output compliance (maximum load)</b>	500Ω (Current is source, not sink)
<b>Voltage output compliance (minimum load)</b>	1kΩ
<b>Current open loop detection</b>	Display flashes "mA.Loop" error message
<b>Linearity</b>	<0.02% of full scale
<b>Accuracy</b>	0.05% of full scale
<b>Communications:</b>	
<b>Protocol</b>	MODBUS RTU MODBUS ASCII ASCII In (Infiniteq Protocol) ASCII Out (Infiniteq Protocol)
<b>RS232 Communications</b>	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
<b>RS485 Communications</b>	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
<b>Setpoints (2xElectro-mechanical Relays)</b>	
<b>Contact rating</b>	2A@240VAC or 30VDC (Resistive load)
<b>Isolation to input circuitry</b>	>1000Vrms for 1 minute
<b>Type</b>	FORM-C (Change over contact (NO/NC))
<b>Life expectancy</b>	>100K cycles min. at full load rating. External RC snubber extends relay life for operation with inductive loads

### 3 Installation

#### Front panel layout



Hardware Connections



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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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