



IQ300

Wall Mount Load Cell Indicator

Data sheet – English 1.01



7 Segment
LED Display



128x64
Pixels
Graphic LCD
Display



Analog
Re-Transmission



5V or 10V
Excitation



High Resolution
ADC



High Resolution
DAC



Modbus™
Communications



Auto Zero
Function



Field upgradeable
Firmware



Scale Motion
Indication



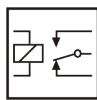
Advanced
Digital Filtering



Real Time
Clock



Tare
Function



4 Alarm
Setpoints



Gross/Net
Function



RS232
&
RS485

Introduction

The IQ300 wall mount load cell indicator is a precision digital indicator for load cell and strain gauge applications.

The high bright 6-digit 7-segment 20mm LED displays and the sunlight readable graphic LCD display make for easy setup and readability. A simple menu system 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 IQ300 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 IQ300 can power up to 6x350Ω load cells at 10V excitation and can interface to both 4-wire and 6-wire load cells.

RS232 and RS485 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.

The IQ300 also has analog out circuitry to generate a precision 0/4-20mA, 0-10V or +-10V analog output signal.

The IQ300 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, zero indication, 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 6x350Ω load cells at 10V excitation voltage
- High precision 22bit ADC front end circuitry
- -199999 to +999999 display counts
- High bright 6-digit 7-segment 20mm LED displays
- 128x64 pixel backlit sunlight readable graphic LCD display for easy setup and calibration
- Easy calibration either from the load cell calibration certificate or by using known weights
- RS232 and RS485 communications (MODBUS™ RTU/ASCII and a serial ASCII out protocol)
- 180x180x60mm flame retardant ABS enclosure
- Universal mains switch mode power supply (85-264VAC) standard with built in EMI and fuse protection
- 4x Mechanical (FORM-C) relays
- 3x Programmable digital inputs
- 16 Point lineariser
- High precision 16bit Analog output (0/4-20mA, 0-10V, +-10V)
- Auto-zero tracking function
- Selectable/adjustable advanced digital filtering
- Up to 8 front panel LED indicators for alarm set point status, print, net/gross toggle, motion and zero
- Full alpha-numeric keypad
- Front programmable function keys (Zero, Tare, Print, Gross/Net toggle, LED Display Toggle, Display Hold & Alarm latch reset
- Max/Min weight recording
- RTC (Real Time Clock) for time and date stamping
- Cage clamp wire connectors for easy installation
- Field upgradable firmware via the RS232 interface
- 1 Year Warranty

Additional hardware options include:

- Up to 4 solid state (FORM-A) relays
- Low voltage 10-30VDC Isolated power supply
- High voltage 25-70VDC Isolated power supply

2 Specifications

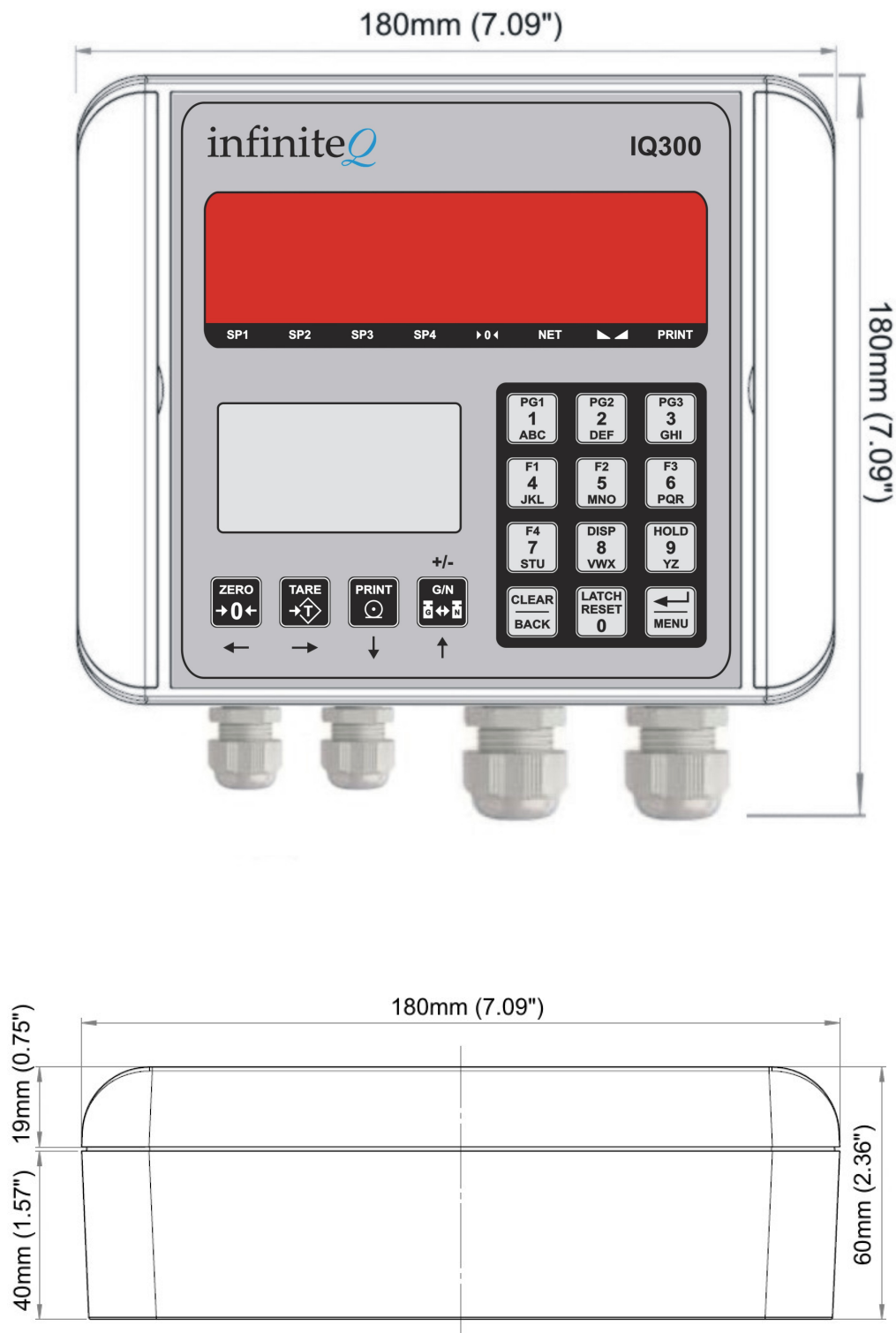
General:	
LED Display	6-Digit, 20mm (0.8") 7 segment high brightness red LED
LCD Display	128x64 Full graphic sunlight readable monochrome display
LCD Backlight	Yellow/Green, User defined on/off control
Display range	-199999 to +999999
Display decimal point	0 to 0.00000
Status LEDS	8 LEDs total (SP1, SP2, SP3, SP4, Zero, Net, Motion & Print)
Digital Inputs	3 Programmable digital inputs Built in hysteresis, filter and input over voltage protection Maximum input voltage <30VDC (Pull up, sinking inputs) - 10kΩ internal resistor to +5V Active/Non-Active input trigger: <1.9V Non-Active/Active input trigger: >2.3V
Keypad	Full 4x3 alpha-numeric keyboard 4 Dedicated function keys (Zero, Tare, Print, Gross/Net toggle) 3 Dual function keys (Display Toggle, Display Hold & Alarm latch reset)
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	<15W
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	180x180x60mm (LxHxD) (7.09x7.09x2.36") (Height includes cable glands)
Mounting Holes	159x94mm (6.26x3.7")
Enclosure Material	ABS – Flame Retardant (UL 94 V-0)
IP Rating	IP65 / NEMA 4 / UL Type 4
Connector Ratings: (Cage clamp wire connectors)	
Conductor cross section solid min	0.2mm ²
Conductor cross section solid max	2.5mm ²
Conductor cross section stranded min	0.2mm ²
Conductor cross section stranded max	1.5mm ²
Conductor cross section solid min with ferrule	0.25mm ²
Conductor cross section solid max with ferrule	1.5mm ²
Wire stripping length	7.5mm

Gland Ratings:	
Clamping/sealing range (Small gland)	4-8mm (0.157-0.314") Diameter wire
Clamping/sealing range (Large gland)	7-13mm (0.276"-0.512") Diameter wire
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. 172mA Up to 6x350Ω load cells or 10x1000Ω load cells
Cable compensation	4 wire Kelvin force sense feedback
Cable compensation resistance	<= 10Ω
Analog Out:	
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	LCD display flashes "Loop Error" 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	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	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:	
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): (Optional, Up to 4 can be fitted)	
Contact rating	120mA@400VAC/DC
Isolation to input circuitry	>1000Vrms for 1 minute
Type	FORM-A (Normally open)
RTC (Real Time Clock):	
Battery	CR2032
Accuracy	Better then 3 seconds per day (Temperature dependent)

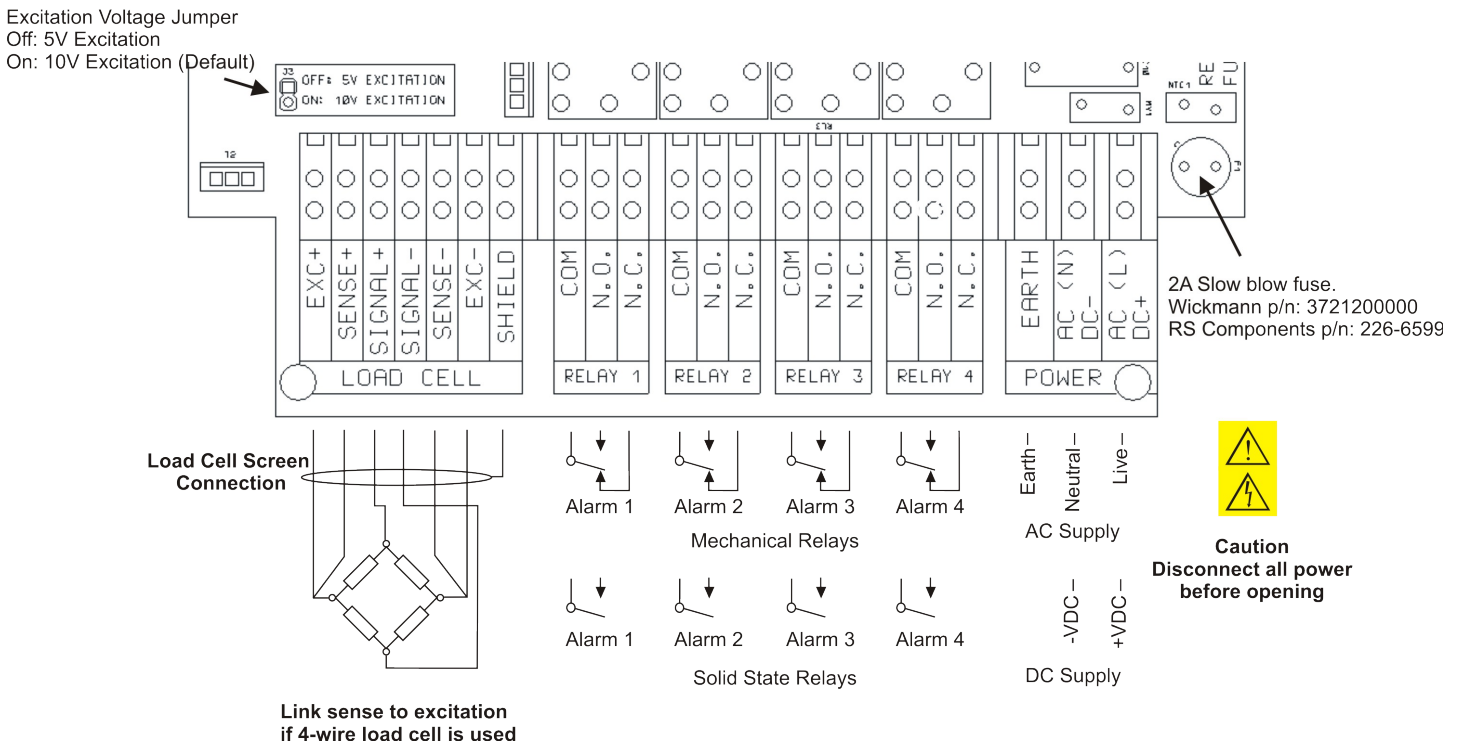
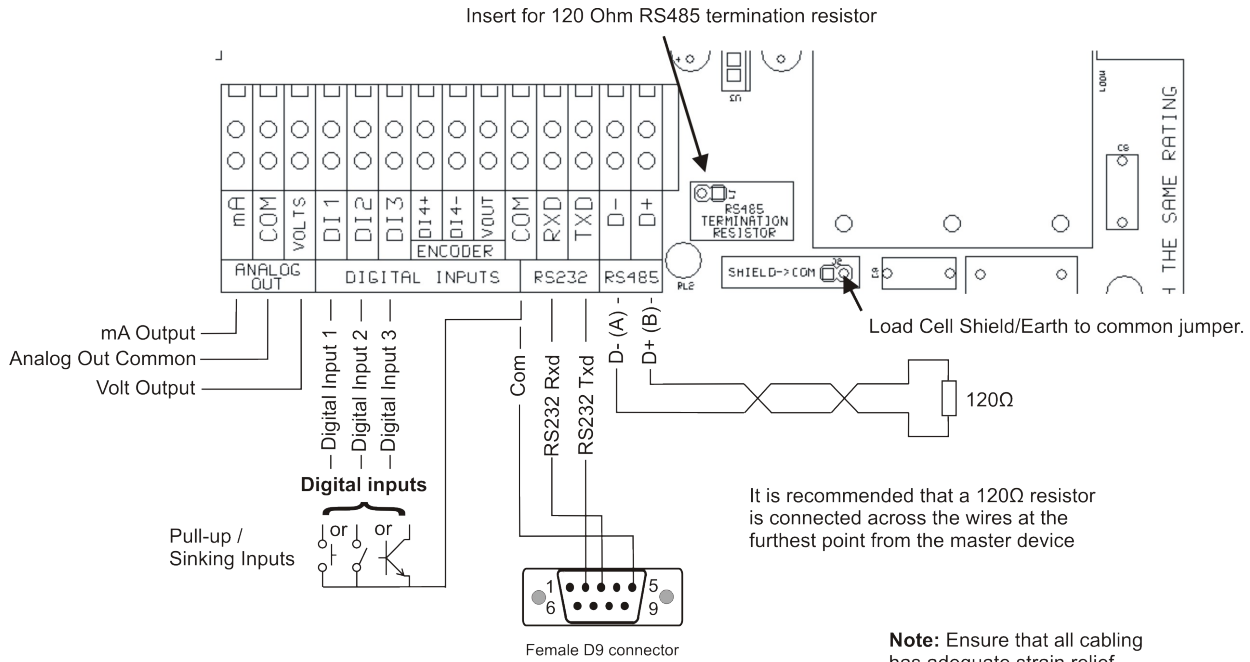
3 Installation

Enclosure Dimensions

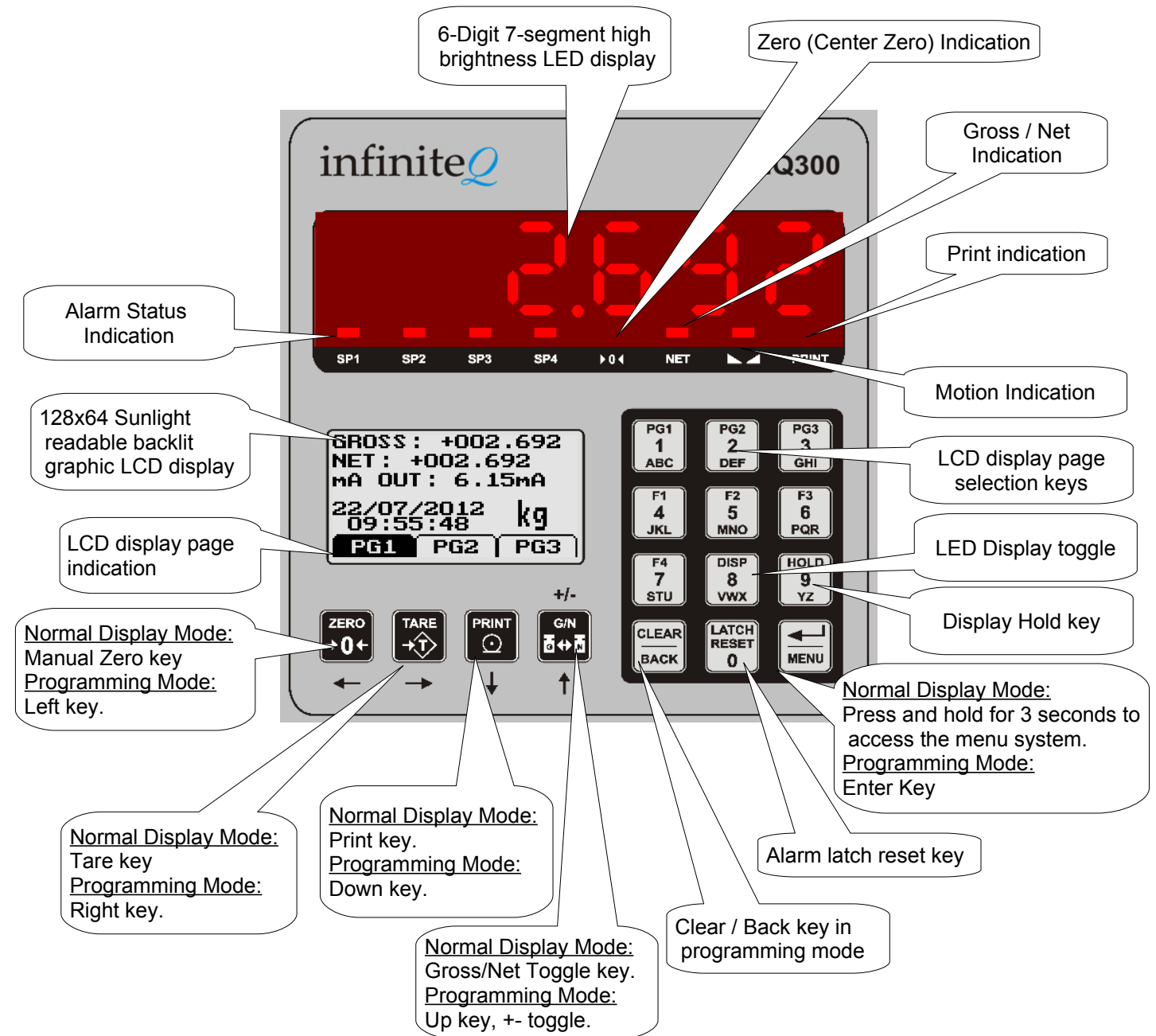


Hardware Connections, Jumpers and Fuse position

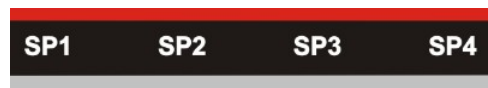
Below is an exploded view of the hardware connections and jumper locations of the main circuit board.



4 Front Panel Layout



LED Status Indicators



The SP1 to SP4 LED will illuminate when the corresponding alarm has been activated.



The Zero (Center Zero) LED will illuminate when the gross weight is within 0.25 counts.



The Net LED will illuminate when the LED display is showing the Net weight.



The display value must remain within the motion band for 1 second in order for the motion LED to illuminate.

5 Notice

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6 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.

