Introduction

The large intelligent 7-Segment display with its high light output 57mm 2.3" digits provide excellent visibility even at a distance of 25m away. The large 57mm 2.3" display is housed in an black aluminium enclosure with flanged side plastic ends which provide holes for mounting the display on to a wall etc.

Model IQ400 is a 4 digit display and model IQ401 is a 6 digit display. Both RS232 and RS485 serial communications are available as well as many software protocols*. Options for the large display include a 2.4GHz radio interface.

A simple menu system allows for easy configuration of display and serial communication settings. The large display can be modified to accept custom protocols.

Applications include remote display for PLC systems, process inputs (temperature, pressure, level, etc), Remote display for weighing systems, scoreboard systems, etc.

1 Features

- **57mm 2.3" Extra Large 7-segment intelligent display**
- **Excellent visibility even at 25m viewing distance**
- **4 or 6 digit model available**
- **Rugged black aluminium enclosure with flanged side plastic ends**
- **RS232 and RS485 serial interfaces standard**
- **Various protocols and software libraries available***
- **Software service available for protocol modifications***
- **Over/under range and communication error messages**
- **Wide input supply voltage range of 12 to 30Vdc with built in voltage reversal and over voltage protection for harsh environments.**
- **Transmit and Receive LEDS for RS232 and RS485 for in the field communication diagnostics**
- **Options include a 2.4GHz RF interface**
- **Field upgradable firmware via RS232**

*Please contact the factory for more information

2 Menu System

The menu system can be entered by pressing the menu button. Use the keys to navigate though the menu system. All settings are saved in non-volatile memory when exiting the menu system. The menu system has a 30 second program timeout. If no key has been pressed within this period then the instrument will save all settings and return to the normal display mode. Press the menu button to return to the previous menu.

2.1 Editing and Entering Values

The instrument will occasionally prompt the user to enter a value by flashing the digit. Use the "LEFT" and"UP" buttons to change the value, "ENTER" to accept or "MENU" to cancel and return to the menu system.

2.2 Main Menu

Press the "ENTER" key to enter the sub-menus, "MENU/BACK" key to go back

CORM Communication Setup Menu

Press the "UP" key to progress to the next menu option

CodE Code Protection Setup Menu

End Exit menu. Settings are saved on menu exit and the instrument will return to the normal display mode

Back to the start of the main menu

Note: The menu system has a 30 second program timeout. If no key has been pressed within this period then the instrument will save all settings and return to the normal display mode.

2.3 Communication Setup Menu

COÑÑ   All serial communication parameters can be setup here

↓

Prot   Select the interface protocol

↓

t.oUt ⟷ **005**   Communication timeout value. If the large display does not receive any information within the timeout period then the large display will flash the display to indicate a communication error. Enter zero to disable this feature. Timeout value is in seconds.

↓

Addr ⟷ **000**   Enter the unit address of the instrument. Any packet not addressed to this address will be ignored. A value of 0 to 255 can be entered. Default address is 0.

↓

bAUd ⟷ **9600**   Enter the baud rate of the instrument. Baud rate settings of 1200, 2400, 4800, 9600, 19200, 38400, 57600 & 115200 can be selected. Default setting is 9600 baud.

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dAtA ⟷ **7bit**   Enter the number of data bits of the instrument. 7 or 8 data bits can be selected.

↓

PrtY ⟷ **odd**   Enter the parity for the instrument. Odd, Even or no parity can be selected.
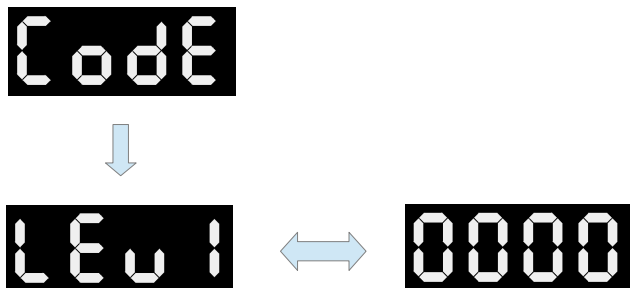
↓

StoP ⟷ **1bit**   Enter the number of stop bits of the instrument. 1 or 2 bits can be selected.

⇨ Back to the start of the Communication Setup menu

2.4 Code Protection Setup Menu

Select this option if you want to password protect the menu system. Select "NONE" for no menu protection or select "LEV1" for menu level 1 password protection. If "LEV1" is selected then the user can enter a 4 digit password. If a password has been set and "LEV1" has been selected then the large display will display "CODE" when entering the menu system. If the code is correct then it will allow the user into the menu system otherwise it will return to the normal display mode.

2.5 Error Messages (Over/under range and Communication Error)

Under Range:

If the input message to the large display is less then -1999 (4 digit), -199999 (6 digit) etc. Then the message to the left will be displayed.

Over Range:

If the input message to the large display is greater then 9999 (4 digit), 999999 (6 digit) etc. Then the message to the left will be displayed.

Communication Error:

The display will flash if no communications have been received within the timeout period set in the input setup menu. This message is disabled if the timeout parameter is set to zero.

2.6 Firmware Revision Number

On startup the large display will do a display test whereby all the segments of the display is turned on. It will then briefly display the firmware revision number.
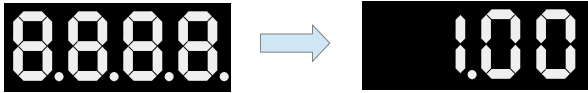

2.7 Field Firmware Upgrading

The large display can be upgraded in the field by connecting the RS232 port to a PC and running the update program.

Steps to follow to upgrade the firmware:

1) Connect the RS232 port on the instrument to the PC RS232 port as described in the table below
2) Run the upgrade program on the PC that matches your instrument
3) Select the correct Com Port and click the "Connect" button
4) Power up the instrument while holding all 4 push buttons down
5) The words "Ready to program" will be displayed in the text area and the "Update Firmware" button will be enable
6) Click the "Update firmware" button and the firmware will begin to be updated
7) The following screen will be displayed if successful
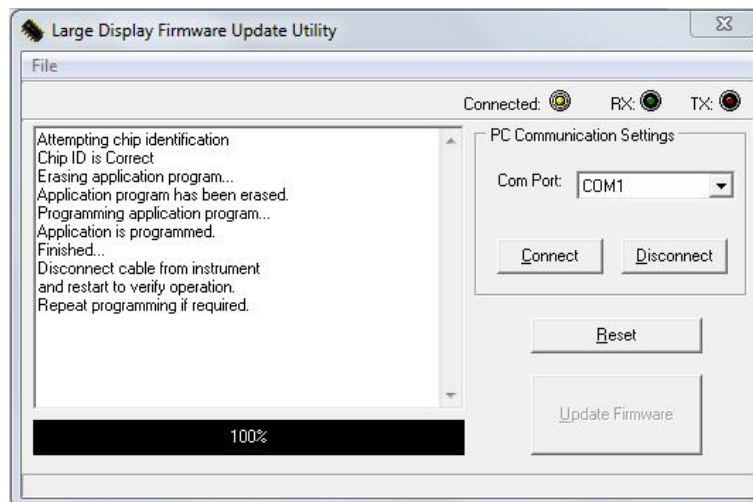
PC connections:

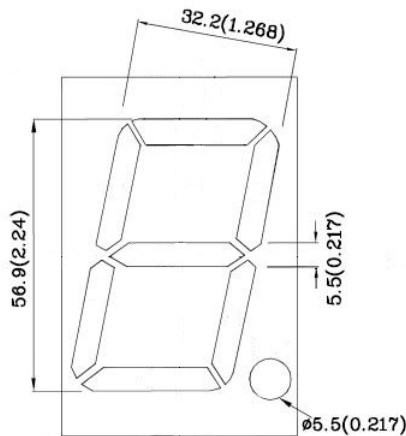| D9 Female Connector	Large Display
Pin 5	GND
Pin 2	TXD
Pin 3	RXD

2.8 Loading Default Settings

Default settings can be loaded by pressing both the "UP" and "LEFT" key simultaneously at power up. The word "D.SET" will briefly appear on the display. All settings will be set back to the factory defaults.

3 Dimensional Drawings

3.1 7-Segment Digit Size

3.2 Enclosure Dimensions

Depth = 32mm (1.26")

4 Specifications

General:	
Display	57mm (2.3") high light output 7-segment display
Non-volatile memory storage	100000 write cycles
Weight (6 digit model incl. enclosure)	760g
Connector	Internal removable 6 way terminal block
Power Requirements:	
Power Supply	12 to 30Vdc SMPS (switch mode power supply) with built in 33V over voltage and reverse voltage protection.
Power Consumption	2W (All segments on, based on a 6-digit display)
Communications:	
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 Jumper selectable 120 Ohm termination resistor on Master Digit PCB (position J1) non isolated
Radio interface (Optional)	2.4Ghz
Environmental Conditions:	
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)
Altitude	Up to 2000 meters
Enclosure:	
Unit Dimensions (4 digit enclosure)	260x88x32mm (10.24x3.46x1.26")
Unit Dimensions (6 digit enclosure)	370x88x32mm (14.57x3.46x1.26")
Enclosure Material	Aluminium with flanged plastic side ends
Enclosure Color	Black
Window	Red Perspex
Gland Ratings:	
Clamping/sealing range	4-8mm (0.157-0.314") Diameter wire

5 Installation

5.1 RS485 Communications

The RS485 protocol allows for a wired connection to be established as far as 4000ft (1200m). RS232 only allows for a wired connection up to 100ft (30.5m). The large display includes an on-board termination resistor which can be selected by linking J1 on the PCB inside the large display enclosure. The termination resistor is 120 Ohms.

Please note that if the RF interface option is installed then the large display wont have the RS485 interface installed.

5.2 Transmit and Receive LEDS

The transmit and receive LEDS will flash to indicate activity on the RS232 and RS485 serial communication lines. This is useful for field debugging and installation.

5.3 Connection diagram

Connect the large display as shown in the drawing below:
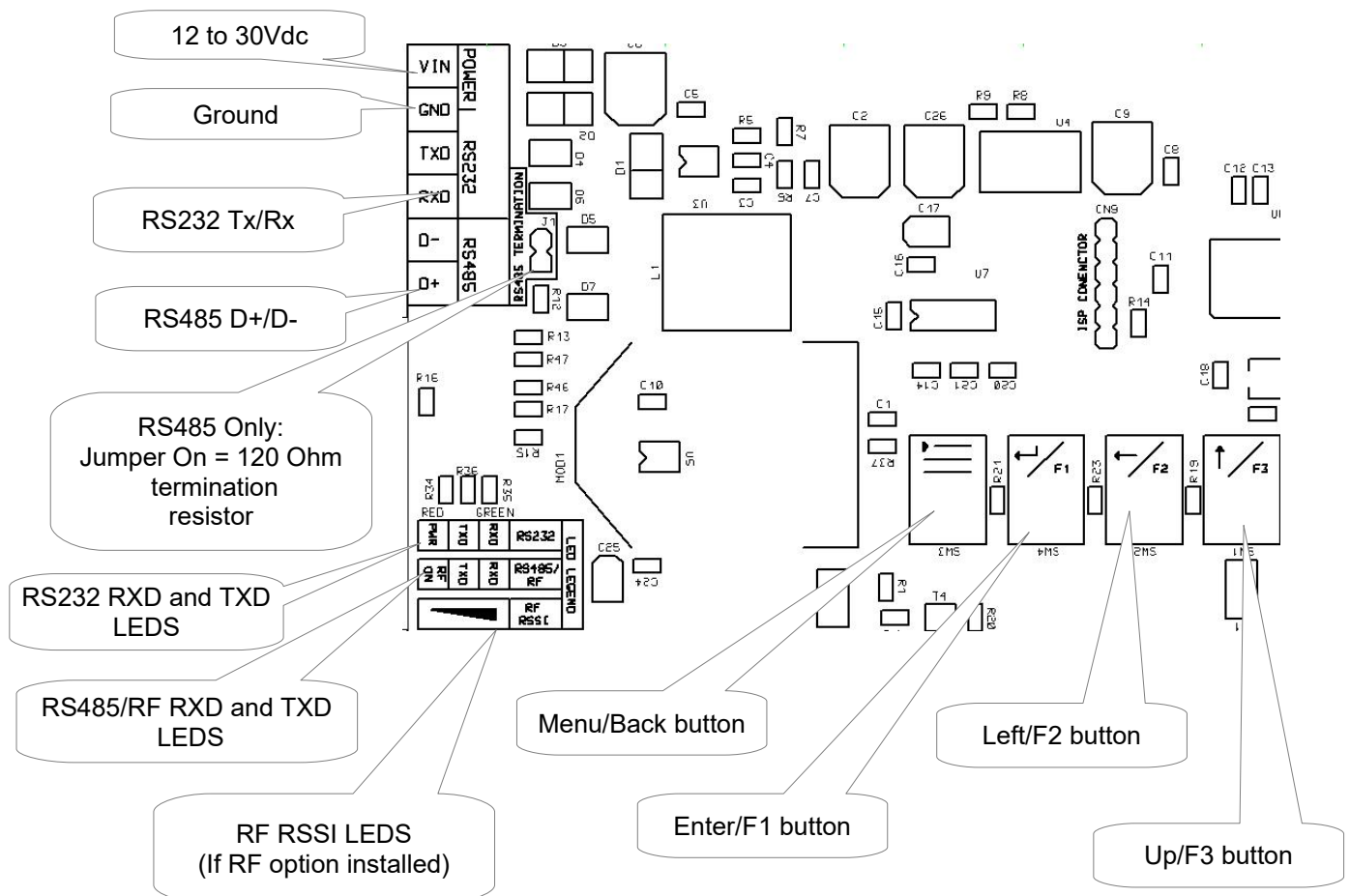
Install the large display with cable drip loops (If the cables and large display is exposed to water then bend a short downward loop in all cables near the cord grips so any water draining down the cables will drip off before reaching the large display.

6 Ordering Information

IQ400 – 4 Digit display
IQ401 – 6 Digit display

Options:

-24 -2.4GHz radio interface

7 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.

8 Disclaimer

Operation of this instrument is the sole responsibility of the purchaser of the unit. The user must make themselves familiar with the operation of this instrument and the effect of any possible failure or malfunction. The manufacturer its agents, agencies, partners nor the like take any responsibility for the use of this equipment for any reason whatsoever and shall not be held liable for any damages or loss whatsoever resulting out of the use of this equipment.

> The manufacturer reserves the right to alter any specification without prior notice been given.

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