

# IQ200

## Panel Mount Process Indicator

Data sheet – English 1.00



**mA**  
**Volts**  
**Frequency**  
**Counting**  
**Potentiometer**  
**Event Timer**  
**Real Time Clock**  
**Manual Analog Out Station**



14 Segment  
LED Displays



Analog  
Re-Transmission



4 Alarm  
Setpoints



Universal  
Process  
Input



High Resolution  
ADC



High Resolution  
DAC



Modbus™  
Communications



RS232  
&  
RS485



Field upgradeable  
Firmware



RTC Option



Advanced  
Digital Filtering



Sensor  
Excitation

## Introduction

The IQ200 panel mount process indicator is a precision digital indicator for interfacing to and measuring most process variables. The IQ200 is capable of measuring and processing variables such as mA, Volts, Potentiometers, Frequency, Counting and also has built in functions such as an Event Timer, Real Time Clock and a manual analog output station. The IQ200 also includes a multiple output excitation voltage selection for sensor excitation of 2 or 3 wire transmitters, encoders, potentiometers and many more.

Calibration of the analog process variables is simply done by either entering in the display range selection or by direct sensor injection calibration.

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 sensor settings.

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.

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 IQ200 also has an analog out or an isolated analog out option to generate a precision 0/4-20mA and 0-10V analog output signal.

The IQ200 also includes advanced features such as user input linearisation, max/min recording, programmable front push buttons, programmable digital inputs, security menu lockout, advanced digital filtering, plus many more to provide a truly universal process indicator.

## Features

- High bright 6-digit 14 segment LED displays for easy setup and calibration
- Inputs for mA, Volts, Potentiometer, Frequency and Counting
- Built in functions such as an Event Timer, Real Time Clock (RTC option required), manual setpoint station (Analog output option required)
- Multiple output excitation voltage for transmitter and sensor excitation.
- High precision 24 bit ADC front end circuitry
- -199999 to +999999 display counts
- Easy calibration of analog process variables from display ranges or by direct sensor injection
- 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 on analog process variables (mA, V, mV, Potentiometer, Ohms)
- Up to 4 front panel LED indicators for alarm set point status (Mechanical or solid-state option required)
- Maximum/Minimum recording
- 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
- 16 Bit analog output (0/4-20mA, 0-10V)
- 16 Bit Isolated analog output (0/4-20mA, 0-10V)
- 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

## Specifications

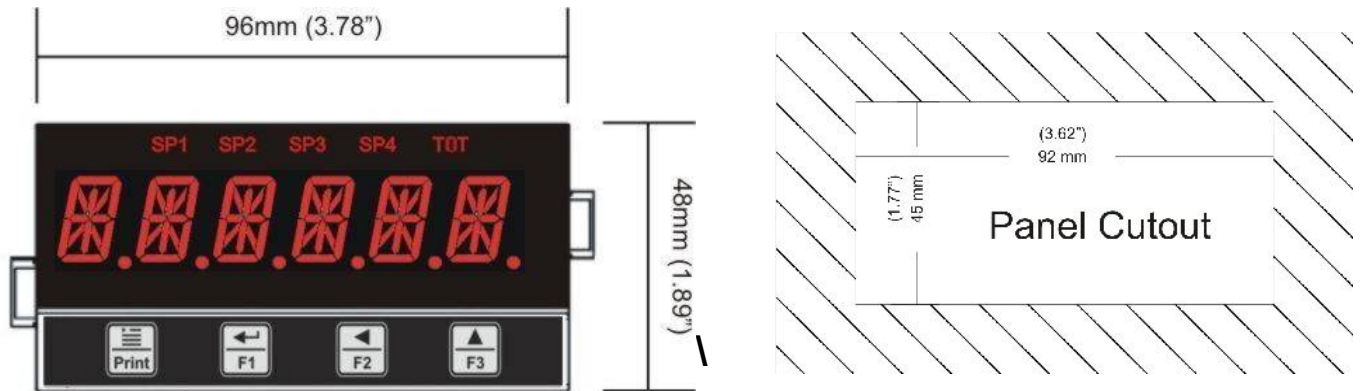
<b>General:</b>	
<b>Display</b>	6-Digit, 13.8mm (0.543") 14 segment high brightness red LED
<b>Display range</b>	-199999 to +999999
<b>Status LEDs</b>	6 LEDs total (SP1 to SP4 & Totaliser)
<b>Digital Inputs</b>	2 Programmable digital inputs Built in hysteresis, filter and input over voltage protection 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>	<6W (Depending on options selected)
<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>	96x48x112mm (LxHxD) (3.78x1.89x4.41") (Depth includes connectors)
<b>Mounting</b>	92x45mm (3.62x1.77")
<b>Enclosure Material</b>	Rear ABS plastic, Front Polycarbonate
<b>Front Facia Rating</b>	IP65, with o-ring supplied as standard
<b>Wiring connections</b>	Removable terminal blocks
<b>Input:</b>	
<b>ADC Resolution</b>	24 bit Delta-sigma
<b>Input</b>	Bi-polar on all inputs
<b>mA Input:</b>	
<b>Measurement range</b>	+/-27mA (Bi-polar)
<b>Programmable range</b>	All ranges have a programmable zero, span and decimal point 0 to 20mA 4 to 20mA Direct sensor calibration
<b>Accuracy</b>	<= 0.05% of reading +/-4uA (Typically 0.02%)
<b>Temperature Coefficient</b>	<= +/-0.4uA/°C
<b>Input impedance</b>	18Ohms + PTC 25 Ohms

<b>Decimal point</b>	Programmable on all digits
<b>Filter</b>	Moving average digital filter with programmable input step detection
<b>Conversion rate</b>	10 updates/second
<b>Increment size</b>	1, 2, 5, 10, 20, 50, 100, 200
<b>Lineariser</b>	16 Point
<b>Voltage Input:</b>	
<b>Measurement ranges</b>	+23V (Bi-polar)
<b>Programmable range</b>	All ranges have a programmable zero, span and decimal point 0-2V 0-5V 1-5V 0-10V 2-10V 0-15V 3-15V 0-20V Direct sensor calibration
<b>Accuracy</b>	0.05% of reading $\pm 20\mu\text{V}$ (Typically 0.02%)
<b>Temperature Coefficient</b>	$\leq \pm 2\mu\text{V}/^\circ\text{C}$
<b>Input impedance</b>	$> 1\text{Mohm}$
<b>Decimal Point</b>	Programmable on all digits
<b>Filter</b>	Moving average digital filter with programmable input step detection
<b>Conversion rate</b>	10 updates/second
<b>Lineariser</b>	16 Point
<b>Frequency Input:</b>	
<b>Maximum Frequency</b>	250KHz, RF noise filter plus Schmitt-trigger based input
<b>Input voltage</b>	Typical 5V, Maximum 24V
<b>Factor</b>	Programmable (999.999)
<b>Scale</b>	Selectable 0.001, 0.010, 0.1, 1.0, 10.0, 100.0
<b>Measurement</b>	Frequency or period
<b>Decimal Point</b>	Programmable on all digits
<b>Filter/Gate time</b>	0.5 Seconds 1 Second 5 Seconds
<b>Counting Input:</b>	
<b>Maximum Frequency</b>	250KHz, RF noise filter plus Schmitt-trigger based input
<b>Input voltage</b>	Typical 5V, Maximum 24V
<b>Factor</b>	Programmable (999.999)
<b>Scale</b>	Selectable 0.001, 0.010, 0.1, 1.0, 10.0, 100.0
<b>Modes</b>	Up or Down Counter
<b>Decimal Point</b>	Programmable on all digits
<b>Reset/Preset</b>	Via an external digital input Via a front panel push button
<b>Potentiometer Input:</b>	
<b>Minimum resistance of Potentiometer</b>	1K Ohm
<b>Accuracy</b>	0.05% of reading $\pm 20\mu\text{V}$ (Typically 0.02%)
<b>Temperature Coefficient</b>	$\leq \pm 2\mu\text{V}/^\circ\text{C}$
<b>Input impedance</b>	$> 1\text{Mohm}$
<b>Decimal Point</b>	Programmable on all digits
<b>Filter</b>	Moving average digital filter with programmable input step detection
<b>Conversion rate</b>	10 updates/second
<b>Lineariser</b>	16 Point
<b>Event Timer:</b>	
<b>Time mode:</b>	HHHH.MM

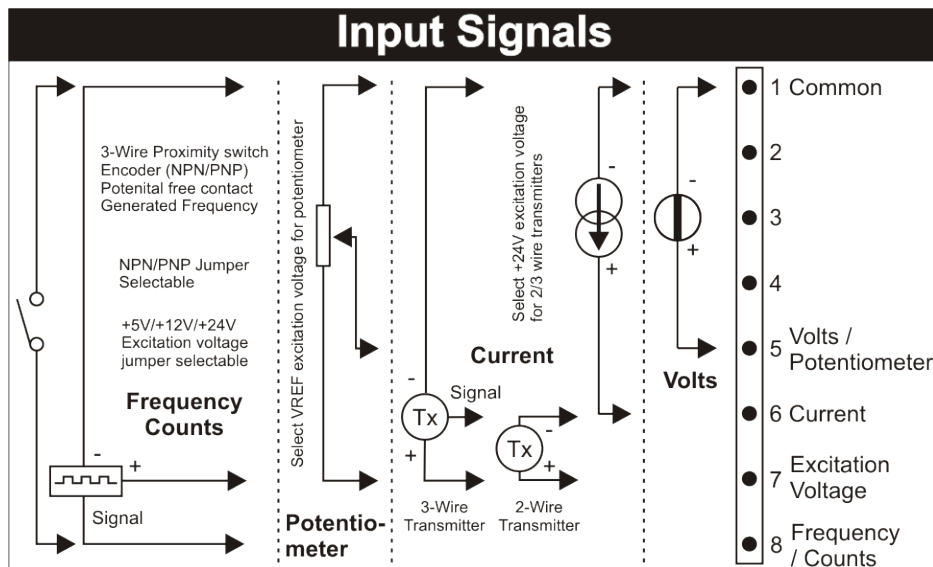
	HH.MM.SS SSSSSS SSSS.S SSSS.SS
<b>Reset / Preset / Start / Stop</b>	Via an external digital input Via a front panel push button
<b>Manual Analog Output Station: (Optional with analog out option)</b>	
<b>Decimal Point</b>	Programmable on all digits
<b>Sensor Excitation Voltage: (Jumper selectable)</b>	
<b>Excitation Voltage</b>	+2.048V, Max 2mA +5VDC, Max 50mA +12VDC, Max 50mA +24VDC, Max 50mA
<b>Analog Out: (Optional)</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>Isolation (Optional)</b>	1000VDC @ 1mA for 1 minute
<b>Communications:</b>	
<b>Protocol</b>	MODBUS RTU MODBUS ASCII ASCII In (Infiniteq Protocol) ASCII Out (Infiniteq Protocol)
<b>RS232 Communications (Standard)</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 (Optional)</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: (Optional, Up to 4 can be fitted)</b>	
<b>Electro-mechanical Relays:</b>	
<b>Contact rating</b>	3A@250VAC or 30VDC (Resistive load)
<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
<b>Solid-State Relays (SSR):</b>	
<b>Contact rating</b>	120mA@400VAC/DC
<b>Dielectric strength</b>	>1000VAC for 1 minute
<b>Type</b>	FORM-A (Normally open)
<b>RTC (Real Time Clock): (Optional)</b>	

<b>Battery</b>	CR2032
<b>Accuracy</b>	Better then 2 seconds per day (Temperature dependent)

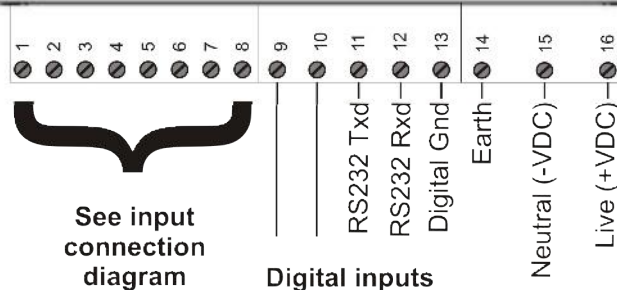
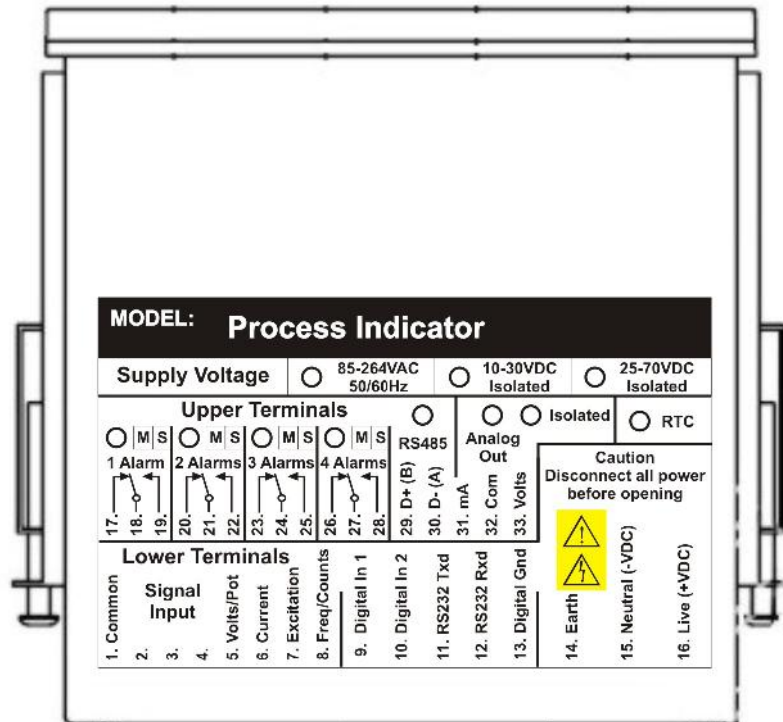
## Dimensions, cutout & wiring



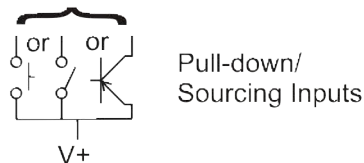
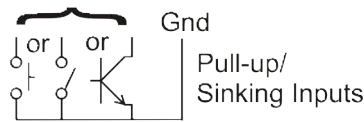
## Input Connection Diagram



Hardware Connections (Lower terminals)



**Note:** Ensure that all cabling has adequate strain relief.







## Ordering Information

Add option codes to suffix of model number separated by hyphens.

Example:

(IQ200 Process Indicator with 2 mechanical relays, analog output and an additional RS485 interface)

### **IQ200-711-730-740**

#### **Option part numbers:**

- 700 - Low voltage 10-30VDC isolated power supply
- 701 - High voltage 25-70VDC isolated power supply
- 710 - 1 Mechanical relay
- 711 - 2 Mechanical relays
- 712 - 3 Mechanical relays
- 713 - 4 Mechanical relays
- 720 - 1 Solid-state relay
- 721 - 2 Solid-state relays
- 722 - 3 Solid-state relays
- 723 - 4 Solid-state relays
- 730 - 16 Bit Analog Output (0/4-20mA, 0-10V)
- 731 - 16 Bit Isolated Analog Output (0/4-20mA, 0-10V)
- 740 - Second communication RS485 interface
- 750 - RTC (Real Time Clock)
- 760 - Panel mount engineering units
- 761 - Power connector protective cover
- 762 - 115VAC Inductive load suppressor
- 763 - 230VAC Inductive load suppressor
- 764 - 2A Slow blow replacement fuse
- 765 - R-C Snubber noise and arc suppressor
- 766 - Transparent protective front cover



## Notice

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## 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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