LT1210

Panel Mount Digital Logic Indicator

Operating Manual – English 1.00

- 14 Segment LED Displays
- 0-10V, 0-20mA, 4-20mA Analog Re-Transmission
- 4 Alarm Setpoints
- Sensor Excitation
- RTC Option
- High Resolution DAC
- RTU, ASCII Modbus™ Communications
- RS232 & RS485
- FW Field upgradeable Firmware

Introduction

The LT1210 panel mount digital logic indicator provides the versatility needed to interface to BCD, Binary and Gray code input signals.

The LT1210 can accept logic signals between 5V and 24Vdc, inverse or normal. The LT1210 is capable of displaying parallel BCD in the range of -199999 to 399999, Multiplexed BCD in the range of -199999 to 999999, Gray code and Binary code in the range of -199999 to 999999 display counts.

Other features include a programmable factor, scale and decimal point. The LT1210 also provides a Field jumper selectable 5V or 12V auxiliary power supply for sensor excitation.

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 LT1210 also has an analog out or an isolated analog out option to generate a precision 0/4-20mA and 0-10V analog output signal.

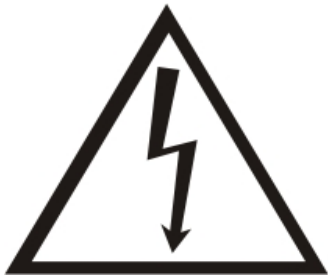
The LT1210 also includes advanced features such as user input linearisation, max/min recording, programmable front push buttons, programmable digital inputs, security menu lockout, advanced digital filtering, plus many more to provide a truly universal process indicator.

1 Features

- **High bright 6-digit 14 segment LED displays for easy setup and calibration**
- **Designed for BCD, Gray code and Binary coded inputs**
- **Input is front panel configurable for decimal point, scaling and positive or negative logic**
- **5V to 24V logic levels**
- **Positive (True) or negative (Inverse) logic**
- **Parallel BCD range: -199999 to 399999 display counts**
- **Multiplexed BCD range: -199999 to 999999 display counts**
- **Gray code and Binary code range: -199999 to 999999 display counts**
- **Field jumper selectable 5V or 12V auxiliary power supply for sensor excitation**
- **Programmable decimal point, factor and scale**
- **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**
- **3x Programmable front panel push buttons**
- **16 Point lineariser provided as standard**
- **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:

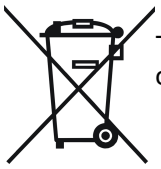
- **Up to 4 Mechanical (FORM-C) or solid state (FORM-A) alarm set points**
- **16 Bit analog output (0/4-20mA, 0-10V)**
- **16 Bit Isolated analog output (0/4-20mA, 0-10V)**
- **Second communication RS485 interface**
- **RTC (Real Time clock) option for time and date stamping**
- **Low voltage 10-30VDC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



This instrument is marked with the international hazard symbol. It is important to read this manual before installing or commissioning your panel meter as it contains important information relating to safety and Electromagnetic Compatibility EMC.

ENSURE THAT ALL POWER IS SWITCHED OFF TO THE INSTRUMENT BEFORE INSTALLING OR DOING MAINTENANCE WORK.

- **Do not place signal and power supply wiring in the same loom.**
- **Make sure that all anti-static precautions are adhered to when handling the circuit boards.**
- **Use screened cable for all signal inputs and attach to earth at one point only.**
- **Use ferrules with all input connections for greater reliability.**



The instrument may contain a battery for data retention purposes. The battery should be disposed of correctly. Please contact your supplier or local council if in doubt.

2 Specifications

General:	
Display	6-Digit, 13.8mm (0.543”) 14 segment high brightness red LED
Display range	-199999 to +999999
Status LEDS	5 LEDs (SP1 to SP4 & Totaliser)
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	<6W (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:	
Multiplexed BCD display range	-199999 to 999999
Parallel BCD display range	-199999 to 399999
Binary code display range	-199999 to 999999
Gray code display range	-199999 to 999999
Decimal point	Programmable on all digits
Digital inputs	Built in 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
Factor	Programmable (999.999)
Scale	Selectable 0.001, 0.010, 0.1, 1.0, 10.0, 100.0
Lineariser	16 Point
Logic	Inverted or Normal

Sensor Excitation Voltage: (Jumper selectable)	
Excitation Voltage	+5VDC, Max 50mA +12VDC, Max 50mA
Analog Out: (Optional)	
Ranges (Selectable through menu)	0-20mA 4-20mA 0-10V
DAC Resolution	16 Bit
Update rate	10 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
Isolation (Optional)	1000VDC @ 1mA for 1 minute
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	3A@250VAC or 30VDC (Resistive load)
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
Dielectric strength	>1000VAC for 1 minute
Type	FORM-A (Normally open)
RTC (Real Time Clock): (Optional)	
Battery	CR2032
Accuracy	Better then 2 seconds per day (Temperature dependent)

3 Installation

3.1 Dimensions & Front panel layout