TEKTROL
Technology Solutions

TEK-LCD 7804A

NEMA 4X Modbus® Scanner Indicator

INDICATOR/
CONTROLLER

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Introduction

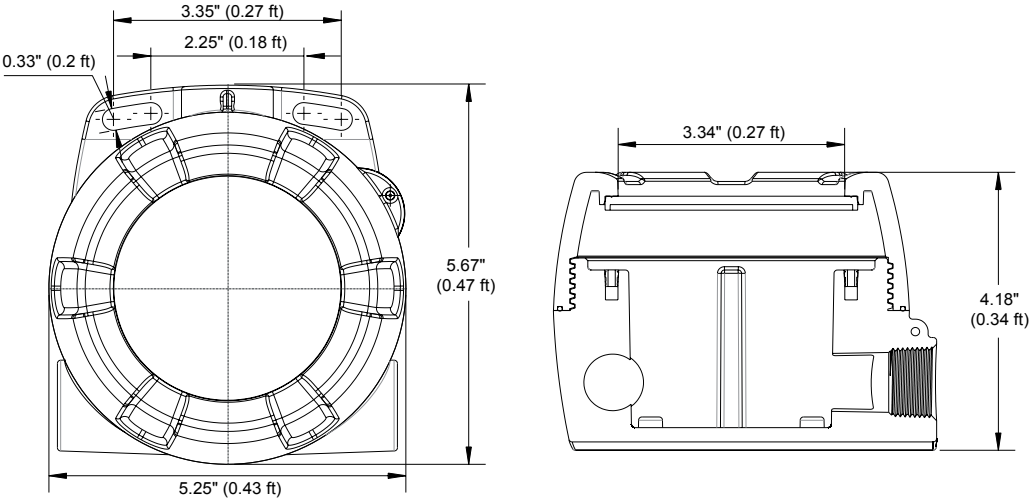
NEMA 4X Modbus® Scanner Indicator

The Tek-LCD 7804A is a plastic, field-mounted, RS485 serial input Modbus® RTU scanner capable of scanning up to 16 Modbus variables and displaying them on an easy-to-read, dual-line, LCD display. It can be programmed as a Modbus RTU master, slave, or snooper. The Tek-LCD 7804A is available in two upper display line configurations: 5-digit decimal display and feet & inches display with bar graph. The lower line is the same for both versions and consists of seven alphanumeric characters. Two features that really make the Tek-LCD 7804A stand out are its wide viewing angle display and SafeTouch® through-window buttons. These buttons allow the Tek-LCD 7804A to be programmed and operated through the cover window, thus eliminating the need to remove the cover in dirty or wet environments.

Features

- Modbus Master, Slave, or Snooper Mode
- Scan up to 16 Modbus Process Variables
- 5-Digit Decimal or Feet & Inches Level Display
- On-Board Three-Wire RS-485 with Modbus
- Independent Scaling, Tag, and Unit for Each PV
- 7 Alphanumeric Character 0.4" (0.03 ft)
- Injection-Molded, IP65, NEMA 4X Enclosure
- SafeTouch Through-Window Button Programming
- Isolated 4-20 mA Output Option
- Pulse Input for Rate, Total, and Grand Total
- 13-Digit Totalizer with Total Overflow Feature
- Backlight Standard on All Models
- Automatic Rate, Total, and Grand Total Unit Conversions
- Operates from -40°C to 75°C (-40°F to 167°F)
- Data Logging Functions and Modbus Accessible Data
- Two Isolated Pulse Outputs Standard, Up to 5 kHz

Dimensional Drawings



Specifications

General

Decimal Display	Top Display: Five Digits (0 to 99999), 0.7" (0.05 ft) high, 7-segment, automatic lead zero blanking. Bottom Display: Seven Characters, 0.4" (0.03 ft) high, 14-segment, automatic lead zero blanking. Symbols: Total, grand total, high alarm, low alarm, SafeTouch button sleep mode/disable, password lock.
Feet & Inches Display	Top Display: 0.60" (0.05 ft) high, 0 to 399 FT, 11 and 15/16 IN, 7-segment, programmable 1/16 or 1/8 fraction display. Bottom Display: Seven Characters, 0.4" (0.03 ft) high, 14-segment, 7-digits. Tank Level Indicator: 20-segments, F (Full) and E (Empty). Alarm Indication: High and low alarm Backlight: White
Display Assignment	Top and Bottom Display*: Process Variables (PV); Alternating PV and Units, Tag and PV, or Tag, PV, and Units; Pulse Input Rate, Total, or Grand Total with Alternating Tag. Bottom Display: All Top Display Options or Off Units and tag independent for each PV, pulse input rate, total, and grand total. *Note: On feet and inches display models, top display used only for level Modbus process variables or math channels.
Backlight	White LED, 10 sec auto-off when battery powered. Backlight deactivated below temperature ≈ -20°C (-4°F)
Alarm Indication	Flashing display plus HI/LO (alarm) or SET indicators.
Scan and Update Rate	Ambient > -20°C (-4°F): Modbus PV scan rate programmable from 2 to 99 seconds per PV. Tag and units programmable for 1 to 5 second alternation. Pulse input variables update 1/second. Rate update is dependent on gate settings. Ambient < -20°C (-4°F): All Modbus scan, alternating units and tags, and pulse input variables update/10 seconds minimum.
Underrange	Upper Display: Decimal display flashes -9999. Level display flashes to 399 FT, 11 and 15/16 IN Lower Display: Flashes -999999
Programming Method	Four SafeTouch through-window buttons when cover is installed. Four internal push buttons when cover is removed.
Recalibration	Calibrated at the factory to read frequency in Hz. No recalibration required.
Password Menu Options	Three programmable password selections can be used for the following: restrict modification of settings, prevent resetting the total or grand total without the password, or permanently lock out the ability to change or reset the grand total or any grand total related settings(making a non-resettable grand total). Pass: Restricts modifications of programmed settings to require re-entering the password to make changes. Pass T: Restricts the reset of total to require re-entering the password. Disables the manual mode reset contact. Pass GT: Restricts the reset of grand total to require re-entering the password. May enable a non-resettable grand total and permanent lockout of grand total-related settings with a specific password.
Input Power	9-30 VDC, 38 mA max. 2.2 W
Data Logging	Up to 512 records, recorded 4/day at specific times or at defined time intervals. Record contains first eight enabled Modbus PVs; C1-4 if enabled; date; time; pulse rate, total, and grand total with units; and log number.
Isolation: All Models	500 V opto-isolated pulse input-to-power/OC output with isolated input enabled, 500 V input/power-to-RS-485 serial communications. AXA Models: 500 V input/power-to-analog output.
Environmental	Operating temperature range: -40 to 75°C (-40°F to 167°F); Storage temperature range: -40 to 75°C (-40°F to 167°F); Backlight deactivated below temperatures ≈ -20°C (-4°F); Relative humidity: 0 to 90% non-condensing
Non-Volatile Memory	All programmed settings and total reading are stored in non-volatile memory for a minimum of ten years if power is lost.
Connections	Screw terminals accept 12 to 22 AWG wire
Enclosure	NEMA 4X, IP65 plastic field enclosure. Color: blue. Material: Polycarbonate with UV Stabilizer. Three ¾" NPT threaded conduit openings. Two ¾" NPT plastic conduit plugs, with 1.29" wrenching flats and a screwdriver slot, are included.
Mounting	May be mounted directly to conduit. Two slotted flanges for wall mounting or NPS 1½" to 2½" or DN 0.13 ft to 0.21 ft pipe mounting.
Display Orientation	Display may be mounted at 90° increments up to 270° from default orientation.
Overall Dimensions	5.67" x 5.25" x 4.18" (0.47 ft x 0.43 ft x 0.34 ft) (W x H x D)
Weight	1.65 lbs (26.4 oz, .75 kg)
Warranty	3 years parts and labor

Input

Pulse/Transistor/Contact Closure Input	Field selectable; Sourcing or sinking pulse or square wave; 0-5 V, 0-12 V, or 0-24 V; TTL; NPN or PNP transistor; Open collector 100 kΩ pull-up to 3 V; Switch contact 100 kΩ pull-up to 3 V; PNP transistor 100 kΩ pull-down to ground (COM); Active input 100 kΩ to battery level, 10 kΩ to power Maximum Frequency: 64 kHz; Minimum Pulse Width: 5 µs; Threshold Setting Low (V) High (V) Normal 1.2 2.0 Low 0.2 1.2
Opto-Isolated Input	Sourcing pulse or square wave 0-5 V, 0-12 V, or 0-24 V; Logic High: 2-24 V, Logic Low: < 1 V; Maximum Frequency: 20 kHz; Minimum Pulse Width: 20 µs; Input Current: 1 mA @ 5 V, 2.5 mA @ 12 V, 5 mA @ 24 V
Low Voltage Mag Pickup Input	Sensitivity: 20 mVp-p to 24 Vp-p; Maximum Frequency: 6 kHz
Minimum Input Frequency	0.0001 Hz. Minimum frequency is dependent on high gate setting (rate display).
Input Impedance	Pulse input: Greater than 75 kΩ @ 1 kHz. Open collector/switch input: 100 kΩ pull-up to 3 V.
Accuracy	±0.03% of calibrated span ±1 count
Pulse Input Recalibration	All ranges are calibrated at the factory to read frequency in Hz. No recalibration required.
Temperature Drift	Rate display is not affected by changes in temperature.
Low-Flow Cutoff	0-99,999 (0 disables cutoff function)
Decimal Point	Up to four decimal places or none: 4.4444, 33.333, 222.22, 1111.1, or 00000
Calibration Calibration	May be calibrated using K-Factor, scale without signal source, or by applying an external calibration signal.
K-Factor	Field programmable K-Factor converts input pulses to rate in engineering units. May be programmed from 0.000001 to 9,999,999 pulses/unit.
Calibration Range	Input 1 signal must be ≥ 1 Hz; input 2 signal may be set anywhere above input 1 setting. Minimum input span is 1 Hz. An Error message will appear if the input 1 and input 2 signals are too close together.
Input Contact Debounce Filter	Programmable contact debounce filter. Input signal frequency speed selections of Hi (no filter), Med (250 Hz max input, 7 ft/s pulse width), and Low (100 Hz max input, 16 ft/s minimum pulse width).
Time Base	Second, minute, hour, or day
Time Base	Low gate: 1-99 seconds; High gate: 2-9,999 seconds

Popular Models

Model Number	Description
7804A-AX0	NEMA 4X Modbus Scanner indicator

Accessories

Model Number	Description
7800A-6846	Steel Pipe Mounting Kit
7800A-6846SS	Stainless Steel Pipe Mounting Kit
7800A-PLUG75P	¾" NPT Plastic Conduit Plug

Customer Service and Support

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