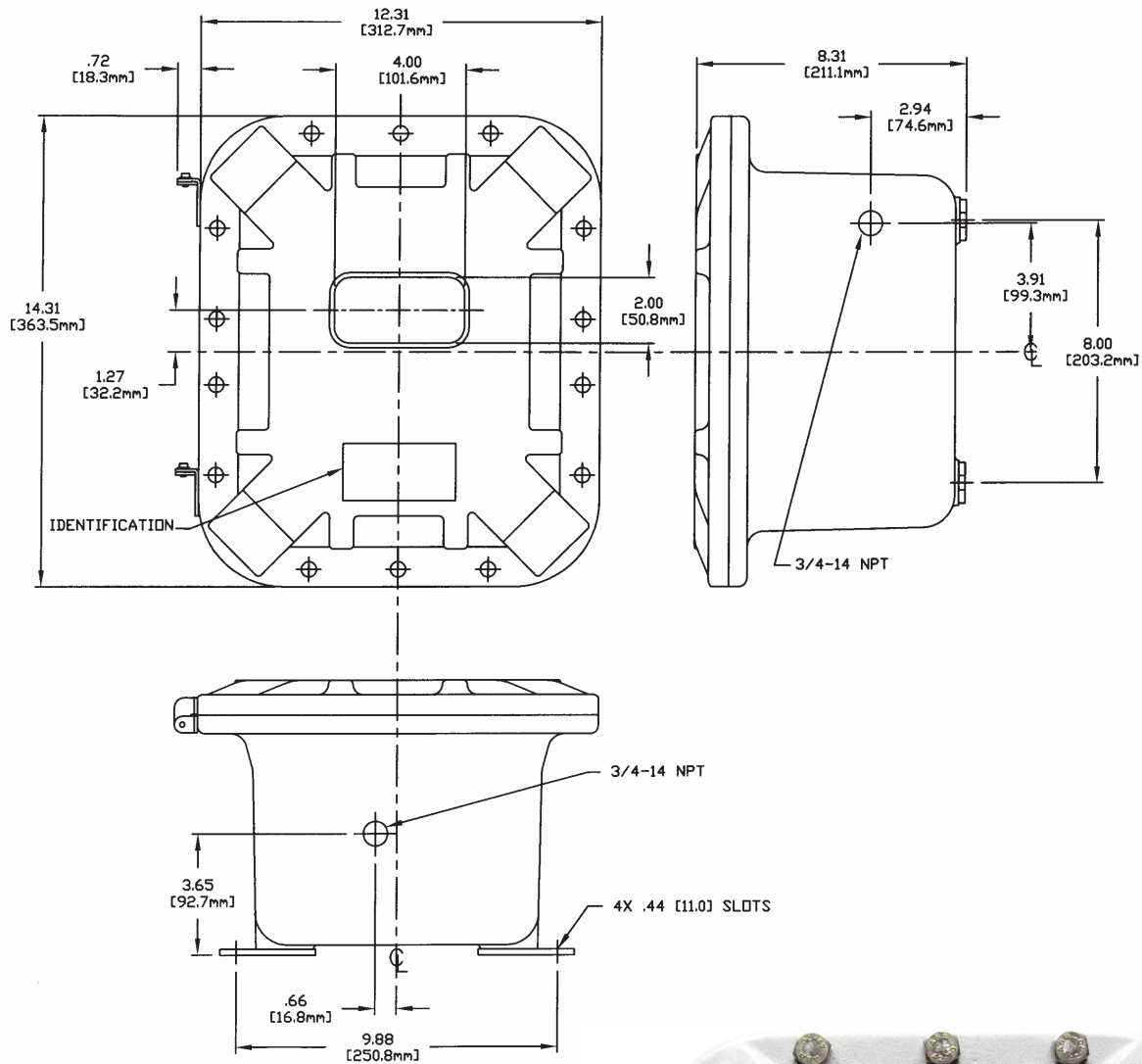# TACHTROL Enclosure Options

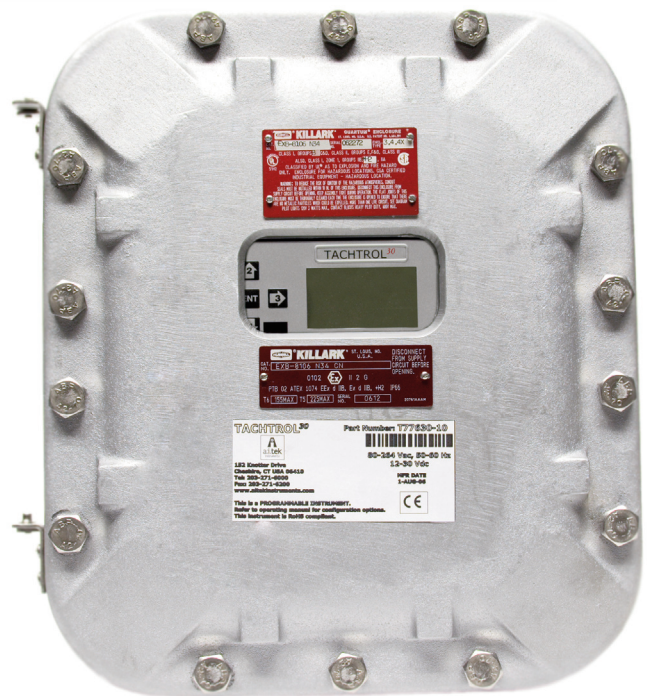## T77610-70 / T77630-70

EXPLOSION PROOF

UL/CSA for Hazardous Locations
Class 1, Groups B, C & D
Class II, Groups E, F & G
Also Class I, Zone 1, Groups IIB, H2, IIA

ATEX
0102 EX II 2 G
For use in Zone 1 Groups
IIA, IIB & IIB+H2 T6 or T5,
IP56 hazardous locations

15

Specifications:

Electrical
All measurements taken at 25°C unless otherwise specified.

Input Power

Power consumption
4.0 watts, typical for tachometer only
Add 0.5 watts per remote display
Add 2.0 watts for 12V out
9.5 watts max.

DC Voltage
12-30 volts. Reverse polarity protected. Available on terminal blocks and din rail in parallel (TACHPAK only).

AC Voltage
80-264 Vac 50-60 Hz

Power Sharing
If DC input and AC input are both supplied, DC will be loaded above approximately 15 volts. Below 15Vdc input, AC will be loaded.

Output Power
Regulated to 12 volts @ 150mA when input voltage is 13.6 volts and above. Below 13.6 volts, output voltage ≈ input voltage –1.5V.

Input Signal Characteristics

Channel A & B

Frequency
Upper Limit: 50 kHz absolute maximum
           (20µsec period); 40kHz typical
Lower Limit: 0.005 Hz absolute minimum
           (200 sec. period); .05 Hz typical
Minimum Pulse Width: 0.5 µsec.
Wave shape: Square or Sinusoidal

Input Impedance
12 kΩ typical

Input Sensitivity
Upper and Lower Limit: +/-30 volts max. (AC or DC).
Logic 0 and Logic 1 threshold is user adjustable from 200mV to +28 volts in approx. 20mV steps +/-3%.

Common Mode Rejection Ratio
>40 db @1kHz typical

Electrical Isolation
Channel A, B and Direction share common ground
Channel A, B or Direction to output: 500 Vrms
Channel A, B or Direction to ground: 500 Vrms

Verify and Reset

Frequency
Essentially DC, Minimum Pulse Width: 250 µsec

Input Impedance
10mA current regulated

Input Sensitivity
3.5 volts min. pulse to ground

Common Mode Rejection Ratio
>40 db @ DC typical

Electrical Isolation
Signal to signal 500 Vrms
Signal to ground 500 Vrms

Direction

Frequency
Essentially DC
Minimum Pulse Width: 0.5 µsec.

Input Impedance
12 kΩ typical

Input Sensitivity
Upper and Lower Limit: +/-30 volts max. (AC or DC).
Logic 0 and Logic 1 threshold is user adjustable from 0 to 28 volts in approx. 20mV steps +/-3%.

Common Mode Rejection Ratio
>40 db @1kHz typical

Electrical Isolation
Channel A, B and Direction share common ground
Direction to output: 500 Vrms
Direction to ground: 500 Vrms

Output Characteristics

Relays (Mechanical)

Physical
Form C

Contact Rating
10A @125/250 Vac, 6A @ 277 Vac, 5A @ 100V dc, 2500 VA

Response Time (operate and release)
Input to output 16.5 msec max.
(10msec relay only)

Electrical Isolation
1500 Vrms, 1 minute coil to contacts

Switchpoint Accuracy
Internal instrument accuracy to alarm setpoint: ±.005%

Relays (Solid State)

Physical
Form A

Contact Rating
400mA @ 60V (AC or DC)
On resistance: 2Ω max

Response Time (operate and release)
Operate: 2 ms max, 0.8 ms typical
Release: 0.5 ms max, 0.1 ms typical

Electrical Isolation
500 Vrms, 1 minute

Switchpoint Accuracy
Internal instrument accuracy to alarm
setpoint: ±.005%

Analog Output

Ranges
0 to 20mA, 4 to 20mA, -20 to 0 to +20mA;
user selectable

Accuracy
Internal instrument accuracy: ±.005%; plus ±.05% of full
scale range at room temp with 400 ohm load; ± 0.1%
over temp range and load range. Unit is factory calibrated.
Can be re-calibrated using TACHLINK.

Resolution
Step size: 610 nanoamps per lsb. 16 bit D/A

Linearity
±0.02% typical

Loop Impedance
100-1000 Ω

Response Time
Input to output 6.55 msec+ 1 msec settle at 1kΩ (worst
case) to .1% of final value

Electrical Isolation
500 Vrms continuous

Display

Resolution
Black and White graphics display. 64x128 Pixels.

Accuracy
±.05% of full scale

Communication Protocol
RS485: 19.2kbaud, 8-n-1 protocol, Half duplex,
Tachometer is bus master

Network
• Multiplex up to seven displays plus one integrated
display. Displays are addressable.

• With all seven displays at the end of one RJ11 6-4
cable, max length would be 125 ft (38m), limited by
voltage drop in cable. Cable must be 1:1 type (not
flipped), described as RJ11 6-4 reversed cable. For
longer distances the RJ type cable should not be
used. With #18 wire max run to a single display is
1000 ft (305m).

• Response time: 1 second update to all displays, PC,
and RS485

Electrical Isolation
500Vrms to ground continuous

Utility RS485
Full access to TACHLINK, single drop only

Communication Protocol
RS485: 19.2kbaud, 8-n-1 protocol, Half duplex,
Tachometer is bus master

Maximum Transmission Distance
8000 ft (2400m)

Electrical Isolation
500Vrms to ground continuous

USB
Full access to TACHLINK,
Version 1.1 / 2.0 compatible

Processing Platform
PIC18F series micro controller

Clock Speed
10MHz, +/-50 ppm at room temp

Acquisition Time
Basic instrument acquisition time / period 6.55
milliseconds

Accuracy
Basic instrument accuracy +/-.005% (50 ppm)

Resolution
Basic instrument resolution: +/- .025% or better

TACHTROL® plus
Digital Remote Display

Part Number Series
T77810

CE
RoHS

TACHTROL plus :

- An extension of the **TACHPAK** and **TACHTROL** lines. While this device has no intrinsic tachometer function, it is used as a remote display for **TACHPAK 10 & 30** and **TACHTROL 10 & 30**
- Serves as a gateway with both **TACHTROL** and **TACHPAK** instruments for secure, remote programming and alarm reset.
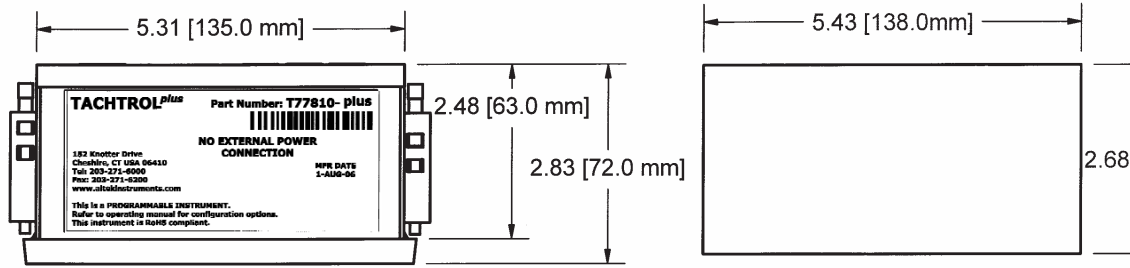- Use as a hub for multiplexing additional displays.

Programming Features:

Programming has been greatly simplified and can be accomplished by 2 different methods. Many configurable attributes have been added to improve flexibility and function.
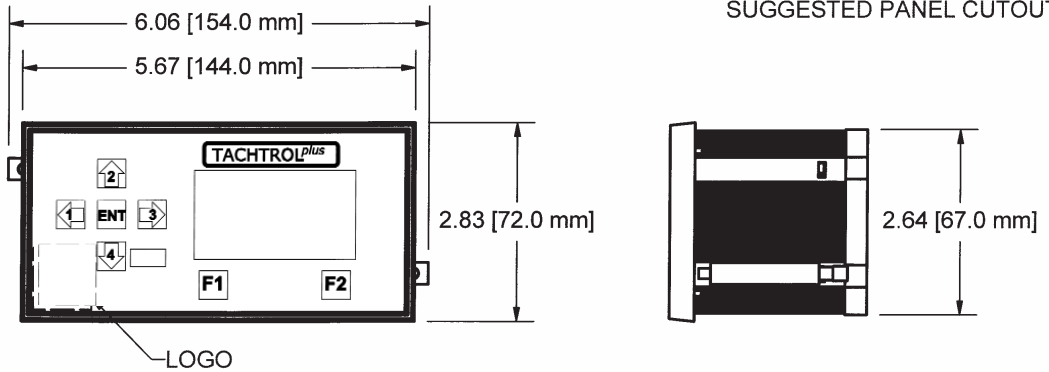
- Display front panel: **TACHTROL 10 and 30** can be programmed through the integrated display/membrane panel. **TACHPAK 10 and 30** can also be programmed in the same manner with the addition of a **TACHTROL plus** remote display. In either case programming is accomplished by navigating through a series of nested menus. In the case of tachometer instruments embedded in explosion proof or **NEMA 4X** enclosures, remote access solves the problem of programming by making use of an **IR** link to allow full front panel control via a hand-held remote.

- PC / Windows-based **TACHLINK**: Custom software allows the user to program all configurable attributes of **TACHPAK** and **TACHTROL by PC** via a **USB2.0** or **RS485** connection. In addition, the PC can be used to display data, perform security functions, diagnostics, analog output calibration and real-time data logging; all available through the **TACHLINK**.

Ordering P/N	Input Power	Enclosure	Net Weight (lbs.)
T77810-10	80-264 Vac/12-30 Vdc	Std. Panel Mount	0.6
T77810-40	80-264 Vac/12-30 Vdc	NEMA 4X	3.7
T77810-70	80-264 Vac/12-30 Vdc	Explosion Proof	42.0

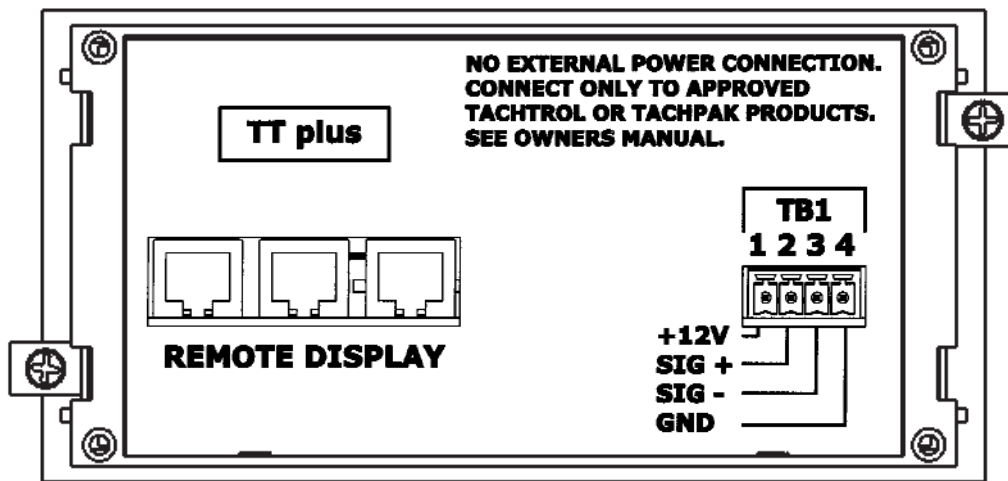*It is the customer's responsibility to determine whether the product is proper for customer's use and application.*

AI-Tek Instruments, Cheshire, CT USA

5.31 [135.0 mm]

TACHTROL*plus* Part Number: T77810- plus

NO EXTERNAL POWER CONNECTION

182 Knotter Drive
Cheshire, CT USA 06410
Tel: 203-271-6000
Fax: 203-271-6200
www.al-tekinstruments.com

MFR DATE
1-AUG-06

This is a PROGRAMMABLE INSTRUMENT.
Refer to operating manual for configuration options.
This instrument is RoHS compliant.

2.48 [63.0 mm]

2.83 [72.0 mm]

5.43 [138.0mm]

2.68

SUGGESTED PANEL CUTOUT

6.06 [154.0 mm]

5.67 [144.0 mm]

TACHTROL*plus*

2 1 ENT 3 4 F1 F2

2.83 [72.0 mm]

2.64 [67.0 mm]

LOGO

PANEL MOUNT STANDARD ENCLOSURE

TT plus

NO EXTERNAL POWER CONNECTION.
CONNECT ONLY TO APPROVED
TACHTROL OR TACHPAK PRODUCTS.
SEE OWNERS MANUAL.

REMOTE DISPLAY

TB1
1 2 3 4

+12V
SIG +
SIG -
GND

REAR VIEW - CONNECTIONS

Table 2: Connection Information		
Terminal Block	**Pin #**	**TACHTROL** plus
TB1 Remote Display	1	+12vdc In
	2	Sig +
	3	Sig -
	4	Gnd
Remote Display	Use RJ11 type connector. See TB1 for individual breakout of pins.	