

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 (applies to TT & TTplus)

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 ms

Accuracy

Basic instrument accuracy ±.005% (50 ppm)

Resolution

Basic instrument resolution: ±.025% or better

Specifications (Continued):

Electrical

All measurements taken at 25°C unless otherwise specified.

Input Power

Power consumption

3.5 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 \approx input voltage -1.5V.

Input Signal Characteristics

Channel A & B

Frequency

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

Input Impedance

12 k Ω typical

Input Sensitivity

Upper and Lower Limit: +/-30 volts max. (AC or DC).
Logic 0 and Logic 1 thresholds are user adjustable from 200mV to +28 volts in approx. 20mV steps +/-3%.
200mV peak absolute min. input sensitivity.

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 μ sec.

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 μ sec.

Input Impedance

12 k Ω typical

Input Sensitivity

Upper and Lower Limit: +/-30 volts max. (AC or DC).
Logic 0 and Logic 1 thresholds are 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 @ 30Vdc,
0.5A @ 100Vdc
2500 VA

Response Time (operate and release)

Input to output 16.5 msec max.
(10 msec relay only)

Electrical Isolation

1500 Vrms, 1 minute coil to contacts

Switchpoint Accuracy

Internal instrument accuracy to alarm setpoint: \pm .005%