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Honeywell

Model 7541

AC Carrier or DC Strain Gage Conditioner Indicator



DESCRIPTION

These advanced instruments provide engineering unit display of a strain gage (mV/V) input and a frequency input. They also compute power and perform 21 functions including limit checks, tare, hold and max./min. capture. You needn't write code or add hardware to be up and running a productive test.

The alphanumeric readout can display measured and computed data, units of measure, and test status. During setup, it guides you with English language prompts. There are no manual adjustments. To calibrate, enter the full scale value in engineering units and auto-cal takes over. Provides 0.01 % (max.) resolution and ±5 V and/or ±10 V analog outputs at full scale. The keyboard accesses measured data, held data, max./min. data, data spread, limit status, and/or I/O status without disruption. Password protection may be used, if needed.

FEATURES

- May be calibrated in two directions (clockwise and counter-clockwise or tension and compression)
- Fast, rock-solid readings with high noise immunity - 2000 samples/sec for torque, head, or drawbar force input - 1 ms response for speed
- One or two channel input
- Six-digit engineering unit with legends and 0.01 % resolution max.
- RS-232, RS-422, RS-485 serial communication
- Auto-scaled ±5 V and/or ±10 V analog outputs
- No pots, batteries, fans, maintenance, or external power supplies
- Excitation: ac carrier models, 3.28 kHz, 3 V rms; dc models, 5 V or 10 V dc, user selectable
- CE approved

Order code

7541-111	ac excitation, single display
7541-112	ac excitation, dual display (two inputs)
7541-115	ac excitation, torque, RPM, hp (displays 2 of the 3)
7541-101	dc excitation, single display
7541-102	dc excitation, dual display (two inputs)
7541-105	dc excitation, torque, RPM, hp (displays 2 of the 3)

Model 7541

GENERAL SPECIFICATIONS

Characteristic	Measure
Strain gage input	Any 80 ohm to 2K ohm transducer, directly wired or transformer coupled. 4, 6, or 7 wire circuits are accommodated
Transducer excitation, ac models	3 Vrms, 3.28 kHz ±0.01 % sine wave. Regulated and short circuit protected
Transducer excitation, dc models	5 V or 10 V dc, user selectable, regulated
Sensitivity	1.0 mV/V to 4.5 mV/V with 50 % overrange; automatically scaled
Input resistance	100 mohm in parallel with 33pF
Automatic null	In Phase: ±10 % of full scale (with 50 % overrange), ±60 % of full scale (with 0 % overrange). Quadrature: ±1 mV/V
Auto calibration	Dual polarity shunt calibration with provision for CAL resistor feedback
Spurious signal rejection	60 Hz: 120 dB common mode, 100 dB normal mode. Carrier quadrature: 60 dB
Anti-alias filter	200 Hz, 7-pole Bessel response filter
Low-pass filtering	Four-pole Bessel response digital filter with 11 cutoff frequencies from 0.1 Hz to 200 Hz in 1-2-5 steps

ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Signal-to-noise ratio[1]	With 1/10/100/200 Hz filters 86/76/66/62 dB @ 1 mV/V full scale and 86/80/72/66 dB @ 5 mV/V FS
Resolution	0.01 % of full scale
Overall accuracy @ 25 °C [77 °F]	0.02 % of full scale, worst case.

DISPLAY SPECIFICATIONS

Characteristic	Measure
System display	Two line by 16 alphanumeric characters, each 0.2 in wide by 0.3 in high. Backlit LCD with adjustable contrast
Views	Select either two channels, one Channel with limit status or one channel with I/O status
Data displayed	Select from current, max., min., spread, held data and tare value
Data format	Engineering units with six digits (1-2-5 format) and five character, upper or lower case, user-entered legend/descriptor

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature effects, zero	±0.001 % of full scale/°F max.
Temperature effect, span	±0.001 % of full scale/°F max.
Frequency input	Any unidirectional or bidirectional (quadrature) source including self-generating and zero velocity magnetic pickups, optical encoders, flowmeters, etc. When used with bidirectional sensors, the conditioner outputs both direction and magnitude
Input impedance and configuration	Differential or single ended inputs. 100 kohm differential, 50 kohm single ended
Input threshold (keypad selectable)	10, 20, 50, 100 or 200 mV pk-pk (between inputs) or TTL
Maximum voltage	±130 Vdc or 130 Vrms
Input signal bandwidth	0.001 kHz to 200 kHz (10 mV to 200 mV pk-pk threshold) 0.001 kHz to 400 kHz (TTL threshold)
Display ranges and resolution	Rangeless (use any full scale engineering unit value) with 50 % overrange. Resolution is 0.01 % of full scale
Low pass filter (keypad selectable)	20 kHz (-3 dB) or none (this filter is not available for TTL inputs)
Response time	Greater of: 1 ms, typ (2 ms worst case) or the input pulse length
Common mode rejection	80 dB (60 Hz), 55 dB (0 kHz to 10 kHz)
Low pass filtering of sampled data	Unfiltered or four-pole Bessel filter. Cutoff frequencies from 0.1 Hz to 100 Hz in 1-2-5 steps
Overall accuracy	0.01 % of full scale @ 25 °C [77 °F], 0.015 % of full scale @ 5 °C to 50 °C [41 °F to 122 °F]
Excitation supplies	12 V @ 125 mA2 or 5 V @ 250 mA2. Short circuit (current limit and overvoltage (fuses) protected
Maximum transducer cable length	500 ft, except 200 ft for 100 ohm or lower strain gage transducers

SYSTEM RESPONSE (PER CHANNEL) SPECIFICATIONS

Characteristic	Measure
Data samp. & max./min. update rates	2000 Hz (hardware channels), 50 Hz (CH3 calculation)
Limit checking rate	1000 Hz (hardware channels), 50 Hz (CH3 calculation)
Logic I/O response time	1 ms (hardware channels), 20 ms (CH3 calculation)
Update rate for each analog output	1000 Hz

SYSTEM SPECIFICATIONS

Characteristic	Measure
System control	All I/O functions can be ordered in any combination. The pattern function adds ANDing capabilities
Input actions/channel	Logic inputs, outputs and internal Matrix signals control the following actions: tare, clear tare, hold, clear hold, reset max./min., clear latched limits, check limits, do max./mins., apply +CAL
Output events/channel	The following events drive logic outputs and internal Matrix signals: HI limit, NOT HI limit, IN limit, NOT IN limit, LO limit, NOT LO limit, at max., NOT at max., at min., NOT at min.
Three user-defined patterns	Patterns of logic inputs, outputs and Matrix signals drive Logic outputs and internal Matrix signals
Limit Checking	Each channel has a HI and LO limit which may be latched or unlatched, absolute or signed, and with or without hysteresis. Select either current, max., min. spread or held data for limit checking. Limit violations on any or all channels can be set to trigger back-light flashing in any of the display view modes

MECHANICAL SPECIFICATIONS

Characteristic	Measure
Size (W x H x D)	165,1 mm x 73,66 mm x 220,98 mm [6.5 in x 2.9 in x 8.7 in]
Weight	3 lb
Operating temperature	5 °C to 50 °C [41 °F to 122 °F]
Input power	90 Vac to 250 Vac, 50/60 Hz @ 25 VA, max. Two 2 A/250 V fuses, line filter and rear power switch

LOGIC INPUTS SPECIFICATIONS

Characteristic	Measure
Four Logic inputs	Each with programmable destination, protected to ±130 Vdc or 130 Vrms
Four Logic type	TTL compatible, Scmitt Trigger, low-true with 47 kohm pull-up. Input current is -100 µA @ 0 V
Six Logic outputs	Each with programmable source, short circuit (current and thermal limits) and overvoltage (fuse) protected.
Six Logic type	Open collector, low-true. Operating @ 24 V (max.) and 0.3 A max sink current
External +5 Vdc power (on I/O conn.)	250 mA, short circuit (current limit) and overvoltage (fuse) protected.
Serial communication port	(selectable as RS232, RS422 or RS485) Supports 32 devices on RS485 port and 1 device on RS232/422
Baud rate	300 to 38400. Maximum cable length: 4000 ft (RS422/RS485), 50ft (RS232)
120 ohm terminal resistors (RS485)	User selectable for RXD and TXD
RS422/485 transceivers	Slew-rate limited, short circuit protected (current and thermal limits)
RS232 drivers	Short circuit protected (current limit)
Serial I/Os	Use a nine-pin D connector. ±15 kV ESD protected and float (100 kohm) with respect to earth ground
Commands	Control of all modes, settings and measurements
Non-volatile memory storage settings	EEPROM, batteries are not used
Dual analog outputs	Each assignable to any of the three channels are short circuit (current limit) and overvoltage (fuse) protected
Output impedance/min. load resis.	< 1 ohm/10 kohm
Full scale	±5 V or ±10 V (user selectable). Resolution is 2 mV @ ±5 V full scale or 4 mV @ ±10 V full scale
Overrange	±8.2 V @ ±5 V full scale or ±13.5 V @ ±10 V full scale
Nonlinearity	±2 mV @ ±5 V full scale or ±4 mV @ ±10 V full scale
Overall error	
(worst case, incl. temp. effects)	±5 mV @ ±5 V full scale or ±10 mV @ ±10 V full scale
Filter	100 Hz, 5 pole Bessel response low pass filter

Notes

1. The ratio expressed in decibels (dB), of full scale (FS) to noise spread. Measurements are made for a one-minute interval using a 350 ohm bridge.
2. Both excitation voltages can be used simultaneously with the following restrictions: 4.8 x (12 V current) + (5 V current) < 700 mA; 12 V current < 125 mA; 5 V current < 250 mA.
3. Applies to strain gage channel only. Frequency measurement is absolute with enhanced accuracy and only requires user engineering unit scale.
4. Specification is subject to change without notice.

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