

F E A T U R E S :

- 3.28 kHz carrier excitation
- Reads, displays, processes and outputs
 - Shaft torque, speed, power
- Fast, rock-solid readings with high noise immunity
 - 2,000 samples/sec. for torque, head or drawbar force input
 - 1 millisecond response for speed
- 6-digit engineering unit display with legends and 0.01% resolution
- RS232, RS422 or RS485 serial communication
- Auto-scaled ± 5 V and/or ± 10 V analog outputs
- No pots, batteries, fans, maintenance or external power supplies

**MODEL 7541-115**

AC carrier



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% 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 test disruption**. Password protection may be used if needed.



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SPECIFICATIONS & FEATURES : 7541-115

Strain Gage Input	Any 80 Ω to 2 kΩ transducer, directly wired or transformer coupled. 4, 6 or 7 wire circuits are accommodated.
Transducer Excitation	3 Vrms, 3.28 kHz ±0.01% sine wave. Regulated and short circuit protected.
Sensitivity	0.5 to 5 mV/V with 50% overrange; automatically scaled.
Input Resistance	100 MΩ in parallel with 33 pF.
Automatic Null	In Phase: ±10% of F.S. (with 50% overrange), ±60% of F.S. (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.
Antialias Filter	200 Hz, 7 pole Bessel response filter.
Low Pass Filtering	4 pole Bessel response digital filter with 11 cutoff frequencies from 0.1 to 200 Hz in 1-2-5 steps.
Signal-to-Noise Ratio¹	With 1/10/100/200 Hz filters 86/76/66/62 dB @ 1 mV/V F.S. and 86/80/72/66 dB @ 5 mV/V F.S.
Resolution	0.01% of F.S.
Overall Accuracy (at 77°/25°C)	0.02% of F.S., worst case.
Temperature Effects	Zero: ±0.001% of F.S./F° (max); Span: ±0.001% of F.S./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 <i>direction</i> and <i>magnitude</i> .
Input Impedance and Configuration	Differential or single ended inputs. 100 kΩ differential, 50 kΩ 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 to 200 kHz (10 to 200 mV pk-pk threshold). 0.001 to 400 kHz (TTL threshold).
Display Ranges and Resolution	Rangeless (use any F.S. Engineering Unit value) with 50% overrange. Resolution is 0.01% of F.S.
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, typical (2 ms worst case) or the input pulse length.
Common Mode Rejection	80 dB (60 Hz), 55 dB (0 to 10 kHz).
Low Pass Filtering of Sampled Data	Unfiltered or 4 pole Bessel filter. Cutoff frequencies from 0.1 to 100 Hz in 1-2-5 steps.
Overall Accuracy	0.1% of F.S. @ +77°F (+25°C), 0.015% of F.S. @ +41°F to +122°F (+5°C to +50°C).
Excitation Supplies	+12 V @ 125 mA ² or +5 V @ 250 mA ² . Short circuit (current limit and overvoltage (fuses) protected).
Maximum Transducer Cable Length	500 ft. except 200 ft. for 100 Ω or lower strain gage transducers.
System Display	2 line by 16 alphanumeric characters, each 0.2" wide by 0.3" high. Backlit LCD with adjustable contrast.
Views	Select either 2 Channels, 1 Channel with Limit Status or 1 Channel with I/O Status.
Data Displayed	Select from Current, Max, Min, Spread, Held data and Tare value.
Data Format	Engineering units with 6 digits (1-2-5 format) and 5 character, upper or lower case, user-entered legend/descriptor.
System Response (per channel)	
Data Sampling and Max/Min Update Rates	2,000 Hz (hardware channels), 50 Hz (CH3 calculation).
Limit Checking Rate	1,000 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	1,000 Hz.
System Control	All I/O functions can be OR'd in any combination. The pattern function adds ANDING capabilities.
Input Actions/Channel	Logic inputs, outputs and internal Matrix signals control 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 backlight flashing in any of the display view modes.
Four Logic Inputs	Each with programmable destination, protected to ±130 VDC or 130 Vrms.
Type	TTL compatible, Scmitt Trigger, low-true with 47 kΩ 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.
Type	Open collector, low-true. Operating @ 24 V (max) and 0.3 A max sink current.
External +5VDC Power (on I/O connector)	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), 50 ft. (RS232).
120 Ω 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 9 pin D connector. They are ±15 kV ESD protected and float (100 kΩ) with respect to Earth Ground.
Commands	Control of all modes, settings and measurements.
Non-Volatile Memory Storage for System Settings	EEPROM, batteries are not used.
Dual Analog Outputs	Each assignable to any of the 3 channels are short circuit (current limit) and overvoltage (fuse) protected.
Output Impedance/Minimum Load Resistance	< 1 Ω/10 kΩ.
Full Scale	±5 V or ±10 V (user selectable). Resolution is 2 mV @ ±5 V F.S. or 4 mV @ ±10 V F.S.
Overrange	±8.2 V @ ±5 V F.S. or ±13.5 V @ ±10 V F.S.
Nonlinearity	±2 mV @ ±5 V F.S. or ±4 mV @ ±10 V F.S.
Overall Error (worst case, including temperature effects)	±5 mV @ ±5 V F.S. or ±10 mV @ ±10 V F.S.
Filter	100 Hz, 5 pole Bessel response low pass filter.
Size and Weight	6.5" wide, 2.9" high, 8.7" deep. Weight is 3 pounds.
Operating Temperature	+41°F to +122°F (+5°C to +50°C).
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.

- Notes: 1. The ratio expressed in decibels (dB), of Full Scale (F.S.) to noise spread. Measurements are made for a one-minute interval using a 350 Ω 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 guaranteed accuracy and only requires user engineering unit scale.
 4. Specification is subject to change without notice.