Bulletin 700G

Designing and Making the Worlds Best Torque Instruments Since 1960





S. HIMMELSTEIN AND COMPANY

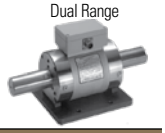
Himmelstein Precision Torquemeters

Non-Contact Rotating and Reaction Types

DIGITAL

Digital Rotating Torque Sensors	Compact	Precision Digital				Bearingless Digital		
	2X Overload	2X Overload	4X Overload	10X Overload	Dual Range	2X Overload	4X Overload	Dual Range
								
MCRT® Series	**48200V**	**48700V**	**49700V**	**59700V**	**79700V**	**84000V/86000V**	**85000V/87000V**	**84700V/88700V**
Range (lbf-in)	25 to 10,000	25 to 4,000,000	25 to 2,000,000	250 to 735,000	40 to 4,000,000	500 to 4,000,000	250 to 2,000,000	500 to 4,000,000
Range (N-m)	2.83 to 1,130	2.83 to 452,000	2.83 to 226,000	28.3 to 83,000	4.52 to 452,000	56.5 to 452,000	28.3 to 226,000	56.5 to 452,000
Mechanical Overload [1]	200%	200%	400%	1,000%	200%, 1,000% & 2,000%	200%	400%	200%, 1,000% & 2,000%
Overrange	130%	150%	150%	150%	150%	150%	150% or 300%	150% or 300%
Speed (rpm) [2, 12]	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000
Accuracy (%) [3]	0.2 & 0.15	0.1 & 0.05	0.1 & 0.05	0.1	0.1	0.03 & 0.019 [14]	0.03 & 0.019 [14]	0.03 & 0.05 [14]
Noise Hardening [4]	standard	standard	standard	standard	standard	standard	standard	standard
Torque Output	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc, FM, & RS232/485	±5 or ±10 Vdc, FM, & RS232/485	±5 or ±10 Vdc, FM, & RS232/485
Speed Output	60 ppr	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	30/45/60 ppr	30/45/60 ppr	30/45/60 ppr
Power Output	N/A	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232	N/A	N/A	N/A
Filter Selections	11 from 0.1 to 200 Hz	11 from 0.1 to 200 Hz	11 from 0.1 to 200 Hz	11 from 0.1 to 200 Hz	11 from 0.1 to 200 Hz	13 from 0.1 to 1,000 Hz	13 from 0.1 to 1,000 Hz	13 from 0.1 to 1,000 Hz
Cal Signal	Remotely Operated	Remotely Operated	Remotely Operated	Remotely Operated	Remotely Operated	Remotely Operated	Remotely Operated	Remotely Operated
Zero & Span	Automatic by processor	Automatic by processor	Automatic by processor	Automatic by processor	Automatic by processor	Automatic by processor	Automatic by processor	Automatic by processor
Input Power	10 to 15 Vdc	11 to 24 Vdc	11 to 24 Vdc	11 to 24 Vdc	11 to 24 Vdc	10 to 26 Vdc @ 6 to 11 Watts	10 to 26 Vdc @ 6 to 11 Watts	10 to 26 Vdc @ 6 to 11 Watts
Mechanical Style(s)	Shaft	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Very Short Disk	Very Short Disk	Very Short Disk
Compatible Display(s)	703 or 723	703 or 733	703 or 733	703 or 733	703 or 733	703 or 723	703 or 723	703 or 723
Specification Sheet	7410	7408	7408	7408	7705	8701 & 8703	8701 & 8703	8707 & 8801

ANALOG

Rotating Torque Sensors - Analog Output	mV/V Output		4-20 mA Output	DC Operated ±5 or ±10 volt Output			
	2X Overload	4X Overload	4X Overload	2x Overload	4X Overload	10X Overload	Dual Range
							
MCRT® Series	**28000T**	**29000T**	**39000X**	**48000V**	**49000V**	**59000V**	**79000V**
Range (lbf-in)	0.625 to 4,000,000	0.625 to 2,000,000	25 to 2,000,000	0.625 to 4,000,000	0.625 to 2,000,000	40 to 735,000	40 to 4,000,000
Range (N-m)	0.071 to 452,000	0.071 to 226,000	2.83 to 226,000	0.071 to 452,000	0.071 to 226,000	4.52 to 83,000	4.52 to 452,000
Mechanical Overload [1]	200%	400%	400%	200%	400%	1,000%	200%
Overrange	ext amplifier dependent	ext amplifier dependent	125%	133%	133%	133%	133%
Speed (rpm) [2, 12]	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000	0 to 15,000
Accuracy (%) [3]	0.05 & 0.1	0.05 & 0.1	0.05 & 0.1	0.05 & 0.1	0.05 & 0.1	0.07	0.1
Noise Hardening [4]	standard	standard	standard	standard	standard	standard	standard
Torque Output	1.5 mV/V	1.5 mV/V	4-20 mA or 12±8 mA	±5 Vdc [5] or ±10 Vdc [6]	±5 Vdc [5] or ±10 Vdc [6]	±5 Vdc [5] or ±10 Vdc [6]	±5 Vdc [5] or ±10 Vdc [6]
Speed Output	60 ppr	60 ppr	60 ppr	60 ppr	60 ppr	60 ppr	60 ppr
Bandwidth (Hz)	ext amplifier dependent	ext amplifier dependent	1Hz & 200Hz	1 Hz & 500 Hz [7] or 1,100 Hz [8]	1 Hz & 500 Hz [7] or 1,100 Hz [8]	1 Hz & 500 Hz [7] or 1,100 Hz [8]	1 Hz & 500 Hz [7, 9] or 1,100 Hz [8, 9]
Cal Signal	ext amplifier dependent	ext amplifier dependent	Internal Switch	Remotely Operated	Remotely Operated	Remotely Operated	Remotely Operated
Zero & Span	ext amplifier dependent	ext amplifier dependent	Internal Controls	Internal Controls	Internal Controls	Internal Controls	Internal Controls
Input Power	3 to 6 Vrms @ 3 kHz [10]	3 to 6 Vrms @ 3 kHz [10]	10 to 28 Vdc	10.5 to 24 Vdc [11]	10.5 to 24 Vdc [11]	10.5 to 24 Vdc [11]	10.5 to 24 Vdc [11]
Mechanical Style(s)	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends
Compatible Display(s)	701 & 721	701 & 721	706 & 726	703 & 723	703 & 723	703 & 723	703 & 723
Specification Sheet	761 & 716	709 & 716	7300	7401 & 7402	7400 & 7402	7590	7700

INSTRUMENTS

The Model 700 Series of Signal Conditioning Instruments are designed for measurement, display, and readout of mechanical and fluid power.
Each is a fully-featured Data Acquisition system with Test Control capabilities. Each handles up to two hardware channels and one calculated channel.

- The 16 character by 2 line alphanumeric display provides easy to read menu selections.
- All manual adjustments have been eliminated. Calibration is performed automatically.
- Resolution is not compromised because there are no ranges to select. Resolution is 0.01% for any Full Scale value.
- Simplified keypad allows access to all channels, data types, and status without stopping a Test. Data is displayed in engineering units.
- There is no battery to change. System settings are stored in EEPROM memory.
- There is no filter to change or fan to replace.

- ▲ 0.625 to 4,000,000 lbf-in (0.071 Nm to 452 kNm)
- ▲ 0.05% Accuracy, Accredited* Bi-directional Calibration
- ▲ Industries Highest Overload and Overrange Ratings
- ▲ Best Noise Immunity and Temperature Compensation

SPECIAL PURPOSE

Special Purpose Rotating Torque Sensors	Spline Drive per AND		Pulley	Automotive Torque Wheels		Horsepower/kWh Meters	
							
MCRT® Series	**28550T**	**48550V**	**31200T**	**27800T**	**27800V**	**48000P**	**49000P**
Range (lbf-in)	50 to 10,000	50 to 10,000	50 to 1,500	250 to 100,000	250 to 100,000	25 to 4,000,000	25 to 2,000,000
Range (N-m)	5.65 to 1,130	5.65 to1,130	5.65 to 170	28.3 to 11,300	28.3 to 11,300	2.83 to 452,000	2.83 to 226,000
Mechanical Overload [1]	200%	200%	250%	200% & 1,000%	200% & 1,000%	200%	400%
Overrange	ext amplifier dependent	133%	ext amplifier dependent	ext amplifier dependent	133%	150%	150%
Speed (rpm) [2, 12]	0 to 15,000	0 to 15,000	0 to 7,500	0 to 2,000	0 to 2,000	0 to 15,000	0 to 15,000
Accuracy (%) [3]	0.1	0.15	0.1 & 0.25	0.1	0.15	0.1 & 0.05	0.1 & 0.05
Noise Hardening [4]	standard	standard	standard	standard	standard	standard	standard
Torque Output	1.5 mV/V	±5 Vdc [5] or ±10 Vdc [6]	4 mV/V	4 mV/V	±5 Vdc [5] or ±10 Vdc [6]	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232
Speed Output	60 ppr	60 ppr	60 ppr	60 or 3,600 ppr	60 or 3,600 ppr	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232
Power Output	N/A	N/A	N/A	N/A	N/A	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232
Energy Output	N/A	N/A	N/A	N/A	N/A	±5 or ±10 Vdc & RS232	±5 or ±10 Vdc & RS232
Filter Selections	ext amplifier dependent	1Hz & 500Hz	ext amplifier dependent	ext amplifier dependent	1Hz & 500Hz [7, 8]	11 from 0.1 to 200 Hz	11 from 0.1 to 200 Hz
Cal Signal	ext amplifier dependent	Remotely Operated	ext amplifier dependent	ext amplifier dependent	Remotely Operated	Remotely Operated	Remotely Operated
Zero & Span	ext amplifier dependent	Internal Controls	ext amplifier dependent	ext amplifier dependent	Internal Controls	automatic by processor	automatic by processor
Input Power	3 to 6 Vrms @ 3 kHz [10]	10.5 to 24 Vdc [11]	3 to 6 Vrms @ 3 kHz [10]	3 to 6 Vrms @ 3 kHz [10]	10.5 to 24 Vdc [11]	11 to 24 Vdc	11 to 24 Vdc
Mechanical Style(s)	AND Flange & Spline	AND Flange & Spline	Pulley	Automotive Wheel	Automotive Wheel	Shaft Ends or Flange Ends	Shaft Ends or Flange Ends
Compatible Display(s)	701 & 721	703 & 723	701 & 721	701 & 721	703 & 723	703 & 733	703 & 733
Specification Sheet	765	7403	7820	7800	7801 & 7800	7404	7404

REACTION

Reaction (Static) Torque Transducers	Hollow Flanged		C-Face	Solid Flanged				Square Drive
	2X Overload 	2X Overload 	5X Overload 	2X Overload 	2X Overload 	2X Overload 	2X Overload 	2X Overload 
RTM Series	**2000**	**2080/2090**	**CF2700V**	**2200M**	**2200V**	**2206/2207**	**2270V/ 2280V**	**2208/2209**
Range (lbf-in)	60 to 100,000	200,000 to 2,400,000	50 to 20,000	0.625 to 100,000	100 to 100,000	300,000 to 750,000	10 to 750,000	300,000 to 4,000,000
Range (N-m)	6.78 to 11,300	22,600 to 271,000	5.65 to 2,260	0.071 to 11,300	11.3 to 11,300	33,900 to 84,700	11.3 to 84,700	33,900 to 452,000
Mechanical Overload [1]	200%	200%	300%, 400% & 500%	200%	200%	200%	200%	200%
Overrange	ext amplifier dependent	ext amplifier dependent	120%	ext amplifier dependent	130%	ext amplifier dependent	150%	ext amplifier dependent
Accuracy (%) [3]	0.1	0.1	0.25 & 0.1	0.1	0.1	0.1	0.1 & 0.05	0.5
Torque Output	1.5 mV/V	1.5 mV/V	±10 Vdc	2 mV/V	±10 Vdc	2 mV/V	±10 Vdc & RS232	3 mV/V
Bandwidth (Hz)	ext amplifier dependent	ext amplifier dependent	dc to 1,000 Hz	ext amplifier dependent	dc to 500 Hz	ext amplifier dependent	dc to 500 Hz	ext amplifier dependent
Cal Signal	ext amplifier dependent	ext amplifier dependent	Remotely Operated	ext amplifier dependent	Remotely Operated	ext amplifier dependent	Remotely Operated	ext amplifier dependent
Zero & Span	ext amplifier dependent	ext amplifier dependent	Internal Controls	ext amplifier dependent	Internal Controls	ext amplifier dependent	Automatic by processor	ext amplifier dependent
Input Power	10 V max, ac or dc	10 V max, ac or dc	15 to 26 Vdc	15 V max, ac or dc	13.5 to 24 Vdc	15 V max, ac or dc	10 to 26 Vdc	15 V max, ac or dc
Mechanical Style	Hollow Flanged	Hollow Flanged	Hollow NEMA C-Face	Solid Flanged	Solid Flanged	Solid Flanged	Solid Flanged	Square Drive
Compatible Display	701 & 708	701 & 708	703	701 & 708	703	701 & 708	703	701 & 708
Specification Sheet	770	779	7070	772	772	773	7721	778

Notes

1. Percentage of Full Scale Torque Rating. A few models vary; see the listed Specification Sheet for complete specifications, outline drawings, features and options by going to our website.
2. Higher range units have lower maximum speed ratings. See listed Specification Sheet.
3. The maximum error component, per referenced Specification Sheet, expressed as a percentage of full scale. Bidirectional NIST traceable calibrations are performed on all models in our accredited laboratory (NVLAP LAB code 200487-0). For more details visit the accreditation link: www.nist.gov.
4. Hardened against electromagnetic interference (EMI) produced by IGBT based adjustable speed drives (ASD's) and magnetic fields from electric machinery; seeSpecification Sheet 708.
5. Standard is dual 5V outputs both available simultaneously; one high frequency and one low frequency; see bandwidth column.
6. Option L changes standard 5V outputs to 10V. See Note 11.
7. Standard dual outputs are dc to 1 Hertz and dc to 500 Hertz.
8. Option K converts the dc to 500 Hertz output to dc to 1,100 Hertz.
9. MCRT® 79000V Torquemeters have four simultaneous outputs; a dual output for the Low Range and a dual output for the High Range.
10. Requires a strain gage carrier amplifier with carrier frequency equal to 3 kHz ± 10% and well regulated voltage between 3 and 6 Vrms. Himmelstein Models 701, 711 or 721 are recommended.
11. Standard units require unipolar power between 10.5 and 24 VDC. When equipped with Option L, sensor requires power between 18 and 24 VDC.
12. Speed Pickups are optional on all models except the MCRT® 48000P & 49000P Series where they are standard along with on-board Speed and Power signal conditioning.
13. MCRT® sensors use bonded strain gages, non-ferrite rotary transformers and high strength alloy steel torsion members, except ranges < 12.5 lbf-in use titanium shafts.
14. For ranges greater than 100,000 lbf-in (11,300 Nm), available accuracies are 0.1 & 0.05.

A business built on company and product integrity.

Established in 1960, S. Himmelstein and Company makes the worlds best sensors and data acquisition systems. Company innovations have created many advances in sensor technology. We design, manufacture and test these products in Hoffman Estates, Illinois where complete machine shop, surface mount, test and engineering facilities permit control of the entire manufacturing process.

Accredited torque calibration services verify your units performance.

Confirm the accuracy of your existing transducers through Himmelstein's expert Torque Calibration Services. All Himmelstein torquemeters and Systems are calibrated CW and CCW to their full capacity in our NVLAP ACCREDITED LABORATORY, Lab code 200487-0. (Visit www.himmelstein.com or, www.nist.gov for details)

Himmelstein will also recalibrate virtually any standard Torque Transducer or Torquemeter, US or foreign. Popular brands include Himmelstein, Lebow/Honeywell, PCB/Key, Sensor Data, Sensor Developments, HBM, Staiger-Mohilo, Kistler, Lorenz, Norbar, ETH, Datum, Futek, Magtrol and Manner.

In addition, you should consider registering your sensors on our secure website so that their calibration certificates are continously available to you as a reference.

To learn more, visit: www.calibratenow.com

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