

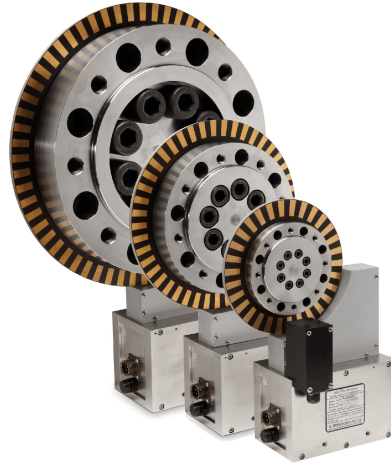
MCRT® 88700V Series Bearingless Dual-Range Digital Torquemeters

High Ranges: 500 to 4,000,000 lbf-in (56.5 Nm to 452 kNm), Low Ranges: 100 to 800,000 lbf-in (11.3 Nm to 90.4 kNm)

Best Performance under Real - World Conditions

Industries Highest Overrange and Overload
World Class Temperature Performance
Greatest Immunity to External Noise
Accredited*, CW and CCW Dead Weight Cal
Bipolar Rotor Shunt Cal
Simple, Non-critical Installation

- **0.05% Accuracy***; **21,000 Samples/Sec.**
- **≥300% and ≥150% Overrange**
- **1,000% and 200% Overload**
- **0.0006%/°F Temperature Compensation**
- **FM Output**
- **±5.000/±10.000V Analog Output**
- **RS232, RS422, RS485 Com Ports - Software Included**
- **Works With VFD's, ISM Transmitters and Other Industrial Noise Sources**
- **48µS Max/Min Acquisition, 10 Bessel Data Filters, Tare Function, Rotor Temperature Measurement, Speed Pickup Option**



* NIST traceable calibrations are performed in our accredited laboratory (NVLAP Lab Code 200487-0). For details visit our website or follow the accreditation link at www.nist.gov

MCRT® 88700V's *measure high and low torques without the cost and inconvenience of swapping two conventional sensors. They also correctly measure average torque when the peak to average torque ratio is high. Thus, avoiding the accuracy loss that occurs when an oversized sensor is used to prevent physical damage.*

They have *high accuracy in real-world applications, not just in the cal lab.* That's due, in part, to *industries highest Overrange.* High overrange avoids clipping real-world torque peaks and driveline torsionals. *Without high Overrange, clipped peaks produce large errors¹.*

World class temperature performance greatly reduces drive heating and gradient errors and avoids Low Range accuracy degradation. Further enhancing real-world performance is very high stiffness and low deflection, exceptional

1. See Application Note 20805B for details.

hardening to EMI from Variable Frequency Drives, other industrial noise sources and ISM devices - see Bulletin 8700.

Each range is calibrated CW and CCW and documented by a NVLAP approved Calibration Certificate certifying NIST traceability and that our laboratory operation and quality management system meet ISO/IEC 17025:2005. A *bi-directional rotor shunt cal* verifies the entire CW and CCW data chains. It may be invoked from switches, I/O lines or your computer. You can select from ten units of measure without re-calibration.

Included software interfaces Windows-based PC's. It displays and plots real time data, selects 5V or 10V output, torque range, filter cutoff frequency, FM center frequency, units of measure, calls calibration, tare, reset max/mins, saves data and test setups, etc.

S. HIMMELSTEIN AND COMPANY

Designing and Making the Worlds Best Torque Instruments Since 1960

STANDARD RANGES MCRT® 88700V DUAL-RANGE BEARINGLESS DIGITAL TORQUEMETERS

MCRT® MODEL	HIGH RANGE			LOW RANGE			ALL MODELS Torque Overload Rating is 200% Of The High Range							ROTOR WEIGHT
	TORQUE RANGE		MAXIMUM DEFLECTION	TORQUE RANGE		MAXIMUM DEFLECTION	MAXIMUM SPEED	TORSIONAL STIFFNESS	ROTATING INERTIA	MAX THRUST	MAX BENDING	MAX SHEAR		
	(lbf-in)	(Nm)		(degree)	(lbf-in)								(Nm)	
	(lbf-in)	(Nm)	(degree)	(lbf-in)	(Nm)	(degree)								
88702V(1-3)	1,000	113	0.021		200	22.6	15,000 Suffix H or 8,500 Suffix B	(lbf-in/rad)	(ozf-in s²)	(lbf)	(lbf-in)	(lbf)	(lb)	
88704V(2-3)	2,000	226	0.007		400	45.2								0.67
88704V(5-3)	5,000	565	0.014		1,000	113	13,500 Suffix H or 8,000 Suffix B	1.61X10⁷	7.2	2,000	1,000	400	28	
88704V(1-4)	10,000	1,130	0.021		2,000	226		2.04X10⁷	7.2	4,000	2,000	800	28	
88707V(2-4)	20,000	2,260	0.004		4,000	452	10,000 Suffix H or 6,000 Suffix B	2.73X10⁷	7.2	7,000	3,500	1,000	28	
88707V(5-4)	50,000	5,650	0.009		10,000	1,130		2.87X10⁸	59	10,000	5,000	2,000	94	
88707V(1-5)	100,000	11,300	0.018		20,000	2,260		3.09X10⁸	59	20,000	10,000	4,000	94	
88708V(3-5)	300,000	33,900	0.047		60,000	6,780	5,000	3.20X10⁸	59	30,000	15,000	5,000	94	
88708V(5-5)	500,000	56,500	0.058		100,000	11,300		3.60X10⁸	72	15,000	100,000	15,000	78	
88708V(75-4)	750,000	84,750	0.075		150,000	16,950	5,000	4.90X10⁸	74	25,000	150,000	25,000	80	
88709V(1-6)	1,000,000	113,000	0.036		200,000	22,600	5,000	5.80X10⁸	75	37,500	250,000	37,500	82	
88709V(175-4)	1,750,000	187,800	0.042		350,000	39,550	3,000	1.60X10⁹	41	200,000	150,000	50,000	260	
88709V(25-5)	2,500,000	282,500	0.045		500,000	56,500	3,000	2.40X10⁹	43	350,000	262,500	87,000	275	
88710V(325-4)	3,250,000	367,300	0.041		650,000	73,450	3,000	3.20X10⁹	45	500,000	375,000	125,000	280	
88710V(4-6)	4,000,000	452,000	0.042		800,000	90,400	2,200	4.80X10⁹	92	650,000	487,000	160,000	425	
							2,200	5.50X10⁹	94	800,000	600,000	200,000	440	

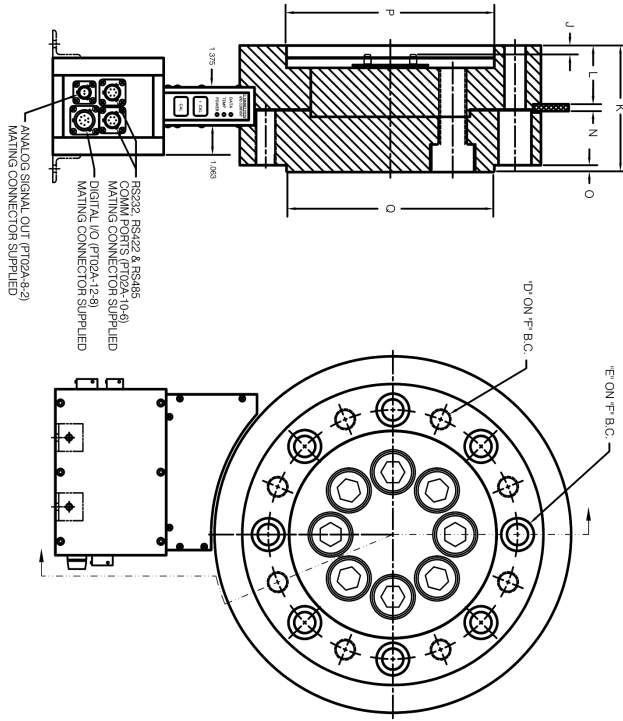
SUPPORTED UNITS OF MEASURE	
Torque  lbf-in (default), lbf-ft, ozf-in, ozf-ft, N-m, kN-m, N-cm, kgf-m, kgf-cm, gf-cm	Temperature  °F (default), °C

Order Number 	MCRT® 88707V	(1 - 5)	C	O	B
	Model No. From Table	High Range	Performance Code N if Standard, C if Enhanced	Speed Pickup Option Z if magnetic, O if optical, N if none	Speed Rating Suffix, When Applicable H for High Speed, B for Lower Speed Omitted if not available
An MCRT® 88707V(1-5)COB is a 100,000 lbf-in High Range Torquemeter with a 20,000 lbf-in Low Range, Enhanced Performance, Installed Optical Speed Pickup, and a 6,000 rpm Maximum Speed Rating.					

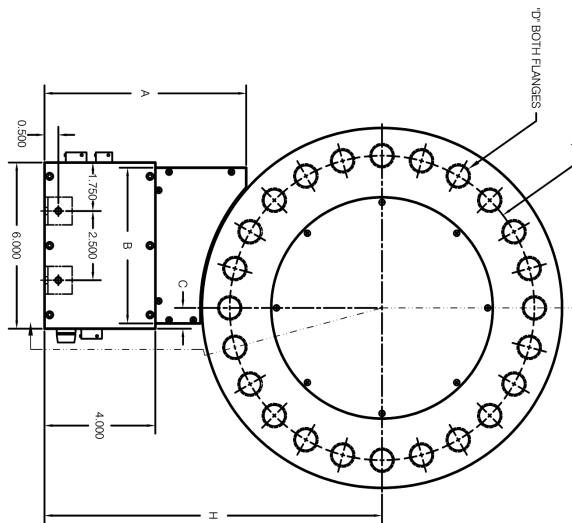
General Specifications	Standard, Code N Performance		Enhanced, Code C Performance	
	High Range	Low Range	High Range	Low Range
Torque ¹ Combined Linearity & Hysteresis (% of Range)	≤±0.1		≤±0.05	
Torque Nonrepeatability (% of Range)	≤±0.05	≤±0.07	≤±0.020	≤±0.05
Zero Drift Torque (% of Range/°F)	≤±0.001	≤±0.005	≤±0.0006	≤±0.003
Span Drift Torque (% of Reading/°F)	≤±0.002		≤±0.001	
Temperature Ranges (°F)	Compensated: +75 to +175, Useable: - 25 to +185, Storage: - 65 to +225			
Rotor-to-Stator Maximum Misalignment (inch)	Axial: ±0.4, Radial:0.3 with or without Code O Optical Pickup; For MCRT® 88708V Series: ±0.25 Axial, 0.3 Radial; For MCRT® 88709V & 88710V Series: ±0.2 Axial, 0.2 Radial. If Code Z Magnetic Pickup is used, radial alignment must be held within ±0.020 and axial alignment within ±0.040.			
Analog Torque Output (Auto-Scaled): Maximum Load	CW ² : +10.000 volts or, + 5.000 volts - user selectable (default = +10.000 V). CCW ² : - 10.000 volts or, - 5.000 volts - user selectable (default = - 10.000 V). 			

- Each torque range is factory calibrated and documented in the Calibration Certificates accompanying the Torquemeter. The Certificate also documents NIST traceability. Although the system allows setting any range less than the HIGH range, if it is a non-calibrated range you won't have either certified results or be assured of their accuracy.
- CW torque causes the shaft to turn CW when viewed from its driven end. CCW torque causes the opposite rotation.
- Data is linear to the Overrange specified. Caution: the Torquemeters have infinite fatigue life for full reversals equal to one half their Overload Rating or, their High Range torque rating. Knowingly operating above that value risks a fatigue failure. Fatigue is not an issue on the Low Range which can sustain a 1,000% Overload (of its range) without a failure.
- Fused and reverse polarity protected.
- All outputs are fused. Digital inputs are reverse polarity and overvoltage protected.
- Specifications are subject to change without notice.

MCRT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
8_002V	8_484	5.500	0.813	8 X 1/4-20 X 1/2 DP	Ø 0.266 THRU Ø 0.458 X 0.625 DP C-BORE	3.625	6.375	8.938	4.375	0.201	1.828	0.875	--	0.250	0.125	Ø 3.137 Ø 3.1250	Ø 3.1546 Ø 3.1241	--	--
8_004V	7_881	5.500	0.813	8 X 7/16-14 X 7/8 DP	Ø 0.353 THRU Ø 0.719 X 1.250 DP C-BORE	6.625	8.875	10.188	6.875	0.314	3.500	1.813	--	0.250	0.250	Ø 4.8760 Ø 4.8730	Ø 4.8744 Ø 4.8737	--	--
8_007V	7_251	5.625	0.750	8 X 3/4-10 X 1/2 DP	Ø 0.766 THRU Ø 1.188 X 2.016 DP C-BORE	9.000	12.875	12.188	10.875	0.326	4.578	2.125	--	0.250	0.250	Ø 7.5012 Ø 7.5000	Ø 7.4894 Ø 7.4886	--	--
8_008V	7_281	5.625	0.750	24 X 7/8-9 UNC-28	--	11.000	12.875	12.187	13.000	0.250	5.500	2.516	1.000	0.500	--	Ø 8.0018 Ø 8.0000	--	9.875	1.000
8_009V	7_071	5.875	0.625	24 X 1-1/4-7 UNC-28	--	18.500	21.000	16.571	21.000	0.375	8.000	1.500	1.500	1.000	--	Ø 11.7520 Ø 11.7500	--	16.552	0.535
8_010V	7_071	5.875	0.625	20 X 1-1/2-8 UNC-28	--	21.500	24.000	18.071	24.000	0.406	9.000	1.875	1.875	1.000	--	Ø 13.2522 Ø 13.2500	--	20.000	0.660



MCRT 8_002, 8_004 & 8_007



MCRT 8_008, 8_009 & 8_010

