



# MCRT<sup>®</sup> 48200V NON-CONTACT, DC OPERATED COMPACT DIGITAL TORQUEMETERS

**Torque Ranges: 25 to 10,000 lbf-in (2.83 to 1,130 N-m)**

- ±10 Volt or ±5 Volt Analog Output with 0.02% Resolution and Low Noise & Ripple
- 14 Bit Engineering Unit Output Via Com Port; Includes PC Interface Software and Cable
- No Pots, Switches or Manual Adjustments, 11 Selectable Signal Filters
- Strain Gage Sensing in a Robust, Compact Assembly
- High Strength Alloy Steel Shaft with 200% Torque Overload Capacity
- NIST Traceable\* Bidirectional Calibration
- Noise Tolerant - Compatible with IGBT-based Adjustable Speed Drives
- Optional Speed Pickup



To power and display Torque only, use a Model 703+. To power and display Torque, Speed and HP, use a Model 723+. See Bulletins 372 & 374.

\*NIST traceable calibration performed in our accredited laboratory (NVLAP Lab Code 200487-0). For details visit [www.himmelstein.com](http://www.himmelstein.com) or follow the accreditation link at [www.nist.gov](http://www.nist.gov).

| General Specifications   |  | Code N Performance   | Code C Performance |
|--|--|--|--------------------|
| <b>Accuracy</b> (combined nonlinearity, hysteresis and nonrepeatability, % of Range)                       |  | ≤ ±0.2   | ≤ ±0.15            |
| <b>Remote Calibration Accuracy*</b> (% of Range @ 75 °F/23.9 °C, traceable to NIST)                        |  | ≤ ±0.1   | ≤ ±0.05            |
| <b>Temperature Effects:</b>  | Zero Drift (% of Range/°F)/(%) of Range/°C)  | ≤ ±0.004/≤ ±0.007  | ≤ ±0.0017/≤ ±0.003 |
|  | Span Drift (% of Reading/°F)/(%) of Reading/°C)  | ≤ ±0.004/≤ ±0.007  | ≤ ±0.0017/≤ ±0.003 |
|  | Compensated Range (°F)/(°C)  | +75 to +150/+23.9 to +66                                       |                    |
|  | Usable Range (°F)/(°C)   | +32 to +175/0 to +79.4   |                    |
| <b>Analog Output:</b><br><br>(Resolution: 0.02% on ±10V & 0.04% on ±5V output)<br>(Source Impedance: < 1Ω) | CW/CCW Output at Full Scale  | +10V/-10V or +5V/-5V, user selectable. Default is +10V/-10V.   |                    |
|  | Bandwidth (has Bessel Response Signal Filters)   | DC to 0.1Hz thru 200Hz in eleven 1-2-5 steps, user selectable. |                    |
|  | Noise and Ripple (rms, % of Range)   | 0.1  |                    |
|  | Overrange (% of Full Range, nominal)   | 30   |                    |
|  | Maximum Allowable Resistive and Capacitive Loads   | 10kΩ Minimum and 0.05uF Maximum                                |                    |
| <b>Rotational Effect on Zero</b>   | (% of Range)   | ≤ ±0.05  | ≤ ±0.025           |
| <b>RS232C Port:</b> (115.2 kBaud)  | Outputs Torque in Engineering Units. Inputs units of measure selection, scaling, signal filter selection, zero, span, cal data and commands.   |  |                    |
| <b>Supply Voltage</b>  | 10 to 15 VDC @ 200 mA, nominal. Has reverse polarity and 20 Volt overvoltage protection.   |  |                    |
| <b>Available Options</b>   | Enhanced Performance - Code C, Code N is standard performance.<br>60 PPR Speed Pickup Options: Code A is standard type, Code Z is Zero Velocity type, Code N denotes no pickup.<br><b>A Type Z pickup is recommended for low speeds and/or operation in electrically noisy environments.</b> |  |                    |

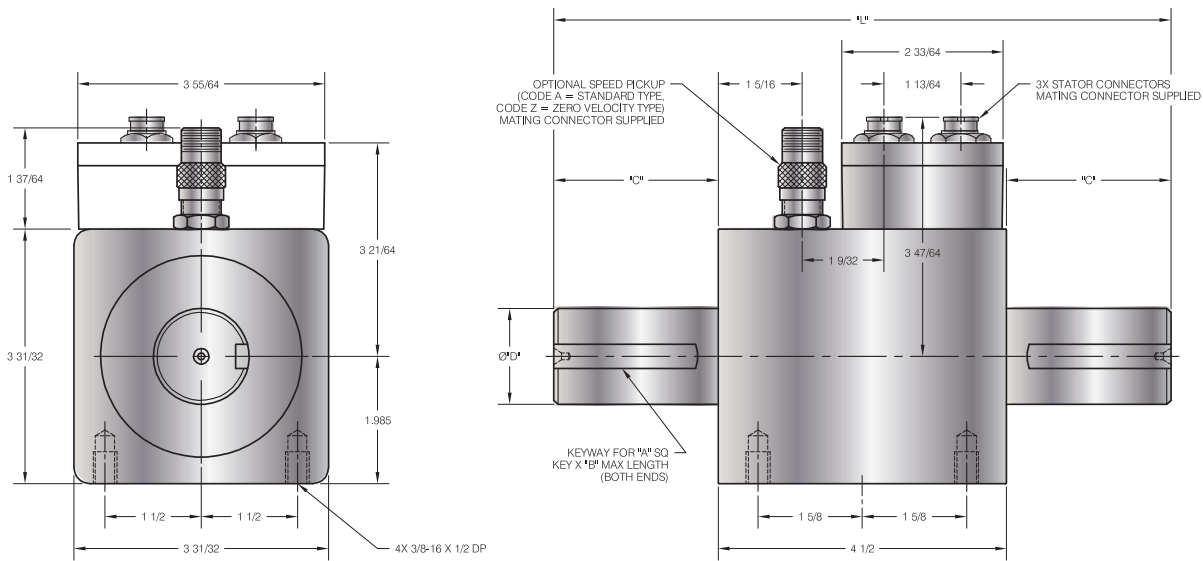
MCRT® 48200V Digital Torquemeters have high accuracy, low noise, high overload capacity, high overrange, inherent noise tolerance and a wide temperature range. State-of-the-art strain gage sensing and non-contact signal transfer suit them for control, laboratory and production use. Two grades are made; Code N standard performance and Code C enhanced performance. They can be floated or foot mounted with the integral mounting base. Do Cal Checks and Auto-Zero using control lines, or from your computer.

**Included software** interfaces with Windows-based PC's. Use it to: display torque, re-scale, run a Cal Check, Auto-Zero, select from 10 units of measure without recalibration, select from 11 signal filters, invoke password protection. Your PC and included software will display current, peak, valley and spread engineering unit data, will classify limits, and do real time plotting. It also saves data to disk and stores your test setup parameters. If you re-calibrate, the original calibration is archived. A sensor to PC cable is provided.

| MCRT®<br>MODEL | TORQUE RANGE |       | TORQUE OVERLOAD |       | SPEED RATING* (RPM) |              | SHAFT STIFFNESS** | ROTATING INERTIA | MAX WT. |
|----------------|--------------|-------|-----------------|-------|---------------------|--------------|-------------------|------------------|---------|
|                | [lbf-in]     | [N-m] | [lbf-in]        | [N-m] | Code N              | Code C       |                   |                  |         |
| 48201V(25-0)   | 25           | 2.82  | 50              | 5.65  | 0 to ±8,000         | 0 to ±15,000 | 1,800             | 0.031            | 10      |
| 48201V(5-1)    | 50           | 5.65  | 100             | 11.3  | 0 to ±8,000         | 0 to ±15,000 | 5,000             | 0.031            | 10      |
| 48201V(1-2)    | 100          | 11.3  | 200             | 22.6  | 0 to ±8,000         | 0 to ±15,000 | 12,000            | 0.031            | 10      |
| 48201V(2-2)    | 200          | 22.6  | 400             | 45.2  | 0 to ±8,000         | 0 to ±15,000 | 26,000            | 0.031            | 10      |
| 48202V(5-2)    | 500          | 56.5  | 1,000           | 113   | 0 to ±7,000         | 0 to ±12,000 | 66,000            | 0.032            | 10      |
| 48202V(1-3)    | 1,000        | 113   | 2,000           | 226   | 0 to ±7,000         | 0 to ±12,000 | 85,000            | 0.032            | 10      |
| 48203V(2-3)    | 2,000        | 226   | 4,000           | 452   | 0 to ±6,500         | 0 to ±8,500  | 288,000           | 0.080            | 10      |
| 48204V(5-3)    | 5,000        | 565   | 10,000          | 1,130 | 0 to ±6,000         | 0 to ±8,500  | 545,000           | 0.100            | 11      |
| 48204V(1-4)    | 10,000       | 1,130 | 20,000          | 2,260 | 0 to ±6,000         | 0 to ±8,500  | 684,000           | 0.100            | 12      |

\* Ratings are for continuous operation without external lubrication.

\*\*Stiffness is conservatively rated and includes the torsion section and shaft ends.



| MCRT®<br>MODEL | DIMENSIONS [inches] |       |       |                       |       | 4 PIN TORQUE CONNECTOR |  | SPEED PICKUP CONNECTOR       |                |                          |                         |              |
|----------------|---------------------|-------|-------|-----------------------|-------|------------------------|--|------------------------------|----------------|--------------------------|-------------------------|--------------|
|                | A                   | B     | C     | D                     | L     | 1                      | 2  | CODE A PICKUP                |                | CODE Z PICKUP            |                         |              |
| 48201V         | 0.187               | 1.000 | 1.500 | 0.625 +0.0000/-0.0005 | 7.500 | 1                      | Analog Output                              | A                            | Signal         | A                        | + Power In (5 to 15Vdc) |              |
| 48202V         | 0.187               | 1.000 | 1.500 | 0.750 +0.0000/-0.0005 | 7.500 | 2                      | Analog Ground                              | B                            | Signal         | B                        | Output Signal           |              |
| 48203V         | 0.250               | 1.063 | 1.563 | 1.000 +0.0000/-0.0005 | 7.625 | 3                      | CW Cal Check (short 3 to 2)                | C                            |                | C                        | Common                  |              |
| 48204V         | 0.375               | 1.625 | 2.563 | 1.500 +0.0000/-0.0005 | 9.625 | 4                      | CCW Cal Check (short 4 to 2)               |                              |                |                          |                         |              |
|                |                     |       |       |                       |       |                        | Auto-Zero (short 3 & 4 to 2 for 5 seconds) | <b>2 PIN POWER CONNECTOR</b> |                |                          |                         |              |
|                |                     |       |       |                       |       |                        | <b>3 PIN RS232C CONNECTOR</b>              | 1                            | Power Ground   |                          |                         |              |
|                |                     |       |       |                       |       |                        | 1  | TXD                          | 2              | + Power In (10 to 15Vdc) |                         |              |
|                |                     |       |       |                       |       |                        | 2  | Ground                       | <b>Order #</b> | MCRT 48202V (5-2)        | N or C                  | A, Z or N    |
|                |                     |       |       |                       |       |                        | 3  | RXD                          | Model No.      | Range                    | Performance             | Speed Pickup |

## S. Himmelstein and Company

Designing and Making the World's Best Torque Instruments since 1960

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