

Model 2110-2116

Flanged Reaction Torque Sensor



DESCRIPTION

Model 2110-2116 flanged reaction torque sensor is designed for installation between test pieces such as motors, switches, axles, or shafts and their mounting plate. These models operate and are calibrated in both directions. Nickel-plated alloy steel construction enhances durability in harsh, industrial environments. These models have no moving parts and utilize four bonded

strain gages on a special machined portion of the transducer to achieve a maximum non-linearity of 0.1% over a wide dynamic range. Typical applications include tire braking, motor dynamometers, friction-skid testing, and twist measurement. 2000 in-lb to 2400000 in-lb capacities.

FEATURES

- 2000 in-lb to 2400000 in-lb capacities
- 0.1 % non-linearity and hysteresis
- High torsional stiffness
- Higher resistance to bending moments
- Low-end sensitivity due to absence of moving parts

Safety considerations: It would be unsafe to operate Honeywell torque sensors and load cells beyond static overload or ultimate extraneous load limits as defined in the glossary of terms or, when applicable, higher than maximum speed. When in doubt, consult factory. Honeywell is not responsible for any property damage or personal injury which may result because of the misapplication of the transducer.

Model 2110-2116

PERFORMANCE SPECIFICATIONS

| Characteristic | Measure |
|-------------------------|-----------------------------|
| Torque range | 2000 lb-in to 2400000 lb-in |
| Non-linearity | ±0.1 % of rated output |
| Hysteresis | ±0.1 % of rated output |
| Repeatability | ±0.05 % of rated output |
| Output @ rated capacity | 2 mV/V (nominal) |

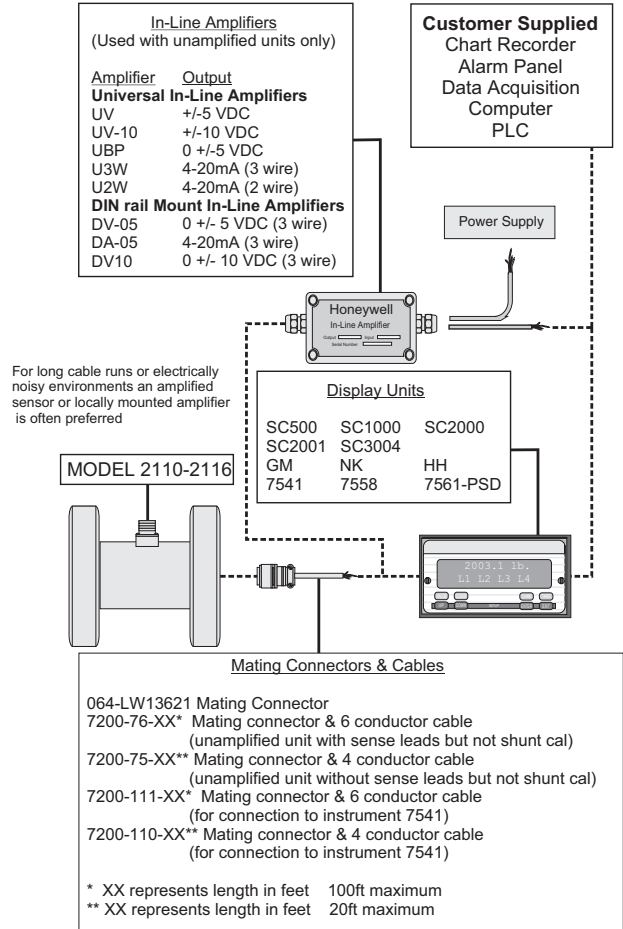
ENVIRONMENTAL SPECIFICATIONS

| Characteristic | Measure |
|----------------------------|------------------------------------|
| Temperature, operating | -54 °C to 93 °C [-65 °F to 200 °F] |
| Temperature, compensated | 21 °C to 77 °C [70 °F to 170 °F] |
| Temperature effect, zero | ±0.002 %/of rated output °F |
| Temperature effect, output | ±0.002 %/of reading °F |

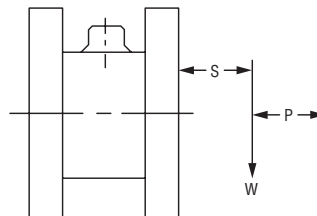
ELECTRICAL SPECIFICATIONS

| Characteristic | Measure |
|-----------------------|------------------------|
| Excitation (maximum) | 20 Vdc or Vac RMS |
| Insulation resistance | > 5000 mOhm @ 50 Vdc |
| Bridge resistance | 350 ohm (nominal) |
| Number of bridges | 1 |
| Zero balance | ±1.0 % of rated output |

TYPICAL SYSTEM DIAGRAM



LOAD CARRYING CAPACITY



W - weight

W x S - overhung moment

S - distance to W

Do not exceed moment (**W x S**) or shear (**W**), whichever value is attained first

P = thrust

Flanged Reaction Torque Sensor

MECHANICAL SPECIFICATIONS

| Model | Capacity Nm [lb-in] | Overload Nm [lb-in] | Torsional stiffness Nm/rad [lb-in/rad] | Max. overhung moment WxS Nm [lb-in] | Max. shear W N [lb] | Max. thrust P N [lb] |
|-------------|---------------------|---------------------|--|-------------------------------------|---------------------|----------------------|
| 2110-2K | 225 [2000] | 340 [3000] | 43384 [384000] | 113 [1000] | 6675 [1500] | 8895 [2000] |
| 2110-5K | 565 [5000] | 845 [7500] | 103941 [920000] | 226 [2000] | 8896 [2000] | 13344 [3000] |
| 2111-10K | 1130 [10000] | 1690 [15000] | 302784 [2680000] | 565 [5000] | 17800 [4000] | 26688 [6000] |
| 2111-20K | 2250 [20000] | 3380 [30000] | 649630 [5750000] | 1130 [10000] | 28900 [6500] | 44480 [10000] |
| 2111-30K | 3390 [30000] | 5085 [45000] | 1129790 [10000000] | 1695 [15000] | 3863 [8500] | 57824 [13000] |
| 2112-50K | 5650 [50000] | 8475 [75000] | 903833 [8000000] | 2704 [24000] | 53375 [12000] | 80064 [18000] |
| 2112-100K | 11300 [100000] | 16950 [150000] | 2259584 [20000000] | 5650 [50000] | 89000 [20000] | 133440 [30000] |
| 2113-200K | 22600 [200000] | 33900 [300000] | 3773505 [33400000] | 10170 [90000] | 133440 [30000] | 177920 [40000] |
| 2114-300K | 33900 [300000] | 50850 [450000] | 6778752 [60000000] | 16950 [150000] | 186800 [42000] | 266880 [60000] |
| 2114-500K* | 56500 [500000] | 84750 [750000] | 12879628 [114000000] | 22600 [200000] | 244640 [55000] | 355840 [80000] |
| 2115-600K* | 67796 [600000] | 101695 [900000] | 18079096 [160000000] | 22600 [200000] | 422560 [95000] | 400320 [90000] |
| 2115-750K* | 84745 [750000] | 127119 [1125000] | 23728814 [210000000] | 28250 [250000] | 489280 [110000] | 467040 [105000] |
| 2116-1200K* | 135593 [1200000] | 203375 [1800000] | 20338983 [180000000] | 39550 [350000] | 622720 [140000] | 578240 [130000] |
| 2116-2400K* | 271186 [24000000] | 406800 [36000000] | 48587570 [430000000] | 79096 [700000] | 1000800 [225000] | 934080 [210000] |

* Calibration performed to 300000 lb-in. Consult factory for higher calibrations.

MOUNTING DIMENSIONS

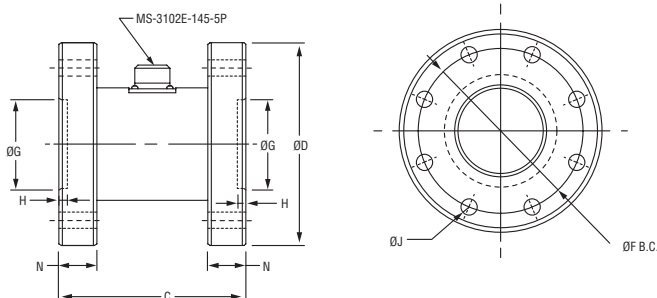
| Model | C cm [in] | D cm [in] | F cm [in] | G* cm [in] | H cm [in] | N cm [in] | J** cm [in] |
|------------------------|---------------|--------------|--------------|-------------|-------------|-------------|----------------|
| 2110-2K, -5K | 7,62 [3] | 10,16 [4] | 8,26 [3.25] | 3,81 [1.50] | 0,32 [0.13] | 1,27 [0.50] | 0,83 [0.33] |
| 2111-10K, -20K | 8,89 [3.50] | 12,70 [5] | 10,80 [4.25] | 5,08 [2.00] | 0,64 [0.25] | 1,91 [0.75] | 0,99 [0.39] |
| 2112-50K, -100K | 18,73 [7.38] | 20,32 [8] | 16,51 [6.50] | 8,89 [3.50] | 0,79 [0.31] | 3,81 [1.50] | 1,63 [0.65] |
| 2113-200K | 21,59 [8.50] | 24,77 [9.75] | 20,32 [8] | 10,16 [4] | 0,79 [0.31] | 3,81 [1.50] | 1,94 [0.77] |
| 2114-300K, -500K**** | 26,67 [10.50] | 35,63 [14] | 27,94 [11] | 15,24 [6] | 0,79 [0.31] | 5,08 [2] | 2,59 [1.02] |
| 2115-600K, -750K**** | 26,67 [10.50] | 38,10 [15] | 30,48 [12] | 15,24 [6] | 0,79 [0.31] | 5,08 [2] | 3,85 [1.52] |
| 2116-1200K, -2400K**** | 40,64 [16] | 50,80 [20] | 40,64 [16] | 20,32 [8] | 1,27 [0.50] | 5,08 [2] | 3,86 [1.52]*** |

* Tolerance on shaft diameter +0.002 - 0.00

** Eight equally spaced holes are located within 0.005 in of true position

*** 16 equally spaced holes

**** Calibration performed to 300000 lb-in max.



For reference only

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While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

 **WARNING**
PERSONAL INJURY

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

 **WARNING**
MISUSE OF DOCUMENTATION

- The information presented in this datasheet is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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