

## 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)

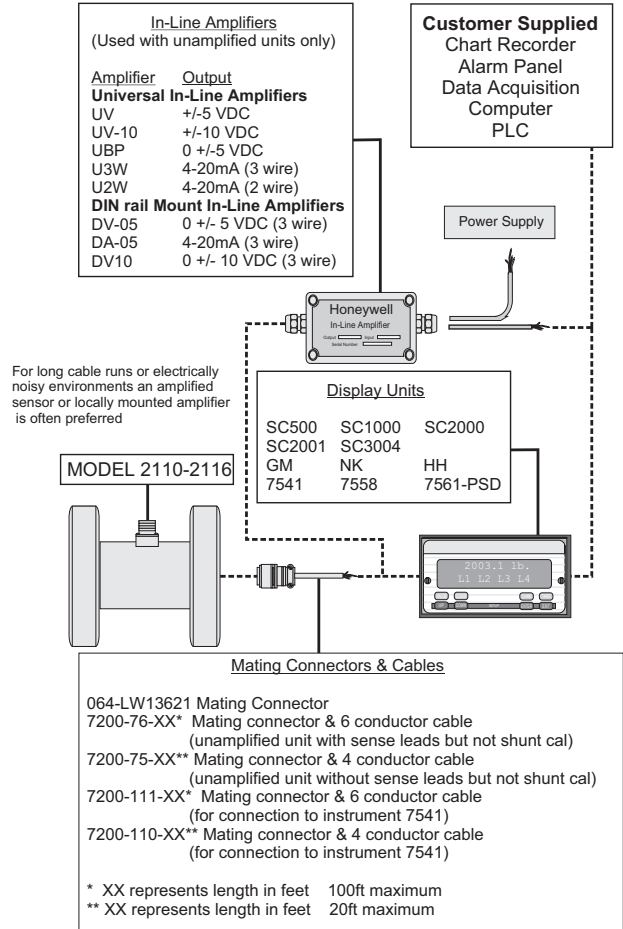
## ENVIRONMENTAL SPECIFICATIONS

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

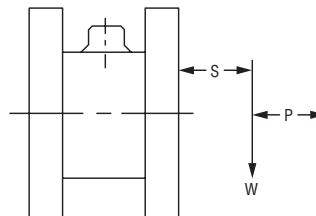
## ELECTRICAL SPECIFICATIONS

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

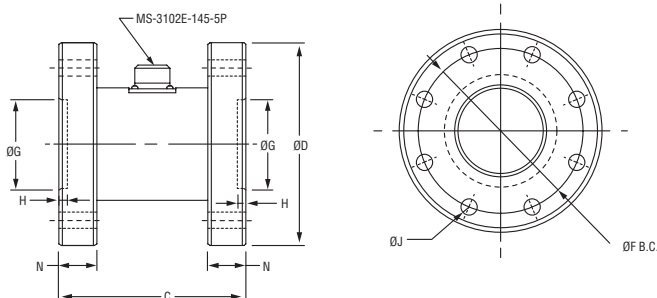
Model	C cm [in]	D cm [in]	F cm [in]	G* cm [in]	H cm [in]	N cm [in]	J** cm [in]
2110-2K, -5K	7,62 [3]	10,16 [4]	8,26 [3.25]	3,81 [1.50]	0,32 [0.13]	1,27 [0.50]	0,83 [0.33]
2111-10K, -20K	8,89 [3.50]	12,70 [5]	10,80 [4.25]	5,08 [2.00]	0,64 [0.25]	1,91 [0.75]	0,99 [0.39]
2112-50K, -100K	18,73 [7.38]	20,32 [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

**Warranty.** Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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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