

# PRODUCT DATA

## Force Transducer Charge Force Transducers — Types 8230 C-003 and 8231 C

### USES

- Measurements of tensile and compressive forces
- Designed for modal and process applications

### FEATURES

- Easily mounted
- Wide compression range
- Rigid construction with high stiffness
- High temperature
- Impact cap included

### Description

Types 8230 C-003 and 8231 C are designed for dynamic, short-duration static and impact force measurements. Type 8230 C-003 is typically used for measuring applied forces in modal applications, for example, inserted directly between an exciter and the test structure. Type 8231 C is typically used in force measurements with excessive compressive forces or where a wide compression range is required. The wide temperature range of the transducers makes them ideal for high-temperature applications, such as environmental tests.

Type 8230 C-003 is mounted using the  $\frac{1}{4}$ "-28 UNF tapped holes on the top and bottom of the body and Type 8231 C using the  $\frac{3}{8}$ "-16 UNC tapped holes on the top and bottom of the body. The transducers feature a 10-32 UNF side connector.

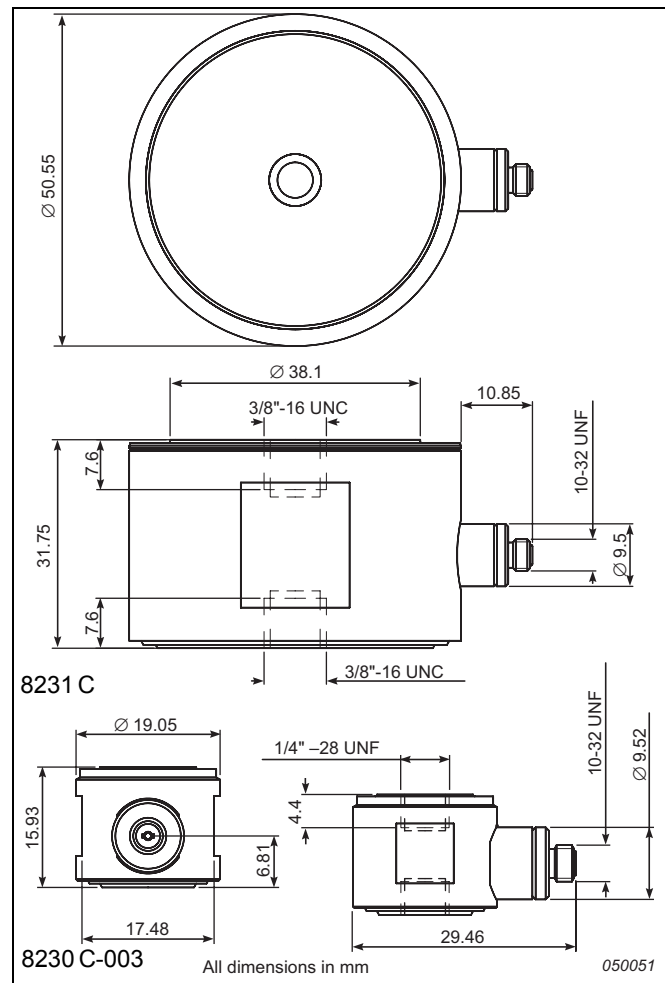
### Characteristics

These force transducers may be treated as charge sources. Their sensitivity is expressed in terms of charge per unit force (pC/N or pC/lbf).

The transducers work on the piezoelectric effect of quartz, which, when stressed (in this case compressed), gives an electrical charge proportional to the compressing force. The housing material is stainless steel giving a very stiff and rigid construction.

### Calibration

The transducers are supplied with an individual calibration of the sensitivity.





## Specifications – Charge Force Transducers Types 8230 C-003 and 8231 C

	Units	8230 C-003	8231 C
<b>Dynamic Characteristics</b>			
Charge Sensitivity (typical)	pC/N (pC/lbf)	-4 (-18)	-2 (-9)
Full Scale Force Range Compression	kN (lbf)	22.2 (5000)	110 (25000)
Full Scale Force Range Tensile	kN (lbf)	2.2 (500)	
Mounted Resonance Frequency	kHz	75	
Max. Compression	kN (lbf)	66.7 (15000)	270 (60000)
Max. Tension	kN (lbf)	2.2 (500)	4.5 (1000)
Linearity Error at Full Scale	% full scale	< ±1	
<b>Electrical Characteristics</b>			
Output Polarity		Negative output for compression	
Nominal Capacitance	pF	18	250
Leakage Resistance	GΩ	1000	500
Grounding		Signal ground connected to case	
<b>Environmental Characteristics</b>			
Temperature Range	°C (°F)	-73 to +260 (-100 to +500)	
Coefficient of Thermal Sensitivity	%/°C (%/°F)	0.05 (0.03)	0.02 (0.01)
Humidity		Epoxy sealed	
Max. Operational Sinusoidal Vibration (peak)	ms <sup>-2</sup> (g)	24500 (2500)	29000 (3000)
Max. Operational Shock (peak)	ms <sup>-2</sup> (g)	98000 (10000)	49000 (5000)
<b>Physical Characteristics</b>			
Dimensions		See outline drawing	
Weight	total	30.2 (1.1)	452 (15.9)
	mass above piezo element	9.5 (0.34)	198 (7)
	mass below piezo element	20.7 (0.73)	254 (9)
Case Material		17-4 PH stainless steel	
Stiffness	kN/μm (lbf/μin.)	2.0 (11.4)	8.8 (50)
Connector		10-32 UNF	
Mounting		¼"-28 UNF thread on top and bottom	⅜"-16 UNC thread on top and bottom

All values are typical at 25°C (77°F) unless measurement uncertainty is specified

### COMPLIANCE WITH STANDARDS

 Compliance with EMC Directive and Low Voltage Directive of the EU

 Compliance with the EMC requirements of Australia and New Zealand

### Ordering Information

Type 8230 C-003 includes the following accessories:

- Carrying box
- Calibration chart
- Mounting stud, ¼"-28 UNF, 9.7 mm (0.38") length
- Impact cap, stainless steel
- ¼"-28 UNF (external) to 10-32 UNF (internal) threaded insert

Type 8231 C includes the following accessories:

- Carrying box

- Calibration chart
- 2 × Mounting stud, ⅜"-16 UNC, THD, 12.7 mm (0.5") length
- Impact cap, stainless steel

#### OPTIONAL ACCESSORIES\*

- AO 0038: 260°C Teflon® low-noise cable, 10-32 UNF, length 1.2 m (4 ft.)
- AO 0122: 250°C, reinforced super low noise cable, 10-32 UNF, 3 m (10 ft.)
- AO 1382: Teflon low noise cable, double screened 10-32 UNF, 1.2 m (4 ft.)
- JP 0145: Plug adaptor, BNC/10-32 UNF

- UA 2068: Set of 10 ¼"-28 UNF threaded mounting studs, 9.7 mm (0.38") length
- UA 2052: Set of 10 stud adaptors ¼"-28 UNF to 10-32 thread
- UA 2054: Set of 20 bushing adaptors ¼"-28 UNF (external) to 10-32 UNF (internal) thread
- UA 2062: Set of 10 stud adaptors ¼"-28 UNC to 10-32 UNF thread, with flange
- UA 2061: Set of 10 mounting studs ⅜"-16 UNC thread, 12.7 mm (0.5") length

\* Additional accessories and cables are available (see [www.bksv.com](http://www.bksv.com)). For a complete list of stingers and other mechanical connectors for use with modal exciters, please consult the product data sheets on Types 3624, 3625, 3626, 3627 or 3628.

Brüel & Kjær reserves the right to change specifications and accessories without notice

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