

# PRODUCT DATA

## Modal Exciters — Types 4827 and 4828

*Designed for demanding large structure modal test applications, electrodynamic Modal Exciters Types 4827 and 4828 provide users with precise, reliable, stable and long-lasting operation. The highest quality materials, rugged construction and stringent quality control provide a versatile modal excitation instrument, which can be employed in any experimental modal test*

*The two modal exciters are available as stand-alone units – supplied with the appropriate trunnion, blower and connecting cable only – or as complete systems (Types 3627 and 3628), with centering unit, matching power amplifier and field power supply.*

*Optional accessories include traditional push/pull stingers, tension wire stingers, turnbuckles, hose and cable extension kits, chuck nut assemblies and various adaptors.*

### Uses

- General mechanical mobility measurements
- Experimental modal analysis on most mechanical structures
- SISO, MISO, SIMO and MIMO modal test applications
- Advanced structural dynamic investigations
- Structural damage detection

### Features

- Force rating 650 N sine (Type 4827) and 1000 N sine (Type 4828) (with forced air cooling)
- Rugged, industrial design
- Can be delivered as a complete turnkey excitation systems (Types 3627 and 3628)
- High force-to-weight ratio
- 2" peak-to-peak displacement for best low-frequency excitation
- High-rigidity, low-mass magnesium armature for minimised force drop-offs at resonance frequencies
- Wide frequency range
- Low stray magnetic field
- Built-in air switch for protection against damage related to excessive current
- Blocked forced air cooling with installation of Squeak and Rattle Option WQ-2553 (maximum operating time is 2 hours)
- Electronic DC control of tension wire pre-tensioning
- Full range of stingers – tension wire technology (only electrical pre-tensioning) as well as traditional push/pull stinger technology (optional)
- Built-in optical sensor for accurate determination of armature position
- Ideal for any excitation signal (sine, impulse or random based signals)



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## Description

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In order to function properly, both of these modal exciters, in combination with Power Amplifier Type 2721, require a Field Power Supply Type 2830 and a DC Static Centering Unit Type 1056. Field Power Supply Type 2830 provides the necessary current to the electromagnet, while DC Static Centering Unit Type 1056 provides armature “suspension” and correct centering of the armature relative to the exciter’s housing and the test specimen. Available as a complete system with modal exciter, auxiliary hardware and all necessary cables, Types 4827 and 4828 become Types 3627 and 3628, respectively.

Precise centering of the armature requires that DC Static Centering Unit Type 1056 and the modal exciter are calibrated together. When a modal exciter is delivered as part of a complete Modal Exciter System Type 3627 or 3628, it comes calibrated (matched) with the DC Static Centering Unit Type 1056. If the exciter and static centering unit are not purchased together, they must be calibrated before use.

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## Specifications — Modal Exciters Types 4827 and 4828

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### COMPLIANCE WITH STANDARDS



Compliance with EMC Directive and Low Voltage Directive  
Compliance with EMC Requirements of Australia and New Zealand

**Safety, EMC Emission and Immunity:** According to relevant standards: EN/IEC 61010–1, EN 50081–1/2, IEC 61000–6–1/2/3/4, EN 61326–1, CISPR22 Class B limits, FCC Rules Part 15, EN 50082–1/2, EN 61326–1

**Temperature:** According to IEC 60068–2–1 & IEC 60068–2–2

Operating temperature: +5 to +40°C (41 to 104°F)

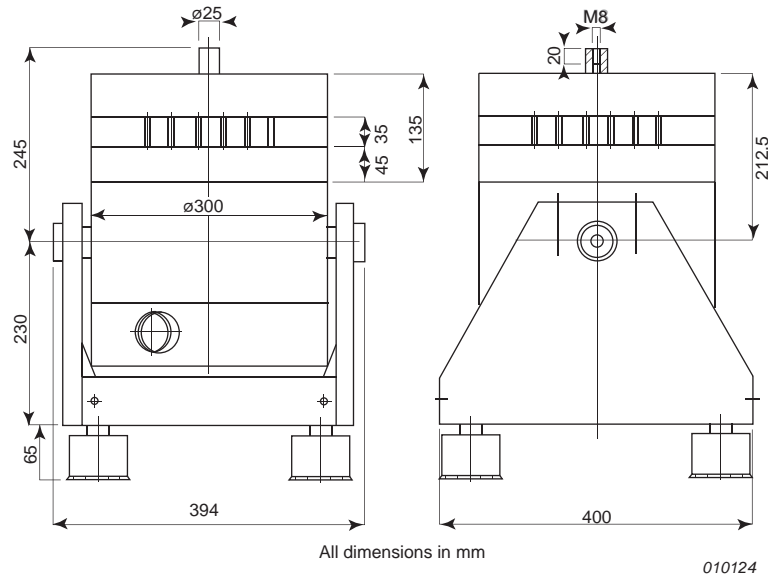
Storage temperature: –25 to +70°C (–13 to 158°F)

**Humidity:** According to IEC 60068–2–3, Damp Heat: 90% RH (non-condensing at 40°C (104°F))

**Mechanical:** Non-operating according to IEC 60068–2–6, IEC 60068–2–27, IEC 60068–2–29

**Enclosure:** IEC 60529: Protection provided by enclosures: IP 20

**Fig. 1** Dimensions of Modal Exciter Types 4827 and 4828



**Table1** Overview of specifications for Modal Excitation Systems Types 3627 and 3628

System (Exciter)	Type 3627 (4827)	Type 3628 (4828)
Matching Power Amplifier	Type 2721	Type 2721
Matching Blower	UH-1036	UH-1036
Rated Force – without forced air cooling <sup>a</sup> [sine (peak)/random (RMS)]	100/70 N <sup>a</sup>	100/70 N <sup>a</sup>
Rated Force – with forced air cooling [sine (peak)/random (RMS)]	650/420 N <sup>b</sup>	1000/650 N <sup>b</sup>
Useful Frequency Range	2 – 5000 Hz	2 – 5000 Hz
Max. Rated Travel	50.8 mm (2 inches)	50.8 mm (2 inches)
Max. Velocity [sine (peak)/random (RMS)]	1.5/1.5 m/s	1.5/1.5 m/s
Max. Acceleration [sine (peak)/random (RMS)]	500/343 m/s <sup>2</sup> (51/35 g)	765/490 m/s <sup>2</sup> (78/50 g)
Rated Current	18 A	18 A
Suspension Stiffness <sup>c</sup>	Adjustable	Adjustable
Effective Moving Mass	1.3 kg (2.87 lb.)	1.3 kg (2.87 lb.)
Main Resonance Frequency	3000 Hz	3000 Hz
Weight with Trunnion	80 kg (176 lb.)	80 kg (176 lb.)

- a. Only if option WQ-2553 is installed. Maximum operating time is then two hours
- b. Brüel & Kjær assumes no responsibility if blowers other than UH-1036 are used for cooling
- c. Adjusted with DC Static Centering Unit Type 1056

**Table2** Overview of specifications for Blower UH-1036

	Mains Power Frequency	Max. Air Capacity	Max. Diff. Pressure (Vacuum)	Electro-motor	Hose Diameter	SPL	Weight	Approx. Dimensions	Enclosure
UH-1036	50 Hz	140 m <sup>3</sup> /hr.	150 hPa	1.1 kW	40 mm	63 dB(A)	16 kg	287 × 241 × 305 mm	IP class 54
	60 Hz	175 m <sup>3</sup> /hr.	180 hPa	1.3 kW		64 dB(A)			

**Ordering Information**

**MODAL EXCITER TYPE 4827**

Includes the following accessories:

- Integral cable with Hahn-15 connector
- KC-1008: Trunnion
- UH-1036: 1000 N blower
- AF-1103: Air hose for UH 1036, length 5 m
- UA-1614: Three adaptors, M8 to 10–32 UNF
- UA-2039: Three M8 to M6 thread inserts

**MODAL EXCITATION SYSTEM TYPE 3627**

Includes the following accessories:

- Type 4827: Modal Exciter
- Type 2721: Power Amplifier
- Type 1056: DC Static Centering Unit
- Type 2830: Field Power Supply
- UA-1599: Three Push/Pull steel stingers

**MODAL EXCITER TYPE 4828**

Includes the following accessories:

- Integral cable with Hahn-15 connector
- KC-1008: Trunnion
- UH-1036: 1000 N blower
- AF-1103: Air hose for UH-1036, length 5 m
- UA-1614: Three adaptors, M8 to 10–32 UNF
- UA-2039: Three M8 to M6 thread inserts

**MODAL EXCITATION SYSTEM TYPE 3628**

Includes the following accessories:

- Type 4828: Modal Exciter
- Type 2721: Power Amplifier
- Type 1056: DC Static Centering Unit
- Type 2830: Field Power Supply
- UA-1599: Three Push/Pull steel stingers

**Optional Accessories**

**ARMATURE CENTERING AND SUSPENSION**

Type 1056 DC Static Centering Unit

**POWER AMPLIFIER**

Type 2721 Power Amplifier

**ELECTROMAGNET FIELD POWER SUPPLY**

Type 2830 Field Power Supply

**FORCED AIR COOLING BLOCKER**

WQ-2553 Squeak and Rattle Option (must be installed at the factory)

**STINGERS, COLLET CHUCKS AND ADAPTORS**

- UA-1596 Five push/pull steel stingers. Content: Ten adaptors diameter 2.5 mm to 10–2 UNF. Five Steel rods, length 200 mm, diameter 2.5 mm. Ten fastening screws
- UA-1597 Five push/pull steel stingers. Content: Ten adaptors, diameter 3.5 mm to 10–32 UNF. Five steel rods, length 200 mm, diameter 3.5 mm. Ten fastening screws
- UA-1598 Three push/pull steel stingers. Content: Three fastening screws. Three adaptors diameter 2.5 mm to 10–32 UNF. Three steel rods, length 500 mm, diameter 2.5 mm. One 2.5 mm collet chuck (chuck nut with collet insert)

UA-1599	Three Push/Pull steel stingers. Content: Three fastening screws. Three Adaptors, diameter 3.5 mm to 10–32 UNF. Three steel rods, length 500 mm, diameter 3.5 mm, one 3.5 mm collet chuck (chuck nut with collet insert)	UA-1604	inserts for wire diameter 2.0 mm. Three fastening screws. Three adaptors, 2.0 mm to 10–32 UNF Collet chuck and adaptor for push/pull rod, diameter 2.5 mm. Content: Three chuck nuts. Three collet inserts for push/pull rod diameter 2.5 mm. Three fastening screws. Three adaptors, 2.5 mm to 10–32 UNF
UA-1600	One tension wire, length 5000 mm, with collet chuck. Content: One fastening screw. One adaptor, diameter 0.75 mm to 10–32 UNF. One tension wire, length 5000 mm, diameter 0.75 mm, on a spool. One 0.75 mm collet chuck (chuck nut with collet insert)	UA-1605	Collet chuck and adaptor for push/pull rod, diameter 3.5 mm. Content: Three chuck nuts. Three collet inserts for push/pull rod diameter 3.5 mm. Three fastening screws. Three adaptors, 3.5 mm to 10–32 UNF
UA-1601	Three tension wires. Content: Three fastening screws. Three adaptors, diam. 2.0 mm to 10–32 UNF. Three tension wires, length 500 mm, diameter 2.0 mm. Three 2.0 mm collet chucks (chuck nut with collet insert)	UA-1606	Five nylon stingers. Content: Five nylon rods, 200 mm, diameter 3.5 mm. Ten fastening screws. Ten adaptors, diameter 3.5 mm to 10–32 UNF
UA-1602	Collet chuck and adaptor for tension wire with diameter 0.75 mm. Content: Three chuck nuts. Three collet inserts for wire diameter 0.75 mm. Three fastening screws. Three adaptors, diameter 0.75 mm to 10–32 UNF	<b>THREAD AND BUSHING ADAPTORS</b>	
UA-1603	Collet chuck and adaptor for tension wire with 2.0 mm. Content: Three Chuck nuts. Three collet	UA-2054	Bushing Adaptor, 10–32 UNF to ¼–28 UNF
		UA-2052	Adaptor, Male 10–32 UNF to Male ¼–28 UNF
		<b>CABLE AND HOSE EXTENSIONS</b>	
		AF-1102	Extension air hose, length 10 m
		AQ-0655	Extension cable with Hahn 15-pin connectors at both ends, length 10 m

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

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