

Modal Exciter Types 4827 and 4828

Modal Excitation Systems Types 3627 and 3628

Designed for demanding large structure modal test applications, electrodynamic Modal Exciter Types 4827 and 4828 provide precise, reliable, stable and long-lasting operation. High quality materials, rugged construction and stringent quality control assure versatile means of modal excitation for any experimental modal test.

The two modal exciters are available as stand-alone units – supplied with the appropriate trunnion, blower and connecting cable – or as complete systems (Types 3627 and 3628), with centring 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 and Features

- Uses**
- General mechanical mobility measurements
 - Experimental modal analysis using SISO, MISO, SIMO and MIMO test techniques
 - Advanced structural dynamic investigations
 - Structural damage detection
 - Finite elemental modal correlation and validation
- Features**
- Force rating with forced air cooling:
 - 650 N sine (Type 4827)
 - 1000 N sine (Type 4828)
 - 2-inch peak-to-peak displacement for best low-frequency excitation
 - Wide frequency range: 2 to 5000 Hz
 - Rugged, industrial design
 - High force-to-weight ratio due to rare earth magnet technology
 - High-rigidity, low-mass magnesium armature for minimised force drop-offs at resonance frequencies
 - Low stray magnetic field
 - Ideal for any excitation signal (sine, impulse or random signals)
 - Built-in air switch for protection against damage related to excessive current
 - Built-in optical sensor for accurate determination of armature position
 - 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)
 - Can be delivered as a complete turnkey excitation systems: Types 3627 and 3628

Description

In order to function properly, both modal exciters require Power Amplifier Type 2721, Field Power Supply Type 2830 and DC Static Centring Unit Type 1056.

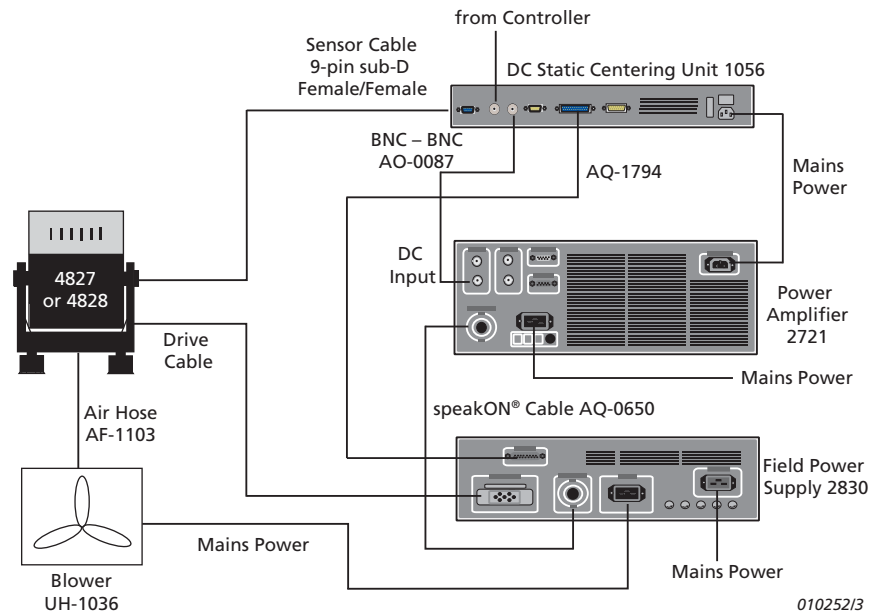
Field Power Supply Type 2830 provides the necessary current to the electromagnet, while DC Static Centring Unit Type 1056 provides armature "suspension" and correct centring of the armature relative to the exciter's housing and the test specimen.

Precise centring of the armature requires that Type 1056 and the modal exciter are calibrated together. If the exciter and static centring unit are not purchased together, they must be calibrated before use.

Types 4827 and 4828 are also available as complete systems. Modal Excitation Systems Types 3627 and 3628 come with the respective modal exciter and its accessories, DC Static Centring Unit Type 1056, Power Amplifier Type 2721, Field Power Supply Type 2830 and three push/pull steel stingers.

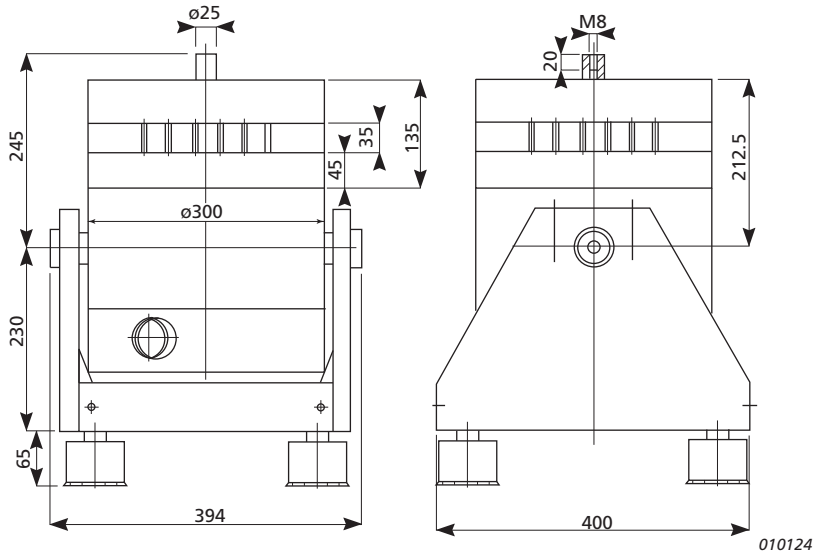
When a modal exciter is delivered as part of a complete Modal Excitation System Type 3627 or 3628, it comes calibrated (matched) with the DC Static Centring Unit Type 1056.

Fig. 1
Setup for Modal
Excitation System
Types 3627 and 3628



Dimensions





Fig. 2
Dimensions of
Type 4827 or 4828 in
its trunnion (in mm)



Modal Exciter Configurations

See Modal Exciter Configuration Guide (BG 1483) for an overview of modal excitation systems, exciter stands, stingers, tension wires, and force and impedance transducers.

Compliance with Standards

   	<p>The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EU directives</p> <p>RCM mark indicates compliance with applicable ACMA technical standards – that is, for telecommunications, radio communications, EMC and EME</p> <p>China RoHS mark indicates compliance with administrative measures on the control of pollution caused by electronic information products according to the Ministry of Information Industries of the People's Republic of China</p> <p>WEEE mark indicates compliance with the EU WEEE Directive</p>
Temperature	IEC 60068–2–1 & IEC 60068–2–2: Environmental Testing. Cold and Dry Heat. Operating Temperature: 5 to 40 °C (41 to 104 °F) Storage Temperature: –25 to +70 °C (–13 to +158 °F)
Humidity	IEC 60068–2–78: Damp Heat: 90% RH (non-condensing at 40 °C (104 °F)).

Specifications – Modal Exciters Types 4827 and 4828

Table 1 Specifications for Modal Exciter Types 4827 and 4828 in system configurations

	Type 4827/3627	Type 4828/3628
Matching Power Amplifier	Type 2721	Type 2721
Matching Blower	UH-1036	UH-1036
Rated Force – without forced air cooling* [sine (peak)/random (RMS)]	100/70 N*	100/70 N*
Rated Force – with forced air cooling [sine (peak)/random (RMS)]	650/420 N [†]	1000/650 N [†]
Useful Frequency Range	2 – 5000 Hz	2 – 5000 Hz
Max. Rated Travel	50.8 mm (2 in)	50.8 mm (2 in)
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 ² (51/35 g)	765/490 m/s ² (78/50 g)
Rated Current	18 A	18 A
Suspension Stiffness [‡]	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)

* Only if option WQ-2553 is installed. Maximum operating time is then two hours

[†] Brüel & Kjær assumes no responsibility if blowers other than UH-1036 are used for cooling

[‡] Adjusted with DC Static Centring Unit Type 1056

Table 2 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 ³ /hr	150 hPa	1.1 kW	40 mm (1.6 in)	63 dB(A)	16 kg (35.3 lb)	287 × 241 × 305 mm (11.3 × 9.5 × 12.0 in)	IP class 54
	60 Hz	175 m ³ /hr	180 hPa	1.3 kW		64 dB(A)			

Ordering Information

Type 4827 **Modal Exciter, 650 N**
Type 4828 **Modal Exciter, 1000 N**

Each Modal Exciter 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 (16.4 ft)
- UA-1614: Three Adaptors, M8 to 10–32 UNF
- UA-2039: Three M8 to M6 Thread Inserts

Modal Excitation Systems

Type 3627 **Modal Excitation System**

Includes the following accessories:

- Type 4827: Modal Exciter
- Type 2721: Power Amplifier
- Type 1056: DC Static Centring Unit
- Type 2830: Field Power Supply
- UA-1599: Three 3.0 mm Push/Pull Steel Stingers

Type 3628 **Modal Excitation System**

Includes the following accessories:

- Type 4828: Modal Exciter
- Type 2721: Power Amplifier
- Type 1056: DC Static Centring Unit
- Type 2830: Field Power Supply
- UA-1599: Three 3.0 mm Push/Pull Steel Stingers

Optional Accessories

- Type 1056 DC Static Centring Unit (must be calibrated with the exciter at Brüel & Kjær)
- Type 2721 Power Amplifier
- Type 2830 Field Power Supply
- WQ-2553 Squeak and Rattle Option (must be installed at Brüel & Kjær)

STINGERS, TENSION WIRES AND ACCESSORIES

All adaptors, screws and inserts required to attach the Modal Exciter and/or DC Static Centring Unit are included in each package.

- UA-1596 Five 2.5 mm Push/Pull Steel Stingers, including:
- 10 × adaptors diameter 2.5 mm to 10–32 UNF
 - 5 × steel rods, length 200 mm, diameter 2.5 mm
 - 10 × fastening screws
- UA-1597 Five 3.0 mm Push/Pull Steel Stingers, including:
- 10 × adaptors, diameter 3.0 mm to 10–32 UNF
 - 5 × steel rods, length 200 mm, diameter 3.0 mm
 - 10 × fastening screws
- UA-1598 Three 2.5 mm Push/Pull Steel Stingers, including:
- 3 × fastening screws
 - 3 × adaptors, diameter 2.5 mm to 10–32 UNF
 - 3 × steel rods, length 500 mm, diameter 2.5 mm
 - 1 × 2.5 mm collet chuck (chuck nut with collet insert)

TRADEMARKS

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- UA-1599 Three 3.0 mm Push/Pull Steel Stingers, including:
- 3 × fastening screws
 - 3 × adaptors, diameter 3.0 mm to 10–32 UNF
 - 3 × steel rods, length 500 mm, diameter 3.0 mm
 - 1 × 3.0 mm collet chuck (chuck nut with collet insert)
- UA-1600 One 0.75 mm Tension Wire, length 5000 mm, including:
- 1 × fastening screw
 - 1 × adaptor, diameter 0.75 mm to 10–32 UNF
 - 1 × 0.75 mm collet chuck (chuck nut with collet insert)
- UA-1601 Three 1.5 mm Tension Wires, length 500 mm, including:
- UA-1602 Three 0.75 mm Collet Chucks and Adaptors, for tension wire, including:
- 3 × chuck nuts
 - 3 × collet inserts, diameter 0.75 mm
 - 3 × fastening screws
 - 3 × adaptors, diameter 0.75 mm to 10–32 UNF
- UA-1603 Three 1.5 mm Collet Chucks and Adaptors, for tension wire, including:
- 3 × chuck nuts
 - 3 × collet inserts, diameter 1.5 mm
 - 3 × fastening screws
 - 3 × adaptors, diameter 1.5 mm to 10–32 UNF
- UA-1604 Three 2.5 mm Collet Chuck and Adaptor, for push/pull rod, including:
- 3 × chuck nuts
 - 3 × collet inserts, diameter 2.5 mm
 - 3 × fastening screws
 - 3 × adaptors, diameter 2.5 mm to 10–32 UNF
- UA-1606 Five Nylon Stingers, including:
- 5 × nylon rods, length 200 mm, diameter 3.5 mm
 - 10 × fastening screws
 - 10 × adaptors, diameter 3.5 mm to 10–32 UNF

FORCE TRANSDUCERS AND IMPEDANCE HEAD

- Type 8230 CCLD Force Transducer (+44/–44 N range)
- Type 8230-001 CCLD Force Transducer (+220/–220 N range)
- Type 8230-002 CCLD Force Transducer (+2200/–2200 N range)
- Type 8230-003 CCLD Force Transducer (+22000/–2200 N range)
- Type 8230-C-003 Charge Force Transducer (+22200/–2200 N range)
- Type 8231-C Charge Force Transducer (+110000/–2200 N range)
- Type 8203 Force Transducer/Impact Hammer
- Type 8001 Impedance Head

THREAD AND BUSHING ADAPTORS

- UA-2052 Set of 10 Stud Adaptors, 10–32 UNF to ¼–28 UNF
- UA-2054 Set of 20 Bushing Adaptors, 10–32 UNF to ¼–28 UNF

CABLE AND HOSE EXTENSIONS

- AF-1102 Extension Air Hose, length 10 m
- AQ-0655 Extension Cable with Hahn 15-pin connectors at both ends, length 10 m

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