

PRODUCT DATA

Modal Exciter — Types 4827 and 4828

Designed for demanding modal testing applications of large structures, the electrodynamic Modal Exciter Types 4827 and 4828 provide precise, reliable, stable and long-lasting operation. Highest quality materials, stringent quality control and rugged construction provide a versatile means of modal excitation for any experimental modal test using the attached excitation method.

The two modal exciters are available as stand-alone units – supplied only with the appropriate trunnion, blower and connecting cable or as complete systems, 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 dynamics investigations
- Structural damage detection
- Finite element model correlation

FEATURES

- Force rating 650 N sine (Type 4827) and 1000 N sine (Type 4828)
- Rugged, industrial design
- Can be delivered as a complete turnkey excitation system with trunnion, auxiliary hardware and all necessary cables
- High force-to-weight ratio
- Two inch 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 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 and random based signals)



Description

For proper functioning, both of these modal exciters – together with Power Amplifier Type 2721 – require Field Power Supply Type 2830 and 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 the modal exciters are delivered as parts of one of the complete Modal Exciter System Types 3627 and 3628, they come 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.

Specifications — Modal Exciter Types 4827 and 4828

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 61010–1, IEC 61010–1, UL 3111–1, 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)

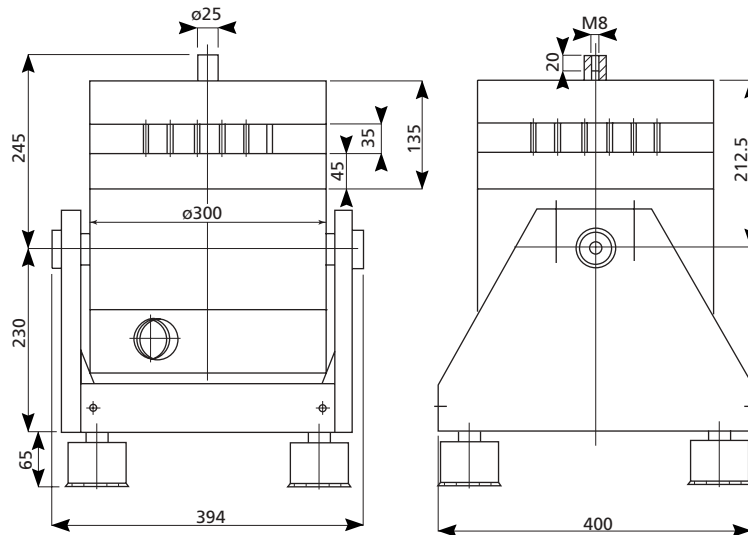
Storage temperature: –25 to +70°C (–13 to 158°F)

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



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Table1 Overview of specifications for Modal Excitation System Types 3627 and 3628

Exciter	Type 4827	Type 4828
Matching Power Amplifier	Type 2721	Type 2721
Matching Blower	UH 1036	UH 1036
Rated Force – without forced air cooling ^a [sine (peak)/random (RMS)]	100/70 N ^a	100/70 N ^a
Rated Force – with forced air cooling [sine (peak)/random (RMS)]	650/420 N ^b	1000/650 N ^b
Useful Frequency Range	2 – 5000 Hz	2 – 5000 Hz
Operating Frequency Range	DC – 5000 Hz	DC – 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 ² (51/35 g)	765/490 m/s ² (78/50 g)
Rated Current	18 A	18 A
Suspension Stiffness ^c	Adjustable	Adjustable
Effective Moving Mass	1.3 kg	1.3 kg
Main Resonance Frequency	3000 Hz	3000 Hz
Weight with Trunnion	80 kg (176 lb.)	80 kg (176 lb.)

a. Only if option WQ2553 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 the 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	63dB(A)	16 kg	287 × 241 × 305 mm	IP class 54
	60 Hz	175 m ³ /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 1000N 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

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

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

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 10–32 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 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 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 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

UA 1603 Collet chuck and adaptor for tension wire with 2.0 mm. Content: Three Chuck nuts. Three collet inserts for wire diameter 2.0 mm. Three fastening screws. Three adaptors, 2.0 mm to 10–32 UNF

UA 1604 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 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 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

FORCE TRANSDUCERS AND IMPEDANCE HEADS

EE-0357 ENDEVCO® 2312 Piezoelectric Force Sensor
 EE-0358 ENDEVCO 2313 Piezoelectric Force Sensor
 EE-0112 ENDEVCO 2311-1 ISOTRON® Force Transducer
 EE-0113 ENDEVCO 2311-10 ISOTRON Force Transducer
 EE-0114 ENDEVCO 2311-100 ISOTRON Force Transducer
 EE-0115 ENDEVCO 2311-500 ISOTRON Force Transducer
 Type 8203 Force Transducer/Impact Hammer
 Type 8001 Impedance Head

THREAD AND BUSHING ADAPTORS

EE-5227-002 Bushing Adaptor, 10–32 UNF to ¼–28 UNF
 EE-5004 Adaptor, Male 10–32 UNF to Male 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

TRADEMARKS

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