

BRÜEL & KJÆR® Modal and Measurement Exciters

Modal Exciter Types 4825 and 4826
Modal Excitation System Types 3625 and 3626

Designed for demanding modal test applications, electrodynamic Modal Exciter Types 4825 and 4826 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 only with the appropriate trunnion, blower and connecting cable – or as complete systems (Types 3625 and 3626) with matching power amplifiers and a standard set of stingers.

Optional accessories include traditional push/pull stingers, tension wire stingers, robust lateral modal exciter stands, turnbuckles, hose and cables, chuck nut assemblies and various adaptors.



Uses and Features

- Uses
- Experimental modal analysis using SIMO (single input multiple output) and MIMO (multiple input multiple output) testing techniques
 - Normal mode testing (NMT)
 - Linearity studies
 - Mechanical impedance and mobility measurements
 - Advanced structural dynamics investigations
 - Test results for finite element model (FEM) correlation and updating
 - Structural damage detection
- Features
- Force rating with forced air cooling:
 - Type 4825: 200 N (45 lbf) sine peak; 140 N (31 lbf) random RMS
 - Type 4826: 400 N (90 lbf) sine peak; 280 N (63 lbf) random RMS
 - 1-inch peak-to-peak displacement for best low-frequency excitation
 - Wide operating frequency range: DC – 5000 Hz
 - Stingers:
 - Through-hole design for easy setup
 - Choice of tension wire or traditional push/pull stingers
 - Tension wire technology minimizes lateral loading and reduces potential rattling (slack) of the structure
 - Rugged, industrial design and compact, lightweight construction for easy positioning/orientation relative to the test object
 - High force-to-weight ratio due to rare earth magnet technology
 - High-rigidity, low-mass magnesium armature for minimized force drop-offs at resonance frequencies
 - Low stray magnetic field
 - Ideal for any excitation signal (sine, impulse and random)
 - Built-in air switch for protection against damage related to excessive current
 - Built-in optical sensor for accurate determination of the armature position
 - Electronic DC control of tension wire pre-tensioning (optional)
 - Robust lateral exciter stands for easy positioning and orientation (optional)
 - Included in complete modal excitation systems: Types 3625 and 3626

Description

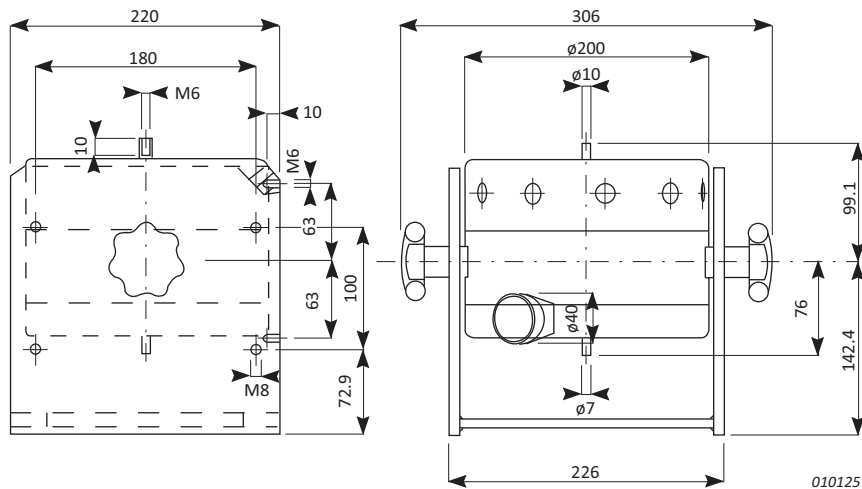
The low-weight modal exciters feature small physical dimensions relative to their force ratings and a low-mass, high-rigidity spring-suspended armature. The light-weight armature helps to ensure high-quality force measurements by minimizing force drop-offs at the test specimen's resonance frequencies.

Stingers

The "hole-through" design makes it possible to use tension wire stingers or traditional push/pull stingers with the exciters. Easy and rapid attachment of stingers is achieved by use of a chuck nut assembly (for use with tension wire stingers) or with an M6 to 10–32 UNF threaded insert (for use with push/pull stingers).

In lateral setups of Types 4825 and 4826, tension wire stingers can easily be mechanically pre-tensioned with the use of a Lateral Modal Exciter Stand. For electrical pre-tensioning, especially useful in vertical, skewed setups and for excitation in confined spaces, use DC Static Centering Unit Type 1056. The modal exciters have a Video HR-10 socket that outputs the signal from the built-in optical sensor, providing necessary feedback to the DC Static Centering Unit. Traditional push/pull stingers require no pre-tensioning.

Fig. 1 Dimensions of Modal Exciter Types 4825 or 4826 in its trunnion (in mm)



Modal Excitation System Types 3625 and 3626

Types 3625 and 3626 are complete turnkey excitation systems comprising Modal Exciter Types 4825 and 4826 with trunnion and blowers, matching power amplifier, stingers and all necessary cables.

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	<p>IEC 60068–2–1 & IEC 60068–2–2: Environmental Testing. Cold and Dry Heat.</p> <p>Operating Temperature: 5 to +40 °C (41 to 104 °F)</p> <p>Storage Temperature: –25 to +70 °C (–13 to +158 °F)</p>
Humidity	<p>IEC 60068–2–78: Damp Heat: 93% RH (non-condensing at 40 °C (104 °F)).</p>

Table 1 Specifications for Modal Exciter Types 4825 and 4826 in system configurations

		TYPE 4825/3625	TYPE 4826/3626	
Matching Power Amplifier		Type 2720*	Type 2721	
Matching Blower†		UH-1035	UH-1036	
Rated Force	Without forced air cooling	Sine peak	100 N (22 lbf)	
		Random RMS	70 N (15 lbf)	
	With forced air cooling	Sine peak	200 N (45 lbf)†	400 N (90 lbf)†
		Random RMS	140 N (31 lbf)†	280 N (63 lbf)†
Useful Frequency Range		2 – 5000 Hz		
Operating Frequency Range		DC – 5000 Hz		
Max. Rated Travel		25.4 mm (1 in)		
Max. Velocity	Sine peak	1.5 m/s (59 in/s)		
	Random RMS	1.5 m/s (59 in/s)		
Max. Acceleration	Sine peak	863 m/s ² (88 g)	981 m/s ² (100 g)	
	Random RMS	608 m/s ² (62 g)	697 m/s ² (71 g)	
Rated Current		11.2 A	18 A	
Suspension Stiffness		4 N/mm (23 lbf/in)		
Effective Moving Mass		0.23 kg (8.1 oz)	0.40 kg (14.1 oz)	
Main Resonance Frequency		>6000 Hz	4000 Hz	
Weight with Trunnion		22.8 kg (50.3 lb)		
Weight of Trunnion		7.9 kg (17.4 lb)		

* For 230 V mains supply only. For 100 or 120 V mains supply, use Type 2721

† HBK assumes no responsibility if blowers other than UH-1035 or UH-1036 are used for cooling

Table 2 Specifications for Blowers UH-1035 and UH-1036

	MAINS POWER FREQUENCY	MAX. AIR CAPACITY	MAX. DIFF. PRESSURE (VACUUM)	ELECTRO-MOTOR	HOSE DIAMETER	SPL	WEIGHT	APPROX. DIMENSIONS	ENCLOSURE
UH-1035	50 Hz	80 m ³ /hr.	110 hPa	0.37 kW	40 mm (1.6 in)	58 dB(A)	10 kg (22.0 lb)	248 × 230 × 250 mm (9.8 × 9.1 × 9.8 in)	IP class 54
	60 Hz	90 m ³ /hr.	130 hPa	0.45 kW		61 dB(A)			
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

Modal Exciters

Type 4825 Modal Exciter

Includes the following:

- AQ-0649: Cable with two 4-pin Neutrik® speakON® connectors, length 5 m (16.4 ft)
- KC-1007: Trunnion
- UH-1035: Blower for Type 4825
- AF-1101: Air Hose for UH-1035, 5 m (16.4 ft)
- UA-1612: Three Adaptors M6 to 10–32 UNF

Type 4826 Modal Exciter

Includes the following:

- AQ-0659: Cable with two 8-pin Neutrik speakON connectors, length 5 m (16.4 ft)
- KC-1007: Trunnion
- UH-1036: Blower for Type 4826
- AF-1103: Air Hose for UH-1036, length 5 m (16.4 ft)
- UA-1612: Three adaptors, M6 to 10–32 UNF

Modal Excitation Systems

Type 3625 Modal Excitation System, 230 V mains supply only

Includes the following:

- Type 4825: Modal Exciter
- Type 2720: Power Amplifier (500 VA), 230 V mains supply only
- UA-1598: Three Push/Pull Steel Stingers with:
 - 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)

Type 3626 Modal Excitation System

Includes the following:

- Type 4826: Modal Exciter
- Type 2721: Power Amplifier (1250 VA)
- UA-1598: Three Push/Pull Steel Stingers, with:
 - 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)

Note: For use of Type 4825 in countries with 100 or 120 V mains supply, use Power Amplifier Type 2721

Optional Accessories

POWER AMPLIFIERS

Type 2720 Power Amplifier (500 VA), 230 V mains supply only

Type 2721 Power Amplifier (1250 VA)

ELECTRICAL TENSION WIRE PRE-TENSIONING

Type 1056 DC Static Centering Unit, must be calibrated with exciter at HBK

STINGERS, TENSION WIRES AND ACCESSORIES

- 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)
- 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:
- 3 × fastening screws
 - 3 × adaptors, diameter 1.5 mm to 10–32 UNF
 - 3 × 1.5 mm collet chuck (chuck nut with collet insert)
- UA-1602 Three 0.75 mm Collet Chucks and Adaptors, for tension wires, 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 wires, 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 Chucks and Adaptors, for push/pull rods, 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 3.5 mm 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 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

CABLES AND AIR HOSE

- AQ-0648 Cable with two 4-pin Neutrik speakON connectors, length 10 m (32.8 ft), for connection to Type 2720
- AQ-0665 Cable with two 8-pin Neutrik speakON connectors, length 10 m (32.8 ft), for connection to Type 2721
- AF-1102 Extension Air Hose, length 10 m (32.8 ft)
- AQ-0658 Cable with 9-pin D-sub connector to video HR-10 connector, length 10 m (32.8 ft), for connection to Type 1056

LATERAL MODAL EXCITER STANDS

- UA-1607 Modal Exciter Stand, max. elevation height 1.24 m (4.1 ft), Mechanical pre-tensioning of tension wire possible via adjustable spring
- UA-1608 Modal Exciter Stand, max. elevation height 1.64 m (5.4 ft), Mechanical pre-tensioning of tension wire possible via adjustable spring



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