

Product Data

8 Channel DeltaTron[®] Accelerometer Supply — Type 5963

USES:

- Multichannel DeltaTron[®] accelerometer preamplifier power supply
- Input module for SONY PC 208 A DAT Instrumentation Cassette Recorder
- In high-quality field and laboratory measurement systems

FEATURES:

- 8 amplitude-matched channels
- Internal rechargeable battery for portability
- Tacho input channel supporting Brüel&Kjær Photoelectric Probe MM0024
- 4 mA constant-current accelerometer preamplifier supply
- Dynamic and frequency ranges optimised for SONY PC 208 A DAT recorder

Type 5963 8-Channel DeltaTron[®] Accelerometer Supply provides the constant current required to power accelerometer preamplifiers and buffers the preamplifiers from any following equipment.

The unit is primarily for use with a SONY PC208 A DAT Instrumentation Cassette Recorder, being housed in a similar case and powered by the same type of battery or power source. Portability is a key feature. Up to 8 accelerometer signals are recorded on the DAT recorder. These are then replayed into a vibration analyzer, effectively allowing field measurements to be made in a laboratory.

Product Overview

The 8-Channel DeltaTron[®] Accelerometer Supply Type 5963 has two main functions. Firstly, the unit supplies power to accelerometer/preamplifier assemblies. Secondly, active circuitry buffers the output of the preamplifiers before the signals are sent to the next piece of equipment in the measurement chain.

The channels operate entirely independently, but are electrically identical, giving minimal cross-channel differential gain. The active circuitry conforms to the same high specifica-



Fig.1 Type 5963 front panel

tion expected of digital recording systems and will not unduly degrade analogue signals before conversion to digital format.

All standard Brüel & Kjær DeltaTron[®] preamplifiers can be connected to the front panel BNC sockets. Through these sockets, preamplifiers receive the current to drive their internal circuitry.

The signals are output via BNC connectors on the side panel. The outputs are all very low impedance and electronically semi-balanced.

Applications

The Type 5963 is built into a small cabinet. This makes it suitable for a wide variety of portable applications where many inputs are to be simultaneously gathered for measurement. In general, the unit would be connect-

ed to a DAT recorder, though the Type 5963 can be used in its own right as a multichannel accelerometer power supply and buffering amplifier.

Attaching calibrated DeltaTron[®] accelerometers allows high-quality vibration measurements to be made on moving machines under non-laboratory conditions. For example, the characteristics of a motor being used in a real situation (rather than on a test-bed) can be recorded for future analysis.

One feature of the Type 5963 is the built in tachometer circuitry. Tachometer pulses, for example from a Brüel & Kjær Photoelectric Probe MM0024, are converted to 5V logic levels in the unit. These tachometer pulses can be recorded by a DAT recorder on an independent digital channel so that, for instance, engine speed can be directly related to the measured parameters.

Recording on DAT

The Type 5963 is primarily for use with a SONY PC208 A DAT recorder. For this reason the case size and connector positioning are set to match those of the DAT recorder. By adding side frames, the two units are incorporated into one portable system, Brüel & Kjær Type 9658 (see Fig. 2). When the unit is connected to the DAT recorder, it acts as a buffer amplifier for the DAT recording inputs.

In this combined mode, the frequency response of the system is defined by the upper limit of the DAT recorder. When running at twice standard tape speed, the eight DAT channels have a maximum recordable frequency of 10 kHz. This is sufficient to cover most situations where an accelerometer is to be used.

The Type 5963 and the DAT recorder use the same type of rechargeable



Fig. 2 Type 5963 and DAT recorder as one package, the Type 9658

battery or external power source (e.g. 12 V vehicle battery), thus avoiding the need to have different power systems for both units. The internal bat-

tery can be trickle charged via the external supply. A full recharge takes a maximum of 14 hours.

Specifications 5963

Amplifier Stages

INPUT IMPEDANCE: 100 k Ω
MAXIMUM INPUT LEVEL: 7.5 V RMS
GAIN: 0 dB \pm 0.1 dB
OUTPUT IMPEDANCE: 30 Ω
MAX. CHANNEL OUTPUT:
Level: 7.5 V RMS
Current: 15 mA
FREQUENCY RESPONSE (Lin., \pm 10%):
 0.3 Hz to 30 kHz
CHANNEL SEPARATION: >80 dB
GAIN ERROR: <0.1 dB
INTERNAL NOISE: <15 μ V (2 Hz to 20 kHz)
PHASE BETWEEN CHANNELS:
 <40 m $^\circ$ at 10 Hz
 <20 m $^\circ$ at 100 Hz
 <20 m $^\circ$ at 1 kHz
 <200 m $^\circ$ at 10 kHz

Tachometer

MAXIMUM PULSE FREQUENCY: 96 kHz
MAXIMUM PULSE AMPLITUDE: 10 V
THRESHOLD LEVELS:
Positive-going: 1.9 V
Negative-going: 0.9 V

Power Supply

BATTERY:
Type: NP-1B rechargeable (WQ 1129)
Capacity: 2.3 Ah
Life: 6.5 hours continuous operation
Charge: Approx. 14 hours via external supply
EXTERNAL SUPPLY: 12 V to 20 V DC
SUPPLY CURRENT:
Total: 250 mA at 12 V (500 mA when charging batteries at 18 V DC)
To Preamplifiers: 4 mA (can be changed at the factory upon request to up to 10 mA when using long cables)

Connectors

ACCELEROMETER INPUT: BNC
SIGNAL AND REGENERATED TACHO OUTPUT: BNC
TACHO INPUT: BNT
TACHO DATA INTERFACE:
 9-pin sub-D-type socket
EXTERNAL SUPPLY INPUT: 2-pin

Dimensions and Weight

Height: 70 mm (2.8")
Width: 297 mm (11.7")
Depth: 220 mm (8.7")
Weight: 2.1 kg (4lb. 10 oz) (without battery)

EMC

SUSCEPTIBILITY TO DISTURBANCES SPECIFIED IN EN 50082-2:

Measured using Accelerometer Cable AO 1382 with Ferrite Cable Clamp LK 0014 mounted on accelerometer cable and Ferrite Cable Clamp LK 0013 mounted on external DC cable.
 At magnetic field 30 A/m input noise can increase to 14 μ V
 At magnetic field 80 A/m input noise can increase to 40 μ V

RADIATED RF: (3 to 10 V/m, 80% AM, 1 kHz)
CONDUCTED RF: (3 to 10 V, 80% AM, 1 kHz)

Input	Radiated	Conducted
DeltaTron ^{®1}	<3 mV	<35 μ V

¹ Measured with 50 Ω AC termination

Note: All values are typical at 25 $^\circ$ C (77 $^\circ$ F), unless measurement uncertainty or tolerance field is specified. All uncertainty values are specified at 2 σ (i.e. expanded uncertainty using a coverage factor of 2)

COMPLIANCE WITH STANDARDS:

CE	CE-mark indicates compliance with: EMC Directive.
Safety	EN 61010-1 and IEC 1010-1: Safety requirements for electrical equipment for measurement, control and laboratory use.
EMC Emission	EN 50081-1: Generic emission standard. Part 1: Residential, commercial and light industry. EN 50081-2: Generic emission standard. Part 2: Industrial environment. CISPR 22: Radio disturbance characteristics of information technology equipment. Class B Limits. FCC Rules, Part 15: Complies with the limits for a Class B digital device.
EMC Immunity	EN 50082-1: Generic immunity standard. Part 1: Residential, commercial and light industry. EN 50082-2: Generic immunity standard. Part 2: Industrial environment. Note 1: The above is guaranteed using accessories listed in this Product Data sheet only. Note 2: See "EMC"
Temperature	IEC 68-2-1 & IEC 68-2-2: Environmental Testing. Cold and Dry Heat. Operating Temperature: 0 to +50 $^\circ$ C Storage Temperature: -25 to +70 $^\circ$ C
Humidity	IEC 68-2-3: 90% RH (non-condensing at 40 $^\circ$ C)
Enclosure	IEC 529: IP 20
Mechanical	Non-operating: IEC 68-2-6: Vibration: 0.3 mm, 20 m/s ² , 10-500 Hz IEC 68-2-27: Shock: 1000 m/s ² IEC 68-2-29: Bump: 1000 bumps at 250 m/s ²

Ordering Information

Type 5963 8 Channel DeltaTron[®] Accelerometer Supply
Includes the following accessories:
 WB 1375: Mains adaptor, 100 to 127 V AC or
 WB 1376: Mains adaptor, 200 to 240 V AC
 WU 0484: Guard frames and screw set
 DH 0541: Carrying strap
 WL 1141: Tachometer data interface cable
 8xWL 1157: 0.09 m (3.5") BNC to BNC cables
 WL 1192: External supply cable
 LK 0013: Ferrite cable clamp for ext. DC or BNC cable
 LK 0014: Ferrite cable clamp for accelerometer cable

To make a combined accelerometer supply/DAT recorder package, you should additionally order a SONY PC 208 A DAT recorder. This must be done via a SONY agent.

Optional Accessories

MM 0024: Photoelectric Probe
WQ 1128: SONY 4-cell battery charger
WQ 1129: SONY rechargeable battery pack (NP-1B)
JP 0145: BNC to 10-32 UNF adaptor
AO 1382: Teflon, low-noise cable, double screened AC 0104 with

10-32 UNF connectors. Length 1.2 m (4 ft)
AO 0429: Double screened BNC to BNC cable. Length 1.2 m (4 ft)
AO 0426: Double screened BNC to BNC cable. Length 3 m (9.8 ft)
AO 0427: Double screened BNC to BNC cable. Length 10 m (32.8 ft)
Type 2671: DeltaTron[®] Microphone Preamplifier with BNC socket



WORLD HEADQUARTERS:

DK-2850 Naerum · Denmark · Telephone: +45 45 80 05 00 · Fax: +45 45 80 14 05 · Internet: <http://www.bk.dk> · e-mail: info@bk.dk
Australia (02) 9450-2066 · Austria 00 43-1-865 74 00 · Belgium 016/44 92 25 · Brazil (011) 246-8166 · Canada: (514) 695-8225 · China 10 6841 9625 / 10 6843 7426
Czech Republic 02-67 021100 · Finland 90-229 3021 · France (01) 69 90 69 00 · Germany 0610 3/908-5 · Holland (0)30 6039994 · Hong Kong 254 8 7486
Hungary (1) 215 83 05 · Italy (02) 57 60 4141 · Japan 03-3779-8671 · Republic of Korea (02) 3473-0605 · Norway 66 90 4410 · Poland (0-22) 40 93 92 · Portugal (1) 47114 53
Singapore (65) 275-8816 · Slovak Republic 07-37 6181 · Spain (91) 36810 00 · Sweden (08) 71127 30 · Switzerland 01/94 0 09 09 · Taiwan (02) 713 9303
United Kingdom and Ireland (0181) 954-236 6 · USA 1 - 800 - 332 - 2040
Local representatives and service organisations worldwide