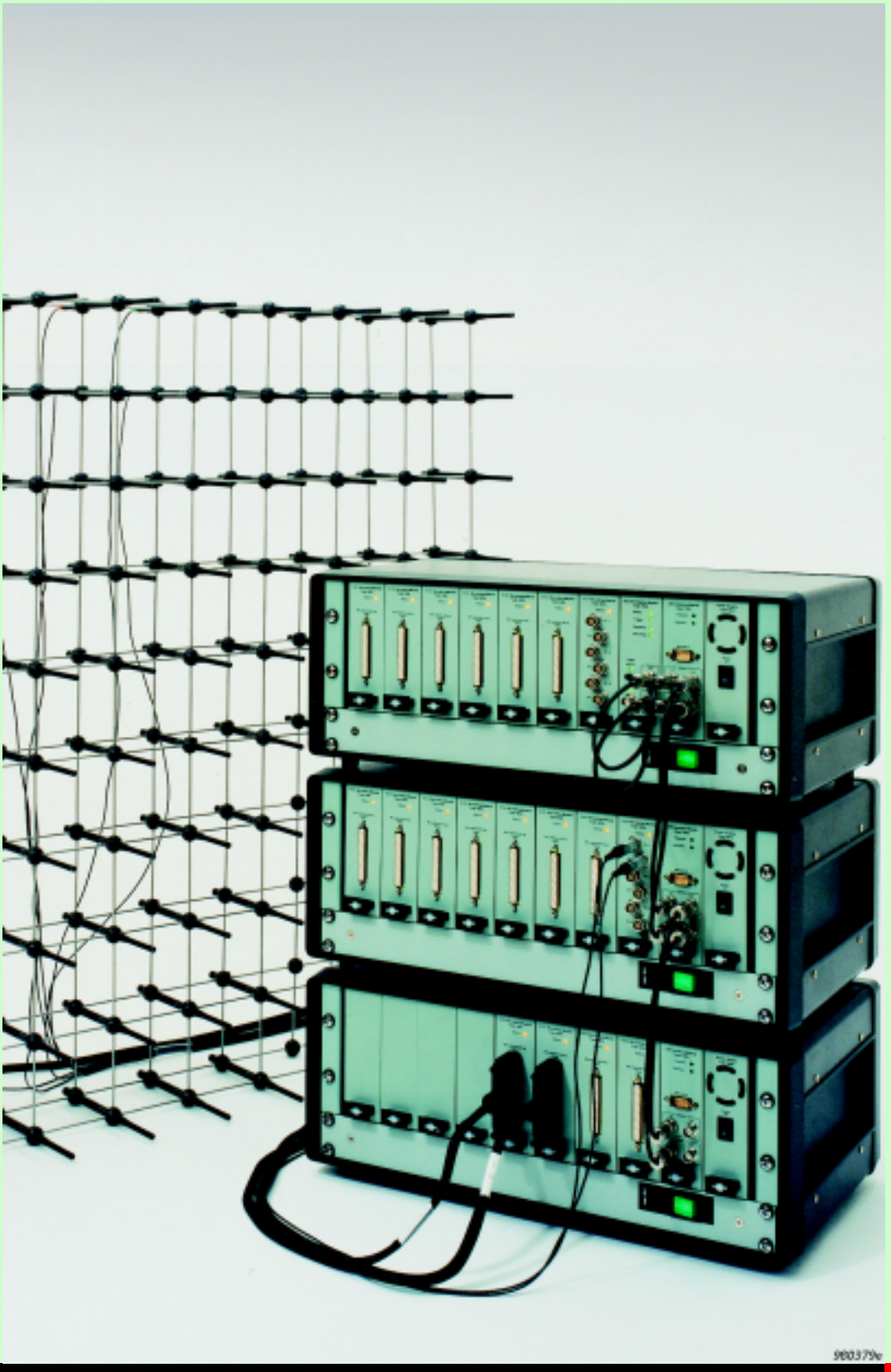
PRODUCT DATA

Intelligent Data Acquisition System — Type 3561



Intelligent Data Acquisition System Type 3561 is a modular data acquisition front-end, for use with application software packages such as Spatial Transformation of Sound Fields Software Type 7688. A system comprises a number of frames (from 1 to 64) and each frame can contain up to 10 modules. The variable frame concept does away with the fixed size of previous frame-based systems. Modules and frames are connected quickly and easily allowing you to build a system containing exactly the number of frames required for your application.

3561

Brüel & Kjær

USES

- ❍ General purpose data acquisition front-end for use with application software
- ❍ Multichannel applications such as STSF, Modal Analysis, ODS, Non-stationary STSF and Simulated Pass-by

FEATURES

- ❍ Modular architecture – add up to 64 frames of up to eight input/output modules
- ❍ Built-in signal conditioning for direct connection of microphones and DeltaTron® transducers
- ❍ Synchronous sampling on all channels
- ❍ Up to 600 kbytes/s data flow rate (effective data throughput, sequential transmission) for a single frame. Data transmission increases per added frame up to saturation limit
- ❍ Long, real-time, time records – up to 2048 ksamples total for the enabled number of channels
- ❍ Gap-free data recording to external disk using LAN and SCSI Interface Module Type 7532 and SCSI Connector UA 1342
- ❍ Powerful built-in signal processors
- ❍ Easy control and data transfer over standard LAN interface using TCP/IP network protocol
- ❍ Extremely flexible configuration allows testing of many different products
- ❍ EMC: Conforms to US and European Standards – FCC Class B, EN50081–1, EN 50082–1 and EN50082–2

Frames

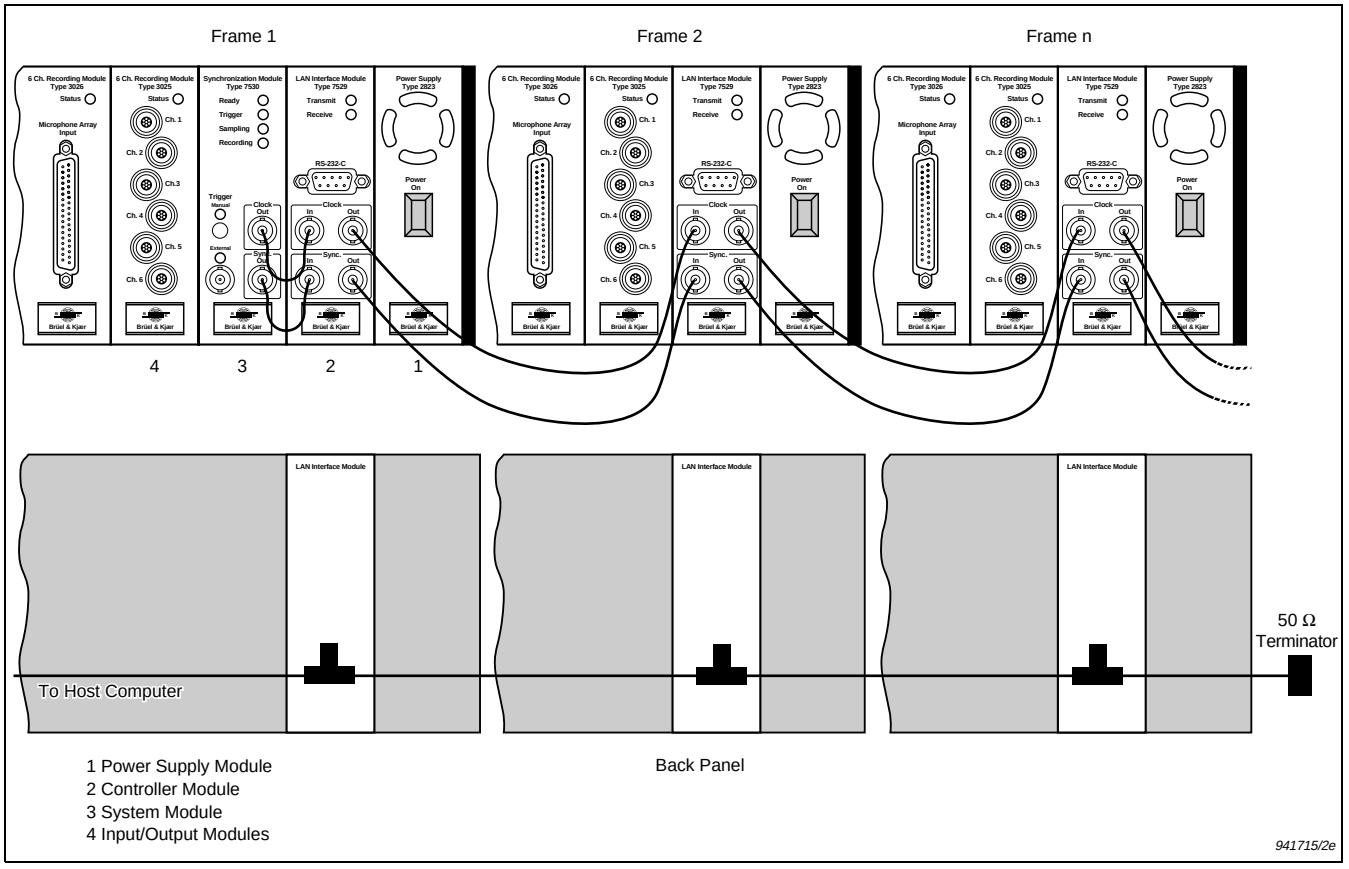
All frames and the host computer are connected via a LAN interface (see Fig. 1) and communicate using TCP/IP network protocol.

A frame can/must contain the following modules:

- 1 Power Supply Module (always)
- 1 Controller Module (always) (plus 0 to 1 SCSI Connector)
- 0 to 1 System Module
- 1 to 8 Input/Output Modules

Details of specific modules are given in their separate Product Data. Here we consider only the *types* of module.

Fig. 1 An Intelligent Data Acquisition System consisting of n (1 ≤ n ≤ 64) Type 3561 frames. Each frame contains up to 8 input modules. The host computer runs application software (e.g., STSF Software Type 7688) which controls the system via the Local Area Network (LAN, Ethernet). Each Type 3561 frame has a Controller Module connected to the LAN interface. When external triggering is required, a single System Module, contained in frame 1 (as below), provides the system clock and triggering through two BNT cables connected in series to all Controller modules



Power Supply Module

Every frame in a Type 3561 system requires a separate Power Supply Module. This is always the module furthest to the right and provides power to all other modules in its frame.

Controller Module

Every frame in a Type 3561 system requires its own Controller Module, which normally includes a LAN interface. This module connects to the next frame in the system and provides the interface between the frame and the Local Area Network. In addition, it has inputs and outputs for the distribution of the sampling clock and synchronization signals between frames. Dependent on the type of controller module and your requirements for free-running or external triggering, the sampling clock and synchronization can come from a system module or from one of the controller modules.

If the controller module you are using has a SCSI option, you can also add a SCSI connector for gap-free throughput of data to disk.

System Module

If your measurements require an external trigger, or if you are using controller modules without clock and synchronization generation, the first frame of your system must include a System Module. When included in the system, this provides the sampling clock and synchronization of all modules in all frames, as well as executing trigger conditions. This feature allows real-time synchronous sampling in all Type 3561 frames. The module has LEDs for monitoring triggering, sampling and recording.

In addition, the system module is equipped with inputs for external triggering and tacho probes. Trigger conditions and tacho specifications (controlled by application software) apply for all channels controlled by the system module.

Input/Output Modules

Up to eight Input/Output Modules can be used in each Type 3561 frame (6 or 7 if the system includes a system module and/or a SCSI controller).

Input/output modules contain a conditioning amplifier, digital signal processor and RAM for data storage.

Several different input modules are available. They either have six separate 7-pole LEMO sockets for connecting, for example, DeltaTron® Microphone Type 4935 or Microphone Type 4188 with Preamplifier Type 2669 L, or a single 37-pin D sub-connector for connecting an array of six DeltaTron Microphones Type 4935.

The input/output modules can be combined in any order in frames.

Input modules can accommodate record sizes of 512 k- or 2048 ksamples[1] for enabled channels over the frequency range from DC to 25.6 kHz. If longer recordings of data are needed a controller module with SCSI option can be used for gap-free throughput to disk.

A LAN-based System

A host computer running application software controls the system via the LAN.

Type 3561 frames have their controller modules connected via ethernet cable (thin) and communicate using a protocol conforming to the industrial standard for Ethernet II, IEEE–802.3 10. This TCP/IP protocol gives an effective data flow of up to 600 kbyte/s for one frame. When more frames are used, the effective data flow will be higher (see specifications for the LAN Interface Modules in the separate Product Data).

[1] With 4 MB memory option WH 3090

Application Software

The Intelligent Data Acquisition System is controlled by an application software package suited to your measurement requirements. These software packages are described in separate Product Data and have their own user manuals. An example of such software is Spatial Transformation of Sound Fields Software Type 7688 (Brüel & Kjær Publication No. BP 1450).

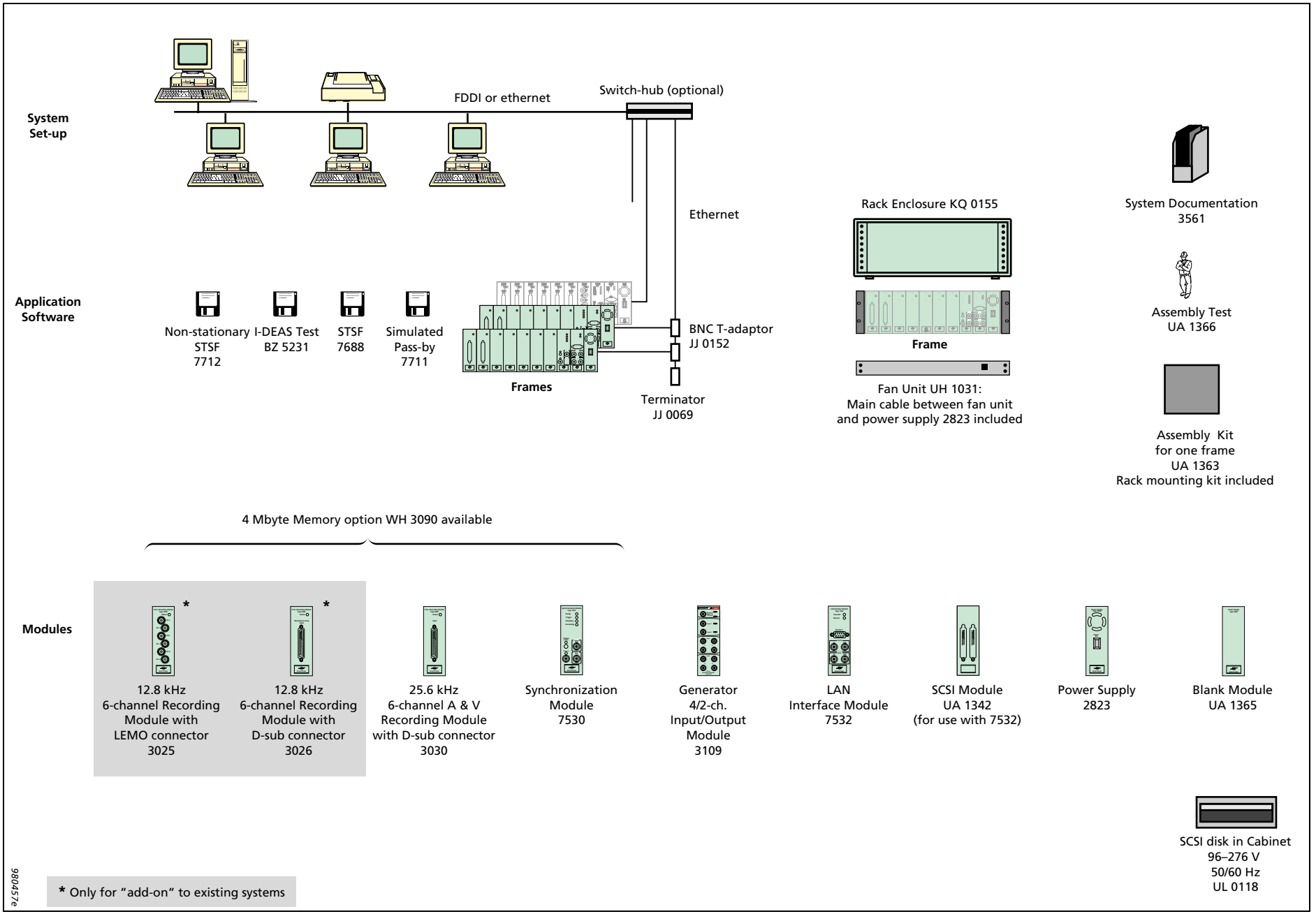
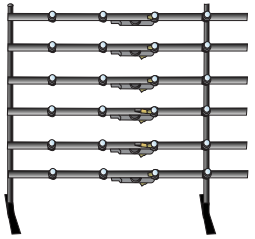


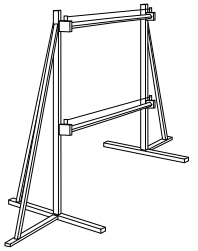
Fig. 2 Major components

WA 0807

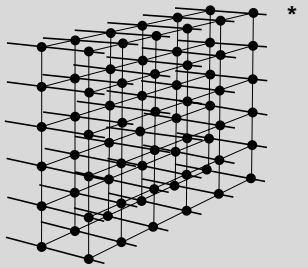


WA 0806

WA 0808

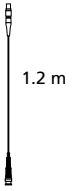


Support for
Microphone Array
WA 0795



Microphone Array
WA 0737

Cables and Accessories



1.2 m

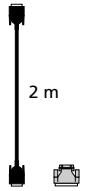
7-pole LEMO
to BNC
1.2 m: AO 0479

0.2 m
3 m
x m

Triaxial to triaxial
0.2 m: AO 0451
3 m: AO 0158
x m: WL 0235

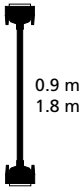
0.6 m
1.2 m
3 m

BNC to BNC
1.2 m: AO 0087
3 m: AO 0142



2 m

9-pole to 9-pole
D-sub null modem
cable with 9-pole
to 25-pole adaptor
AO 1386



0.9 m
1.8 m

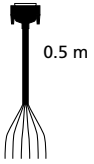
SCSI wide
D-sub 68-pole
connection cable
0.9 m: AO 0516
1.8 m: AO 0517

10 m
x m

2 channel
triax cable
10 m / x m:
AO 0536

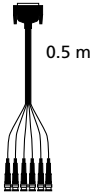
10 m
x m

6 channel
microdot cable
10 m / x m:
AO 0535



0.5 m

37-pole D-sub to
6 × BNC plug
0.5 m: WL 1291

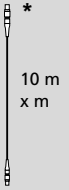


0.5 m

37-pole D-sub to
6 × BNC plug
0.5 m: WL 1291

*

WB 0145
3-pole LEMO
to
microdot cable



*
10 m
x m

7-pole LEMO
to 3-pole LEMO
10 m: AO 0433
x m: AO 0433/x m

*

37-pole D-sub to
6 × 3-pole LEMO
10 m: AO 0432
x m: AO 0432/x m

Array Microphone
4935

Pistonphone Adaptor
WA 0728

Pistonphone
4228

37-pole D-sub to
37-pole D-sub with
6 sockets WB 1461

JP 0145
Microdot
to
BNC adaptor

*

Microphone
4196

*

Heat Shield
WS 3913

*

Carrying Case for 52
Microphones 4196 KE 0351

9804072e

* Only for "add-on" to existing systems

Fig. 3 Cables and accessories

Specifications 3561

Type 3561 is a modular, expandable multichannel data acquisition system for use with application programs running on a host controller and connected via Ethernet (LAN)

HARDWARE
Intelligent Data Acquisition System Type 3561 consists of one or a number of frames each fitted with a Power Supply Module and a combination of the following modules:
- System module
- Controller modules
- Input/Output modules

Details of the different modules are given in separate Product Data

MAXIMUM CONFIGURATION
A standard Type 3561 can have a maximum of 64 frames each including up to 8 input/output modules, giving a maximum of 512 input/output modules. If the frames include a System module or SCSI controller modules, the number of input/output modules is reduced correspondingly

CONFIGURATION AND ACCESSORIES
Page 5 gives an overview of the modules and accessories available as part of a Type 3561 system. To order, please contact your local Brüel & Kjær representative

COOLING
To maintain the operating temperature and system lifetime, forced-air cooling (200 m^3/hour) is required. Use of a Fan Unit UH 1031 is recommended for cooling each frame

Compliance with Standards

CE	CE-mark indicates compliance with: EMC Directive and Low Voltage 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:** Effect of Magnetic Field: <10µV spurious signal in input modules for a magnetic field of 100 A/m at 50 Hz
Temperature	IEC 68–2–1 & IEC 68–2–2: Environmental Testing. Cold and Dry Heat. Operating Temperature: 0 to 50 °C (32 to 132 °F) **Note:** See "Cooling" Storage Temperature: –25 to +70 °C (–13 to +158 °F)
Humidity	IEC 68–2–3: Damp Heat: 95% RH (non-condensing at 30 °C, 86°F)
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
Enclosure	IEC 529 (1989): Protection provided by enclosures: IP 20

98/12

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

BP 1447 – 14

HEADQUARTERS: DK-2850 Nærum · Denmark · Telephone: +4545800500 · Fax: +4545801405 · http://www.bk.dk · e-mail: info@bk.dk
Australia (02)9450-2066 · Austria 0043-1-8657400 · Brazil (011)5182-8166 · Canada (514)695-8225 · China 1068419625
Czech Republic 02-67021100 · Finland (0)9-755 950 · France (01)69906900 · Germany 06103/908-5 6 · Hong Kong 25487486 · Hungary (1)2158305
Ireland (01) 450 4922 · Italy (02)57604141 · Japan 03-3779-8671 · Republic of Korea (02)3473-0605 · Netherlands (0)30 6039994 · Norway 66771155
Poland (0-22)8409392 Portugal (1)4711453 · Singapore (65) 275-8816 · Slovak Republic 421 7 544 307 01 · Spain (91)3681000 · Sweden (08)4498600
Switzerland 01/9436070 · Taiwan (02)7139303 · United Kingdom (0181)954-2366 · USA 18003322040
Local representatives and service organisations worldwide