

16ch DAQ System

for 2 Force Plates – Data Acquisition and Analysis System for Biomechanics

Data acquisition system for the connection and control of two multi-component force plates with integrated charge amplifiers. Connection to the PC via USB 2.0 and operation with BioWare or Kistler MARS software.

- Simple installation via USB 2.0
- Remote control of the integrated charge amplifiers
- High-performance data acquisition and signal processing
- Versatile data analysis and filters
- Can be triggered externally

Description

Up to two multi-component force plates can be operated via the DAQ system with integrated charge amplifier from Kistler. A 16-bit converter digitizes the analog signals of the force plates. The USB 2.0 interface is used for the connection to the PC and for the control of the force plates with BioWare or Kistler MARS software (measurement range, reset/operate). The DAQ system Type 5691A... can also be controlled by 3rd party software that is utilizing the software interface (API) BioWare dataserver.dll. The software interface (API) dataserv-er.dll is available for download at the Kistler website.

Application

The Type 5691A... with BioWare is designed specifically to fully exploit the capabilities of Kistler's piezoelectric force plates Type 9260AA, 9281EA, 9286BA and 9287CA in biomechanics applications. The 16-bit resolution of the measurement signals and high sampling rate of up to 17 kS/s in conjunction with Kistler force plates allow a very wide range of applications. The system as a whole is therefore equally ideal for measuring highly dynamic processes, very small measurands and slow phenomena.

Type 5691A...



Technical Data

General Data

Dimensions	mm	208x65x250
Total weight	kg	2,05
Operating temperature range	°C	0 ... 50

Power Supply Voltage

Power supply	VDC	11 ... 15
Power consumption	VA	6

A/D-Converter

Number of channels		16
Resolution (per channel)	Bit	16
Input voltage range (software selectable)	V	±1, ±2, ±5, ±10
Sampling rate (software selectable)	S/s	0,6 ... 50 000
max. @ 2 channels	kS/s	50
1 Force plate max. @ 8 channels	kS/s	17
2 Force plates max. @ 16 channels	kS/s	9,5

Connections

USB 2.0		
USB In (uplink, to the PC)		USB Type B, female
USB Out (downlink, free)		USB Type A, female

Force Plate 1/2		D-Sub37, male
Input voltage (max.)	V	±15

External Trigger (trigger-in)

Input voltage		BNC neg.	
Pull-Up resistance 10 kΩ to ±5 V			
	max.	VDC	12
	high or input open	VDC	>3,6
	low	VDC	<0,6
Trigger mode	standard		rising edge
	software selectable		falling edge

Conforms to the **CE** safety standards (73/23/EG) for electrical equipment and systems:
EN 60601-1:2005, EN 61010-1:2001
and the EMC standards (89/336/EG):
EN 60601-1:2005 (EN 55022 Class B), EN 61000-6-3:2004
(EN 55022 Class B), EN 61000-6-4:2001 (EN 55011 Class B),
EN 60601-1:2005, EN 61000-6-1:2001, EN 61000-6-2:2005

Dimensions

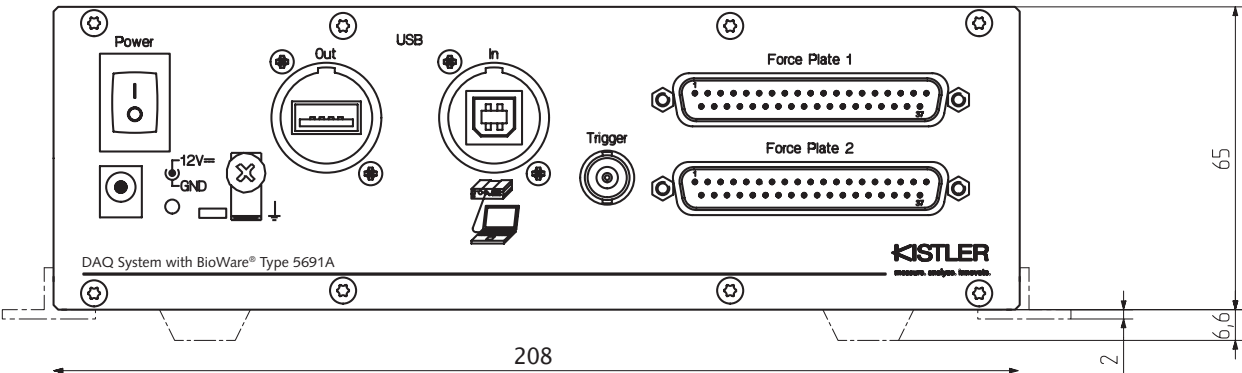
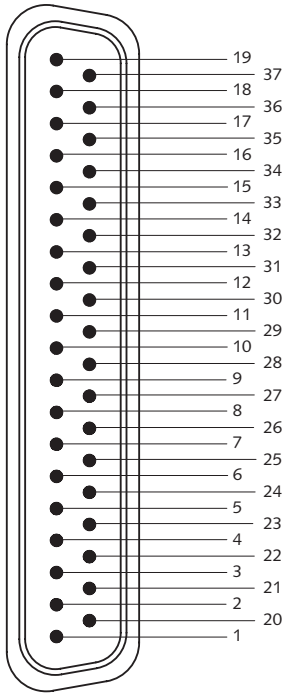


Fig. 1: DAQ system with BioWare Type 5691A...

Pin Allocation D-Sub37, male (Force Plate 1/2)

1	Exct. +12 VDC	20	Data IO5 (reserve)	
2	n.c.	21	Data IO6 (reserve)	
3	n.c.	22	B Range Select Group I	
4	A Range Select Group I	23	Operate/NotReset	
5	n.c.	24	Data IO7 (reserve)	
6	n.c.	25	n.c.	
7	Exct. GND	26	n.c.	
8	n.c.	27	B' Range Select Group II	
9	A' Range Select Group II	28	Control GND	
10	n.c.	29	Control GND	
11	Signal GND	–	Force Plate 1	Force Plate 2
12	Signal GND	30	CH8 (Fz4)	CH16 (Fz4)
13	Signal GND	31	CH7 (Fz3)	CH15 (Fz3)
14	Signal GND	32	CH6 (Fz2)	CH14 (Fz2)
15	Signal GND	33	CH5 (Fz1)	CH13 (Fz1)
16	Signal GND	34	CH4 (Fy23)	CH12 (Fy23)
17	Signal GND	35	CH3 (Fy14)	CH11 (Fy14)
18	Signal GND	36	CH2 (Fx34)	CH10 (Fx34)
19	Signal GND	37	CH1 (Fx12)	CH9 (Fx12)



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With BioWare Software Type 2812A...

Kistler BioWare Type 2812A... is a high-performance data acquisition software. It acquires, processes and saves analog measurement data from force plates and other analog sensors. Forces, torques and center of pressure (COP), among other things, are calculated and output by Kistler force plates. Extensive digital filters, FFT, statistical evaluation and more

is available for the processing of the measurement data. BioWare permits access to all extended functions of the Kistler DAQ systems, e.g. external triggers or pre-triggers and post-triggers. This way the DAQ system can be put to versatile use in basic research, sports science, gait analysis, neurology, ergonomics, etc.

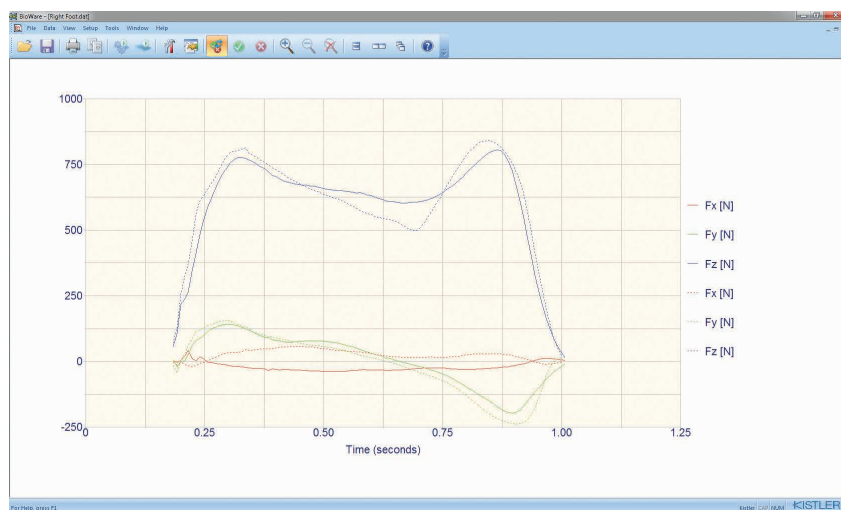


Fig. 2: Data acquisition with BioWare®

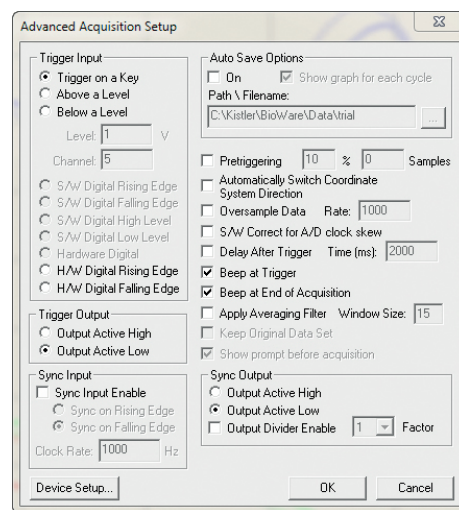


Fig. 3: Setting the extended data acquisition parameters

With Kistler MARS Type 2875A...

Kistler MARS is innovative, comprehensive and user-friendly software for the complete analysis of force plate measurements. It supports routine diagnostics and research work in biomechanics, performance analysis, motor control behavior, rehabilitation medicine and other related fields.

- Kistler MARS full version
20 different analysis modules
- Kistler MARS Power and Strength
9 different analysis modules
- Kistler MARS Balance and Stability
11 different analysis modules



Fig. 4: Performance diagnostics with Kistler MARS



Fig. 5: Balance analysis with Kistler MARS

Typical Measuring Chain

			
Force Plate with charge amplifier Type 9286BA	Connection cable Type 1758A...	DAQ system (USB 2.0) Type 5691A...	Laptop (provided by user) with BioWare® or Kistler MARS

Fig. 6: Configuration of a typical measuring chain with Kistler DAQ system with BioWare®

16ch DAQ-System for 2 Force Plates Type 5691A...

- Data Acquisition and Analysis Tool for Biomechanics

System Requirements

With BioWare software:

- Windows Vista®, Windows® 7, or Windows® 8.1 operating system
- 1 GHz processor
- 2 GB RAM
- 125 MB free space on the hard disk
- Video resolution 800x600 px
- CD-ROM or DVD-ROM
- 1 freier USB port
- Microsoft compatible mouse

With Kistler MARS software:

- Windows® 7 or Windows® 8.1 operating system
- 2 GHz processor
- 2 GB RAM
- 1 GB free space on the hard disk
- Video resolution 1 280x760 px
- CD-ROM or DVD-ROM
- 2 USB ports
- Microsoft compatible mouse

Included Accessories

- USB 2.0 connecting cable, length 1,8 m
- Universal AC/DC adapter,
100 ... 240 V~ 12 VDC
- Self-adhesive base, black,
20,5x7,6 mm
- Software corresponding to ordering key

Type/Art. No.

–
5.510.276
5.211.368

Optional Accessories

- Connection cable for
 - Force platforms w/ integr. amplifier (straight connector)
 - Force platforms w/ integr. amplifier (angle connector)
 - Force plate Type 9260AA... with integr. charge amplifier (D-Sub 25)
 - External charge amplifier Type 9865E...
 - External control unit Type 5233A2
 - Analog signals (8x BNC pos.)
- Mounting kit consisting of 2 brackets and 4 screws
- BioWare Dataserver Interface Library dataserver.dll: free download from Kistler website

Type/Art. No.

1758A...
1759A...
1791A...
1769A1
1500B5
1500A67
7.511.339
2873A

Ordering Key

DAQ system with BioWare	1
DAQ system with Kistler MARS Full Version	2
DAQ system with Kistler MARS Strength & Power	3
DAQ system with Kistler MARS Balance & Stability	4

Type 5691A ☐

BioWare® is a registered trade mark of Kistler Holding AG.
Windows® is a registered trade mark of Microsoft Corporation.