KISTLER

measure. analyze. innovate.

64ch DAQ System with BioWare®   Type 5695A...

Data Acquisition and Analysis System for Biomechanics

Data acquisition system for connecting and controlling up to 8 multicomponent force plates with integral charge amplifiers. The system is connected to a USB 2.0 port of the PC and operated with the included software BioWare.

- Easy installation with USB 2.0
- Connection of up to 8 force plates
- Remote control of integral charge amplifiers
- Powerful data acquisition and signal processing
- Versatile digital control and synchronization options

Description

The DAQ system with BioWare Type 5695A1 consists of a connecting box for up to 8 Kistler multicomponent force plates and one integral 16-bit A/D converter to digitize the plates' analog output signals. The system is connected to a USB 2.0 high speed port of the PC. The integral charge amplifiers of the connected Kistler force plates are supplied via the connecting box and controlled by means of the supplied software (measuring range and reset/operate).

The DAQ system Type 5695A ... can also be controlled by 3rd party software that is utilizing the software interface (API) BioWare dataserver.dll. The software interface (API) Bioware dataserver.dll is available for download at the Kistler website.

Application

The DAQ system Type 5695A1 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 the high sampling rate 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. Furthermore, it is possible to acquire any other analog signals (0 ... ±10 VDC) instead of those of Kistler force plates.

The integrated analog anti-aliasing filters limit the bandwidth and increase the quality of the digitized data.

The additional options of acquiring any analog signals rather than just those from force plates, and the versatile digital control and synchronization options underscore the versatility of the system for use in basic research, sports science, gait analysis, neurology, ergonomics, etc., etc.

Technical Data

General Data

Dimensions	mm	208x70x265
Weight	kg	2,3
Operating temperature range	°C	0 ... 50

Power Supply Voltage

Galvanically isolated between input-, output- and control-GND (40 V max.)		
Power supply	VDC	10 ... 36
Power consumption max.	VA	<10

A/D-Converter

Number of channels		64
Resolution (per channel)	Bit	16
Input voltage range (software selectable)	V	±0,1; ±0,2; ±0,5; ±1; ±2; ±5; ±10
Input voltage (max.)	V	±20
Sampling rate max.	S/s	10 000

Analog Anti-Aliasing-Filter

Cut-off frequency	Hz	500
Order		3.
Type		Butterworth

Connections   USB 2.0

USB In (uplink to the PC)		USB Typ B, fem.

5695A_000-803e-12.11

KISTLER

measure. analyze. innovate.

Force Plate 1 ... 8		D-Sub25, fem.
Power supply per force plate	VDC	12
Supply current (max.)	mA	50

Control I/O		D-Sub9, fem.
Galvanically isolated between input-, output- and control-GND (40 V max.)		
Trigger Input/Sync Input (10 Ω Pull-Down)		
High (+12 V max.)	VDC	>2,3
Low	VDC	<1
Trigger Output/Sync Output/Sampling Clock Output/Reserve Output		
High @Iout = 10 µA/2 mA	VDC	>4,9/>4,4
Low @Iout = 10 µA/2 mA	VDC	<0,1/<0,35

Digital Control and Synchronization Options

Trigger-Input
Sync Input
Trigger Output
Sync Output
Sampling Clock Output
Reserve Output

The instrument follows the Directives 2004/108/EG and conforms with the following standards:
EMC Emission: EN 61000-6-4/EMC Immunity: EN 61000-6-2/Product standard: EN 61326-1 (Class A)/Safety: EN 60950-1 (Power Adapter).

Software
The DAQ system 5695A... can be operated with Kistler BioWare or by 3rd party software that is utilizing the software interface (API) BioWare dataserver.dll.

Typical Measuring Chains

| Force plate with charge amplifier Type 9260AA6	Connection cable Type 1700A107A10	DAQ system (USB 2.0) Type 5695A1	Laptop (provided by user) with BioWare

Fig. 1:   Configuration of a typical measuring chain with DAQ system with BioWare®

Force plate with charge amplifier Type 9281EA	Connection cable Type 1700A105A10	DAQ system (USB 2.0) Type 5695A	Laptop (provided by user) with utilization of BioWare dataserver.dll

Fig. 2:   Configuration of a typical measuring chain with DAQ system with BioWare® dataserver.dll

5695A_000-803e-12.11

KISTLER

measure. analyze. innovate.
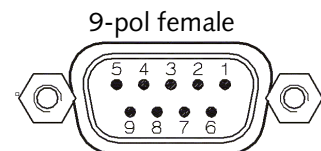
Dimensions
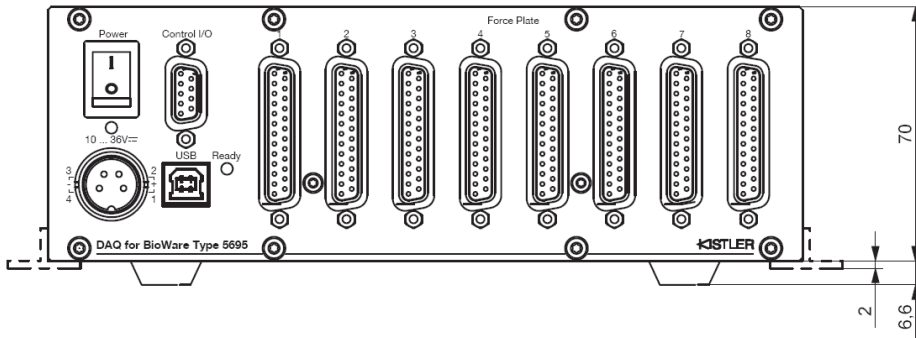
Connections

Force Plate 1 ... 8

Pin	Function	Pin	Function
1	A (Range x,y select)	14	B (Range x,y select)
2	Operate	15	Control GND
3	Fy 2+3	16	Fx 3+4
4	Fx 1+2	17	Fy 1+4
5	Signal GND	18	n.u.
6	n.u.	19	n.u.
7	A' (Range z select)	20	B' (Range z select)
8	Fz 1	21	Fz 4
9	Fz 3	22	Fz 2
10	Singal GND	23	Test / no Test
11	n.u.	24	Overload (n.u.)
12	n.u.	25	Exct. +10...30 VDC
13	Exct. GND		

25-pol female
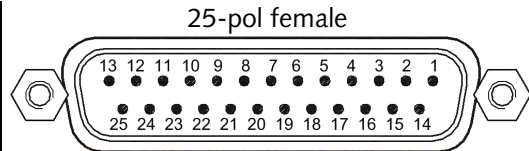
Control I/O

Pin	Function	Pin	Function
1	3,3 V Input	6	Trigger Input
2	Sync Input	7	GND Input
3	Trigger Output	8	Sync Output
4	Reserve Output	9	Sampling Clock Output
5	GND Output		

9-pol female

Power 10 … 36 VDC

Pin	Function
1	10 … 36 VDC
2	GND
3	GND
4	10 … 36 VDC

M12   4-pol male

SUNSTAR   http://www.sensor-ic.com/ TEL: 0755-83376489 FAX 0755-83376182 E-MAI L: szss20@163.con

measure. analyze. innovate.

## Synchronization

The synchronization signals are available at control-I/O connector. There are four basic functions:

A) The measurement is started on a key and stopped after time of scanning (BioWare). On each analog scan the "Sync Output" generates a pulse. On the first sample, the "Trigger Output" generates a pulse.

B) The measurement is started by "Trigger Input" and stopped after time of scanning (BioWare). On each analog scan the "Sync Output" generates a pulse. On the first sample, the "Trigger Output" generates a pulse.
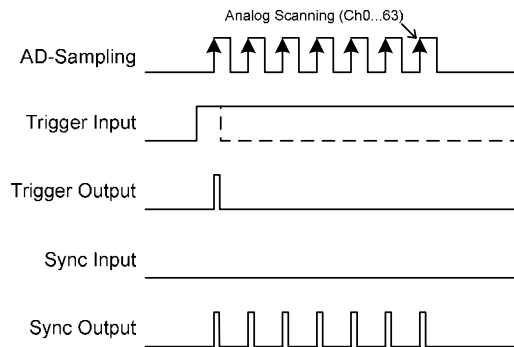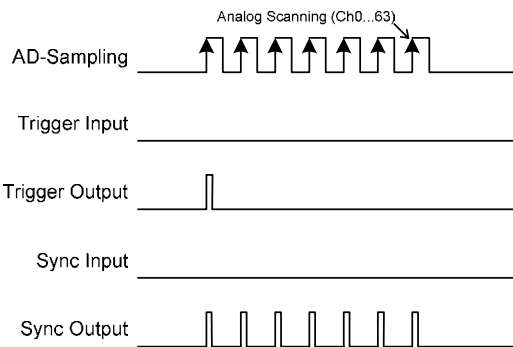
C) The measurement is started by "Trigger Input" and stopped after time of scanning (BioWare). The analog scans are synchronous to "Sync Input". On each analog scan the "Sync Output" generates a pulse. On the first sample, the "Trigger Output" generates a pulse.

D) The measurement is exclusively controlled by "Sync Input". The DAQ board executes an analog scan on each pulse of "Sync Input". On each analog scan the "Sync Output" generates a pulse. On the first sample, the "Trigger Output" generates a pulse.
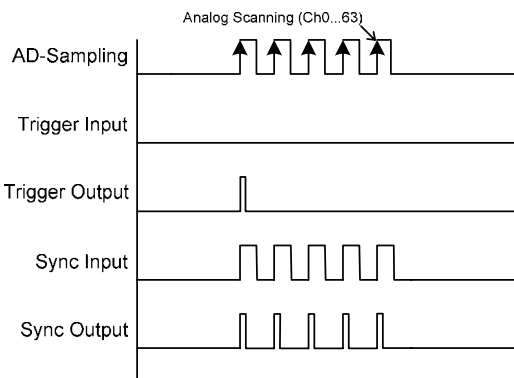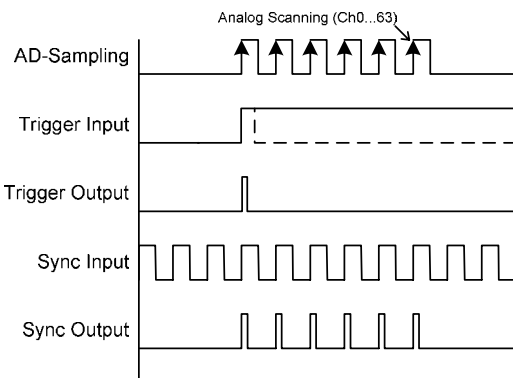
The polarity (rising edge, falling edge, active high or active low) of trigger and sync signals can be selected by the software.

The minimal pulse width of input signals is 10 µs. The signal "Sync Output" can be divided by 2 ... 16, to synchronize a fast force-acquisition (Force Plate) with a lower speed video analyzing system. (Example: Force Plate Sampling Rate = 1 kS/s, Video Analyzing System = 100 Frames/s)

5695A_000-803e-12.11

KISTLER

measure. analyze. innovate.

Included Accessories	Type/Art. No.
• USB 2.0 connecting cable, length 1,8 m	5.590.303
• Universal AC/DC adapter, 100 ... 240 V~ to 24 VDC 24 W	5.510.435
• 4x Self-adhesive feet, black, 20,5x7,6 mm	5.211.368

At Type 5695A1 only:

• BioWare Software CD-ROM	2812A
• HASP licence key (USB)	–
• Instruction manual	2812A_002-312

Ordering Key

Type 5695A ☐

DAQ System		
without software	–
with BioWare and BioWare Dataserver.dll	1

Optional Accessories	Type/Art. No.
Connection cable for:	
• Force plates with integr. charge amplifier (Fischer 19, angle connector)	1700A105A...
• Force plates with integr. charge amplifier (Fischer 19, straight connector)	1700A105B...
• Force plates Type 9260AA... with integr. charge amplifier (D-Sub25 connector)	1700A107A...
• External control unit Type 5233A2 or cable Types 1758A, 1759A,1769A	1700A109A...
• External charge amplifier Type 9865E...	1779A
• Mounting kit consisting of 2 brackets and 4 screws	7.511.339
• Adapter box (control I/O to 6xBNC fem.)	5767
• BioWare Dataserver.dll	2873A-01

5695A_000-803e-12.11

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