







BX8 Operating Manual 15-247 Rev A

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Introduction

- Eight full bridges provide mV/V input on 8 independent channels.
- Communication interfaces such as USB port, EtherCAT, RS232 or CANbus are available. Does not support RS-485.
- The device has 8 configurable analog outputs (±10 V and 4-20 mA among others). UART interface serves to control the measuring amplifier via the Raspberry PI (not for versions with EtherCat).
- There are three common types of the BX8.
 - o AS, HD15 and HD44. Each have their own Input/Output connectors.
- 8-channel measuring amplifier
- 8x input configurable
 - full, half, quarter bridges, 120- 350- 1000 Ohm, PT1000, ±10V
- Outputs
 - 1x USB Port, 8x Analog output ±10V, 4-20mA configurable, 1x UART, alternatively EtherCat, CANbus/CANopen
- 16x Digital in- and output
- 5x Galvanic isolation: analog-input, analog-output, digital-I/O, UART, USB
- 8x 48kS/s Simultaneous sampling
- 6-wire technology, bridge supply 2.5V, 5.0V, 8.75V configurable
- Automatic configuration of analog and digital filters by specifying the data frequency
- Additional Digital Filters IIR 4th order and FIR 14th order individually configurable
- Step response of the filter configuration available (with PC software)
- Resolution < 20 nV/V
- Versions to connect 1-axis and 3- and 6-axis sensors
- Autonomous calculation of 3 forces and moments of six-axis sensors Two operating hours counters
- Sensors with TEDS supported (readable and writable) Integration of a Raspberry PI in the housing cover of the BX8-AS

Scope

- To ensure the correct installation of BlueDAQ software.
- To ensure the correct installation of the 6 Axis Load Cell to the BX8 Instrumentation to communicate with BlueDAQ.

Abbreviations		
DAQ	Data Acquisition	
EXC	Excitation	
SIG	Signal	
PWR	Power	



Description

The 8-channel measuring amplifier BX8 is characterized by particularly high resolution at data frequencies of 1 Hz to 48000 Hz. The 8 channels are acquired simultaneously.

Versions

Туре	Sensor Input	Signal-Output
BX8-HD15	8x SubD15HD	1xUSB, UART, Analog, Digital-I/O
BX8-HD15-EC	8x SubD15HD	1xUSB, EtherCat, Analog, Digital-I/O
BX8-HD15-CAN	8x SubD15HD	1xUSB, UART, CAN, Analog, Digital- I/O
BX8-HD44	4x SubD44HD	1xUSB, UART, Analog, Digital-I/O
BX8-HD44-EC	4x SubD44HD	1xUSB, EtherCat, Analog, Digital-I/O
BX8-HD44-CAN	4x SubD44HD	1xUSB, UART, CAN, Analog, Digital- I/O
BX8-AS	1x 24pol M16, screw terminal	1xUSB, UART, Analog, Digital-I/O
BX8-AS-EC	1x 24pol M16, screw terminal	1xUSB, EtherCat, Analog, Digital-I/O
BX8-AS-CAN	1x 24pol M16, screw terminal	1xUSB, UART, CAN, Analog, Digital- I/O
BX8-AS PI-3	1x 24pol M16, screw terminal	like BX8-AS, but with Raspberry PI

Interfaces

Communication interfaces such as USB port or EtherCAT or CANbus are available. The device has 8 configurable analog outputs (±10 V and 4-20 mA among others). UART interface serves to control the measuring amplifier via the Raspberry PI (not for versions with EtherCat).

The interface protocol of USB and UART is identical and described in a separate documentation. The fieldbus protocols EtherCAT and CANopen are standardized in the lower protocol layers and the application layer is described in separate documents.



Software

The Windows programs BlueDAQ multichannel with graphical user interface and the console terminal program BlueDAQ are suitable. A Windows function library (MEGSV8w32.dll) with commented C header is available for self-programming users and a LabVIEW library with wrapper VIs for this DLL for programming with LabVIEW ©.

Features

There are 8 analog inputs available. They are individually configurable as:

- Strain gauge input for full bridges in 4 and 6 wire technology or
- Strain gauge input for half bridges or
- Strain gauge input for quarter bridges 120 ohm, 350 ohm, 1 kOhm or
- Single-ended input ±10 V or
- Input for PT1000 temperature sensor

The strain gauge supply voltage can be switched between 8.75 V, 5.00 V and 2.5 V, assigned to input sensitivities 2 mV/V, 3.5 mV/V or 7 mV/V.

Bridge supply voltage	Resulting input sensitivity
8.75 V	2 mV/V
5 V	3.5 mV/V
2.5 V	7 mV/V



Signal Flow





Galvanic isolation

The supply voltage UB+ / 0V is galvanically isolated from the modules for

 \checkmark analog input

✓ analog output

UB+	Supply voltage 1228V DC
UB-	Ground Supply voltage
GNDE	Ground analog-input
-Us	Negative bridge supply
GNDA	Ground analog-output
GNDD	Ground digital input / output
GNDU	Ground UART port ("Raspberry PI Port")
GNDR	Ground RS232 port (only BX8-AS)



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Dimensions

BX8-AS Dimension (Dimensions are in mm)





BX8-HD15 Dimension (Dimensions are in mm)



BX8-HD44 Dimension (Dimensions are in mm)





Specifications

Analog Input

Accuracy class	0.05%
Number of analog inputs	8
Strain gauge bridge input	Quarter, half, full bridge
Input impedance	> 20 MOhm (300pF)
Common mode rejection ratio DC	> 120 dB
Common mode rejection ratio AC 100Hz	> 100 dB
Strain gauge bridge completions	120 Ohm, 350 Ohm, 1 kOhm
Strain gauge bridge supply	2.50 V, 5.00 V, 8.75 Volt
Total current across all channels	200 mA
Max. current per channel at bridge supply 2.5V	40 mA (min. bridge resistance 62,5 Ohm)
Max. current per channel at bridge supply 5V	60 mA (min. bridge resistance 83,3 Ohm)
Max. current per channel at bridge supply	26 mA (min. bridge resistance 336,5 Ohm)
8.75V	
Input sensitivities	7 mV/V, 3.5 mV/V, 2 mV/V
Input voltage, single-ended	±10 V
Input resistance	10 MOhm
Input for PT1000 sensor	-230 °C +1500 °C
Excitation voltage PT1000	1.25 V



Digital Input / Digital Output

Number of in-/ outputs	16
Output	TTL (0V 5V), push-pull
total current across all channels	140 mA
Max. load current per output	25 mA
Input	
Max. input voltage	5.5 V
min. input voltage	-0.5 V
Resistance Pullup +5V	10 kOhm
Sampling period	40 msec

Analog Output

Number of analog outputs	8
Configuration of analog outputs	0-10V, ±10V, 0-5V, ±5V, 4-20mA

Supply

Supply voltage	12 V to 28 V
Power	< 12 W

Environmental Data

Operating temperature	0°C to 50 °C (32 to 122 Deg F)
Power	< 12 W



Interfaces

USB	2.0 Full speed
	Communication Device Class, HID (firmware
Devices class	update only)
	Level 3.3V, galvanically isolated;
UART	auxiliary voltage 24V DC, 2A
	protocol: CoE device profile 404, Mailbox- and
	Buffered mode. Synchronization: Hardware-
EtherCat	Latching
CANbus	CANopen, device profile 404, 4x TxPDOs,

Resolution of Strain Gage Input

The resolution of measuring amplifier depends on the adjusted input sensitivity and the data frequency. The input sensitivity is assigned to the bridge supply voltage: 8.75V with 2.0 mV/V, 5V with 3.5 mV/V, and 2.5V with 7 mV/V.

The excitation voltage with 8.75V is recommended only with sensors of minimum 1kOhm bridge resistance and sufficient construction size. For miniature sensors under 500g weight the bridge supply of 8.75V shall not be applied!

	+Us	10 Hz	50 Hz	100 Hz	1 kHz	5 kHz	8 kHz
3.5 mV/V	5 V	2.0 10 ⁵	1.2 10 ⁵	8.0 10 ⁴	2.5 10⁴	1.0 10 ⁴	8.0 10 ³
2.0 mV/V	8.75 V	3.0 10 ⁵	2.5 10 ⁵	1.5 10 ⁵	6.0 10 ⁴	4.0 10 ⁴	1.4 10 ⁴

At a data frequency of 10 Hz the measuring range from 0 to +3.5 is quantized in 2.0 10^5 steps.



The noise amplitude is 17.5 nV/V.

At a sensor with rated force of 10 N and rated output of 0.5 mV/V the noise amplitude is

$$\frac{0.5}{10 \ N} \cdot \frac{1}{3.5 \cdot 2.0 \ 10^5} = 7.14 \cdot 10 \ N$$

Noise Amplitude at Analog Output

The noise amplitude at the analog output is approx. 25mV (peak values) or 10mV (RMS). It is due to the galvanic isolation of the analog output. The frequency components of the noise signal are predominantly at frequencies above 300 kHz and higher. These can be largely attenuated by the use of oversampling with subsequent digital filtering (eg arithmetic averaging) in the subsequent analog-digital conversion.

Digital Filters

The BX8 adjusts automatically the analog filter and the "decimating"digital input filter. The user provides only the required number of measured values per second (data frequency), which is send via USB-interface or made available to the field bus. Additionally there are two adjustable digital filters: 1x FIR filter and 1x IIR filter. Each of these filter is individually adjustable for any of the 8 input channels. In the measured data signal processing chain, the FIR filter is processed first, followed by the IIR filter.

Finite Impulse Response Filter

The FIR filter is a low pass filter with which the filter order N and the cut-off frequency fg can be set. The cut-off frequency is the frequency at which the signal is already attenuated by -3 db. This corresponds to a factor of approx. 0.7. Frequencies lying above this will continue to be attenuated.

The filter order determines the maximum and minimum adjustable cut-off frequency fg in terms of the data rate Fa, and the steepness of the attenuation range. Higher orders have a steeper slope, i.e. an increase in the signal frequency causes the attenuation to increase faster. The so-called step response is slower at higher orders however, i.e. it always takes N+1 measured values until the filter's output value corresponds to the input value.



Order	fg/Fa min in Hz	fg/Fa min in Hz
14	0,05	0,190
12	0,06	0,225
10	0,07	0,270
8	0,09	0,340
6	0,12	0,350
4	0,18	0,410

Infinite Impulse Response Filter

The infinite Impulse Response Filter (IIR) of fourth order allows four different filter types:

- 1) Low pass filter: Sensor signals at low frequency (including DC size with f=0) pass through the filter, signals at a higher frequency are attenuated.
- 2) High pass filter: Sensor signals at low frequency (including DC size with f=0) are

Attenuated, signals at a higher frequency pass through the filter. Note: Frequencies above half of the measured data rate cannot be processed. The measuring amplifier includes an analog-to-digital sampling system, which in itself acts as a low pass.

- 3) Band pass filter: Signals are allowed to pass through within a frequency range, signals which are above or below this range are attenuated.
- 4) Band stop filter ('Notch filter'): Signals are attenuated within a frequency range, signals which are above or below this range are allowed to pass through.

The cut-off frequency can be configured for low and high pass filters. The cut-off frequency is the frequency at which the signal is already attenuated by -3 db. This corresponds to a factor of approx. 0.7. Frequencies lying above for low pass and lying below for high pass will continue to be attenuated.

Two cut-off frequencies can be configured for band pass and band stop filters; the upper and the lower. Attenuation by -3 dB also occurs here. The two cut-off frequencies may not be the same. Signal frequencies lying between these are allowed to pass through for the band pass filter, and are attenuated for the band stop filter.

The maximum (and also the minimum if need be) of each cut-off frequency is dependent on the measured data rate. Cut-off frequencies can be set to (0.49 * measured data rate), i.e. almost to half.



The filters can be individually configured for each channel and also switched on and off. The configuration also remains the same for filters that have been switched off.

Buttons and Indicators

	Switch on and off the device (only BX8-HD)
Power-button with LED function	Function LED
	a) reset the status LED;
	b) start the Firmware-updates, if during the
Mod-button with Led status	Power On activates
	Sensor Test; by pressing the CHK button the
	sensor signal for the unloaded condition is
	emulated on the input of the measuring
	amplifier; for sensors with calibration matrix the
	documented zero signals of the sensor are
CHK button with Check LED	Emulated on the inputs.
	"Tara", Set-Zero": trigger an automatic zero
ТА	adjustment for all outputs (analog and digital)
ECR-LED	EtherCat EC Run;



Pin Configuration



Connection of strain gauges, active sensors, TEDS. Activation of the bridge completion with bridge from "HB" (12) to -UD (10).

No	Symbol	Description
1	TEDS	Transducer Electronic Data according to IEEE 1451.4
2	-Us	Negative bridge supply
3	+Us	Positive bridge supply
4	Q350	Quarter bridge completion 350 Ohm
5	+UD	Positive differential input
6	GNDE	Ground, analog input
7	-Uf	Negative sense line (6-wire connection only)
8	+Uf	Positive sense line (6-wire connection only)
9	Q120	Quarter bridge completion 120 Ohm
10	-UD	Negative differential input
11	Q1k	Quarter bridge completion 1000 Ohm
12	НВ	Half bridge completion
13	VCCIO	Supply voltage for active sensors (optional)
14	Ue	Analog input voltage, single ended ±10V
15	GNDIO	Ground, supply voltage (optional)
Shield	PE	Earth (housing)



Input Sub-D44 HD



	1/3 Channels 1,2,3, Sub-D HD 44					
Pin	Signal	Description	Channel			
Shield	PE	Earth (housing)	-			
1	TEDS	Transducer Electronic Data according IEEE 1451.4	1			
2	US-	Negative bridge supply	1			
3	US+	Positive bridge supply	1			
4	Q350	Quarter bridge completion 3500hm	1			
5	UD+	Positive differential input	1			
6	GNDE	Ground, analog input	1			
7	UF-	Negative sense line (6-wire connection only)	1			
8	UF+	Positive sense line (6-wire connection only)	1			
9	Q120	Quarter bridge completion 1200hm	1			
10	UD-	Negative differential input	1			
11	Q1k	Quarter bridge completion 10000hm	1			
12	HB	Half bridge completion	1			
13	UE	Analog input voltage, single ended ±10V	1			
14	GNDIO	Not equipped sep.galv. isol. (optional)	1			
15	PE	Earth (housing)	-			
16	TEDS	Transducer Electronic Data according IEEE 1451.4	2			
17	US-	Negative bridge supply	2			
18	US+	Positive bridge supply	2			
19	Q350	Quarter bridge completion 3500hm	2			
20	UD+	Positive differential input	2			
21	GNDE	Ground, analog input	2			
22	UF-	Negative sense line (6-wire connection only)	2			
23	UF+	Positive sense line (6-wire connection only)	2			
24	Q120	Quarter bridge completion 1200hm	2			
25	UD-	Negative differential input	2			
26	Q1k	Quarter bridge completion 1000Ohm	2			
27	НВ	Halt bridge completion	2			
28	UE	Analog input voltage, single ended ±10V	2			
29	GNDIO	Not equipped sep.galv.isol. (optional)	2			



	1/3 Channels 1,2,3, Sub-D HD 44					
Pin	Signal	Description	Channel			
30	VCCIO	Not equipped sep.galv.isol. (optional)	1,2,3			
31	TEDS	Transducer Electronic Data acc. to IEEE 1451.4	3			
32	US-	Negative bridge supply	3			
33	US+	Positive bridge supply	3			
34	Q350	Quarter bridge completion 350Ohm	3			
35	UD+	Positive differential input	3			
36	GNDE	Ground, analog input	3			
37	UF-	Negative sense line (6-wire connection only)	3			
38	UF+	Positive sense line (6-wire connection only)	3			
39	Q120	Quarter bridge completion 1200hm	3			
40	UD-	Negative differential input	3			
41	Q1k	Quarter bridge completion 1000Ohm	3			
42	НВ	Half bridge completion	3			
43	UE	Analog input voltage, single ended ±10V	3			
44	GNDIO	Not equipped sep.galv.isol. (optional)	3			

The labeling on the front panel is 4/6 for connecting the channels 4 to 6.

	4/6 Channels 4,5,6, Sub-D HD 44				
Pin	Signal	Description	Channel		
Shield	PE	Earth (housing)	-		
1	TEDS	Transducer Electronic Data acc. to IEEE 1451.4	4		
2	US-	Negative bridge supply	4		
3	US+	Positive bridge supply	4		
4	Q350	Quarter bridge completion 3500hm	4		
5	UD+	Positive differential input	4		
6	GNDE	Ground, analog input	4		
7	UF-	Negative sense line (6-wire connection only)	4		
8	UF+	Positive sense line (6-wire connection only)	4		
9	Q120	Quarter bridge completion 1200hm	4		
10	UD-	negative bridge supply	4		
11	Q1k	Quarter bridge completion 10000hm	4		
12	HB	Half bridge completion	4		
13	UE	Analog input voltage, single ended ±10V	4		
14	GNDIO	Not equipped sep.galv.isol. (optional)	4		
15	PE	Earth (housing)	-		
16	TEDS	Transducer Electronic Data acc. to IEEE 1451.4	5		
17	US-	Negative bridge supply	5		
18	US+	Positive bridge supply	5		



	4/6 Channels 4,5,6, Sub-D HD 44				
Pin	Signal	Description	Channel		
19	Q350	Quarter bridge completion 350Ohm	5		
20	UD+	Positive differential input	5		
21	GNDE	Ground, analog input	5		
22	UF-	Negative sense line (6-wire connection only)	5		
23	UF+	Positive sense line (6-wire connection only)	5		
24	Q120	Quarter bridge completion 1200hm	5		
25	UD-	Negative differential input	5		
26	Q1k	Quarter bridge completion 10000hm	5		
27	HB	Half bridge completion	5		
28	UE	Analog input voltage, single ended ±10V	5		
29	GNDIO	Not equipped sep.galv.isol. (optional)	5		
30	VCCIO	Not equipped sep.galv.isol. (optional)	4,5,6		
31	TEDS	Transducer Electronic Data acc. to IEEE 1451.4	6		
32	US-	Negative bridge supply	6		
33	US+	Positive bridge supply	6		
34	Q350	Quarter bridge completion 3500hm	6		
35	UD+	Positive differential input	6		
36	GNDE	Ground, analog input	6		
37	UF-	Negative sense line (6-wire connection only)	6		
38	UF+	Positive sense line (6-wire connection only)	6		
39	Q120	Quarter bridge completion 1200hm	6		
40	UD-	Negative differential input	6		
41	Q1k	Quarter bridge completion 10000hm	6		
42	HB	Half bridge completion	6		
43	UE	Analog input voltage, single ended ±10V	6		
44	GNDIO	Not equipped sep.galv.isol. (optional)	6		



At the 44-pole SubD socket 1/6 up to 6 channels can be connected. The labeling on the front panel is 1/6 for connecting the channels 1 to 6. The connections are parallel to the input jacks 1/3 and 4/6.

Channels 1,2,3,4,5,6, Sub-D HD 44				
Pin	Signal	Description	Channel	
Shield	PE	Earth (housing)	-	
1	UF+	Positive sense line (6-wire connection only)	1	
2	US+	Positive bridge supply	1	
3	UD+	Positive differential input	1	
4	UD-	Negative differential input	1	
5	US-	Negative bridge supply	1	
6	UF-	Negative sense line (6-wire connection only)	1	
7	TEDS	Transducer Electronic Data according IEEE 1451.4	1	
8	UF+	Positive sense line (6-wire connection only)	2	
9	US+	Positive bridge supply	2	
10	UD+	Positive differential input	2	
11	UD-	Negative differential input	2	
12	US-	Negative bridge supply	2	
13	UF-	Negative sense line (6-wire connection only)	2	
14	TEDS	Transducer Electronic Data according IEEE 1451.4	2	
15	PE	Earth (housing)	-	
16	UF+	Positive sense line (6-wire connection only)	3	
17	US+	Positive bridge supply	3	
18	UD+	Positive differential input	3	
19	UD-	Negative differential input	3	
20	US-	Negative bridge supply	3	
21	UF-	Negative sense line (6-wire connection only)	3	
22	TEDS	Transducer Electronic Data according IEEE 1451.4	3	
23	UF+	Positive sense line (6-wire connection only)	4	
24	US+	Positive bridge supply	4	
25	UD+	Positive differential input	4	
26	UD-	Negative differential input	4	
27	US-	Negative bridge supply	4	
28	UF-	Negative sense line (6-wire connection only)	4	
29	TEDS	Transducer Electronic Data acc. to IEEE 1451.4	4	
30	PE	Earth (housing)	-	



Channels 1,2,3,4,5,6, Sub-D HD 44				
Pin	Signal	Description	Channel	
31	UF+	Positive sense line (6-wire connection only)	5	
32	US+	Positive bridge supply	5	
33	UD+	positive differential input	5	
34	UD-	Negative differential input	5	
35	US-	Negative bridge supply	5	
36	UF-	Negative sense line (6-wire connection only)	5	
37	TEDS	Transducer Electronic Data according IEEE 1451.4	5	
38	UF+	Positive sense line (6-wire connection only)	6	
39	US+	Positive bridge supply	6	
40	UD+	Positive differential input	6	
41	UD-	Negative differential input	6	
42	US-	Negative bridge supply	6	
43	UF-	Negative sense line (6-wire connection only)	6	
44	TEDS	Transducer Electronic Data acc. to IEEE 1451.4	6	



Channels 7, 8, Sub-D HD 44			
Pin	Signal	Description	Channel
Shield	PE	Earth (housing)	-
1	UE	Analog input voltage, single ended ±10V	1
2	GNDE	Ground, analog input	1
3	UE	Analog input voltage, single ended ±10V	2
4	GNDE	Ground, analog input	2
5	UE	Analog input voltage, single ended ±10V	3
6	GNDE	Ground, analog input	3
7	UE	Analog input voltage, single ended ±10V	4
8	GNDE	Ground, analog input	4
9	UE	Analog input voltage, single ended ±10V	5
10	GNDE	Ground, analog input	5
11	UE	Analog input voltage, single ended ±10V	6
12	GNDE	Ground, analog input	6
13	PE	Earth (housing)	-
14	PE	Earth (housing)	-
15	PE	Earth (housing)	-
16	TEDS	Transducer Electronic Data according IEEE 1451.4	7
17	US-	Negative bridge supply	7
18	US+	Positive bridge supply	7
19	Q350	Quarter bridge completion 350Ohm	7
20	UD+	Positive differential input	7
21	GNDE	Ground, analog input	7
22	UF-	Negative sense line (6-wire connection only)	7
23	UF+	Positive sense line (6-wire connection only)	7
24	Q120	Quarter bridge completion 1200hm	7
25	UD-	Negative differential input	7
26	Q1k	Quarter bridge completion 10000hm	7
27	HB	Half bridge completion	7
28	UE	Analog input voltage, single ended ±10V	7
29	GNDIO	Not equipped sep.galv.isol. (optional)	7
30	VCCIO	Not equipped sep.galv.isol. (optional)	7,8



Channels 7, 8, Sub-D HD 44				
Pin	Signal	Description	Channel	
31	TEDS	Transducer Electronic Data according IEEE 1451.4	8	
32	US-	Negative bridge supply	8	
33	US+	Positive bridge supply	8	
34	Q350	Quarter bridge completion 350Ohm	8	
35	UD+	Positive differential input	8	
36	GNDE	Ground, analog input	8	
37	UF-	Negative sense line (6-wire connection only)	8	
38	UF+	Positive sense line (6-wire connection only)	8	
39	Q120	Quarter bridge completion 1200hm	8	
40	UD-	Negative differential input	8	
41	Q1k	Quarter bridge completion 10000hm	8	
42	HB	Half bridge completion	8	
43	UE	Analog input voltage, single ended ±10V	8	
44	GNDIO	Not equipped sep.galv.isol. (optional)	8	



Input M16 Binder 423



View from the plug-in side

A 6-axis sensor type K6D can be connected to the 16-pin socket of the BX8-AS.

Channels 1,2,3,4,5,6, M16					
Pin	Signal	Description	Channel		
Shield	PE	Housing	-		
1	US+	Positive bridge supply	1		
2	US-	Negative bridge supply	1		
3	UD+	Positive bridge output	1		
4	UD-	Negative bridge output	1		
5	US+	Positive bridge supply	2		
6	US-	Negative bridge supply	2		
7	UD+	Positive bridge output	2		
8	UD-	Negative bridge output	2		
9	US+	Positive bridge supply	3		
10	US-	Negative bridge supply	3		
11	UD+	Positive bridge output	3		
12	UD-	Negative bridge output	3		
13	US+	Positive bridge supply	4		
14	US-	Negative bridge supply	4		
15	UD+	Positive bridge output	4		
16	UD-	Negative bridge output	4		
17	US+	Positive bridge supply	5		
18	US-	Negative bridge supply	5		



Channels 1,2,3,4,5,6, M16				
19	UD+	Positive bridge output	5	
20	UD-	Negative bridge output 5		
21	US+	Positive bridge supply	6	
22	US-	Negative bridge supply	6	
23	UD+	Positive bridge output	6	
24	UD-	Negative bridge output	6	



Connection strain gauge Quarter Bridge



Connection strain gauge half bridge





Connection strain gauge full bridge



Connection of PT1000





Connection of the Active Sensors

The single-ended voltage signal of active sensors is applied to Ue and GNDE.

Potentiometric sensors can be supplied via +Us. The energy supply for active sensors can be via galvanic isolated voltage VCCIO and GNDIO.

Analog output SUB-D25 socket



Analog outputs voltage or current for channels 1 to 8.

Pin	Signal	Meaning
1	Ua1/ Ia1	Analog output channel 1
2	Ua2/ Ia2	Analog output channel 2
3	Ua3/ Ia3	Analog output channel 3
4	Ua4/ la4	Analog output channel 4
5	Ua5/ Ia5	Analog output channel 5
6	Ua6/ Ia6	Analog output channel 6
7	Ua7/ Ia7	Analog output channel 7
8	Ua8/ Ia8	Analog output channel 8
9	-	Internal usage
10	-	Internal usage
11	-	Internal usage
12	OutB-	60kHz frequency -6V Out (optional)
13	-	Internal usage
14	GNDA	Analog GND
15	GNDA	Analog GND
16	GNDA	Analog GND
17	GNDA	Analog GND
18	GNDA	Analog GND
19	GNDA	Analog GND
20	GNDA	Analog GND
21	GNDA	Analog GND
22	-	Internal usage
23	-	Internal usage
24	OutB+	60kHz frequency +6V Out (optional)
25	GNDINT	GNDINT



Digital in- and outputs Sub-D25 plug connector



Pin	Name	Meaning	
1	VCC	5V voltage supply, digital	
2	DGND	Digital ground (GND)	
3	DGND	Digital ground (GND)	
4	DGND	Digital ground (GND)	
5	DGND	Digital ground (GND)	
6	DIO 2	Group 1, 1.2	
7	DIO 4	Group 1, 1.4	
8	DIO 6	Group 2, 2.2	
9	DIO 8	Group 2, 2.4	
10	DIO 10	Group 3, 3.2	
11	DIO 12	Group 3, 3.4	
12	DIO 14	Group 4, 4.2	
13	DIO 16	Group 4, 4.4	
14	DGND	Digital ground (GND)	
15	DGND	Digital ground (GND)	
16	DGND	Digital ground (GND)	
17	DGND	Digital ground (GND)	
18	DIO 1	Group 1, 1.1	
19	DIO 3	Group 1, 1.3	
20	DIO 5	Group 2, 2.1	
21	DIO 7	Group 2, 2.3	
22	DIO 9	Group 3, 3.1	
23	DIO 11	Group 3, 3.3	
24	DIO 13	Group 4, 4.1	
25	DIO 15	Group 4, 4.3	



EtherCat M12 4-pole socket D-coded



Pin	Name	Meaning
1	TD+	Transmit +
2	RD+	Receive +
3	TD-	Transmit -
4	RD-	Receive -
Shield	PE	Earth (housing)

CANbus M12 5-pole socket / plug A-coded



Pin	Name	Meaning			
1	Shield	Shielding			
2	V+	Power (UB+)			
3	V-	GND (0V)			
4	CAN_H	Dominant High			
5	CAN_L	Dominant Low			
	Housing	Shield			



UART Port Sub-D9 socket

The UART Port is used for connection of Raspberry PI.

The UART Port is not available for variants "EC" with EtherCat.



Pin	Name	Meaning		
1	UB-	Ground supply voltage		
2	RX	Receive data of BX8, 3.3Volt level		
3	ТХ	Transmit data of BX8, 3.3 Volt level		
4	/	Internal usage		
5	UB-	Ground supply voltage		
6	UB+	Supply voltage		
7	/	Internal		
8	UB+	Supply voltage		
9	OFF	BX8 Disable		
	Housing	Shield		

Voltage supply M8, 4-pole



Pin	Name	Meaning		
1	UB+	Positive supply voltage 10-27V, brown		
2	PE	Earth (housing) PE, white		
3	0V	Negative supply voltage (GND), blue		
4	PE	Earth (housing) PE, black		



Screw terminal BX8-AS



Pos.	Terminal labelling	Description		
1	n.2 / n.4 Group n	Digital In/Out No. 2 / 4 / 6 / 8 / 10 / 12 / 14 / 16		
2	n.1 / n.3 Group n	Digital In/Out No. 1 / 3 / 5 / 7 / 9 / 11 / 13 / 15		
3	GNDD	Ground, digital In/Out		
4	UA/IA	Analog output, current or voltage		
5	GNDA	Ground, Analog output		
6	TEDS	Transducer Electronic Data according to IEEE 1451.4		
7	UE	Voltage, Analog input		
8	GNDE	Ground. Analog input		
9	Q1k	Quarter bridge completion 1000 Ohm		

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Pos.	Terminal labelling	Description		
10	Q350	Quarter bridge completion 350 Ohm		
11	Q120	Quarter bridge completion 120 Ohm		
12	HB	Half bridge completion		
13	-US	Negative bridge supply		
14	-UF	Negative sense line		
15	-UD	Negative differential input		
16	+UD	Positive differential input		
17	+UF	Positive sense line		
18	2112	Positive bridge supply		
19	SH	Earth, Analog input (shielding)		

Connection of the TEDS cables for sensors with transducer elec. datasheet

The 1-wire EEPROM memory module located in the sensor or in the sensors connector is connected with two wires: the ground of the EEPROM to **GNDE** and the signal line (also its supply line) at the **TEDS** side.

TEDS, however, are only supported by BX8 firmware version 1.32 and hardware version 4.0 (devices purchased from 11/2016) and following.



Additional Information

LED Indicators

The LED indicators differ according to the housing versions AS and DS as well as the field bus versions CANopen and EtherCAT. The DS housing is equipped with all the LEDs on the front panel, integrated into the buttons. The green ECR or green FUNCTION LED only has significance for EtherCAT devices.

LED	Color AS	Color DS	Meaning	Position AS	Labeling DS
	yellow	blue	on/off, Bootloader		
				outside,	
			EtherCAT-State	yellow/green	ON OFF
FUNCTION	green	green	EC-RUN	combined	ECR
STATUS	red	red	Error state	outside	MOD
			Measuring value-		
CHECK	yellow	yellow	emulation	inside	CHK

For devices with fieldbus (CANopen, EtherCAT), there are two small green LEDs next to the field bus connections. These have the following meaning:

EtherCAT: Link activity

CANopen: Fieldbus switched on

LED indicators STATUS and FUNCTION on EtherCAT devices

Device state	FUNCTION-LED	EC-RUN-LED
EtherCAT State=INIT (not active)	Permanently on	Off
		Blinking
		200ms on
EtherCAT State=PREOP	Off	200ms off
		Single flash
		200ms on,
EtherCAT State= SAFEOP	Off	1s off
EtherCAT State= OP	Off	Permanently on
USB-Bootloader active (EtherCAT	300ms on	Off
not used)	300ms off	



LED Display for Error Condition (all device models)

		STATUS	
Error condition	Priority	LED	Meaning
EtherCAT: State- transition inhibited	1	Blinking 200ms on 200ms off	Requested status transition impossible, e.g. because of invalid settings or invalid hardware settings
EtherCAT: State automatically reset	1	Single flash 200ms on, 1s off	Device switched from operating state to SafeOpError because of a synchronization error
EtherCAT: Application watchdog timeout	1	Double flash 200ms on, 200ms off 200ms on 1sec off	If Watchdog-timer is active: process data frame not received within watchdog time
Measuring application: Sensor error	2	Permanent on	 A sensor or its cable is defective, for example, the cable Ud+ or Ud- could be interrupted or could have short circuited with one of the cables Us+ or Us A measured value is saturated, i.e. the measuring signal lies outside of the measuring range. This could be ascribed to a defective sensor. The maximum value is exceeded for a six-axis sensor.


Measuring application: Error at the digital output	3	Blinks slowly 500ms on 500ms off	Short-circuit at the digital output, i.e. if this is connected as an output and switched to High, it has short-circuited with GNDD, or if it is switched to Low, a voltage >=3 V is applied.
Measuring application: Error at the analog output	4	Blinks very slowly 1s on 1s off	Open current output or overheating of the output driver, for example as a result of a short-circuited voltage output.
Bootloader: Firmware- update failed	1	Permanent on	Checksum error after writing to flash memory during firmware update

FUNCTION LED

The FUNCTION LED lights up permanently in yellow (blue for BX8-HD) during normal operation. It blinks after activating the firmware update function (see Annex A).

In EtherCAT devices, this LED lights up or blinks in green depending on the EtherCAT states (with BX8-HD: separate green LED).



STATUS LED (Red)

The STATUS LED indicates errors that have occurred:

If it lights up permanently in red, an error at the sensor input has occurred. This can be ascribed to three causes:

- A sensor or its cable is defective, for example, the cable Ud+ or Ud- could be interrupted or short circuited with one of the cables Us+ or Us-.
- A measured value is saturated, i.e. the measuring signal lies outside the measuring range. This could be ascribed to a defective sensor.
- The maximum value is exceeded for a six-axis sensor.

If the STATUS LED blinks slowly (approx. 1x/s), an error has occurred at the analog output. This could be an open current output or overheating of the output driver, for example, as a result of a short-circuited output voltage.

If the STATUS LED blinks quickly (approx. 2x/sec), an error has occurred at the digital output, namely a short circuit, i.e. if this is connected as an output and switched to High, it has short-circuited with GNDD, or if it is switched to Low, a voltage >=3 V is connected.

The status display of the error can be cleared by pressing the MODE button (located in the housing) if the error is currently no longer present.

Detailed error information is stored in the device and can be displayed by pressing the keyboard key E in the terminal program.



Digital Inputs and Outputs

The BX8 has 16 configurable 5V TTL compatible digital inputs and outputs ('DIOs'). These are organized into 4 groups which are identified on the BX8-ASterminal connections as 'Group 1' to 'Group 4'. The respective DIOs are identified here as <GroupNo.>.<DIOno>.

The DIOs can be configured as an input or output function, whereby the DIOs within one group must all have the same data direction.

Digital-I/O Numbers

In the devices and windows API (DLL), the numbers of the DIOs are assigned to the terminal connection identification as follows:

Number in the API and terminal		
program	Belongs to group	Identification on the terminal board
1	1	1.1
2	1	1.2
3	1	1.3
4	1	1.4
5	2	2.1
6	2	2.2
7	2	2.3
8	2	2.4
9	3	3.1
10	3	3.2
11	3	3.3
12	3	3.4
13	4	4.1
14	4	4.2
15	4	4.3
16	4	4.4



Digital I/O Functions

The following functions can be configured:

			Parameter	
			Device- or	
			DLL-	
			Command	
		Data	(GSV86)Get/	
No	Function	direction	SetDIOtype	Short description
				General input. The logic level can be
	General-			queried with
1	Purpose Input	Input	0x000004	GetDIOlevel / GSV86getDIOlevel.
				Input for synchronous measurement data
				frame
				transmission in combination with several
				BX8,
	Sync-Slove			whereby the line is connected to the
2	Sync-Slave	Input	0x000002	no 18)
2	Zero setting	input	0,000002	The active input level sets an analog
3	single channel	Input	0x000010	input channel to zero.
	Zero setting			
	all			The active input level sets all analog
4	channels	Input	0x000020	input channels to zero.
	Reset the			
	maximum and			
	minimum			
	value			The active input level resets all maximum
5	determination	Input	0x000040	and minimum values.
				Triggers the sending of a measured
				value frame with actual measured values
	Trigger Send			via a USB interface to the inactive-to-
6	actual value	Input	0x000080	active edge of the digital input.



				The maximum value determination is
				started for the inactive-to-active edge at
				the digital input (all input channels) and a
	Trigger			frame with these maximum values is sent
	minimum			to the USB interface at the active-to-
7	value	Input	0x000100	inactive edge.
		ı		The minimum value determination is
				started for the inactive-to-active edge at
				the digital input (all input channels) and a
	Triager			frame with these minimum values is sent
	minimum			to the USB interface at the active-to-
8	value	Input	0x000200	inactive edge.
-	, raide	p at	0//00200	A decimating mean value formation is
				started for the inactive-to-active edge on
				the digital input (all input channels) and a
				frame with these mean values is sent to
	Trigger mean			the LISB interface at the active-to-
a	value	Input	0x000400	
5	Value	mput	07000400	While the input level is active measured
				value frames with actual measured
	Trigger Send			values are sent via a LISB interface at
10	actual value	Output	0~000800	the set data rate
10		Output	0,000000	Conoral output. The actual logic lovel
	Durnose			can be defined with SetDIOlevel /
11		Output	0x001000	
	Output	Output	0,001000	Threshold value output: The output is
				activated if the assigned measured value
	Throshold			is larger than the upper threshold value
				and is deactivated if it is smaller than the
12		Output	0×010000	lower threshold value
12	value	Output	0.010000	Threshold value output: The output is
	Threshold			activated if the assigned maximum value
				is larger than the upper threshold value
	movimum			and is deastivisted if it is smaller than the
12	voluo	Output	02014000	and is deadlivated if it is smaller than the
13	value	Output	0x014000	
				Threehold volue output: The output is
	These starts			i nresnoid value output: The output is
	Inreshold			activated if the assigned minimum value
	output			is larger than the upper threshold value
	minimum			and is deactivated if it is smaller than the
14	value	Output	0x018000	lower threshold value.



				Window comparator: The output is
	Window			activated if the assigned measured value
	comparator			is smaller than the upper threshold value
	output actual			and larger than the lower threshold
15	value	Output	0x012000	value; otherwise it is deactivated.
	Window			Window comparator: The output is
	comparator			activated if the assigned maximum value
	output			is smaller than the upper threshold value
	maximum			and larger than the lower threshold
16	value	Output	0x016000	value; otherwise it is deactivated.
	Window			Window comparator: The output is
	comparator			activated if the assigned minimum value
	output			is smaller than the upper threshold value
	minimum			and larger than the lower threshold
17	value	Output	0x01A000	value; otherwise it is deactivated.
				Output to the synchronous data frame
				transmission in combination with several
				BX8, whereby the line is connected to the
	Sync-Master			slave (s) (see
18	output	Output	0x020000	no.2)



Inverting Digital Inputs

The DIOs have pull-up resistances that generate high levels when the input is open. For input trigger functions that are intended to be used with a switch or button, that one must be connected between the DIO and the GNDD terminal. The line must be functionally inverted by software so that the function can be executed when the switch is closed. When using the device interfaces or DLL, the specified value in the above mentioned column 'Value' must be ORed with 0x80000 for this purpose.

The threshold value outputs can also be inverted in this way.

The terms in the above mentioned table mean:

Level	Non-ir	nverted	Inverte	ed
Active	Logic 1	= High = 5V	Logic 0	= Low = 0V
Inactive	Logic 0	= Low = 0V	Logic 1	= High = 5V

Only when using the general purpose functions (no. 1 and 10 in the above table) does the inversion have no effect. The functions GSV86get/setDIOlevel and Get/SetDIOlevel always read the level directly, i.e. not inverted.

Further Notes Digital I/O

The **default level** can be defined for digital outputs, i.e. the level that the output should take after restarting and after a reconfiguration. This setting also applies directly, i.e. independent of the inversion state.



The general permanent data transmission should be turned off for measured value-sendtrigger functions (no. 6 to 10 in the above-mentioned table). This can be done with the button y in the terminal program.

For functions, that are associated with the acquisition of maximum and minimum values (in the above-mentioned table no. 5,7,8,13,14,16,17) the determination of maximum and minimum values of the firmware should be activated. This can be done with the button m in the terminal program.

Master-Slave Frame Synchronization

When using several BX8s at the same time, the transmission of the measured data frames can be synchronized via digital I / Os. For this, one of the devices must be configured as a master by selecting one of the DIO lines 13 to 16 as a synchronization line and configuring the function of this line as a sync master output (no.18). All other devices are configured as sync slave input (No. 2) on the DIO line connected to the master.

When using the optional BX8 master-slave adapter cable, the synchronization line for all devices is set to DIO no. 16.

The synchronization line always consists of two wires: signal (e.g., DIO 16 <-> DIO 16) and GND = digital reference mass.

Data Acquisition and Bandwidth

The BX8 has a 24-bit sigma delta AD converter that acquires all 8 channels simultaneously (simultaneous sampling). It is set to a fixed single sampling rate of 48000 samples/second (total sampling rate = 48000/s x 8 channels = 384000/s). These are decimated down by a digital anti-aliasing filter to fixed values depending on the selected data rate, whereby all input samples are included in the calculation (output decimation). The cut-off frequencies mentioned in the following table is a result of this input filter, i.e. these apply if:

- The analog input filter is set to the highest value of 11.4 kHz and
- The additional digital filters (see above) are switched off.

In this case, the data frequency also automatically corresponds to the update of the analog output. However, the analog output is updated up to 16000 samples / s. The analog output is switched off from 24000 samples / s and higher.



Data frequency in	ו ו	-3 dB cut-off frequency in
frames/	s Decimation divisor	Hz
1	48000	0.4
2	24000	0.8
3	16000	1.2
4	12000	1.6
5	9600	2
6	8000	2.4

Data frequency in		-3 dB cut-off frequency in
frames/s	Decimation divisor	Hz
8	6000	3.2
10	4800	4
12	4000	4.8
15	3200	6
16	3000	6.4
20	2400	8
24	2000	9.6
25	1920	10
30	1600	12
32	1500	12.8
40	1200	16
48	1000	19.2
50	960	20
60	800	24
75	640	30
80	600	32
96	500	38.4



Data frequency in		-3 dB cut-off frequency in
frames/s	Decimation divisor	Hz
100	480	40
120	400	48
125	384	50
150	320	60
160	300	64
192	250	76.8
200	240	80
240	200	96
250	192	100
300	160	120
320	150	128
375	128	150
384	125	153.6



Data frequency in frames/s	Decimation divisor	-3 dB cut-off frequency in Hz
400	120	160
480	100	192
500	96	200
600	80	240
640	75	256
750	64	300
800	60	320
960	50	384
1000	48	400
1200	40	480
1500	32	600
1600	30	640
1920	25	768
2000	24	800
2400	20	960
3000	16	1200
3200	15	1280
4000	12	1600
4800	10	1920
6000	8	2400
8000	6	3200
9600	5	3840
12000	4	4800
16000	3	6400
24000	2	9600
48000	1	11400



Note: The configurable maximum data frequency depends on other settings of the device.

When setting the data frequency, the BX8 checks if the desired data frequency is possible and refuses the command, if not. The maximum configurable data frequency can be determined by a read command. Examples of settings that have an impact on the maximum data frequency, are:

- Measured data type
- Bit rate of the UART interface, if activated (if present)
- Digital FIR- and IIR-filters
- Trigger- and threshold functions of the digital I/Os
- Activated six-axis sensor measuring

At the highest data rates of 24000 / s and 48000 / s, the range of functions of the BX8 is limited to digital data transmission.

Data Frames and Bandwidth

The BX8 transmits the measured data in single frames via a serial USB interface, whereby each measured data frame contains samples of all 8 channels that were acquired simultaneously.

The data format for the measured data can be changed. There are 3 different data formats available:

Data type	Description	Maximum data frequency1
	Integer 16-Bit-value in binary offset format.	
INT16	Unscaled raw value.	48000 frames/s
	Integer 24-Bit-value in binary offset format.	
INT24	Unscaled raw value.	24000 frames/s
		12000 frames/s (six-axis sensor =
	32-bit floating-point number according to	off) 2
IEEE 754. Measured value has been complete	IEEE	12000 frames/s (six-axis
	754. Measured value has been completely	sensor =
Float	scaled.	on) 3



Using the example of the strain gauge input with a bridge supply voltage of 8.75 V, the following applies for the integer measured value display INT16 and INT24:

Sensor deviation in mV/V	Integer measuring value, 16-Bit Hex	Integer measuring value, 24-Bit Hex	Read value MEGSV8w32.dll:: GSVread and other measuring value -read functions4
<= -2.1	0x0000	0x000000	-1.05
-2.0	0x0618	0x061862	-1.0
0	0x8000	0x800000	0.0
2.0	0xF9E7	0xF9E79E	1.0
>= 2.1	0xFFFF	0xFFFFF	1.05

The measuring amplifier is factory-calibrated so that the value for the nominal input sensitivity (here 2.0 mV/V) is as exact as possible.

The multiplication with the scaling value (button 'n' in the terminal program) is carried out by external software for the INT data types.

The BX8 independently calculates the completely scaled measured values for the **data type float** either by taking the scaling value (general sensors) into consideration or by multiplying with the coefficient matrix for the activated six-axis sensors or by using the calculation for PT1000 RTDs.

- 1 This value may be smaller depending on configuration. The BX8 rejects an attempt to set a data frequency that is too high.
- 2 from Firmware 1.36 and higher
- 3 from Firmware 1.36 and higher
- 4 This value doesn't apply for the BX8, if the configured data type is float.

Frequency output 60kHz ±30khz



The measuring signal of the channel 1 can be additionally represented as a frequency modulated square wave signal. It is a differential signal with an amplitude of 6Vpp. The signal can be picked up on the terminals Tx+, Tx- and GND. The connection on GND is optional.

The representation of sensor zero signal is with 60kHz. At maximum positive nominal input detuning of the amplifier the frequency increases to 90kHz. At maximum negative nominal input detuning of the amplifier the frequency sinks to 30kHz.

An user scaling value can be supplied which allows for changing the output scaling.

The total range of the frequency output, however, is set to 28500Hz to 91500Hz (30000-5% from the hub to 90,000 + 5%).



Installation of the 6 Axis Load Cell to the BX8

BX8 Diagram



FIGURE 1 - 6 AXIS LOAD CELL TO BX8 (HD44 SHOWN)





BX8-AS Installation



FIGURE 2 – 6 AXIS LOAD CELL TO BX8-AS TERMINAL BLOCK INPUT







NOTE - Refer to Page 33 for Sense Lines





FIGURE 4 - 6 AXIS LOAD CELL TO BX-AS M16 CONNECTOR INPUT











FIGURE 6 - DIAGRAM OF BX8-AS



BX8-HD44 Installation



FIGURE 7 - 6 AXIS LOAD CELL TO BX8-HD44 INPUT





FIGURE 8 - 6 LOAD CELLS TO BXD-HD44 INPUT

NOTE – Refer to Page 18 for Sense Lines





FIGURE 9 – BX8-HD44 DIAGRAM



BX8-HD15 Installation



FIGURE 10 - 6 AXIS LOAD CELL TO BX8-HD15





FIGURE 11 - SEPARATE LOAD CELLS TO BX8HD15

NOTE – Refer to Page 17 for Sense Lines





FIGURE 12 - BX8-HD15 DIAGRAM



BlueDAQ Software Installation

- Please follow these instructions carefully. DO NOT connect the amplifier to the PC until instructed to do so. The BlueDAQ PC software is included on a USB Flash Drive with the amplifier or can be downloaded from <u>www.interfaceforce.com</u>
- Install the software by double-clicking the "setup.exe" file located in the BlueDAQ folder. You may
 need to "Extract" the contents of the folder first if you downloaded it from the website. Follow the
 instructions for installation. Once the software completes installation you **MUST** restart your
 computer.
- 3. Attach the amplifier to the PC using the supplied USB A-B cable. BSC4, BSC8 and BX8 drivers were installed with the BlueDAQ software and Windows will automatically load them. BSC8D/BX8 must be powered ON using supplied power cable and power switch. 9330 drivers must be installed as described below.
- 4. When the device is connected in **Communication mode** for the first time, Windows will ask for a driver directory. The installation process is described below. The driver is located on the USB Flash drive supplied with the 9330. The Flash drive **MUST** be connected to the PC or the files copied to the PC before connecting the 9330 to the PC.
- 5. Enable USB Communication mode. To do this, click the MODE button of the measuring amplifier and select USBmode: Comm in the logger menu.
- Now you can connect your 9330 to the PC via USB cable. Once connected the driver installation window appears. Select "Install software from a list or specific source (advanced users)" and Click "Next >".



FIGURE 13 - FOUND NEW HARDWARE WIZARD



- 7. Click "Search for the best driver in these locations"
- 8. Check the option "Include this location in the search:" and then click "Browse". Select the folder: <u>9330_Com_Driver from the supplied USB drive and Click</u> "Continue >".



FIGURE 14 - NEW HARDWARE WIZARD

9. In the dialogue window "Hardware installation" click "Continue installation".

Hardwar	e Installation
1	The software you are installing for this hardware: GSV-2MSD-DI USB communication has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway

FIGURE 15 - HARDWARE INSTALLATION



10. The driver was installed successfully. Click "Finish".

Found New Hardware Wiz	ard						
	Completing the Found New Hardware Wizard						
	The wizard has finished installing the software for:						
	GSV-2MSD-DI USB communication						
	Click Finish to close the wizard.						
	< Back Finish Cancel						

FIGURE 16 - HARDWARE INSTALL FINISH

COM Ports

Once windows is finished installing the device navigate to Device Manager and check for a new **USB Serial Port** (COMX) where X is the assigned port number. Remember this number. In the examples below it is COM6 or COM28





🛃 Device Manager	x
<u>File Action View H</u> elp	
Human Interface Devices	*
IDE ATA/ATAPI controllers	
Imaging devices	
Keyboards	
Mice and other pointing devices	
Monitors	
Network adapters	
Ports (COM & LPT)	
GSV-2MSD-DI USB communication (COM28)	Ξ
Processors	
Sound, video and game controllers	
System devices	
🔈 🗤 🏺 Universal Serial Bus controllers	
	Ŧ





FIGURE 19 - EXAMPLE OF BX8 COMPORT



🚔 Device Manager	<u> </u>
<u>F</u> ile <u>A</u> ction <u>V</u> iew <u>H</u> elp	
🔺 🚔 Sales-115	*
Batteries	
Biometric Devices	=
Bluetooth Radios	
⊳ nter	
a 🔉 Data Acquisition Devices	
Disk drives	
Display adapters	
Human Interface Devices	
IDE ATA/ATAPI controllers	
Imaging devices	÷
۰ III ا	

FIGURE 20 - BSC8D INSTALLS AS A DATA ACQUISITION DEVICE

BlueDAQ – Adding a New Channel

1. Adding a New Channel

Add Channel	Remove this channel	Channel name:		Actual Channel 0
Load Settings Save Settings Open Session Save Session Open File Monitor	Set Zero Scaling Data Frequency	Range: 0	Unit: mVV vz Hz	Serial Number COMport No. 0 Number of Channels 0

FIGURE 21 - MAIN MENU



2. Under Devicetype, select the device. In this example we are using a BX8.



FIGURE 22 - ADD CHANNEL MENU

3. Under Communication Interface, select the correct COM port. In this Example our COMport Number is COM9.

🕰 Add Channel		
Devicetype	Communication Interface	Input Channel
BX8 V	COMport Number COM1 COM9 Bits/s 115200	Open all input channels Input No. of BX8 First 1 v Last 1 v
Plot Colour <- Click to change	Connect	Cancel

FIGURE 23 - ADD CHANNEL MENU

4. Under Input Channel, select how many channels. In this example we are using a 6 Axis Load Cell, so we will select Last 6.



- FIGURE 24 ADD CHANNEL MENU
- 5. Click Connect





Adding a Sensor with a .Dat File

1. Under the Sensor Option, Click on Multi-axis

BlueDAQ version 1.39								- 🗆	×
File View Action Device	Channel Sensor Options Help								
Configuration	Recorder Multi-axis	rder XY Value	e Display						
	Rosette Stress								
	TEDS								
Add	Strain gage	Remove this channe	el	C	Channel name:		Actual Chan	nel 6	÷.
	Cambrate				Chan. 9_6				
	Load Settings						Serial Number	6356041	
							COMport No.	9	
	Save Settings						Number of Channels	6	1
		_					BX8 Input	6	
	Open Service								
	open session		Set Zero						
	Save Session			_	Range:	Unit:			
			Scaling		50	Nm 🗸			
	Open File Monitor		Data Frequency		10	Hz			
			,						
	Special Sensor		Input Type		Bridge 3.5mV/V				
Status									_
Multi-axi	s sensor enabled.		Meas	suring	Value	0 001	416 Nr	n	
						0.001	. - - - - - - - - - - -		

FIGURE 26 -SENSOR DROPDOWN MENU

2. If this is a new Sensor, Click on the Remove button to remove the previous sensor.

Add Sensor	Sensors enabled 1	i o r s Number of sensors stored in device
Remove	Enabled Sensor dis	splayed Calculated by decive Sensor displayed
Sensor Mode	Storing location	
Six-axis	Device: BX8 SerNo 16356041	Index in memory 1 Sensor Serial No 1548585
General Ze	ero Sianals Matrix	
	Channel assignment	Distance offsets
Component 1:	han. 9_1	X-direction 7 0 m
component n.	I: Com 9_Tassigned to bax 1 🗸	Y-direction
Component 2:	han. 9_2	in and in the set of t
	han 9.3	Z-direction 7 0 m
Component 3:	3: Com 9 3assigned to 6ax 1 \bigtriangledown	
	han. 9 4	Maximum Values (read only)
Component 4:	4: Com 9_4assigned to 6ax 1 🛛 🗸	Force X 2000 N Torque X 50 Nm
c	han. 9_5	
Component 5:	5: Com 9_5assigned to 6ax 1 🛛 💎	Force Y 2000 N Torque Y 50 Nm
C	han. 9_6	
Component 6:	6: Com 9_6assigned to 6ax 1 🛛 🗸	Force Z 4000 N Torque Z 50 Nm
	Auto-Rename Channels	

FIGURE 27 - SENSOR MENU



3. Once the Remove button has been clicked, the Channel assignment will reset.

	Sensor di	splayed
Remove	Enabled	Calculated by decive Sensor displayed
Sensor Mode Six-axis	Storing location Device: BX8 SerNo 16356041	Index in memory 1 Sensor Serial No
General 7	ero Sionals Matrix	
	Channel assignment	Distance offsets
Component 1:	Chan. 9_1	X-direction
	Chan 9.2	Y-direction
Component 2:	Please select	Z-direction / 0 m
	Chan. 9_3	
Component 3:	Please select	Maximum Values (read only)
Component 4:	Chan. 9_4	Maximum values (read only)
component in	Chan 9.5	Force X 0 N Torque X 0 Nm
Component 5:	Please select	Force Y 0 N Torque Y 0 Nm
	Chan. 9_6	
Component 6:	Please select	Force Z 0 N Torque Z 0 Nm
	Auto-Rename Channels	

FIGURE 28 - SENSOR MENU, REMOVE BUTTON

4. Click on Add Sensor and Open File / Dir..

C Select sensor	×
Use sensor data	already stored in device
	Select sensor
Open File / Dir	Please select 🤝
ОК	Cancel
	Currect

FIGURE 29 - ADD SENSOR MENU



×E

5. In this Example, the Multi-Axis SN is 15485857, so 15485851.dat will be selected.

Multi-axis Sensor

T 📘	This P	C > Desktop > 6-Axi	s Matrix ⇒	√ Ū	Search 6-Axis Ma	ətrix	PA
)rganize 🔻 New	v folder					= -	?
🖈 Quick access	<u>^</u>	Name ^		Dat	e modified	Туре	
Desktop 🧳	*	14302589		12/	20/2016 8:56 AM	File folder	
Downloads		R202213		12/	20/2016 8:56 AM	File folder	
		R202834		12/	20/2016 8:56 AM	File folder	
		15485857.dat		10/	14/2016 7:29 AM	DAT File	
BlueDAQ	L						Nm
💻 This PC	~ <						> Nm
	File name	: 15485857.dat		~	*.dat (*.dat)		~ Nm
			Cur	ront Folder	Open	Cance	

FIGURE 30 - SELECTING THE CORRECT DATA FILE

6. Click OK after selection.

Select sensor			\times
	Use sensor data a	Iready stored in device	
		Select sensor	
	Open File / Dir	15485857 🤝	
	ОК	Cancel	

FIGURE 31 - SENSOR DATA SELECTED



U

7. Verify the Sensor Serial is correct.

Add Sensor	Number of Sensors 1	Number of sensors stored in device 1
Remove Sensor Mode	Enabled Sensor d	isplayed ✓ Calculated by decive Sensor displayed → √1
Six-axis	▽ Device: BX8 SerNo 16356041	Index in memory 1 Sensor Serial No 15485857
eneral	Zero Sianals Matrix	
Component 1:	Channel assignment Chan. 9_1 1: Com 9_1assigned to 6ax 1 🛛 🗸	Distance offsets X-direction 0 m Unit
Component 2:	Chan. 9_2 2: Com 9_2assigned to 6ax 1 Chan. 9_3	Z-direction 0 m Meters
Component 3:	3: Com 9_3assigned to 6ax 1 🗸	Maximum Values (read only)
Component 4:	4: Com 9_4assigned to 6ax 1 Chan. 9.5	Force X 2000 N Torque X 50 Nm
Component 5:	5: Com 9_5assigned to 6ax 1 \bigtriangledown	Force Y 2000 N Torque Y 50 Nm
Component 6:	6: Com 9_6assigned to 6ax 1 \bigtriangledown	Force Z 4000 N Torque Z 50 Nm
	Auto-Rename Channels	

FIGURE 32 - ADD SENSOR MENU - FILE SELECTED

8. Click Auto-Rename Channels to properly assign channels.

Auto-Rename Channels

FIGURE 33 – AUTO-RENAME CHANNELS

9. The default Channels will change from Chan X_X to ForceX or Torque, depending on the .dat file used.

Component 1:	ForceX	X-direction
Component 1:	1. Come O faces and the Second	
	I: Com 9_rassigned to bax I	Unit
	ForceY	Y-direction $\frac{1}{\tau}_0$ m $\frac{1}{\tau}$ Meters
Component 2:	2: Com 9_2assigned to 6ax 1 🛛 🤝	Z-direction Ala
	ForceZ	z-direction = 0 m
Component 3:	3: Com 9_3assigned to 6ax 1 🛛 🦁	
	TorqueX	Maximum Values (read only)
Component 4:	4: Com 9_4assigned to 6ax 1 🗸 🗸	Force X 2000 N Torque X 50 Nm
	TorqueY	
Component 5:	5: Com 9_5assigned to 6ax 1 🛛 🤝	Force Y 2000 N Torque Y 50 Nm
	TorqueZ	
Component 6:	6: Com 9_6assigned to 6ax 1 🛛 🦁	Force Z 4000 N Torque Z 50 Nm
	Auto-Rename Channels	

FIGURE 34 - AUTO-RENAME CHANNELS CLICKED


10. Click OK Enable this sensor

OK Enable this sensor

FIGURE 35 - ENABLE T	HIS SENSOR
----------------------	------------

11. Select Overwrite existing and OK.



FIGURE 36 - OVERWRITE

12. Enter password (if required), enter the correct pass and click OK.

Device: BX8 SerNo 16356041	Index in memory 1
Set Device Password	×
Enter password (if	required)
✓ Use default passwor	d "Beln"
ок	Cancel

FIGURE 37 – PASSWORD REQUIRED



Adding a Sensor Manually without a .Dat File

1. Run BlueDAQ from the start menu. After the program launches click "ADD CHANNEL"

uration	Recorder Yt	Recorder XY				
\searrow						
	Add Channel	Remove this c	hannel	Channel name: Dev2_6	Actual Channel	6 🗴
	Load Settings				Serial Number 267	20737
	Loud Settings				DeviceNo:	2
	Save Settings				Number of Channels	6
					BSC8 Input	6
	Open Session		6.17.00	-		
	Save Session		Set Zero	Range:	Unit:	
			Scaling	2	mV/V	
	Open file monitor		Data frequency	10 Hz	z	
	Special Sensor		Input Type	Bridge-input		
Status						
Six-axis se	ensor disabled		Measuring	Value 0.9	077673 mV	V

FIGURE 38 - ADD CHANNEL

- 2. In the Add Channel dialog box
 - 2.1. Click Devicetype drop-down and select BSC4, BSC8, BX8, or BSC2 (9330)
- Click the Device dropdown box and select the device, select the COM Port (See Device Manager if unknown) and open the correct amount of input channels (First = 1 and Last = total # of channels for device). For Model 9330, you will not be allowed to change the number of channels. If using the BSC8/BX8 with a 6-axis sensor then stop after opening 6 channels and proceed to step 6.12.

Devicetype BX8 🗸	Communication Interface Serial / USB / BT COMport Number of GSV device COM7 Bits/s 115200	Open all input channels Input of GSV-8 at Com 7 First 1 Last 6 +
Plot Colour <- Click to change	Connect	Cancel

4. Click Connect





5. BSC8 has a slightly different add channel box. Select Dev1 instead of Com port. Please remember to open the needed amount of input channels.

Add Channel		X
Devicetype BSC8 /16	Communication Interface NIDAQ (USB) BSC8 Device	Input Channel Open all input channels InputNo of BSC8 First 1 Last 1 L
Plot Colour	Connect	Cancel

FIGURE 40 - EXAMPLE BSC8 DEVICE

6. Each channel must now be scaled using the "SCALING" dialog box. Each channel must be scaled independently. If the BSC8 was purchased with Interface load cells and a System Setup and Scaling then the scaling values will be taken from the "Load Cell / BSC8 Digital Bridge Amplifier Calibration Certificate"

Change Display Scaling			X
Sensor settings		Amplifier settings	
Physical full scale	x	Input Range 2 mV/V	=
Electrical full scale output 2 mV/V		Input Type Counter	
Scaling: 2		mV/V	
Calculate)K/S	et Cancel	

FIGURE 41 - EXAMPLE OF SCALING

- 6.1. <u>Physical full scale</u> is typically the capacity of the sensor.
- 6.2. <u>Electrical full scale</u> output is the output of the sensor at the Physical full scale.
- 6.3. Input Range is always 2 mV/V and should not be changed.



7. Example scaling using Load Cell / BSC8 Digital Bridge Amplifier Calibration Certificate"

						ADVANCED FORCE	
INTERFACE • 7401 E	. BUTHERUS DRIV W	E, SCOTTSDA ww.interfacefo	LE, AZ 85260 prce.com • gen	USA • (800) 94 @interfaceford	47-5598 • (480) ce.com	948-5555 • FAX	(480) 948-1924
L	oad Cell / BS	C8 Digital	Bridge Ar	nplifier Ca	alibration C	Certificate	
The sensitivity of	the following instr	ument was pr	ogrammed or a	adjusted using	g a reference r	mV/V source.	
Customer: Address:				S.O.: P.O.:			
	Interface, Inc.	Model:	BSC8D-C12		Serial; R2	256149	
Calibration condi mV/V Standard:	tions: Tempe Interface Model (Calibration Due:	rature (° F): CX-0610 #: Cal Due:	74 704E 09-Jun-15	R.H. (%): NIST Trace: Uncertainty of	32 656414 of Standard: 0.	.001% RDG	
Excitation:	5 VDC						
	Mode <u>Simulated</u> Compression	Standard (mV/V) 2.0001	Measured An <u>Net Reading</u> 102.833	plifier			
	The above sensit which, when inter line sensitivity of	ivity of the Am connected, wi the Amplifier a	plifier is intend ill produce the and best fit line	led for use wi outputs listed (SEB) output	th the following below, based ts of the transo	g transducer on straight lucer.	
Transducer Mfg: TransducerAmplifier	Interface Interconnection polarit	Model: y (Normal [CT Ci	LBS-100-864 able] / Reversed [CC Cable]):	Serial: T6	67819	
	Mode Compression	Transducer Output (mV/V) 1.94492	Reference Force (lbf) 100		Net Reading at Reference 99.995	Force	
	Channel:	1					
Important: Zero o adjustments must	r offset adjustmen not be disturbed.	ts may be alte	red by the use	er without affe	cting this calib	ration. Span or	gain
Calibration by:	Tin Nguyen				Date:	20-Feb-15	
Results relate	to above serial number	s only. Do not rej	produce this repor	t except in full or	with Interface, Inc Paç	: written approval. ge 1 of 1	

FIGURE 42 - CALIBRATION DATA SHEET – AMPLIFIER CALIBRATION CERTIFICATE









- 0 - X

6 Example scaling a channel using model WMC-100 load cell with 100 lbf capacity and 1.9587 mV/V output. After entering the values into the dialog box you must click "Calculate" and then "OK/Set".

Change Display Scaling			X
Sensor settings Physical full scale 100 lbf ▼ Electrical full scale output 1.9587 mV/V	x	Amplifier settings Input Range 2 mV/V Input Type Counter	=
Scaling: 102.109		lbf	
Calculate	K / Set	Cancel	

FIGURE 44 - EXAMPLE OF CALIBRATION FOR A WMC-100 LOAD CELL

- 7 Once each channel has been scaled the software is ready to take measurements. You can now skip to step 6.16.
- 8 For Six-Axis sensors only. Click "Special Sensor"

A	dd Channel	Remove this ch	annel	Channel name: Dev2_6		Actual Channel 6
	Load Settings					DeviceNo:
	Save Settings					
						Number of Channels 6
	Open Session					
			Set Zero			
	Save Session		Scaling	Range:	Unit:	•
	Open file monitor	l	Data frequency	10	Hz	
	Special Sensor		Input Type	Bridge-input		

FIGURE 45 - 6 AXIS SENSORS



9 Select sensor type "Multidimensional sensor" and click OK



FIGURE 46 - MULTIDIMENSIONAL SENSOR

10 Select Add Sensor. You will be prompted to map the program to the location of the Matrix.

Add Sensor	1	Number of sensors stored in device
Remove Sensor type	Sensor displ	layed ✓ Calculated by decive Sensor displayed →
Six-axis T	Device: BX8 SerNo 16256002	Index in memory 0 Sensor Serial No 16104614
ieneral Zero Signals	Matrix	
Channe	el assignment	Distance offsets
Component 1:	1: Com 7_1assigned to 6ax 1 🛛 🗸	X-direction $\frac{1}{2}$ m Unit
Component 2:	2: Com 7_2assigned to 6ax 1 🛛 🗸	Z-direction 2_0 m
Component 3:	3: Com 7_3assigned to 6ax 1 🛛 🤝	
Component 4:	4: Com 7_4assigned to 6ax 1 □ ▽	Maximum Values (read only)
Component 5:	5: Com 7_5assigned to 6ax 1 🛛 🗸	Force X 10000 N Torque X 1000 Nm
Component 6:	6: Com 7_6assigned to 6ax 1 🛛 🗸	Force Y 10000 N Torque Y 1000 Nm
A	uto-Rename Channels	Force Z 20000 N Torque Z 2000 Nm

FIGURE 47 - ADD SENSOR



11 Select Change Dir.. and select the folder containing the calibration matrix. This folder is located on the USB flash drive and will be labeled with the transducer serial number.

							x
🕒 💭 🗢 📕 🕨 Computer 🕨	Removable Disk	(E:) 6A-Calibration Matrix calibration	n data 🕨 🔻 🗲	Search calibration data	_		\$
Organize 🔻 🛛 😭 Open	Share with 🔻	Burn New folder					?
쑦 Favorites	<u>^</u>	Name	Date modified	Туре	Size		
🧮 Desktop	E	14302589	9/11/2014 7:05 AM	File folder			
Downloads							
Second Disease							
Mecent Places							
🥽 Libraries							
Documents	T						

FIGURE 48 - FILE LOCATION

12 Click "Auto-Rename Channels" and then "OK Enable this sensor

Add Sensor N	umber of Sensors enabled	Number of sensors stored in device 1
Remove Sensor type	Enabled Sensor displa Storing location	yed ✓ Calculated by decive Sensor displayed
Six-axis T	Device: BX8 SerNo 16256002	Index in memory 0 Sensor Serial No 16104614
General Zero Signals	Matrix	
Channe	el assignment	Distance offsets
Component 1:	1: Com 7_1assigned to 6ax 1 💎	X-direction r_0 m Unit
Component 2:	2: Com 7_2assigned to 6ax 1 💎	Y-direction 7 0 m 7 Meters Z-direction 2 0 m
Component 3:	3: Com 7_3assigned to 6ax 1 🛛 🗸	
Component 4:	4: Com 7_4assigned to 6ax 1 □ ▽	Maximum Values (read only)
Component 5:	5: Com 7_5assigned to 6ax 1 🛛 🗸	Force X 10000 N Torque X 1000 Nm
Component 6:	6: Com 7_6assigned to 6ax 1 🛛 🗸	Force Y 10000 N Torque Y 1000 Nm
A	uto-Rename Channels	Force Z 20000 N Torque Z 2000 Nm

FIGURE 49 - AUTO-RENAME



- 13 Add the distance offsets for geometry correction. The origin is at the top center surface of the sensor. For example, if the loads are applied 2" from the top surface then the Z-Direction offset would be entered as 2 inch.
- 14 The software is now ready to use. You should "Save Session" and then you can "Load Session" next time the software runs so you won't have to repeat the channel and scaling or matrix adding process each time the software is opened.
- 15 When "Load Session" is clicked the settings from the last Session are used. You can also Save and Load Settings

Distance Offset

1. To change the distance of the origin, this setting may be access in the sensor option

Add Sensor Sumber of Sensors enabled	Number of sensors stored in device 1
Remove Enabled Sensor display Sensor type Storing location Six-axis Device: BX8 SerNo 16256002	Index in memory 0 Sensor Serial No 16104614
Channel assignment	Distance offsets
Component 1: 1: Com 7_1assigned to 6ax 1 💎	X-direct on 20 m Unit
Component 2: 2: Com 7_2assigned to 6ax 1 🗸	Y-direct on $contraction from m the direct on from $
Component 3: 3: Com 7_3assigned to 6ax 1 💎	
Component 4:4: Com 7_4assigned to 6ax 1 🛛 🗸	Maximum Values (read only)
Component 5: 5: Com 7_5assigned to 6ax 1 💎	Force X 10000 N Forque X 1000 Nm
Component 6: 6: Com 7_6assigned to 6ax 1 💎	Force Y 10000 N Torque Y 1000 Nm
Auto-Rename Channels	Force Z 20000 N Torque Z 2000 Nm
OK Enable this sensor Disable	e this sensor Cancel

FIGURE 50 - DISTANCE OFFSET

- 2. Select the corresponding direction and the distance.
- 3. Can be set in meters or millimeters.



Measurement and Recording

4. Click Set All Zero before measuring



FIGURE 51 - ZERO VALUES

5. Click YES

Since Six/	Three-axis is enabled, Set Ze	ro will be performed on all input
channels,	including one or more that	are not open.
Do you w	ish to proceed? If not, Set Ze	ro won't be done.
,	YES	NO

FIGURE 52 - PROCEED WITH ZERO RESET



6. Click OK to Start Measuring



FIGURE 53 - SUCCESSFUL ZERO

7. Click Start Measuring



FIGURE 54 - MEASUREMENT



8. Recording Options are available.



FIGURE 55 - MEASUREMENT INITIATED

9. Recorder Tab, measurements of all Axis.



FIGURE 56 - VALUES MEASURED



10. Value Display shows values in each Axis.

In BlueDAQ version 1.39	- 🗆 X
File View Action Device Channel Sensor Options Help	
Configuration Recorder Yt Value Display	
Multi-axis sensor enabled.	
ForceX	ForceY
4.64 N	-21.61 N
ForceZ	TorqueX
-53.42 N	3.0693 Nm
TorqueY	TorqueZ
-0.7359 Nm	-0.8538 Nm

FIGURE 57 - VALUE DISPLAY SCREEN

BlueDAQ Menus

File





1. Open Session allows you to open a previous session and start where you left off.

Please select session file				×
\leftarrow \rightarrow \checkmark \bigstar Inis PC \Rightarrow Desktop \Rightarrow	~ Ū	Search Desktop		Q
Organize 🔻 New folder			∎== ▼ □	?
A Name	D	ate modified	Туре	
🔜 Desktop 🕜 🚽 🕞 6-Axis Matrix	1	2/20/2016 8:56 AM	File folder	
🕹 Downloads 🖈 🔤 Application Notes	1	2/20/2016 8:58 AM	File folder	
Documents	2	/2/2017 12:17 PM	File folder	
BlueDAQ	2	/2/2017 3:00 PM	File folder	
BX8 Driver Install	1	2/20/2016 8:57 AM	File folder	
6-Axis Matrix SS	2	/12/2017 11:39 AM	File folder	
hin hin				
BlueDAQ				
J Music				
CneDrive				
This PC				>
File name: Session	~	User Config Fil	e (*.ucf)	\sim
		ОК	Cancel	

2. Save Session allows you to save your session

Please select session file t	to save		×
\leftarrow \rightarrow \checkmark \bigstar \blacksquare > Th	is PC → Desktop →	✓ ひ Search Desktop	م
Organize 👻 New folde	er		· III 🔋
A Quick access	Name	Date modified Typ	De
📃 Desktop 🛛 🖈	6-Axis Matrix	12/20/2016 8:56 AM File	efolder
🕹 Downloads 🖈	Application Notes	12/20/2016 8:58 AM File	folder
🛱 Documents 🖈	Archive	2/2/2017 12:17 PM File	e folder
Distures a	BlueDAQ	2/2/2017 3:00 PM File	e folder
	BX8 Driver Install	12/20/2016 8:57 AM File	e folder
bin	SS SS	2/12/2017 11:39 AM File	folder
Music			
a OneDrive			
This PC			
- *	<		>
File na	ame: Session	✓ User Config File (*.uc OK	cf) ~ Cancel
			FIGURE 60 - SAVE SES



3. Open File Monitor allows you to open previous monitor file.



FIGURE 61 - OPEN FILE MONITOR



- 4. Configure Recording
 - 4.1. Save Memory Data, allows you to save data of the recorded value.
 - 4.1.1.All available values
 - 4.1.2. Number of values
 - 4.1.3. Available Last Time
 - 4.1.4.Data Available

ητ	Configure Recording		\times
	Save Memory Data	Recording Options Advanced	
		Save History data	
		All available values Number of values HH MM SS Available Last Time	
		Data Available Time length of available data 00:00:53.6	
	Select Path B %P	ersonalFolder%\filename.tdms	

FIGURE 55 - SAVE MEMORY DATA



4.2. Recording Options

4.2.1. Manually allows you to choose the run and stop time of recording.

4.2.2. Automatically will choose the run and stop time.

Start Recording	Finish Recording
Manually Automatically	Manually Automatically End condition
Start Trigger Type	O Signal Trigger
Value exeeds threshold	End condition time/number
Value drops below threshold Value change delta threshold Digital I/O Threshold value	Number of Values $\frac{1}{7}$ 0 HH MM SS Relative Time $\frac{1}{7}$ 00 $\frac{1}{7}$ 00 Absolute Time (Daily file) $\frac{1}{7}$ 00 $\frac{1}{7}$ 00 $\frac{1}{7}$ 00 Absolute Date, Time $\frac{1}{7}$ 00:00:00:00:00 $\frac{1}{7}$ 00 $\frac{1}{7}$ 00 When finished: Generate new file $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$
ForceX \bigtriangledown	
Event number Record single event (file) Record several events (files)	Recording Interval Mean values Record every value HH MM SS One Value per time interval 00 : 00 : 00

FIGURE 62 - RECORDING OPTIONS



- 4.3. Advanced
 - 4.3.1.Allows you to choose the timestamp, record hidden channels and create a second file with filters.

١D٢	Configure Recording	\times
	Save Memory Data Recording Options Advanced Record Hidden Channels Image: Im	
	Select Path & %PersonalFolder%\filename.tdms	

FIGURE 63 - ADVANCED

View





- 1. Configuration
 - 1.1. Allows configurations of Axis to be viewed.
- 2. Yt Recorder
 - 2.1. Shows only the Yt Axis
- 3. XY Recorder
 - 3.1. Shows only the XY Axis
- 4. Value Display
 - 4.1. Shows all Axis and values

Dt BlueDAQ version 1.39	– – ×
ile View Action Device Channel Sensor Options Help Configuration Recorder Yt Value Display	
Multi-axis sensor enabled.	
ForceX	ForceY
4.64 N	-21.61 N
ForceZ	TorqueX
-53.42 N	3.0693 Nm
TorqueY	TorqueZ
-0.7359 Nm	-0.8538 Nm

FIGURE 65 - VALUE DISPLAY



5. Add Graph Window

Configure Graph

Add Plot	Remove Plot	Number of Plots	0 Actual Plot 0
Select channel for Please selec	r actual plot t	Standard RAW data	Selected Channel of actual plot
iagram Type X axis plo) Yt P) XY) FFT-PSD	t Please select ▽	X axis Channel Type Standard RAW data	Name of Graph Window Graph Window 1

FIGURE 66 - ADD GRAPH WINDOW

5.1. Add Plot

5.1.1.Allows you to add an Axis to the graph.

2: ForceY		Number of Plots	0 Actual Plot
3: Forcez 4: TorqueX		Channel Type	
5: TorqueY		Standard	Selected Channel of actual plot
✓ 6: TorqueZ	· · · · · · · · · · · · · · · · · · ·	O RAW data	<none></none>
)iagram Type	X axis plot	X axis Channel Type	News of Careb Mindow
Diagram Type • Yt • XY	X axis plot Please select <none></none>	X axis Channel Type Standard RAW data	Name of Graph Window Graph Window 1
Diagram Type • Yt • XY • FFT-PSD	X axis plot Please select ▽ <none></none>	X axis Channel Type Standard RAW data	Name of Graph Window Graph Window 1

FIGURE 67 - ADD PLOT

- 6. Sort Graph windows
 - 6.1. Sort between graphs



Action

File	View	Action	Device	Channel	Sensor	Options	Help
Configura		Start	Measurin	g Yt	F4		Recorde
<u> </u>	-	Start	Measurin	g XY	F5	- L - 1	
		Stop	Measurin	g	F6		
100.0		Сору	values to	clipboard	F12		
		Appe	nd values	to clipboa	rd F11		
	75.00	Set A	ll Zero		Ctrl+/	A	

FIGURE 68 - ACTION

- 1. Start Measuring Yt Measures only the Yt axis.
- 2. Start Measuring XY Measures only the XY Axis.
- 3. Stop Measuring Stops measurement.
- 4. Copy Values to clipboard Copies the last data measured.
- 5. Append values to clipboard Add values to be copied.
- 6. Set All Zero Sets all Values to Zero.

ħτ

×





FIGURE 69 - SET ALL ZERO



Device

F	ile	View	Action	Device	Channel	Sensor	Option	is Help
ĺ	Со	nfigura	tion	Load Save	Settings Settings	Ctrl Ctrl	+L +E	Recorde
	Multi-axi		Frequ	uency	Ctrl	+F		
		100.0	0	Adva	nced Settin	igs		

FIGURE 70 – DEVICE

- 1. Load Settings
 - 1.1. Load Settings from a Custom or Previous Setting

Load Settings	×
Parameter re	ecords in device
User 1	User 4
User 2	User 5
User 3	User 6
Last session	Default
Load from File	Cancel

FIGURE 71 - LOAD SETTINGS



1.2. Load from File

Please select device settings file to lo	ad		×
$\leftarrow \rightarrow \checkmark \uparrow$ his PC \rightarrow De	esktop » 6-Axis Matrix »	ע ט Search 6-	Axis Matrix 🔎
Organize 👻 New folder			EE 🕶 🔟 😯
A Name	^	Date modified	Туре
🔜 Desktop 💉 🔒 1430	2589	12/20/2016 8:5	6 AM File folder
🚽 Downloads 🖈 🛛 🔒 R202	213	12/20/2016 8:5	66 AM File folder
🛱 Documents 🖈 🔤 R202	834	12/20/2016 8:5	66 AM File folder
Pictures 🖈			
6-Axis Matrix			
📙 bin			
BlueDAQ			
SS			
🐔 OneDrive			
This PC			
File name: BX8_1	6356041	V User Cor	nfig File (*.ucf) ~

FIGURE 72 - LOAD FROM FILE

- 2. Save Settings Save current settings.
- 3. Frequency Frequency rate of each record value per second.
 - 3.1. Using low settings such as 1Hz or 0.1Hz may provide a stable reading, but slower refresh rate.

Change Data Rate			\times
Enter Data rate:	Minimum 1 10 OK	Maximum 6000 Values per second x 8 channels Cancel	~

FIGURE 73 - FREQUENCY

INTERFACE

4. Advanced Settings

4.1. Filter



FIGURE 74 - FILTER

4.1.1.Input Channel – Digital Filters are individually configurable for each of the 8 analog input channels. Select input channel here. Do this first, if the filter is not yet configured.

Input Channel	Configured filter(s)	_1	
J 6	INOne		
			FIGURE 75 - INPUT CHANNEL
4.1.2.Which Filter			_
Which filter:			
Digital FIF	₹ 🗸		
			FIGURE 76 - WHICH FILTER





- A. Analog is the frontend low-pass filter
- B. FIR is a Finite-Impulse-Response digital Low pass filter
- C. IIR is an Infinite-Impulse-Response digital filter with selectable type.
- 4.1.3. Filter Type Can only set if "Which filter" is set to IIR.

Filter Type		
Low pass	∇	
- · · · · ·		FIGURE 78 - FILTER TYPE

- A. Low Pass frequencies above Cut-off are damped.
- B. High Pass, frequencies below Cut-off are damped.
- C. Band Pass, frequencies below Lower Cut-off and above Upper Cut-off are damped.
- D. Band Stop, frequencies between Lower and Upper Cut-off are damped.
- 4.1.4.Cut-off frequency (Hz)
 - A. Cut-off frequency in Hz, where the signal is damped by -3dB. Lower Cut-off with Band pass and Band stop type.



FIGURE 79 - CUT OFF FREQUENCY



4.1.5. Filter Order

- A. Settable for FIR Filter only
- B. Higher order leads to steeper damping characteristics, but slower step response.
- C. Lower cut-off frequency is possible with higher order, higher cut-off with lower order.



FIGURE 80 - FILTER ORDER

4.1.6. Frequency response

- A. Calculate filter and show results in frequency domain of sine waves at the input of different frequencies if successful.
- B. Especially with IIR High pass. Band pass and Band stop, observe the graph carefully for instability: A stable freq. response of an IIR filter is generally continuous and should never exceed 0dB.

Frequency response		
Show		

FIGURE 81 - FREQUENCY RESPONSE

4.1.7. Step response

- A. Show filter output signal in time domain of standard step from 0 to nominal value at the input at time=0.
- B. Useful for determining settling time, e.g. for high-order FIR filter.



FIGURE 82 - STEP RESPONSE



4.1.8. Store to device

A. Calculate filter and store all necessary information in the device if the calculation is successful. The same settings will be stored for all 8 inputs if "Apply to all input channels" is checked.



4.1.9.Use Filter

- A. Enable or disable this filter. Even if disabled, all other filter settings will remain stored in device (if no error occurred), if they are already stored.
- B. This filter will be enabled/disabled for all 8 inputs channels if "Apply to all channels" is checked.



FIGURE 84 - USE FILTER

4.2. Digital I/O

Digital I/O Analog Out Value Mode	Administration	
I / O number Terminal name / Pin-No.	Actual Level	DIO les 1
I∕O type GP Input ▽	Function Digital I/O No. 1 is a general purpose input.	2
Triggered value sending Mode		4 5 6
Threshold compared with: Actual value	Upper Threshold	7 8 9
Threshold switch Mode	0	10
 Hysteresis switch (normal) Window comparator 	Lower Threshold	11 12 13
Line Inverted		14
 Not inverted 		16
O Inverted		
Default output level		
• Low (0V)	Apply to all DIOs	
O High (5V)		

FIGURE 85 - DIGITAL I/O



4.3. I/O number

4.3.1. Devices can have up to 16 digital I/O lines. Enter number of digital I/O here.



4.3.2.I/O type

- A. GP Input "General Purpose" Input
- B. Tare Single Zero out.
- C. Tare All Zero all.
- D. Reset Max/Min
- E. Trigger Send value
 - Actual Values
 - Maximum Values
 - Minimum Values
 - Mean Values
- F. GP Output "General Purpose" Output
- G. Threshold Switch

4.3.3. Threshold switch Mode – Only Activated if Threshold Switch is selected in I/O type.

- A. Hysteresis switch (normal) Digital output becomes active if measuring value of corresponding channel is above ON-threshold. It becomes inactive if measuring value of corresponding channel is blow OFF-threshold.
- B. Window comparator Digital output becomes active if measuring value of corresponding channel is between upper and lower threshold, otherwise inactive.

4.3.4.Line Inverted

- A. Not inverted Active level is logical high = 5V. Inactive logical low is 0V.
- B. Inverted Active level is logical low 0V. Inactive logical high is 5V.
- 4.3.5.Default output level Level which digital I/O will output by default. That applies to all DIO output types after power-on, before a set output condition occurs.
 - A. E.g. set output level command if GP output type.



4.4. Analog Out

Advanced Device Settings X				
Device: BX8 COM No: 9 Ser No: 16356041 Firmware: 1.30 Build: 651 Hardware: 3.0				
Filter Digital I/O Analog Out Value Mode	Administration			
Output Channel 6 Analog output type Voltage -10 10V User offset 0 0 0 0 0 0 0 0 0 0 0 0 0	Transfer characteristic Value at input 3.5 mV/V Results in 10 V at the output Zero value at input results in 0 V at the output Value at input -3.5 mV/V Results in -10 V at the output			
Store to device				
	ОК			

FIGURE 87 - ANALOG OUT

4.4.1.Output Channel – Analog output type, voltage or current.



FIGURE 88 - OUTPUT CHANNEL



- 4.4.2.User offset Additional offset in percent, which defines output value at zero analog input value.
 - A. E.g. if set to 50%, analog out value will be half of the positive range.
 - B. 2.5V at 0-5V or ±5V.

User offset		
0	% 🗸	
Hannahar Bara Karakar		FIGURE 89 - USER OFFSET

4.4.3.User scaling factor – Scaling factor to adapt analog input physical values to analog output.A. If using User offset, set User offset first, then User scaling.

User scaling factor	
×)1	
	FIGURE 90 - USER SCALING FACTOR

4.4.4.Analog output mode

- A. Active, follows analog input Output value depends on setting and analog input value of the same input channel number.
- B. Input independent, write direct only Use analog output DAC directly.
- C. Channel off Channel switch is off.

Analog output mode	
Active, follows analog input	۲
۲	
Input independent, write direct only	
Channel off	
0	
	Fig





4.5. Value Mode

ter Digital I/O Analog Out Value I	Mode Administration				
Maximum / Minimum values	Measuring values / Frame size	Value frame transmission	Noise suppression		
Acquire maximum and minimum	8 8	Permanent value transmission non-volatile state Values transmitted permanently Values NOT transmitted nermanently ("Logger")	Noise-cut enabled		
absolute values MAX([vals])	Frame / Value Type O 16-Bit Integer values	Volatile state Start Transmission	Measuring values between Noise-cut threshold and -(Noise-cut threshold) will set to zero.		
Transmit actual values Transmit maximum values	O 24-Bit Integer values	Stop Transmission	Auto-Zero Auto Zero enabled Time interval		
 Transmit minimum values 	Float values	No TX synchronizationMeasuring Started	Related threshold		
ome special value trigger settings see Digital I / O) require cquisition of maximum and mini- num values enabled.	With smaller frame size, higher data rates are possible. Some measurements (multi- dimensional sensors, temperature) require Float data type.		Auto zero Info		
Store to device	Shareka daring				

FIGURE 92 - VALUE MODE

4.5.1.Acquire maximum and minimum – Max/Min value determination enabled. This is a precondition for other max/min settings, also for some threshold and value-trigger modes.



4.5.2. Maximum values are maximum of absolute values MAX(|vals|) – Only active if "Acquire maximum and minimum" is checked. Replaces the maximum value register with that maxima of the absolute values, so that both positive maximum and negative maximum values are determined.

Maximum values are maximum of absolute values MAX([vals])

FIGURE 94 - MAX VALUES ARE MAXIMUM OF ABSOLUTE VALUES





4.5.3. Value transmission – Which values are in the value frame: All channels are either actual values, maximum values or minimum values.



4.5.4.Number of Channels in Frame – Number of input channel values in the measuring data frame. With smaller numbers, higher data frequencies are possible.

Measuring values / Frame size
Number of Channels in Frame
38 El CURE 96

4.5.5.Frame / Value Type – Data type of measuring values in the value-frame that device transmits.





4.5.6. Value frame transmission

- A. Values transmitted permanently After power-on, the device transmits measuring values continuously.
- B. Values NOT transmitted permanently After power-on, the device transmits measuring values on request.



FIGURE 98 - VALUE FRAME TRANSMISSION

4.5.7. Volatile state

- A. Start transmission of measuring values, if permanent value transmission is off. State not stored in non-volatile memory.
- B. Stop Transmission of measuring values, if permanent value transmission is on. State not stored in non-volatile memory.





4.5.8. Noise suppression

- A. Noise-cut enabled If measuring values are between Noise-cut threshold and (Noise-cut threshold), they will be set to 0.000000000, so that the noise around zero will be suppressed. Set checkbox to enable this feature.
- B. Input Channel = 0: Apply all channels Input channel to be used with Noise-cut. Set to 0: Use the same threshold for all inputs.
- C. Noise-cut threshold If measuring values are between Noise-cut threshold and (Noise-cut threshold), they will be set to 0.000000000, so that the noise around zero will be suppressed.

Noise suppression	
Noise-cut enabled	
0 =0: Apply all channels	
Noise-cut threshold	
Measuring values between Noise-cut threshold and -(Noise-cut threshold) will be set to zero.	
	FIGURE 10

FIGURE 100 - NOISE SUPPRESSION

4.5.9. Auto-Zero enabled – Every (Time interval) seconds, an automatic set-zero routine will be performed.

Auto-Zero		
Auto Zero enabled		
Time interval		
0 s		
Related threshold		
0		
Auto zero Info		
	^	
	¥	
		FIGURE 101 - AUTO-ZERO



4.6. Administration

Advanced Device Settings

Device: BX8 COM No: 9 Ser No: 1635604	1 Firmware: 1.30 Build: 651 Hardware: 3.0		
Filter Digital I/O Analog Out Valu	e Mode Administration		
Write Protection Inhibit parameter changing Writes are allowed Device is write-protected	Displayed name of user data record Data record No. 1 Reset to Default Displayed name	Menu language of device English German	Device working hours Total device working hours 403.817 h User device working hours 403.817 h
Connected interface has write-access	To change: Type new name (13 chars max.) and click Store to device No data record assigned to actual sensor parameters Assign Info	Fault Memory Open Dialogue	Reset user device working hours
	Data record No, used and assigned as backup for sensor parameters		
	ОК	-	

FIGURE 102 - ADMINISTRATION

- 4.6.1.Write Protection
 - A. Inhibit parameter changing If the device is write-protected, the device parameters are secured from unintentional changing. To disable write-protection, a devicedepended password must be entered.



FIGURE 103 - WRITE PROTECTION

- 4.6.2. Displayed name of user data record
 - A. Data record No. Six different parameter records can be saved and restored; in the main window with "Save Settings" and "Load Settings". User-defined names for each



data record can be viewed and changed here. Parameter record number (1 to 6) can be set by this, to view and change its name.

B. Displayed name – Name of the parameter record.

Displayed name of user data record	
Data record No.	
Displayed name	
To change: Type new name (13 chars max.) and click Store to device	
No data record assigned to actual sensor parameters	
Assign	
lafa	FIGURE 104 - DISPLAYED NAME OF USER DATA RECORD

4.6.3. Menu language of device

- A. English
- B. German

Menu language of device			
English			
🔿 German			
		05 84-	

4.6.4. Fault memory – Some devices are capable of storing faults that are related to external connections. E.g. broken sensor cable or value saturated.






4.6.5.Device working hours – Some devices count their working hours. This displays the absolute working hours, which can't be reset.



Channel



FIGURE 108 - CHANNEL



1. Add new

Add Channel		×
Devicetype BX8	Communication Interface Serial / USB / BT COMport Number COM9 Bits/s 115200	Input Channel Open all input channels Input No. of BX8 First 1 Last 1
Plot Colour <- Click to change	Connect	Cancel

FIGURE 109 - ADD NEW

1.1. Devicetype



FIGURE 110 – DEVICETYPE



1.2. Communication Interface

1.2.1.Bits/s – Communication Bitrate. If you aren't sure which Bitrate is appropriate to your device, leave this at 115200.

Communication Interface	
Serial / USB / BT 🛛 🗸	
COMport Number	
СОМ9 🤝 9	
Bits/s 115200	
	FIGURE 111 - COMMUNICATION INTERFACE
Communication Interface Serial / USB / BT COM1 y COM9 9	
Bits/s 🖞 115200	
	FIGURE 112 - COMMUNICATION INTERFACE COM

1.2.2. Input Channel

1.2.3.Open all input channels will open all 8 inputs.

1.2.4.Input No. of BX8 – The amplifier has several inputs. Select the desired input(s) here. If opening several inputs, enter lowest channel-No. to open here.

- A. First
- B. Last

Input Channel	
Open all input channels Input No. of BX8 First 1 + Last 1 +	5



1.3. Connect and Cancel



FIGURE 114 - CONNECT AND CANCEL

2. Channel Scaling



FIGURE 115 - CHANNEL SCALING

Sensor



FIGURE 116 - SENSOR MENU

1. Multi-axis – Refer to step 5.



2. Rosette Strain – Arrangement of two or more strain gauges.

3. Rosette Stress

Add Rosette	R o s e Remove Numbe	r of Rosettes 1 Actual Rosette:
Channel	l assignment	Rosette Strain gauge
Component Ea:	Please select	Gage factor a 2 All san
Component Eb:	Please select	Gage factor b 7 2
Component Ec:	Please select	Gage factor c 2
Parameters of roset Modulus of Elastic T	the material, where the te is applied to tity Poisson's rati	Amplifier's input properties Input Sensitivity

FIGURE 117 - ROSETTE STRESS



4. Add Rosette / Remove



5. Number of Rosettes – Number of included rosette strain gauges which are configured already.



Actual Rosette – If you have configured more than one rosette strain gauge, here you can switch between the different rosette stain gauge settings.



Component Ea: - The Rosette-Strain gauge consists of three single strain gauges which are arranged at an angle of 45° to each other. Choose here for the physical channel of your measuring amplifier where the single strain gauge Epsilon A is connected to. The resulting angle value of Phi refers to the longitudinal axis of this single strain gauge.



FIGURE 121 - COMPONENT EA



- 6. Parameters of the material, where the rosette is applied to
 - 6.1. Modulus of Elasticity Enter the elastic modulus of the material, whose stress shall be determined in Newtown per square millimeters. The elastic modulus of an object is defined as the slope of its stress-strain curve in the elastic deformation region of the material to be measured. Since this parameter is very significant for the stress calculation, it should be entered as exact as possible. Please multiply the values in lb/in² with 0.0068971125763 to get the modulus in N/mm².
 - 6.2. Poisson's ratio Enter the Poisson's ratio of the material whose stress shall be determined. The Poisson's ratio is the ratio when a sample object is stretched of the contraction or transverse strain (perpendicular to the applied load), to the extension or axial strain. Since this parameter is a little less significant for the stress calculation, an approximate value may be entered.

Parameters ros	Parameters of the material, where the rosette is applied to						
Modulus of Elas	sticity N/mm²	Poisson's ratio					

FIGURE 122 - PARAMETERS OF THE MATERIAL

6.3. Gage factor – Enter the gage factor for the single strain gauge. The gauge factor is the ratio of relative change in an electrical resistance to the mechanical strain epsilon. If all three gauge factors are equal, enter the value and then press "All Same".

Rosette Strain gauge	
Gage factor a $\frac{2}{5}$ 2	All same
Gage factor b $\frac{\lambda}{5}$ 2	
Gage factor c $\frac{2}{\sqrt{2}}$ 2	

FIGURE 123 - ROSETTE STRAIN GAUGE



6.4. Amplifier's input properties

- 6.4.1.Input Sensitivity Change this value if it doesn't match the input sensitivity of the measuring amplifier where the strain ages are connected to. Normally the value shown is the correct value, some GSV-2 or GSV-4 measuring amplifiers do communicate the correct value to the program. Together with the gauge factor, this value will be used to calculate the correct scaling factor automatically after the OK button is pressed. NOTE: The strain gauges must be wired in a quarter bridge configuration in order to calculate the scaling factor correctly.
- 6.4.2. Set Scaling factor Uncheck this checkbox if you are sure that the scaling factors of the channels where the three strain gauges are connected to are already correct. If checked, the new scaling factor will be calculated automatically according to the gauge factors and the input sensitivity settings. NOTE: the strain gauges must be wired in a quarter bridge configuration in order to calculate the new scaling.



FIGURE 124 - AMPLIFIER'S INPUT PROPERTIES



- 7. TEDS Transducer Electronic Data Sheet
- 8. Strain gage





9. Calibrate



FIGURE 126 - CALIBRATE



Options

Hardware Preferences Default Settings	
Allow Set Zero Always allow Allow depending on input type (not allowed with temperature input) Never allow	Master / Slave synchronization, if available Synchronization No synchronization If connection to device is lost:
If allowed depending on input type:	 No auto-reconnect Try to reconnect automatically
ОК	Cancel

FIGURE 127 - HARDWARE



2. Preferences

Select Options		×
Hardware Preferences Defaul	t Settings	
At Start Measuring: ☑ Ask for recording the measuring data	When closing the program Ask for saving the session, if session data has changed	When changing to XY-diagram: Ask for selection of X-channel
If not, do you always want to record the data? O Yes O No	If not, do you always want to save the session? • Yes • No	✓ Warn if devices datarates are different
	OK Cancel	I

FIGURE 128 - PREFERENCES

3. Default Settings

nc Select Options	×
Hardware Preferences Default Settings	
Yt / XY recorder: Reset Graph Scaling Reset	
Reset all program settings to default values Reset	
OK Cancel	

FIGURE 129 - DEFAULT SETTINGS



Help									
File	View	Action	Device	Channel	Sensor	Options	Help		
Cor	nfigura	tion		Recorder	Yt		Sho	ow Context Help	a
						L	Cre	ate Settings Archive	
100.00							Ab	out	
	100.0								



1. Show Context Help



FIGURE 131 - SHOW CONTEXT HELP

2. A box will appear on the corner with a definition of each function.

							_	Ð	×
ons	Help						Con	itext Help	
	✓ Show	Context Help	alue Display						
	Creat	e Settings Archive					Zer	oAll	
	Abou						Tar	es all open	
	Abou	t				ForceX		inneis to o.	
						ForceY	1		
						ForceZ	1		
						TorqueX			>





3. Create Settings Archive

Please select Settings Archiv	ve file name		×
\leftarrow \rightarrow \checkmark \uparrow \blacksquare \Rightarrow This	PC > Desktop >	V O Search Desktop	Q
Organize 🝷 New folder		- - -	= • 🔳 🕐
A Quick access	Name	Date modified	Туре
📃 Desktop 🛛 🖈	6-Axis Matrix	12/20/2016 8:56 AM	File folder
🖶 Downloads 🖈	Application Notes	12/20/2016 8:58 AM	File folder
🖺 Documents 🔹	Archive	2/2/2017 12:17 PM	File folder
Distance A	BlueDAQ	2/2/2017 3:00 PM	File folder
	BX8 Driver Install	12/20/2016 8:57 AM	File folder
6-Axis Matrix	SS	2/12/2017 11:54 AM	File folder
bin	9330_Com_Driver	10/11/2016 5:49 AM	Compressed (zipp
BlueDAQ			
SS			
🝊 OneDrive			
This PC			
File nam	ne: 02_17-11_54_30	✓ ZIP archive (*.zi)	o) ~
		ОК	Cancel

FIGURE 133 - CREATE SETTINGS ARCHIVE

4. About lets you know the BlueDAQ version number.







Warranty

All Telemetry products from Interface Inc., ('Interface') are warranted against defective material and workmanship for a period of (1) one year from the date of dispatch. If the 'Interface' product you purchase appears to have a defect in material or workmanship or fails during normal use within the period, please contact your Distributor, who will assist you in resolving the problem. If it is necessary to return the product to 'Interface' please include a note stating name, company, address, phone number and a detailed description of the problem. Also, please indicate if it is a warranty repair. The sender is responsible for shipping charges, freight insurance and proper packaging to prevent breakage in transit. 'Interface' warranty does not apply to defects resulting from action of the buyer such as mishandling, improper interfacing, operation outside of design limits, improper repair or unauthorized modification. No other warranties are expressed or implied. 'Interface' specifically disclaims any implied warranties of merchantability or fitness for a specific purpose. The remedies outlined above are the buyer's only remedies. 'Interface' will not be liable for direct, indirect, special, incidental or consequential damages whether based on the contract, tort or other legal theory. Any corrective maintenance required after the warranty period should be performed by 'Interface' approved personnel only.

Revision History		
Author	Revision	Release Date
PB	15-247 Rev A	01/02/2019