2D Debus & Diebold Meßsysteme GmbH, Alte Karlsruher Str. 8, D-76227 Karlsruhe
Tel.: +49(0)721 94485-0 **Fax.:** +49(0)721 94485-29 **Mail:** mail@2d-datarecording.com

BC-3Axx_zGyyy-000 **Box CAN, 3 axis accelerometer, 1(3) GYRO**

Key Features:

- *3 axis acceleration sensor with extreme accurate axis alignment*
- *Direct high speed AD conversion on module*
- *Calibration, temperature compensation and physical unit calculation done by microcontroller*
- *Calculation of complex output channels based on recalculation with channels on CAN bus*
- *Additional output channels with preselected filters*
- *With integrated gyro possibility for direct Bankangle signal*
- *Also available as 6 axis unit with additional 3 gyros*
- *Output of physical values onto the CAN-bus*
  Based on newest MEMS technology 2D integrated a 3 axis acceleration sensor module + 1(3) axis Gyro with a high power CAN controller to start a new generation

2D Debus & Diebold Meßsysteme GmbH, Alte Karlsruher Str. 8, D-76227 Karlsruhe
Tel.: +49(0)721 94485-0 **Fax.:** +49(0)721 94485-29 **Mail:** mail@2d-datarecording.com

BC-3Axx_zGyyy-000 — Box CAN, 3 axis accelerometer, 1(3) GYRO

Technical Specifications

Specification 3 axis acceleration	
Range with 3 axis	± 4, ± 12, ± 16 G
Bandwidth	X,Y 400Hz; Z 300Hz
Error for linearity	<1 %
Specification yaw-rate sensor	
Sensitivity	± 300 °/ s
Error for linearity	<1% FS
Bandwidth	140 Hz
CAN Output	
CAN ID	Selectable
Default: 3 axis acceleration	0x498
1(3) axis gyro	0x499
Transmission rate	25-800 Hz
default	100 Hz
see 2nd page for CAN identifier allocation	
Operating status indicator	
Red LED blinking	
Electrical characteristics	
Power supply	8 – 18 VDC
Consumption @ 12V	40 mA
Sampling rate (per channel)	12.8 kHz
	6.4 kHz
	Tabellenwert

Mechanical characteristics	
Dimensions	44 x 34 x 15 mm
Weight (incl. cable)	60 g
Housing material	Aluminium
Cable	
type	Raychem EPD
wire cross section	4 x AWG26
length	400 mm
Environmental data	
Operating temperature	-10 to 75 ℃
Temperature compensation	25 to 75 ℃
Humidity	5 to 95 %
Sealing class	IP 67
Vibration resistance	
Shock	20 G
during a time period of	10 ms
Vibration tested at	12 G
with a frequency of	1000 Hz
Calibration	
Use formulas on next page to calculate physical values	
Ordering Information	
Use this article number for your order at 2D:	
3 axis ACC 4G, 1 axis Gyro	BC-3A04_1G300-000
3 axis ACC 12G, 1 axis Gyro	BC-3A12_1G300-000
3 axis ACC 16G, 1 axis Gyro	BC-3A16_1G300-000
3 axis ACC 4G, 3 axis Gyro	BC-3A04_3G300-000
3 axis ACC 12G, 3 axis Gyro	BC-3A12_3G300-000
3 axis ACC 16G, 3 axis Gyro	BC-3A16_3G300-000

Formula to calculate IIR-filter (optional)

Calculation of Filter frequency:

Filter = ln(sampling rate/desired filter frequency)/ln2

For example: sampling rate 200Hz; filter frequency 25Hz => ln(200/25)/ln2= filter 3

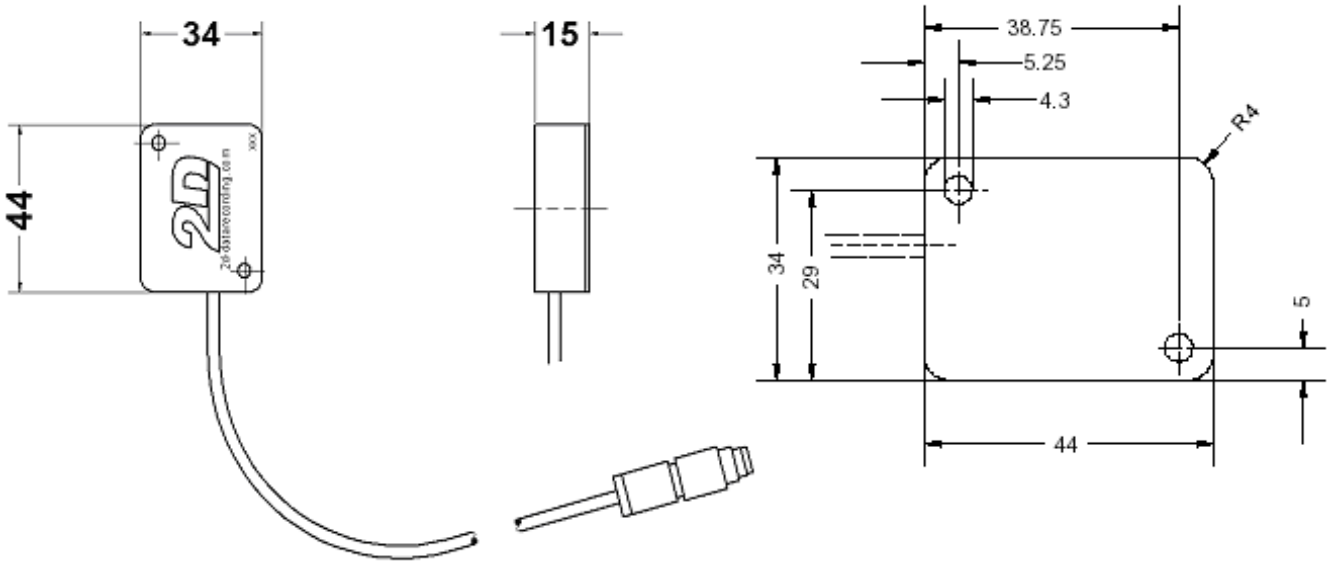
Double click on IIR-channel, go to “Parameter”, then “Display” and choose filter 3 from dropdown menu.

Please note: sampling rate for IIR channel can never exceed sampling rate of source channel

2D Debus & Diebold Meßsysteme GmbH, Alte Karlsruher Str. 8, D-76227 Karlsruhe
Tel.: +49(0)721 94485-0 **Fax.:** +49(0)721 94485-29 **Mail:** mail@2d-datarecording.com

BC-3Axx_zGyyy-000 Box CAN, 3 axis accelerometer, 1(3) GYRO

Dimensions



CAN identifier allocation

CAN ID (default)

CAN-ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x498	ACC_X		ACC_Y		ACC_Z		GYRO_X	
0x499	T_CPU		COUNT_LIFE		GYRO_Y		GYRO_Z	
0x000*	ACC_X_IIR		ACC_Y_IIR		ACC_Z_IIR		GYRO_X_IIR	
0x000*	T_CPU_IIR		COUNT_LIFE_IIR		GYRO_Y_IIR		GYRO_Z_IIR	

***optional**

Formulas to calculate physical values

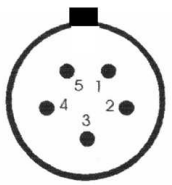
Channel		Multiplicator				Offset
ACC_X	=	0,005	*	digits	-	163,835
ACC_Y	=	0,005	*	digits	-	163,835
ACC_Z	=	0,005	*	digits	-	163,835
T_CPU	=	0,1	*	digits	-	0

Channel		Multiplicator				Offset
GYRO_X	=	0,02	*	digits	-	655,34
GYRO_Y	=	0,02	*	digits	-	655,34
GYRO_Z	=	0,02	*	digits	-	655,34

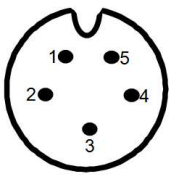
Connector Layout

Pin	Name	Description	Color
1	CAN H	CAN Bus High	White
2	CAN L	CAN Bus Low	Green
3	GND	Ground	Black
4	n.c.	Not Connected	-
5	Vext	Power IN (8-18V)	red

Connector type



Binder 719, 5 PF
(front side)



Binder 719, 5 PM
(front side)

On request some options are possible for the CAN-line connector of all 2D CAN modules. Please take a look at the product group [Connectors] in the 2D Product catalog.

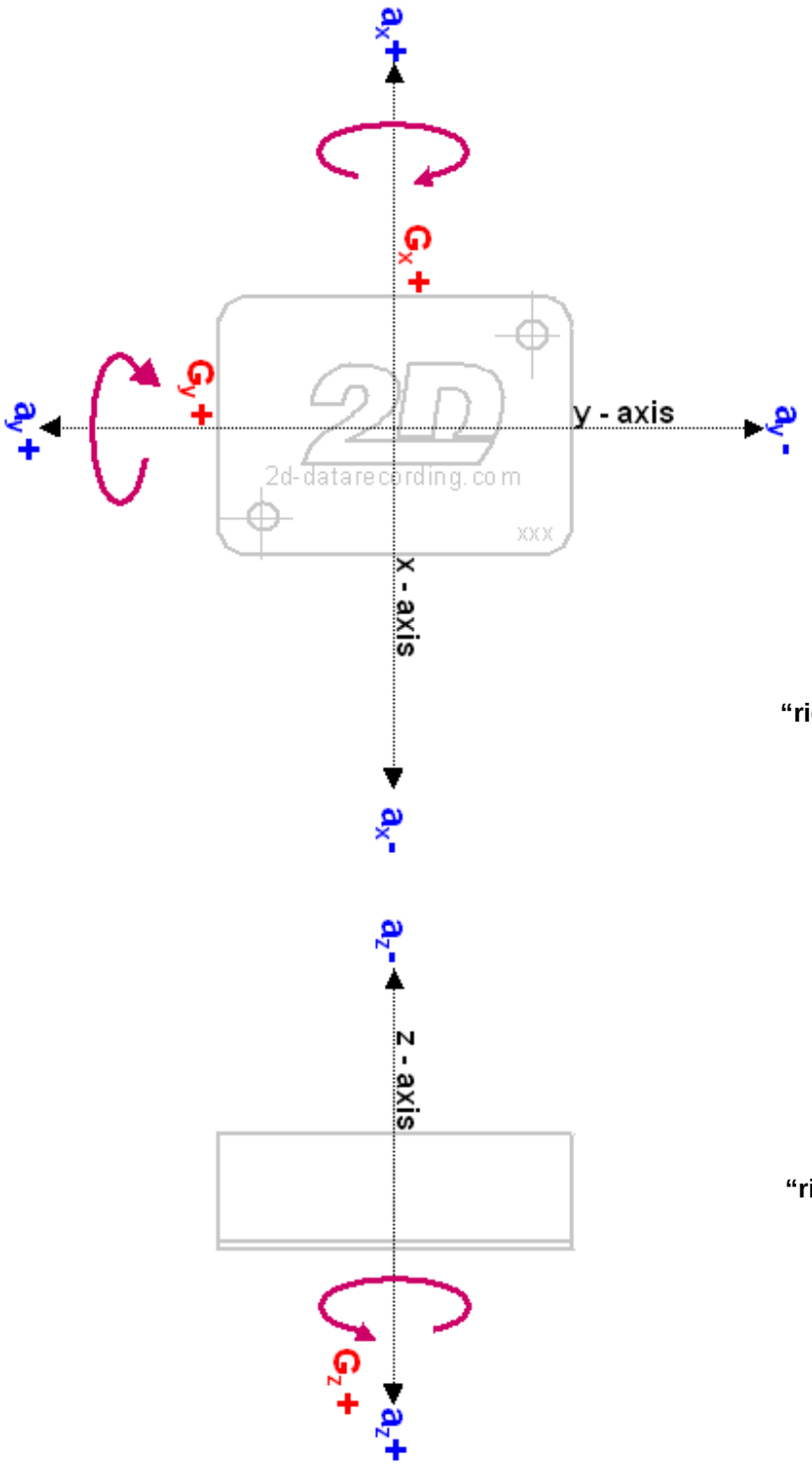
21.12.2011

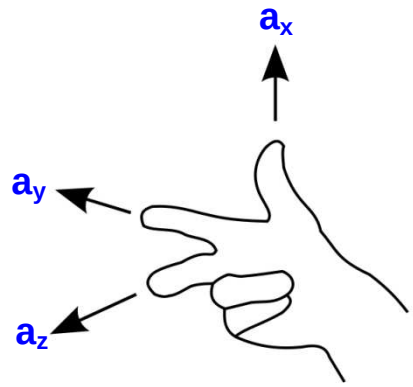
2D Debus & Diebold Meßsysteme GmbH, Alte Karlsruher Str. 8, D-76227 Karlsruhe
Tel.: +49(0)721 94485-0 **Fax.:** +49(0)721 94485-29 **Mail:** mail@2d-datarecording.com

BC-3Axx_zGyyy-000 Box CAN, 3 axis accelerometer, 1(3) GYRO

Supplement Sheet

The Figure shown beneath shows the “correct directions” for the accelerometers in three directions (x, y and z) as well as the three (optional) included gyros. The directions are essential if you calibrate this sensor using WinIt.





“right-hand rule“ for orientation of axis a $_{x,y,z}$

“right-hand rule“ for gyro sense of rotations