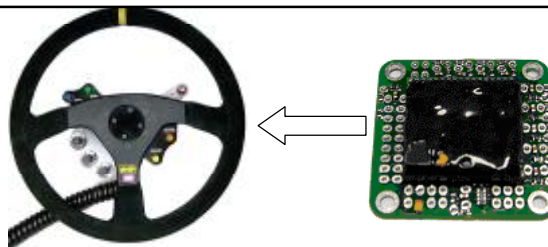


BC-SWC-000

Steering wheel controller

Function

The 2D steering wheel controller allows to control ECU's, switch boxes and any other kind of in car electronics via user configurable CAN bus. The controller has 3 analog inputs for on/off and turning switches and 12 digital inputs for on/off switches and buttons.(more analog channels on request) All outputs can be combined and recalculated with each other or information of CAN inputs. The controller allows short circuit control of all input switches.



Smallest dimensions permit the direct installation of the circuit board onto the back side of most steering wheels

Technical specifications

Electrical characteristics

Power supply..... 5 to 20 V DC
 Current consumption @12V..... 20 mA

Communications

CAN-line..... 1
 Speed..... 125-1000 Kbaud
 Termination..... 120 Ω

Identifiers:

CAN 2.0A (base frame)..... 11 Bit
 CAN 2.0B (extended frame) on request

Voltage ranges

Vext power supply.... +5 to +20 V
 CAN H CAN high level. -7 to +12 V
 CAN L CAN low level... -7 to +12 V

Serial port..... 1

Voltage ranges

Vext power supply.... +5 to +20 V
 TxD output..... 0 to +3.3 V
 RxD input..... 0 to +3.3 V

I/O Channels

Analogue I/O channels..... 15

External supply (output):

range#1 fixed..... +3.3 V
 range#2 fixed..... +5.0 V
 range#3 User definable.. TBD -TBD V

Current drain:

range#1 max. 10 mA
 range#2 max. 20 mA
 range#3 max. 20 mA

Protection (I/O#1 to I/O#15)

short circuit protection. Yes
 reverse input voltage... Yes

Resolution..... 16 Bit

Trigger thresholds..... none

(handled by CALC channels)

Fixed-point calibration Yes

LED output

range..... 0 to +3.3 V
 switched 3.3V@ 470 Ω

Mechanical characteristics

Weight..... 10 g
 Dimensions..... 35 x 35 x 8 mm
 Housing material..... Customized

Connector / Cables

customized



All connectors and cables can be manufactured to specifications. Take a look at ordering information for your first order. After the first order you will get a unique 2D order code for your next orders.

All necessary connection information will be delivered in a separate spec sheet.

Environmental

Operating temperature..... 0 to +75 °C
 Humidity..... 5 - 95 %
 Sealing class..... customized

Vibration resistance

Shock..... 40 G
 during a time period of... 10 ms
 Vibration tested at..... 12 G
 with a test frequency of.. 1000 Hz

Ordering information

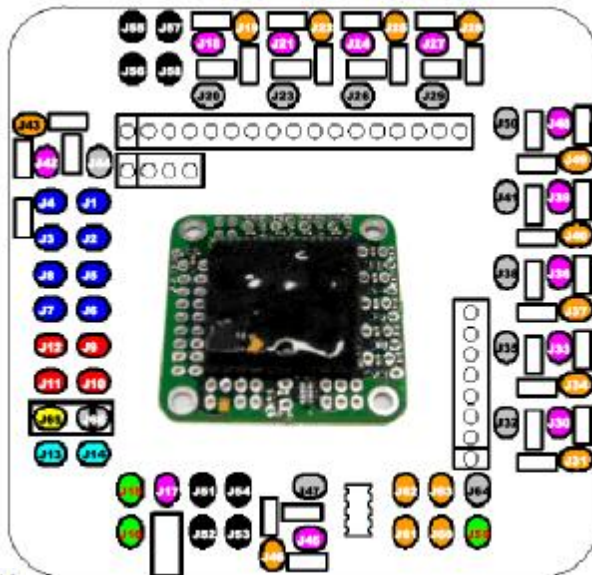
Art.No.:..... BC-SWC-000

BC-SWC-000

Steering wheel controller

Connection reference

		Name	I/O	Range	Function	Protection	Connector
CAN-line	CAN-line	Vext	Supply Input	+5Vto+20V	5)	1)	J1 J5
		BGND	Supply Ground	GND	6)	-	J2 J6
		CAN H	CAN line (120W)	-7Vto+12V	7)	-	J3 J7
		CAN L	CAN line (120W)	-7Vto+12V	7)	-	J4 J8
Serial port	Serial port	Vext	Supply Input	+5Vto20V	5)	1)	J9
		BGND	Supply Ground	GND	6)	-	J10
		TxD	Output	0to+3.3V	8)	2)	J11
		RxD	Input	0to+3.3V	8)	2)	J12
LED Out	LED Out	LED out	Output	0to+3.3V	10)	-	J65
		BGND	Supply Ground	GND	6)	-	J66
Supply +3.3V	+3.3V	Supply Output	+3.3V max.10mA	9)	3)	J13 J14	
Supply +5.0V	+5.0V	Supply Output	+5.0V max.20mA	9)	3)	J15 J16 J59	
Supply Range ^{*)}	+Range	Supply Output	user defined value	9)	3)	J17 J18 J21 J24 J27 J30 J33 J36 J39 J42 J45 J48	
I/O #1-#15	I/O #1-#15	Input / Output	analog 0to+3V digital 0to+3,3V	-	4)	J19 J22 J25 J28 J31 J34 J37 J40 J43 J46 J49 J60 J61 J62 J63	
Supply Ground	BGND	Supply Ground	-	6)	-	J20 J23 J26 J29 J32 J35 J38 J41 J44 J47 J50 J64 J66	



See large image on the next page)

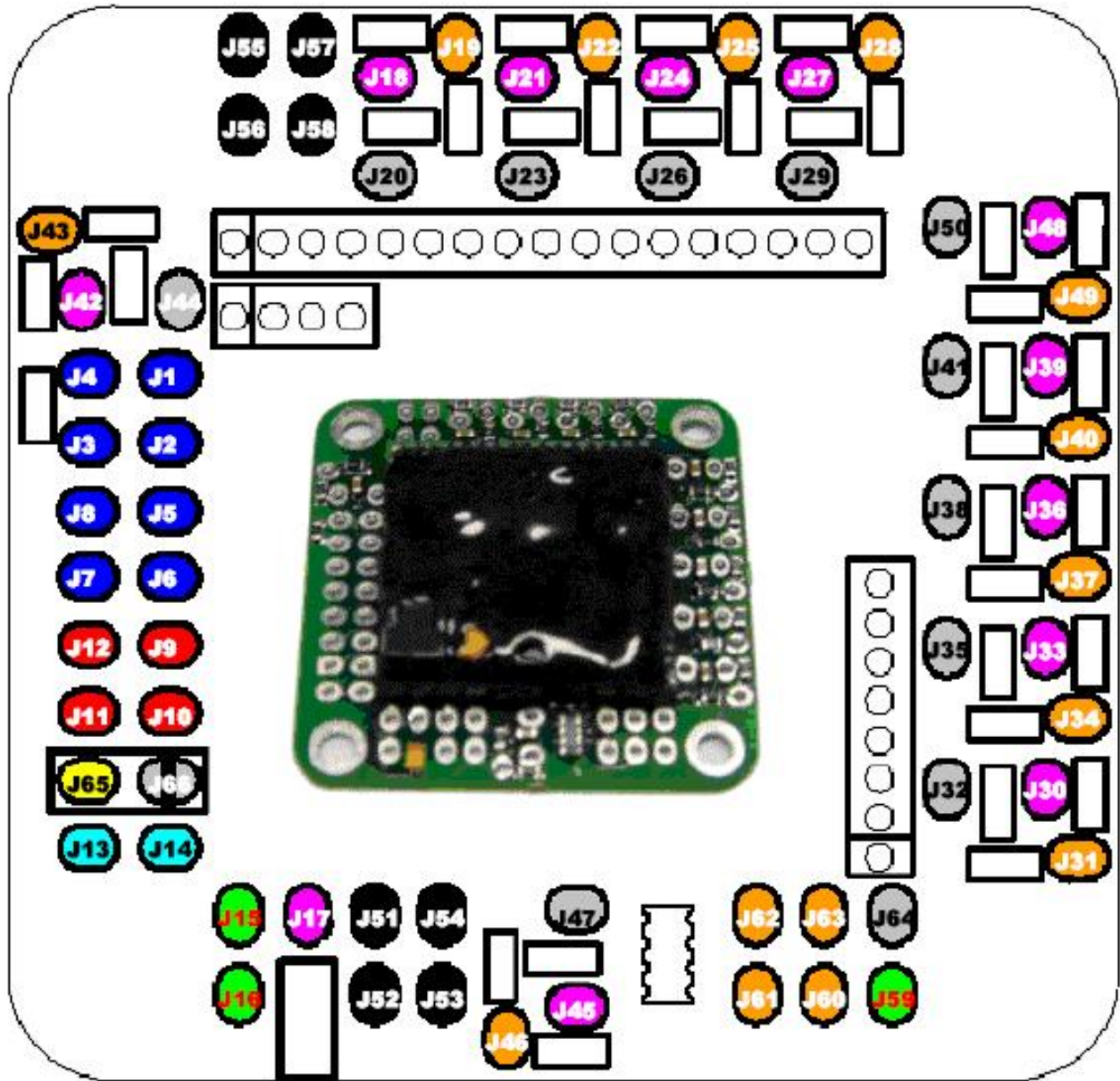
Protection	
1)	multi fuse overvoltage
2)	serial resistance=100W TVS diode
3)	short circuit protection reverse input voltage
4)	I/O input circuit

Function	
5)	Power Supply
6)	Power Supply Ground
7)	CAN line High Low level
8)	Serial Data Transmit Receive
9)	External Supply
10)	Switched +3.3V with serial 470W

BC-SWC-000

Steering wheel controller

Pin assignment | circuit board (detail view)



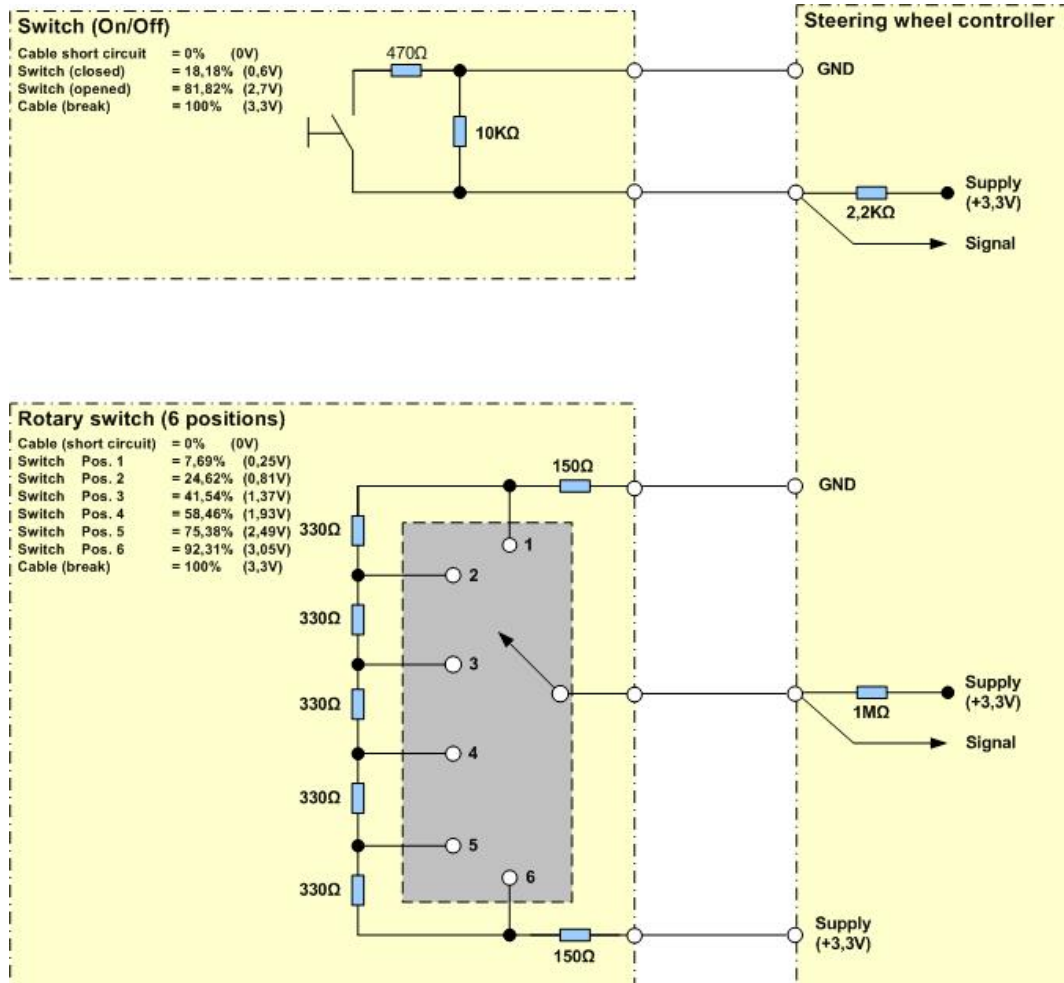
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BC-SWC-000

Steering wheel controller

Connection examples / Application notes

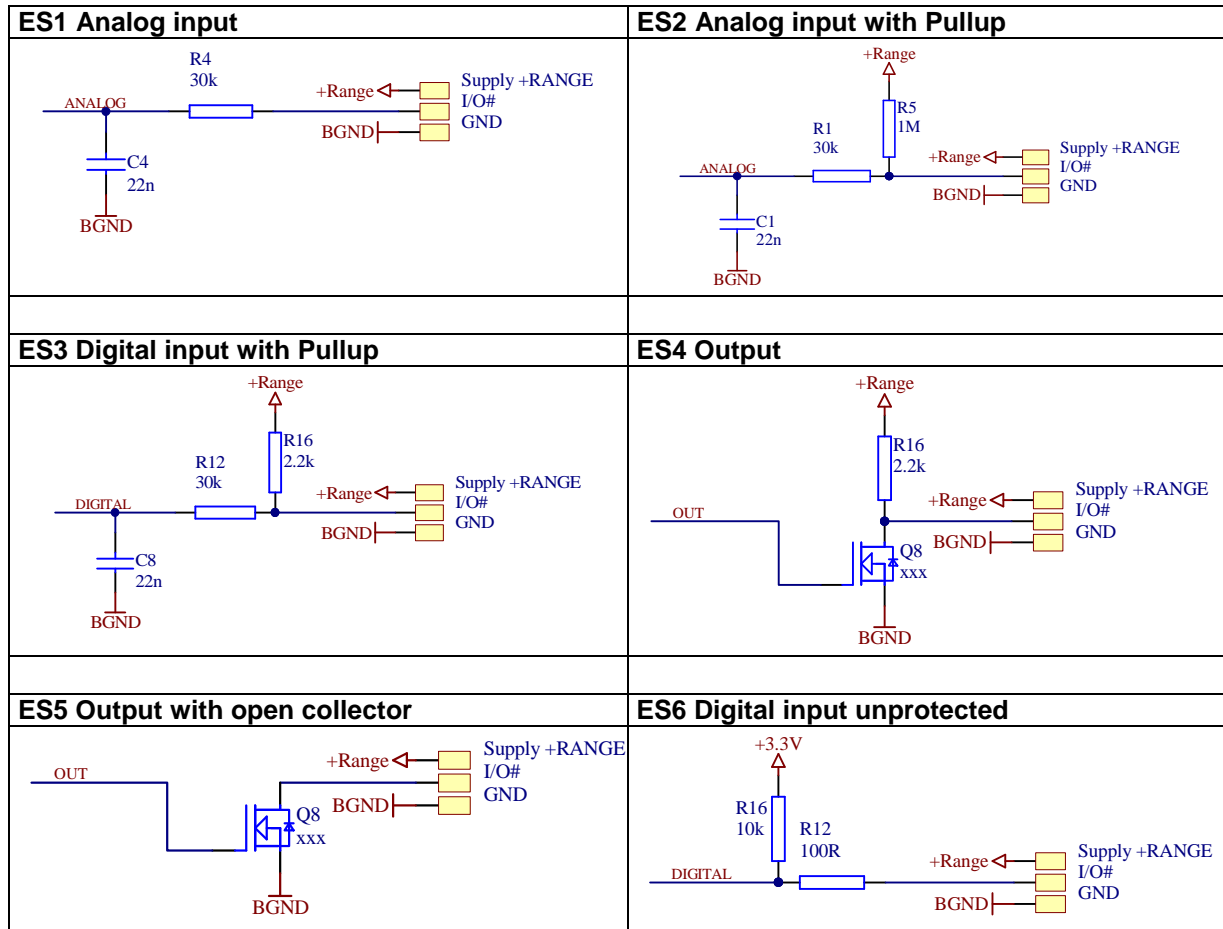


Analog channel	Pin	Rotary switch (analog)	Switch (digital)	Output
#I/O1	J19	Available/ ES2	N/A	Yes
#I/O2	J22	Available/ ES2	N/A	Yes
#I/O3	J25	Available/ ES2	N/A	Yes
#I/O4	J28	N/A	Available/ ES3	Yes
#I/O5	J31	N/A	Available/ ES3	Yes
#I/O6	J34	N/A	Available/ ES3	Yes
#I/O7	J37	N/A	Available/ ES3	Yes
#I/O8	J40	N/A	Available/ ES3	Yes
#I/O9	J43	N/A	Available/ ES3	Yes
#I/O10	J46	N/A	Available/ ES3	Yes
#I/O11	J49	N/A	Available/ ES3	Yes
#I/O12	N/A	N/A	N/A	N/A
#I/O13	J60	N/A	Available/ ES6	No
#I/O14	J63	N/A	Available/ ES6	No
#I/O15	J62	N/A	Available/ ES6	No
#I/O16	J61	N/A	Available/ ES6	No

Possible Input/Output channel options



On customer request different input circuits can be ordered on individual channels. Please get in contact with the sales team for detailed information.



I/O	ES1	ES2	ES3	ES4	ES5	ES6
I/O#1	YES	YES	YES	YES	YES	NO
I/O#2	YES	YES	YES	YES	YES	NO
I/O#3	YES	YES	YES	YES	YES	NO
I/O#4	YES	YES	YES	YES	YES	NO
I/O#5	YES	YES	YES	YES	YES	NO
I/O#6	YES	YES	YES	YES	YES	NO
I/O#7	YES	YES	YES	YES	YES	NO
I/O#8	YES	YES	YES	YES	YES	NO
I/O#9	YES	YES	YES	YES	YES	NO
I/O#10	YES	YES	YES	YES	YES	NO
I/O#11	NO	NO	YES	YES	YES	NO
I/O#12						
I/O#13	NO	NO	NO	NO	NO	YES
I/O#14	NO	NO	NO	NO	NO	YES
I/O#15	NO	NO	NO	NO	NO	YES
I/O#16	NO	NO	NO	NO	NO	YES

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