PowerBox PBX 90



- 120 A continuous current
- 36 outputs, 80 A high side switches
- Ethernet, CAN and LIN communication
- Software-tool integrated
- Easy programming of complex functions

The PowerBox is an intelligent control and distribution unit for the electric grid in a modern racing car, which is seamlessly integrated into the Bosch Motorsport system architecture. It is capable to replace all conventional relays, fuses and circuit breakers, simplifies wiring harnesses and provides diagnostic capabilities. The integrated PBX-software guarantees an easy programming of complex functions by intuitive handling.

Technical Specifications

Mechanical Data

Size	214 x 159 x 57.5 mm
Weight	830 g
Protection Classification	Protected against ingress of particles > 1 mm, splash water proof
Temp. range (at internal sensors)	-20 to 85°C
Max. vibration	Vibration profile 1

Electrical Data

Supply voltage range	5 to 20 V
Current consumption	<1 A
Maximum recommended output current	120 A continuously >180 A peak current (2 s)

Inputs

12 x analog inputs (16 bit resolution) switchable pull-up resistors
4 x digital inputs switchable pull-up/pull-down resistors

Sensor Supplies and Screens

1 x sensor supply 5 V 400 mA with individual ground pin

Outputs

4 x high power channels up to 40 A (parallel up to 80 A)
4 x high power channels up to 25 A
22 x high power channels up to 15 A
6 x multi purpose outputs up to 15 A (low side, high side, push-pull, PWM; two output stages can be combined to form an H-bridge)

Software

Function development and calibration tool	Bosch Motorsport PBX Suite

Connector X1: 38 way (ABS/ESR) Code 1

Pin	Signal	Cont. [A]	Peak [A]
1	HP_OUT3	40	150
2	OUT22	15	100
3	PWM_OUT6	15	75
4	OUT21	15	100
5	ANA_IN07	0 to 5 V, Pull-up	
6	ANA_IN08	0 to 5 V, Pull-up	
7	PWM_OUT4	15	75
8	CAN_3_H	1 Mbaud max.	
9	SENSGND	GND for AIN[x]	
10	SENSPWR_5V	0.4	
11	PWM_OUT2	15	75
12	PWM_OUT1	15	75
13	HP_OUT4	40	150

Connector X1: 38 way (ABS/ESR) Code 1			
14	ANA_IN03	0 to 5 V, Pull-up	
15	ANA_IN04	0 to 5 V, Pull-up	
16	DIG_IN3	0 to 12 V, Pull-up, Pull-down	
17	DIG_IN4	0 to 12 V, Pull-up, Pull-down	
18	ANA_IN09	0 to 5 V, Pull-up	
19	ANA_IN10	0 to 5 V, Pull-up	
20	CAN_3_L	1 Mbaud max.	
21	BAT_GND	15	100
22	BAT_GND	15	100
23	BAT_GND	15	100
24	BAT_GND	15	100
25	HP_OUT7	25	150
26	OUT19	15	100
27	ANA_IN05	0 to 5 V, Pull-up	
28	OUT20	15	100
29	ANA_IN06	0 to 5 V, Pull-up	
30	OUT17	15	100
31	OUT18	15	100
32	ANA_IN11	0 to 5 V, Pull-up	
33	OUT15	15	100
34	OUT16	15	100
35	ANA_IN12	0 to 5 V, Pull-up	
36	PWM_OUT3	15	75
37	PWM_OUT5	15	75
38	HP_OUT8	25	150

Connector X2: 38 way (ABS/ESR) Code 2			
Pin	**Used for**	**Cont. [A]**	**Peak [A]**
1	HP_OUT1	40	150
2	OUT14	15	100
3	OUT13	15	100
4	OUT02	15	100
5	OUT01	15	100
6	TIMESTAMP_INOUT	1 kHz open drain	
7	CAN_2_H	1 Mbaud max.	
8	CAN_1_H	1 Mbaud max.	

Connector X2: 38 way (ABS/ESR) Code 2			
9	ETH_1_RXN	10/100 Mbps	
10	ETH_1_TXN	10/100 Mbps	
11	ETH_2_RXN	10/100 Mbps	
12	ETH_2_TXN	10/100 Mbps	
13	HP_OUT2	40	150
14	BAT_GND	15	100
15	ANA_IN01	0 to 5 V, Pull-up	
16	ANA_IN02	0 to 5 V, Pull-up	
17	DIG_IN1	0 to 12 V, Pull-up, Pull-down	
18	DIG_IN2	0 to 12 V, Pull-up, Pull-down	
19	CAN_2_L	1 Mbaud max.	
20	CAN_1_L	1 Mbaud max.	
21	ETH_1_RXP	10/100 Mbps	
22	ETH_1_TXP	10/100 Mbps	
23	ETH_2_RXP	10/100 Mbps	
24	ETH_2_TXP	10/100 Mbps	
25	HP_OUT5	25	150
26	OUT11	15	100
27	OUT09	15	100
28	OUT12	15	100
29	OUT10	15	100
30	OUT07	15	100
31	OUT08	15	100
32	LIN	Control of Bosch Motorsport LIN devices included. Support of other devices on request.	
33	OUT05	15	100
34	SHIELD_GND	shield	
35	OUT06	15	100
36	OUT03	15	100
37	OUT04	15	100
38	HP_OUT6	25	150

Connector X3: Amphenol Radsok Automotive Pinlock Connector 8 mm (35 mm^2, 50 mm^2)			
Pin	**Used for**	**Cont. [A]**	**Peak [A]**
1	BATT_POS	120	180

Communication

3 x CAN
2 x Ethernet

1 x LIN, Control of Bosch Motorsport LIN devices included. Support of other devices on request.

Installation Notes

Inspection services recommended after 220 h or 2 years, no components to replace.

Legal Restrictions

Generally blocked are direct and indirect business involving high risk destinations, including Russia, Belarus, Cuba, Iran, North Korea, Syria, Libya, Afghanistan, and certain non-governmental controlled Ukrainian regions. This list may change as geopolitics evolve.

Upgrades

CCA Hardware Upgrade per device

Provides the option to run customer developed software code on Bosch device

Ordering Information

PowerBox PBX 90
Order number **F02U.V01.794-06**

Software Options

CCA Hardware Upgrade per device
Order number **F02U.V02.137-01**

Accessories

Mating Connector X1
Order number **F02U.B00.760-01**

Mating Connector X2
Order number **F02U.B00.761-01**

Mating Connector X3
Order number **F02U.B01.279-01**

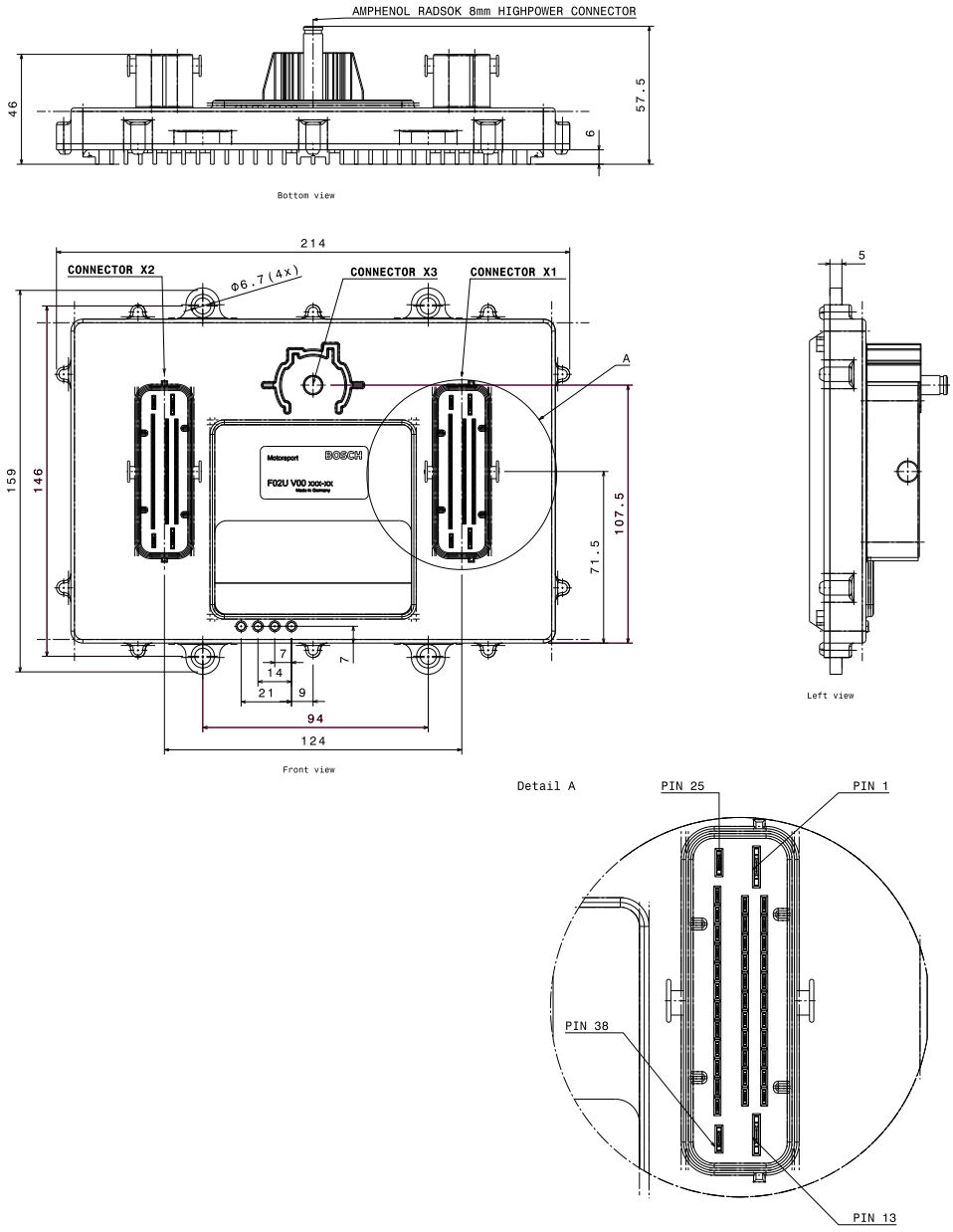
Power Cable 16 mm²
L: 2,000 mm
Order number **F02U.V03.552-01**

Power Cable 35 mm²
L: 2,000 mm
Order number **F02U.V03.553-01**

Breakout Box BOB PBX 90
Order number **F02U.V02.292-01**

CAN Keypad CK-M12
Order number **F02U.V0U.328-04**

Dimensions



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