

# PowerBox PBX 90

www.bosch-motorsport.com



- ▶ 120 A continuous current
- ▶ 36 outputs
- ▶ 80 A high side switches
- ▶ Easy programming of complex functions
- ▶ Software-tool integrated

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.

## Technical Specifications

### Mechanical Data

Size	214 x 159 x 57.5 mm
Weight	830 g
Temp. range (at internal sensors)	-20 to 85°C

### 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)

### Communication

CAN	3
Ethernet	2

### Inputs

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

### Outputs

- 4 high power channels up to 40 A (parallel up to 80 A)
- 4 high power channels up to 25 A
- 22 high power channels up to 15 A
- 6 multi purpose outputs up to 15 A (low side, high side, push-pull, PWM)
- 1 sensor supply 5 V with individual ground pin

### 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

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

Pin	Used for	Cont. [A]	Peak [A]
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
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	TIME-STAMP_INOUT	1 kHz open drain	
7	CAN_2_H	1 MBaud max.	
8	CAN_1_H	1 MBaud max.	
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		
33	OUT05	15	100
34	SHIELD_GND	shield	

## Connector X2: 38 way (ABS/ESR) Code 2

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<sup>2</sup>, 50 mm<sup>2</sup>)

Pin	Used for	Cont. [A]	Peak [A]
1	BATT_POS	120	180

## Installation Notes

Inspection services	Recommended after 220 h or 2 years, no components to replace
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## Ordering Information

**PowerBox PBX 90**  
Order number **F 02U V01 794-05**

## Accessories

**Mating Connector X1**Order number **F 02U B00 760-01****Mating Connector X2**Order number **F 02U B00 761-01****Mating Connector X3**Order number **F 02U 003 574-01****Power Cable 16 mm<sup>2</sup>**

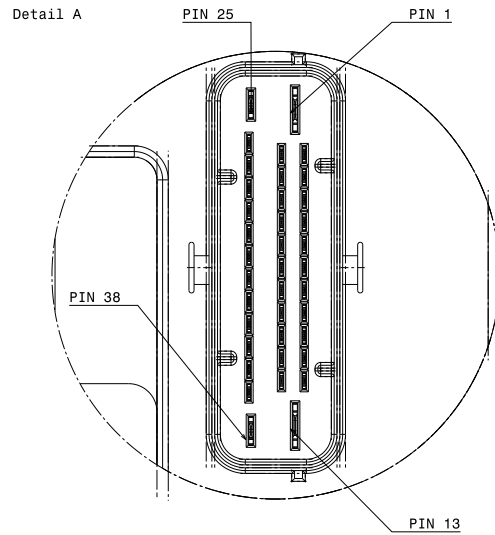
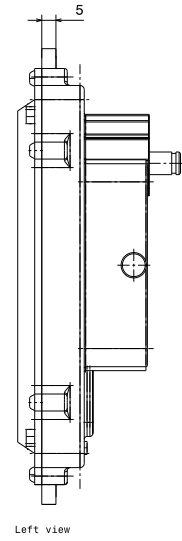
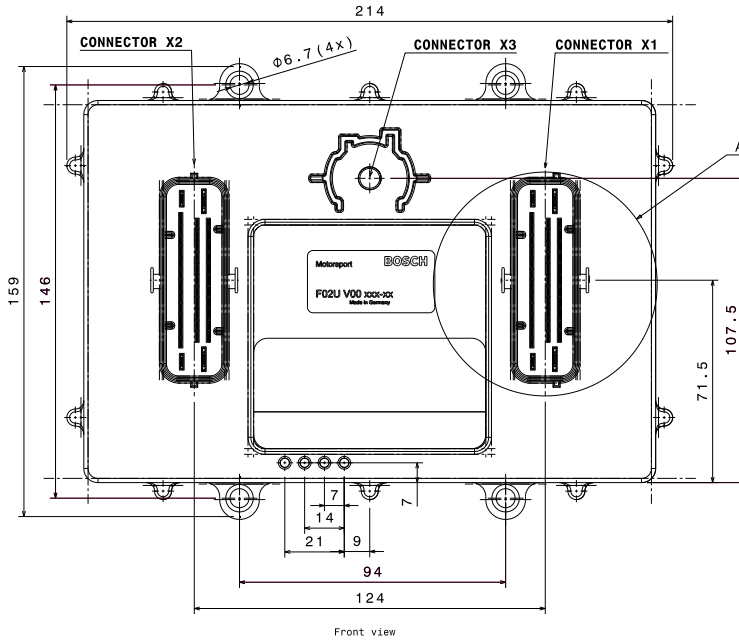
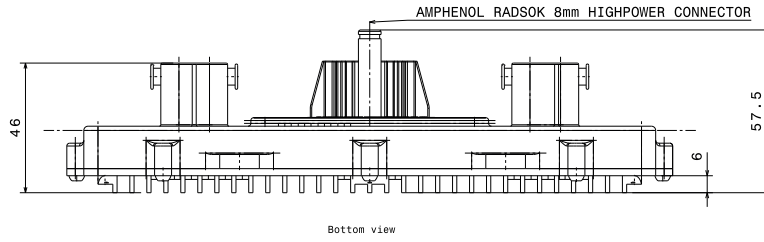
L: 2,000 mm

Order number **F 02U V02 047-01****Power Cable 35 mm<sup>2</sup>**

L: 2,000 mm

Order number **F 02U V02 048-01****Breakout Box BOB PBX 90**Order number **F 02U V02 292-01**

Dimensions



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