PowerBox PBX 190

www.bosch-motorsport.com

BOSCH
Invented for life

- 250 A continuous current
- 52 outputs
- 48 V high side switches
- Easy programming of complex functions
- Precision current measurement

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	245 x 183 x 37 mm
Weight	1,270 g
Internal G-sensors	
Temp. range (at internal sensors)	-20 to 85°C

Electrical Data

Supply voltage range	5 to 16 V
Current consumption	<1 A continuously
Maximum recommended output current	250 A continuously; >310 A peak current (2 s)

Communication

CAN	3
LIN	1
Ethernet	2
Real time ethernet Sercos (optional)	2

Inputs

18 analogue inputs (16 bit resolution) switchable pull-up resistors

10 digital inputs switchable pull-up/pull-down resistors

Outputs

4 high power channels up to 40 A (parallel up to 80 A)

10 high power channels up to 25 A

26 high power channels up to 15 A

8 multi-purpose outputs up to 15 A (low side, high side, push-pull, PWM)

4 x 12 to 48 V high side channels up to 25 A

2 sensor supply 5 V with individual ground pin

Software

Function development and calibration tool	Bosch Motorsport PBX Suite

Pin Configuration

Connector X1: 37 Pins / 8STA6-24-37SA			
Pin	Signal	Cont. [A]	Peak [A]
A	HS_15A X1_A	15	100
B	HS_15A X1_B	15	100
C	HS_15A X1_C	15	100
D	HS_15A X1_D	15	100
E	HS_15A X1_E	15	100
F	HS_15A X1_F	15	100
G	HS_15A X1_G	15	100
H	HS_15A X1_H	15	100
J	HS_15A X1_J	15	100
K	HS_15A X1_K	15	100
L	HS_15A X1_L	15	100
M	HS_15A X1_M	15	100
N	HS_15A X1_N	15	100
P	PWM_15A X1_P	15	60
R	PWM_15A X1_R	15	60
S	PWM_15A X1_S	15	60
T	PWM_15A X1_T	15	60
U	HS_15A X1_U	15	100
V	HS_15A X1_V	15	100
W	HS_15A X1_W	15	100
X	HS_15A X1_X	15	100
Y	HS_15A X1_Y	15	100
Z	HS_15A X1_Z	15	100
a	HS_15A X1_a 1	15	100
b	HS_15A X1_b 1	15	100
c	PWM_15A X1_c 1	15	60
d	PWM_15A X1_d 1	15	60
e	PWM_15A X1_e 1	15	60
f	PWM_15A X1_f 1	15	60
g	HS_15A X1_g 1	15	100
h	HS_15A X1_h 1	15	100
k	HS_15A X1_k 1	15	100
m	HS_15A X1_m 1	15	100
n	HS_15A X1_n 1	15	100
p	Power KL31	15	-
q	Power KL31	15	-
r	Power KL31	15	-

Connector X2: 1 Pin / 8STA6-12-01BN261			
Pin	Signal	Cont. [A]	Peak [A]
1	Power Supply 12 V	200	240

Connector X3: 19 Pins / 8STA6-24-19SN			
Pin	Signal	Cont. [A]	Peak [A]
A	HS_25A X3_A	25	150
B	HS_25A X3_B	25	150
C	HS_25A X3_C	25	150
D	HS_25A X3_D	25	150
E	HS_25A X3_E	25	150
F	HS_25A X3_F	25	150
G	HS_40A X3_G_H	40	150
H	HS_40A X3_G_H	40	150
J	HS_40A X3_J_T	40	150
K	HS_40A X3_K_U	40	150
L	HS_40A X3_L_N	40	150
M	HS_25A X3_M	25	150
N	HS_40A X3_L_N	40	150
P	HS_25A X3_P	25	150
R	HS_25A X3_R	25	150
S	HS_25A X3_S	25	150
T	HS_40A X3_J_T	40	150
U	HS_40A X3_K_U	40	150
V	Power KL31	25	-

Connector X4: 6 Pins / 8STA6-16-06SA			
Pin	Signal	Cont. [A]	Peak [A]
A	HS48V_25A X4_A	25	100
B	HS48V_25A X4_B	25	100
C	HS48V_25A X4_C	25	100

Connector X4: 6 Pins / 8STA6-16-06SA			
D	HS48V_25A X4_D	25	100
E	Supply 12 to 48 V for X4	25	35
F	Supply 12 to 48 V for X4	25	35

Connector X5: 66 Pins / 8STA6-18-35SN		
Pin	**Signal**	
1	Analog Input X5_01	0 to 5 V, Pull-up
2	Analog Input X5_02	0 to 5 V, Pull-up
3	Analog Input X5_03	0 to 5 V, Pull-up
4	Analog Input X5_04	0 to 5 V, Pull-up
5	Analog Input X5_05	0 to 5 V, Pull-up
6	Analog Input X5_06	0 to 5 V, Pull-up
7	Analog Input X5_07	0 to 5 V, Pull-up
8	Analog Input X5_08	0 to 5 V, Pull-up
9	CAN 3 Interface Low-Level	Max. 1 MBaud
10	Analog Input X5_10	0 to 5 V, Pull-up
11	Analog Input X5_11	0 to 5 V, Pull-up
12	Analog Input X5_12	0 to 5 V, Pull-up
13	Digital Input X5_13	0 to 12 V, Pull-up, Pull-down
14	Digital Input X5_14	0 to 12 V, Pull-up, Pull-down
15	CAN 3 Interface High-Level	Max. 1 MBaud
16	LIN	
17	Analog Input X5_17	0 to 5 V, Pull-up
18	Analog Input X5_18	0 to 5 V, Pull-up
19	DGND-fused	5 A
20	DGND-fused	5 A
21	Digital Input X5_21	0 to 12 V, Pull-up, Pull-down
22	Digital Input X5_22	0 to 12 V, Pull-up, Pull-down
23	SERCOS1 TXP	
24	SERCOS1 TXN	
25	do not connect (use for internal debugging)	
26	do not connect (use for internal debugging)	
27	Analog Input X5_27	0 to 5 V, Pull-up
28	Digital Input X5_28	0 to 12 V, Pull-up, Pull-down
29	Digital Input X5_29	0 to 12 V, Pull-up, Pull-down
30	Analog Input X5_30	0 to 5 V, Pull-up
31	KL31-fused	
32	SERCOS1 RXP	
33	SERCOS1 RXN	
34	do not connect (use for internal debugging)	
35	do not connect (use for internal debugging)	
36	Digital Input X5_36	0 to 12 V, Pull-up, Pull-down
37	Digital Input X5_37	0 to 12 V, Pull-up, Pull-down
38	Analog_Screen	
39	Analog Input X5_39	0 to 5 V, Pull-up
40	KL31-fused	
41	SERCOS2 RXP	
42	SERCOS2 RXN	
43	Digital Input X5_43	0 to 12 V, Pull-up, Pull-down
44	Digital Input X5_44	0 to 12 V, Pull-up, Pull-down
45	Sensor GND for X5_51	5 A
46	Timesync	
47	COM_Screen	
48	CAN 1 Interface High-Level	Max. 1 MBaud
49	SERCOS2 TXP	
50	SERCOS2_TXN	
51	Powersupply_5V X5_51	400 mA
52	Sensor GND for X5_58	5 A
53	ETHERNET1 RXN	10/100 Mbps
54	ETHERNET0 RXN	10/100 Mbps
55	CAN 2 Interface Low-Level	Max. 1 MBaud
56	CAN 1 Interface Low-Level	Max. 1 MBaud
57	Analog Input X5_57	0 to 5 V, Pull-up
58	Powersupply_5V X5_58	400 mA
59	ETHERNET1 RXP	10/100 Mbps

Connector X5: 66 Pins / 8STA6-18-35SN		
60	ETHERNET1 TXN	10/100 Mbps
61	ETHERNET0 TXN	10/100 Mbps
62	CAN 2 Interface High-Level	Max. 1 MBaud
63	Analog Input X5_63	0 to 5 V, Pull-up
64	ETHERNET1 TXP	10/100 Mbps
65	ETHERNET0 RXP	10/100 Mbps
66	ETHERNET0 TXP	10/100 Mbps

Ordering Information

PowerBox PBX 190
Order number **F 02U V02 626-01**

Accessories

Mating Connector X1
Order number **F 02U 004 387-01**

Mating Connector X2 (Shell)
Socket 25 mm^2: F 02U 003 741-01
Socket 35 mm^2: F 02U 004 530-01
Order number **F 02U 002 878-01**

Mating Connector X3
Order number **F 02U 004 386-01**

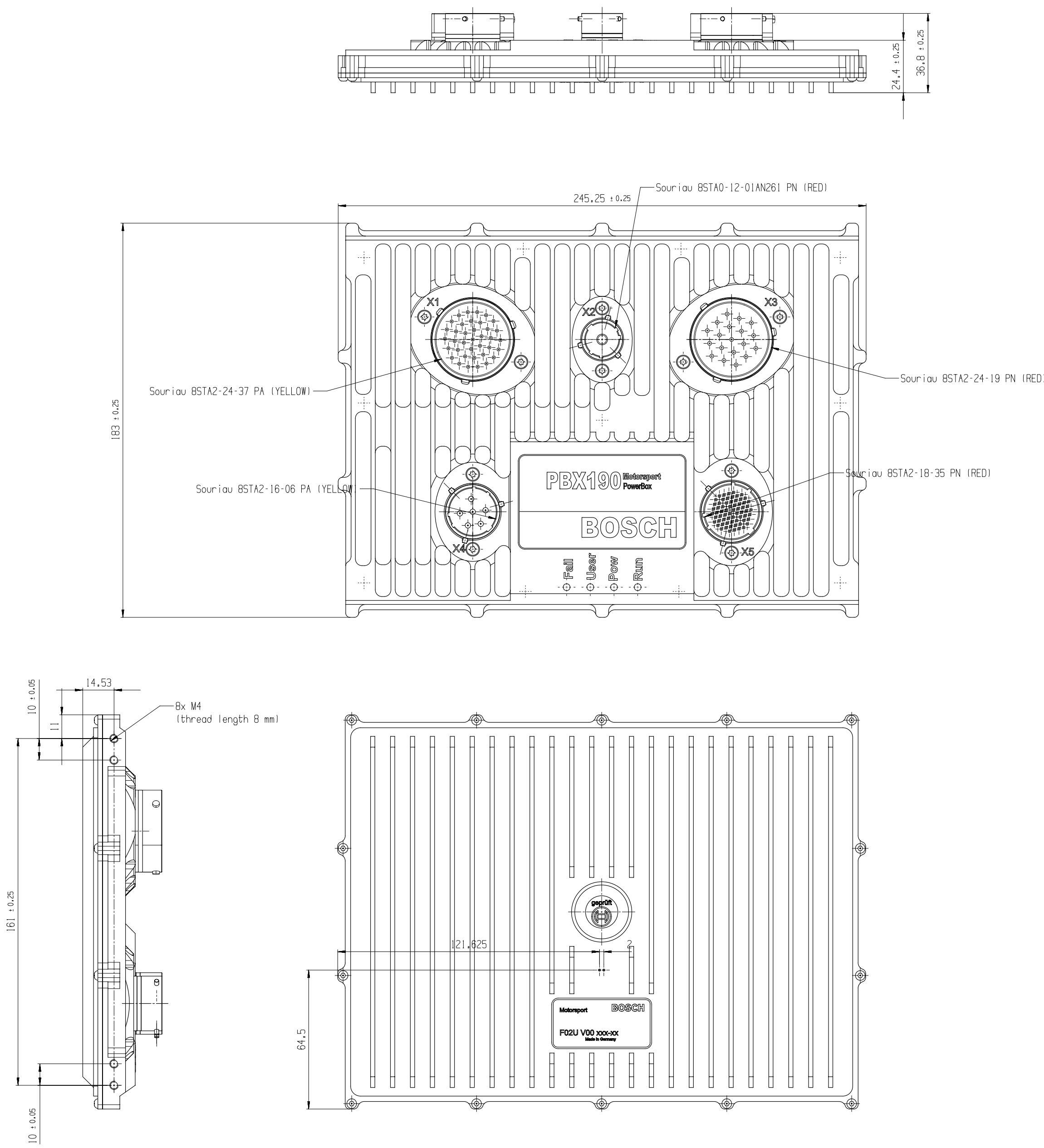
Mating Connector X4
Order number **F 02U 004 388-01**

Mating Connector X5
Order number **F 02U 000 472-02**

Connector Opening Tool for Shellsize 24
Order number **F 02U V02 434-01**

Breakout Box
Order number **on request**

Dimensions



Represented by:

Europe:
Bosch Engineering GmbH
Motorsport
Robert-Bosch-Allee 1
74232 Abstatt
Germany
Tel.: +49 7062 911 9101
Fax: +49 7062 911 79104
motorsport@bosch.com
www.bosch-motorsport.de

North America:
Bosch Engineering North America
Motorsport
38000 Hills Tech Drive
Farmington Hills, MI 48331-3417
United States of America
Tel.: +1 248 876 2977
Fax: +1 248 876 7373
motorsport@bosch.com
www.bosch-motorsport.com

Latin America:
Robert Bosch Ltda
Motorsport
Av Juscelino Kubitscheck de
Oliveira 11800
Zip code 81460-900
Curitiba - Parana
Brasilia
Tel.: +55 41 3341 2057
Fax: +55 41 3341 2779

Asia-Pacific:
Bosch Engineering Japan K.K.
Motorsport
18F Queen's Tower C, 2-3-5 Minato Mirai
Nishi-ku, Yokohama-shi
Kanagawa 220-6218
Japan
Tel.: +81 45 650 5610
Fax: +81 45 650 5611
www.bosch-motorsport.jp

Australia, New Zealand and South Africa:
Robert Bosch Pty. Ltd
Motorsport
1555 Centre Road
Clayton, Victoria, 3168
Australia
Tel.: +61 (3) 9541 3901
motor.sport@au.bosch.com

23439375499 | en, V1, 23. Mar 2017