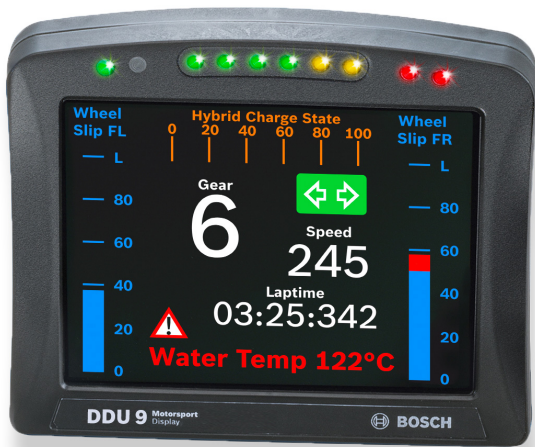


# Display DDU 9



The display DDU 9 integrates a programmable full color dashboard display with a data logging system for motorsport applications for a very competitive price. Additional input devices can be connected via Ethernet and CAN buses.

Data Analysis Software WinDarab is available free of charge as “WinDarab V7 free” on our website. A basic logging function of 100 channels with recording of 50 ms (4 GB) is always included. The logger can be upgraded to full logging performance (max. 1 ms). In addition a 2<sup>nd</sup> logging partition of 4 GB (e.g. for long term recording) can be activated. Customers can implement own graphics, pictures etc. on the 12 freely configurable display pages. For quick data transfer from the car e.g. during pit stop, data copy to a USB stick is available as an option. The stick is connected to the wiring harness for the DDU 9.

The device comes with 4 analog and 4 speed inputs as standard; further 12 analog inputs are available as optional upgrade.

## Application

Display	<ul style="list-style-type: none"> <li>• 5.7” graphic color display</li> <li>• 12 user configurable display pages</li> <li>• 10 multicolor freely configurable (RGB) LEDs</li> </ul>
Resolution	640 x 480 pixel
Supported image file formats	BMP, GIF, JPG, PNG, TIF
Processor	667 MHz Dual Core
Converters	10 kHz 12 bit AD converters with digital low pass filter
Internal power source	Li/Ion capacitor
Configurable math channels	
User configurable CAN in/out messages	

- ▶ 667 MHz Dual Core Processor
- ▶ Large trans-reflective color display
- ▶ Recording on USB flash drive (opt.)
- ▶ Supports GPS laptrigger, pre-dated lap time etc.
- ▶ Page change based on events possible

Online data compression

### Internal logger

- 4 GB memory (standard)
- Plus 4 GB memory (optional)
- 100 channels (standard)
- Up to 1,500 channels (optional)
- 50 ms Sampling rate (standard)
- max. 1 ms Sampling rate (optional)

### Logging rates

- Usage of all features: 600 kB/s
- Primary logging use case: >1,200 kB/s
- Logging data download rate: up to 6.2 MB/s

LTE Ethernet telemetry support, GSM telemetry support

## Technical Specifications

### Mechanical Data

Size	151 x 126 x 33.5 mm
Weight	540 g
Protection Classification	IP54 to DIN 40050, Section 9, Issue 2008
Operating temperature internal	-20 to 85°C
Operating temperature Display	-20 to 70°C
Max. vibration	Vibration profile 1 (see Appendix or <a href="http://www.bosch-motorsport.com">www.bosch-motorsport.com</a> )

### Electrical Data

Supply voltage	5 to 18 V
----------------	-----------

### Inputs

Analog channels	4 standard, additional 12 optional
-----------------	------------------------------------

Input range	0 to 5 V
Resolution	12 bit
Switchable pull up resistor	For all ANA_IN
Wheel speed inputs	4 Hall-effect or DF11, switchable

### Outputs

Sensor supply 5 V ± 1 % (250 mA)	2
Sensor supply 10 V ± 1 % (250 mA)	1
Sensor supply U_Bat 250 mA	1
Sensor ground	4

### Environment

External switch for page selection, 12 steps	B 261 209 658-01
External switch for brightness adjustment or page selection, 6 steps	B 261 209 659-01

### Connectors and Wires

Motorsport connector on Display	AS216-35PN
Mating connector AS616-35SN	F02U.000.466-01

### Pin Configuration

Pin	Name	Comment	Status
1	KL_31		Incl.
2	KL_15		Incl.
3	KL_30		Incl.
4	Rev_In_3	Hall or DF11 switchable	Incl.
5	Rev_In_1	Hall or DF11 switchable	Incl.
6	KL_31		Incl.
7	CAN_2_L	CAN speed selectable	Incl.
8	Ethernet_2_TXP		Incl.
9	Ethernet_2_TXN		Incl.
10	Sens_Power_12V	over current protected	Incl.
11	Rev_In_4	Hall or DF11 switchable	Incl.
12	Rev_In_2	Hall or DF11 switchable	Incl.
13	Laptrigger_In		Incl.
14	CAN_2_H	CAN speed selectable	Incl.
15	CAN_1_H	CAN speed selectable	Incl.
16	Ethernet_2_RXP		Incl.
17	Sens_Gnd_4	fused	Incl.
18	Sens_Power 5V	over current protected	Incl.

Pin	Name	Comment	Status
19	ANA_IN_3	3.01 kOhm switchable	Incl.
20	ANA_IN_4	3.01 kOhm switchable	Incl.
21	Time_Sync	connection to Bosch ECU	Incl.
22	CAN_1_L	CAN speed selectable	Incl.
23	Ethernet_screen		Incl.
24	Ethernet_2_RXN		Incl.
25	Sens_Gnd_3	fused	Incl.
26	Sens_Power 5V	over current protected	Incl.
27	ANA_IN_7	3.01 kOhm switchable	Opt.
28	ANA_IN_1	3.01 kOhm switchable	Incl.
29	USB_Device_DP	to Bosch USB stick	Opt.
30	RS232_TX_Telemetry		Incl.
31	Ethernet_1_TXP		Incl.
32	Sens_Gnd_2	fused	Incl.
33	Sens_Power_10V	over current protected	Incl.
34	ANA_IN_8	3.01 kOhm switchable	Opt.
35	ANA_IN_10	3.01 kOhm switchable	Opt.
36	USB_Device_Gnd	to Bosch USB stick	Opt.
37	USB_Device_DN	to Bosch USB stick	Opt.
38	RS232_RX_Telemetry	e.g. GSM telemetry	Incl.
39	Ethernet_1_TXN		Incl.
40	Sens_Gnd_1	fused	Incl.
41	ANA_IN_11	3.01 kOhm switchable	Opt.
42	ANA_IN_9	3.01 kOhm switchable	Opt.
43	RS232_TX_GPS		Incl.
44	ANA_IN_16	3.01 kOhm switchable	Opt.
45	USB_Device_Power	to Bosch USB stick	Opt.
46	Ethernet_1_RXP		Incl.
47	ANA_IN_12	3.01 kOhm switchable	Opt.
48	ANA_IN_6	3.01 kOhm switchable	Opt.
49	ANA_IN_2	3.01 kOhm switchable	Incl.
50	ANA_IN_13	3.01 kOhm switchable	Opt.
51	ANA_IN_15	3.01 kOhm switchable	Opt.
52	Ethernet_1_RXN		Incl.
53	ANA_IN_5	3.01 kOhm switchable	Opt.
54	RS232_RX_GPS	for GPS sensor input	Incl.
55	ANA_IN_14	3.01 kOhm switchable	Opt.

### Communication

CAN interfaces	2
Ethernet 100BaseT	2
Laptrigger input	1
RS232	Telemetry, GPS

Configuration via RaceCon Over Ethernet or MSA-Box II

**Installation Notes**

Maintenance Interval: 220 h or a maximum of two years

**Legal Restrictions**

The sale of this product in Mexico is prohibited. Due to embargo restrictions, sale of this product in Russia, Belarus, Iran, Syria, and North Korea is prohibited.

**Upgrades**

**CCP/XCP\_MASTER**

Enables CCP/XCP master functionality to request data from foreign devices via CAN/CCP protocol, XCP over Ethernet (UDP) or XCP via CAN.  
(ASAP2 file from ECU manufacturer required)

**FULL\_LOG\_1**

Extension for Partition 1

- 1,500 channels
- fastest sampling 1,000 Hz or 1 synchro

**FULL\_LOG\_2**

Enable full logging performance of 4 GB Partition 2

**IO\_EXTENS**

Enable additional 12 analog inputs

**USB\_DATA**

Rugged USB flash drive Bosch File System (BFS) format included, works with Bosch File System (BFS) preformatted USB Flash drive only

Adapter cable to USB-Port

Adapter for wiring harness

SW license USB-Port unlocked

**Ordering Information**

**Display DDU 9**

Order number **F02U.V02.300-03**

**Software Options**

**CCP/XCP\_MASTER**

Order number **F02U.V02.213-01**

**FULL\_LOG\_1**

Order number **F02U.V02.304-01**

**FULL\_LOG\_2**

Order number **F02U.V02.305-01**

**IO\_EXTENS**

Order number **F02U.V02.205-01**

**Accessories**

**USB\_DATA**

Order number **F02U.V02.214-01**

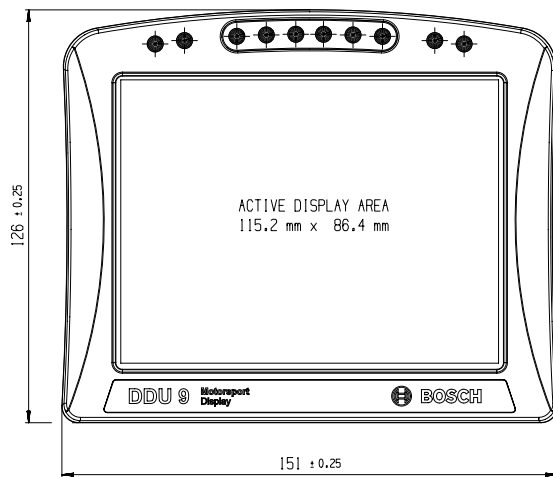
**Vehicle Loom Basic**

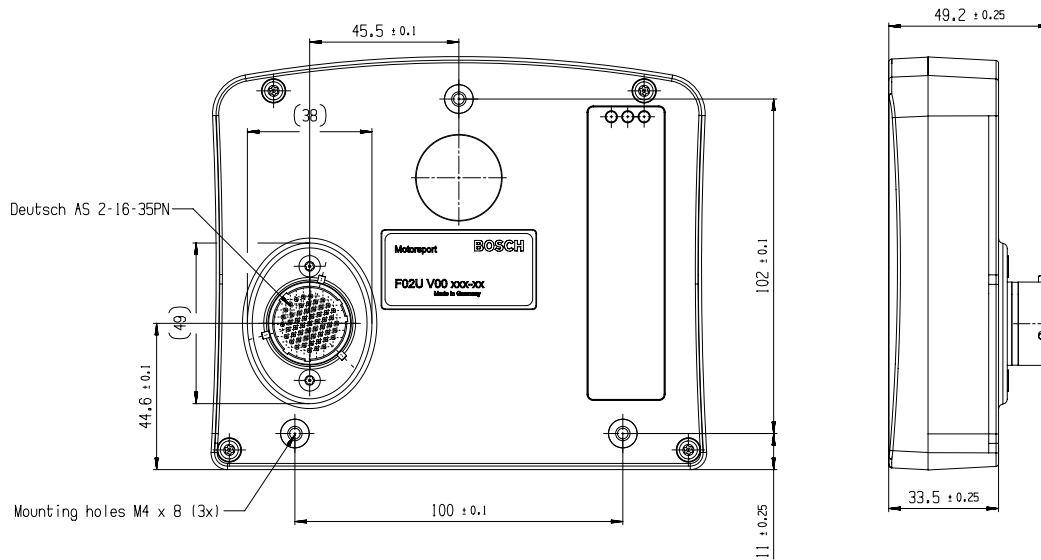
Order number **F02U.V02.735-01**

**Bench Loom**

Order number **F02U.V02.349-01**

**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

**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