SAUER DANFOSS

EIC Engine Information Center

User Manual

J1939™ COMPLIANT

DP200 Series

Graphical Terminal

www.sauer-danfoss.com

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Before You Start

Thank you for purchasing the Sauer-Danfoss DP200 Series Graphical Terminal. This package contains the following items:

- One DP200 Series Graphical Terminal
- One Panel Seal Gasket
- One Mounting Bracket
- Four Bracket Mounting Screws
- One DP200 Series Graphical Terminals User Manual

Please ensure all parts are included prior to use.

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The Engine Information Center (EIC)

The DP200 Series Graphical Terminal comes installed with the powerful and flexible Sauer-Danfoss Engine Information Center (EIC) J1939 engine monitor software application. Use the application to customize the look and feel of your individual engine monitoring needs by creating and controlling analog and digital display information in the screen configurations that work best for your performance requirements. Navigate through diagnostic information and configuration screens with ease by using the four context-dependent soft keys located at the front of the display. Choose from 50 different monitoring parameter profiles to customize the DP200 terminal. Up to four signals can be monitored on each screen. Use the Engine Information Center software to configure the DP200 for alarms and alerts.

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Brightness/Contrast Adjustment

Adjust brightness and contrast levels by pressing the far left soft key. This will display the brightness and contrast soft key bar. The bar will disappear after 3 seconds of inactivity.

Navigation Using Soft Keys

The DP200 Series Graphical Terminal is controlled by navigation through a set of four soft keys located at the lower front of the display. The keys are context dependent. Soft key selection options are displayed above each key and are dependent on the current navigation location within the engine monitor software program. As a general rule, the far right soft key is the selector button and the far left soft key is the step back one screen key. To optimize full screen use, the on-screen selections are not displayed when not in use. Press any soft key to display current selection options. The selection options will be displayed for three seconds.

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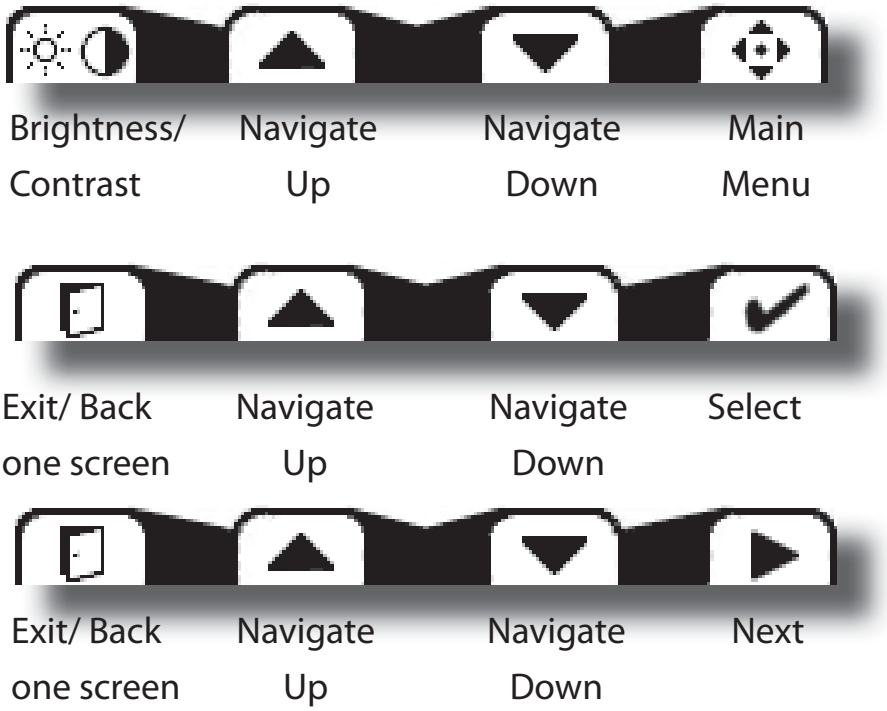
Navigation Using Soft Keys



Screen Navigation

Brightness/Contrast	Press to access brightness and contrast settings.
Navigate Up	Press up to move up through menu items.
Navigate Down	Press up to move down through menu items.
Main Menu	Press to go to Main Menu screen.
Exit/Back one screen	Press to go back one screen.
Select	Press to make selection.
Next	Press to navigate to next digit or screen element.

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Main Menu
Start Menu

Start Menu- Main Menu
The Main Menu screen is the starting point for configuring the DP200 Series Graphical Terminal.

Main Menu

Basic Setup	Use to set Time/Date, Language and Units
Diagnostics	Use to set System Info, Access Fault Log and J1939 lists.
Screen Setup	Use to set Parameters, choose number of screens and select screen. (PIN protected)
System Setup	Use to reset trip and default settings, access CAN information, select display settings and set PIN information. (PIN protected)

DP200

Main Menu
Basic Setup

Overview

Use the Basic setup screen to set time, language and display units for the DP200 series terminal.

Basic Setup

Time/Date	Use Time/Date to set, date and display style for time and date information.
Language	Use Language to set the system language. The default language is English.
Units	Use Units to set speed, distance, pressure, volume, temperature and fuel rates and economy settings.

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Main Menu
Basic Setup

Time/Date

Use Time/Date screen to set Time, Date, calendar style and time style. Use up, down select and next soft keys to navigate.

Language

Use Language screen to select program language. Languages available, English, French, German, Italian, Swedish and Spanish. The default language setting is English.

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Main Menu
Basic Setup

Units

Use the up, down, select and next soft keys to define unit measurements.

Unit Selection Options

Speed	km/h, mph
Distance	km, mi
Pressure	kPa, bar, lbs/ sq in
Volume	l, gal, imp gal
Temperature	°C, °F
Fuel Economy	1/100 km, mpg, mpig
Fuel Rate	l/h, g/h, ig/h

Main Menu
Diagnostics

Overview

Use the Diagnostics screen to display current system information, view and monitor fault logs and display all J1939 devices connected to the graphical terminal.

Diagnostics

System Info	Selecting System Info will display hardware, software, system and node information for connected devices.
Fault Log	Use fault log to view and monitor current and previous fault information.
Device List	The Device List will list all currently connected J1939 devices.
Quick Data	Use Quick Data to set up a customized signal list that can be quickly scrolled through in one signal per page format.

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Main Menu
Diagnostics

System Info

The system info screen displays the hardware system serial number, current software version, current system version and node number. Only information is displayed in the System Info window. No changes can be made.

Fault Log

Fault information is saved and stored to the fault log. Select either Active or Previous Faults to monitor fault activity. Select specific faults to list more information.

Main Menu
Diagnostics

Fault Log: Active and Previous Faults

Selecting Active Faults in the Fault Menu will display all active faults on the CAN network.

Selecting Previous Faults in the Fault Menu will display all previously active faults on the CAN network.

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Main Menu
Diagnostics

Fault Pop-Up Alarms

When a fault is detected on the CAN network, a flashing red warning alarm will be activated and a fault information pop-up window will be displayed listing current fault information.

Warning lights will flash when a pop-up alarm occurs and will stay flashing until acknowledged. Warning lights will remain lit until the fault is no longer on the CAN network.

Fault pop-up softkey actions

	Select to clear pop up and return directly to previous display information
	Select to go to next fault information
	Select to go to previous pop up information
	Select to go to clear pop-up and go to the current active fault complete information screen

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Main Menu
Diagnostics

Fault Pop-Up Alarms

- Faults that have been acknowledged and are no longer active will be shown in the Currently Active Faults log in italics.
- Faults no longer active will also be displayed in the Previous Faults log.
- Pop-up fault alarms can be disabled by setting the Fault Pop-Up to off in the CAN section of the System Setup menu.

Main Menu
Diagnostics

Device List

The Device list page will list all J1939 devices and addresses that are currently being monitored on the network.

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Main Menu
Diagnostics

Quick Data

The Quick Data function allows selected signals to be monitored in a scrollable single view display.

To select signals for display, press the far right soft key.


Quick Data softkey

Scroll through signal list using the up and down arrow soft keys and select/deselect signals for Quick View monitoring by pressing the far right (check mark) soft key. Signals selected for display will show an asterisks to the left of the signal name.

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Main Menu
Screen Setup

Overview

Use Screen Setup to enter parameter settings, select number of signal screens and select individual screens for setup.

Screen Setup

Parameters	Set parameters for RPM, Speed, Fuel, Wheel and Pulse/ Revolutions information.
Number of Screens	Select number of screens for information display. Select from 1 to 4 screens for display.
Select Screen	Use to select screen to set up signal information. Number of screens available are dependent on number of screens selected.

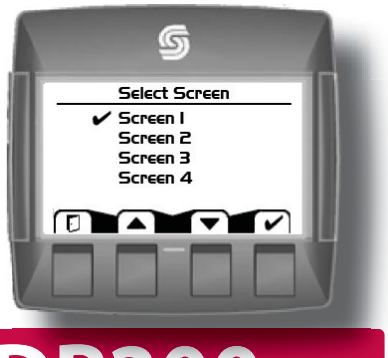
Main Menu
Screen Setup

Parameters

Define system parameter ranges for revolutions per minute, speed, fuel, wheel diameter and pulses per revolution display settings.

Number of Screens

Select number of screens for display. Choose from 1 to 4 screens. See page 25 for detailed screen set up tutorial.



Select Screen

Select screen to customize. See page 25 for detailed screen setup tutorial.

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Main Menu
System Setup

Overview

Use System Setup to monitor and control application systems. Use reset to default settings, make CAN selections, control display settings, set PIN configurations and reset trip functions.

System Setup

Reset Defaults	Select to reset all system information to the default settings status.
CAN	Select to customize CAN setting.
Display	Select to customize display settings.
PIN Setup	Use to set custom PIN settings.
Trip Reset	Select to reset all trip information.

Main Menu
System Setup

Reset Defaults

Select Reset Defaults to reset all EIC settings to original factory default settings.

CAN Settings

Use the CAN settings selection to make the following selections:

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Main Menu
System Setup

CAN Settings

Engine Address	Select engine address. Selection range is 0–253.
Conversion Method	Select 1, 2 or 3 to determine how to interpret non-standard fault messages. Consult engine manufacturer for correct setting.
Fault Popup	Select on or off to enable or disable on screen popup messages.

Display Settings

Display Setting

Startup Screen	Select to enable/disable logo display at startup
Buzzer Output	Select to enable/disable warning buzzer functionality.
Demo Mode	Select on/off to enable demonstration mode.

Main Menu
PIN Protection

Change PIN Code

Refer to information on the following page for PIN code information and PIN code change information.
To reduce the potential for errors, Screen Setup and System Setup menu options can only be accessed by entering a PIN code. The default code is 1-2-3-4. The PIN number can be changed by using PIN Setup located in the System Setup menu.

Trip Reset

Select Yes to reset all trip data.

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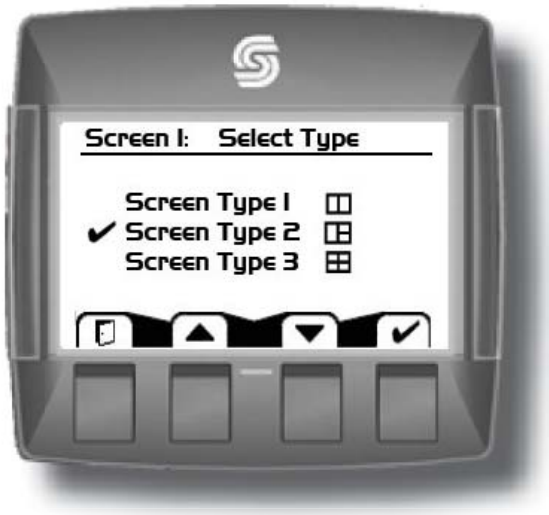
Setup Options

Selecting Screen Number and Types

1. Select from one to four screens for signal monitoring. Navigate to **Main Menu>Screen Setup>Number of Screens.**



2. Select screen type for each of the screens selected. Navigate to **Main Menu>Screen Setup>Select Screen**. Choose from three types of screen setups. Select screen type and press the far right soft key (check mark) to go to signal monitoring options.

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Setup Options
Screen Variants

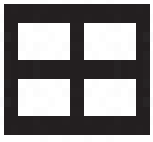
Screen Type 1

Type 1 is a two-up screen view with two signal capacity.

Screen Type 2

Type 2 is a three-up screen view with one large and two small signal capacities.

Screen Type 3



Type 3 is a four-up display with four small signal display capacity.

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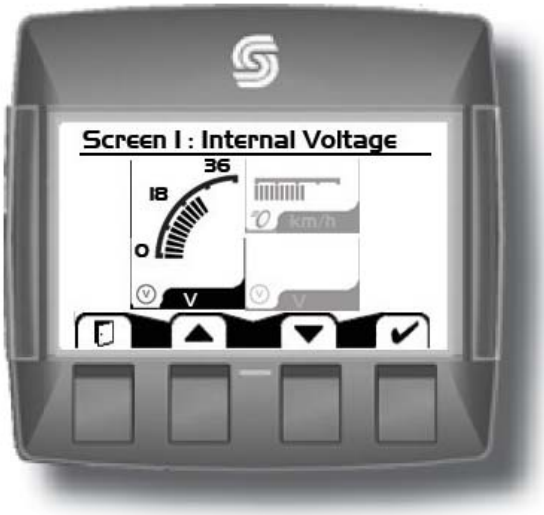
Setup Options
Selecting J1939 Monitor Signals



3. After screen type selection, select signals to monitor. Use the up and down arrow soft keys to cycle through available signal selections.

4. After making a signal selection, press the right arrow (Next) soft key to go to the next selection area. Use the up, down arrow, next and select soft keys to select signal. Select the right arrow soft key to move to the next selection area.

Setup Options

Selecting J1939 Monitor Signals

5. Using the right arrow soft key will rotate through the selections in a clockwise rotation.
When finished with all screen signal selections press the exit (door symbol) soft key to return to previous menus.

6. Navigate back for more screen selections or press the Exit soft key 5 times to display current selections.

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J1939 Monitor Controls

The following tables list the J1939 engine and transmission parameters that are available and can be monitored in the DP200 Graphical Terminal.

For more information on setting up monitor controls in using the Engine Information Center, please refer to ***Selecting J1939 Signals*** on page 27.

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J1939 Monitor Controls
Symbols

Signal Monitor Functions

Symbol	Name/Function	Units
	Actual Engine Torque	%
	Engine Air Inlet Temperature	°C, °F
	Engine Coolant Level	%
	Engine Coolant Pressure	psi, bar, Pa x 1000
	Engine Coolant Temperature	°C, °F
	Engine Exhaust Gas Temperature	°C, °F
	Engine Hours	Hours
	Engine Intake Manifold Temperature	°C, °F
	Engine Oil Level	%
	Engine Oil Pressure	psi, bar, Pa x 1000
	Engine Oil Temperature	°C, °F
	Engine RPM	RPM
	Engine Turbocharger Boost Pressure	psi, bar, Pa x 1000
	Fuel Level	%
	Wheel-based Vehicle Speed	km/h, mph
	Accelerator Pedal Position	%

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J1939 Monitor Controls
Symbols

Symbol	Name/Function	Units
	Alternator Current	Amp
	Alternator Voltage	Volts
	Auxiliary Temperature	°C, °F
	Average Fuel Economy	1/100km, mpg, impg
	Trip Average Fuel Rate	l/h, g/h, ig/h
	Barometric Pressure	psi, bar, Pa x 1000
	Current Gear	F, N, R
	Distance Remaining	km, m
	Engine Air Filter Differential Pressure	psi, bar, Pa x 1000
	Engine Air Inlet Temperature	°C, °F
	Engine Injector Metering Rail 1 Pressure	psi, bar, Pa x 1000
	Engine Injector Metering Rail 2 Pressure	psi, bar, Pa x 1000
	Engine Intercooler Temperature	°C, °F
	Engine Turbocharger Oil Temperature	°C, °F
	Fan Speed	%
	Engine Fuel Delivery Pressure	psi, bar, Pa x 1000
	Fuel Rate	l/h, g/h, ig/h

J1939 Monitor Controls
Symbols

Symbol	Name/Function	Units
	Fuel Remaining	l, gal, igal
	Engine Fuel Temperature 1	°C, °F
	Instantaneous Fuel Economy	1/100km, mpg, impg
	Internal Voltage	Volts
	Net Battery Current	Amps
	Selected Gear	F, N, R
	Torque Convertor Lock-up Engaged	Engd, Dis
	Total Distance	km, m
	Engine Total Fuel Used	l, gal, igal
	Transmission Input Shaft Speed	RPM
	Transmission Oil Pressure	psi, bar, Pa x 1000
	Transmission Oil Temperature	°C, °F
	Transmission Output Shaft Speed	RPM
	Trip Distance	km, m
	Trip Engine Hours	hrs
	Trip Fuel	l, gal, igal

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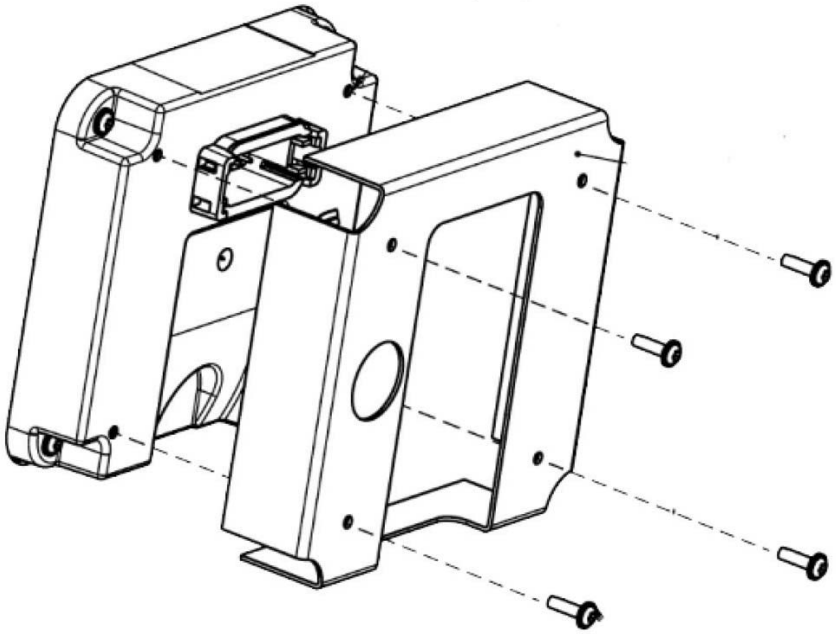
Installation/Mounting Instructions

Panel Bracket Assembly



Mounting and fastening Installation

- Fastening hole depth: 11 mm
- May be threaded M3 and used with standard screws. Reassembly with self-tapping screws may damage existing threads in housing.
- Maximum torque: 0.9 Nm.

⚠ Caution: Excessive screw torque force may cause damage to housing.

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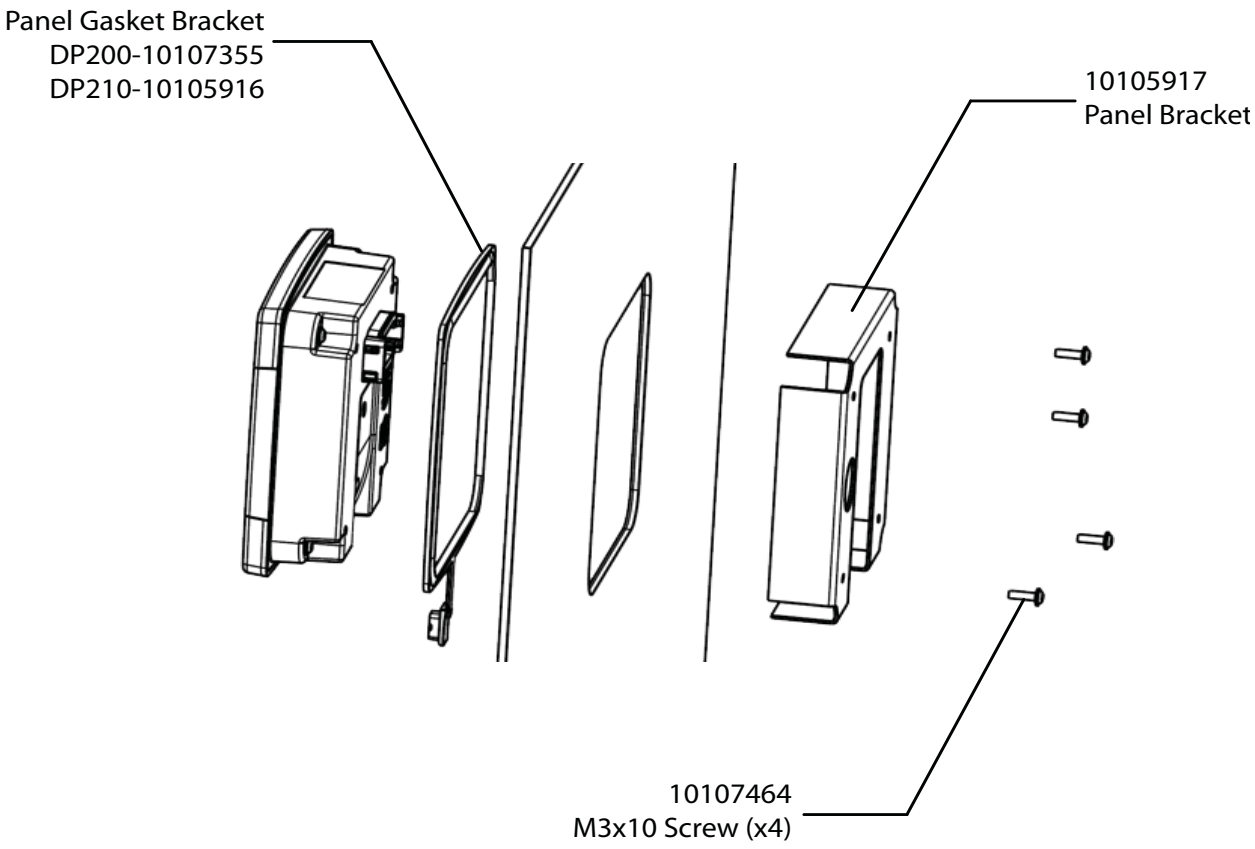
Installation/Mounting Instructions

Surface Mount



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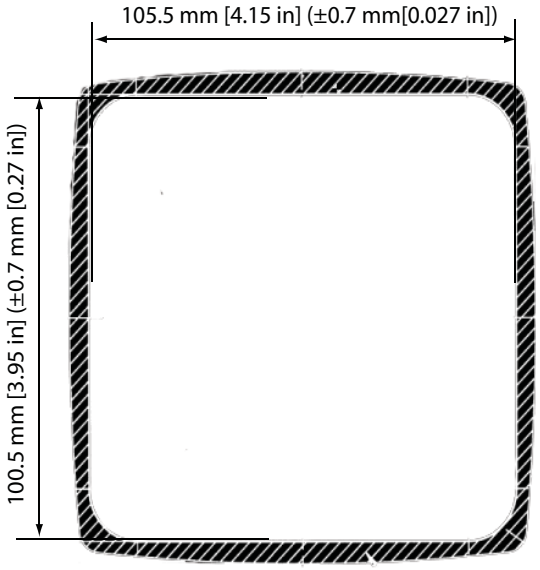
Installation/Mounting Instructions

Panel Gasket Dimensions



- Gasket seal area crosshatched
- Panel thickness: 2-5 mm
- Interior edges chamfered 0.2- 0.5 mm

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DP200 Series Model Code Variants

A *Model Name*

DP200	Graphical Display, IP 67 above panel
DP210	Graphical Display with USB

B *Inputs/Outputs*

00	1 CAN port, 2 DIN/AIN
01	1 CAN port, 6 DIN/AIN
04	2 CAN ports, 2 DIN/AIN

C *Real Time Clock/ Low Temperature Functionality*

00	No RTC and LTF
01	RTC and LTF

D *Flash Memory/Application Key*

01	1MB
02	2MB without Application Key
03	2MB with Application Key

E *Application Log*

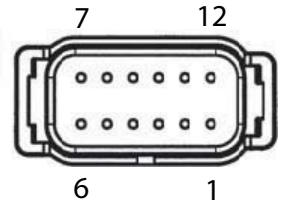
00	None
04	4 MB

F *USB Port Type*

00	None
01	USB Device

Connection/Pinout settings

DP200 Series- Deutsch Connector



DP200 Series pin assignments

		Code B 00	Code B 01	Code B 04
1	Power ground-			
2	Power supply+			
3	CAN 0+			
4	CAN 0–			
5	AIN/ CAN Shield			
6	See Code B option	N/C	DIN/AIN	N/C
7	See Code B option	N/C	DIN/AIN	N/C
8	See Code B option	N/C	DIN/AIN	CAN 1+
9	See Code B option	N/C	DIN/AIN	CAN 1-
10	DIN/AIN/FREQ IN/CURRENT IN			
11	DIN/AIN/FREQ IN/CURRENT IN			
12	DOUT (0.5A)			

DP200 Series Accessories

Related Parts & Kits

DP200 Series Related Products Part Numbers

10106893	J1939 EIC CAN Engine Monitor Software
10100944	Deutsch Mating Connector Bag Assembly (20-24 AWG)
10102025	Deutsch Mating Connector Bag Assembly (16-20 AWG)

Electrical Connection Kits

10100944	12-pin Deutsch connection Kit
	Contents: *10100738 DTM06-12SA 12-pin Deutsch connector* *10100743 Deutsch terminal* *10100741 WM 12S locking plug*

Connection Tools

10100744	Deutsch stamped contacts terminal crimp tool, size 20
10100745	Deutsch solid contacts terminal crimp tool

DP200 Series Accessories

Related Parts & Kits (Continued)

DP200 Mounting Kit

10107354	DP200 Series Mounting Hardware Kit
	Contents: *10107464 Mounting screws (x4), M3 x10* *10105916 Panel gasket seal* *10105917 Panel mounting bracket*

DP210 Mounting Kit

10107264	DP210 Series Mounting Hardware Kit
	Contents: *10107464 Mounting screws (x4), M3 x10* *10107355 Panel gasket seal* *10105917 Panel mounting bracket*

Software

10101000	PLUS+1 GUIDE Software Application (including Service Tool and Screen Editor)

Important Safety Information

• Disconnect your machine's battery power before connecting power and signal cables to the DP200.

• Before doing any electrical welding on your machine, disconnect all power and signal cable cables connected to the DP200

• Do not exceed the DP200 power supply voltage ratings. Using higher voltages may damage the DP200 and can create a fire or electrical shock hazard.

• Do not use or store the DP200 where flammable gases or chemicals are present.

Using or storing the DP200 where flammable gases or chemicals are present may cause an explosion.

• Software configures the keypad buttons on the DP200. Do not use these buttons to implement critical safety features. Use separate mechanical switches to implement critical safety features such as emergency stops.

• Design systems that use the DP200 so that a communication error or failure between the DP200 and other units cannot cause a malfunction that might injure people or damage material.

• The protective glass over the DP200 display screen will break if hit with a hard or heavy object. Install the DP200 to reduce the possibility of it being hit by hard or heavy objects.

• If you break the protective glass of the DP200 screen, remove the DP200 and immediately return it to Sauer-Danfoss for service.

• Storing or operating a DP200 in an environment that exceeds the DP200 specified temperature or humidity rating may damage the DP200.

• Always clean the DP200 with a soft, damp cloth. Use a mild dishwashing detergent as needed.

• The DP200 is not user serviceable. Return the DP200 to the factory in case of failure.

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Sauer-Danfoss Mobile Power and Control Systems – Market Leaders Worldwide

Sauer-Danfoss is a comprehensive supplier providing complete systems to the global mobile market.

Sauer-Danfoss serves markets such as agriculture, construction, road building, material handling, municipal, forestry, turf care, and many others.

We offer our customers optimum solutions for their needs and develop new products and systems in close cooperation and partnership with them.

Sauer-Danfoss specializes in integrating a full range of system components to provide vehicle designers with the most advanced total system design.

Sauer-Danfoss provides comprehensive worldwide service for its products through an extensive network of Authorized Service Centers strategically located in all parts of the world.

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