



Fischer Panda®

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Panda iControl2

Operating Manual

Open-loop and closed-loop control system for Fischer Panda generators

Current revision status

	Document
Current:	Panda iControl2_eng.R08_9.3.16
Replaces:	Panda iControl2_eng.R07

Revision	Page
Kontrolltätigkeiten vor dem Start eingefügt	
Emergency stop, Fehlerspeicher, Master Slave eingepflegt R08	

Hardware

Generator	Revision	Modification Strike Plate	Date	Upgrade

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1. Safety instructions for the Panda iControl2

1.1 Personnel

The settings described here can be performed by the operator unless highlighted differently.

The installation should be implemented by specially trained technical personnel or by authorised workshops (Fischer Panda Service Points), only.

1.2 Safety instructions

Ensure compliance with the safety instructions in the Fischer Panda genset manual.

NOTE:

If these instructions are not on hand, they can be requested from Fischer Panda GmbH, 33104 Paderborn, Germany.



An external signal may trigger an automatic start-up.

WARNING: Automatic start-up



The generator must not be operated with the cover removed.

WARNING:



If the generator is being installed without a sound insulation capsule, it must be ensured that all rotating parts (belt pulley, belts etc.) are covered and protected so that there is no danger to life and body!

If a sound insulation capsule will be produced at the place of installation, then well-placed signs must show that the generator can only be switched on with the capsule closed.

All service, maintenance, or repair work may only be carried out when the unit is not running.

Electric voltage - DANGER TO LIFE!

WARNING: Electric voltage

Electric voltages of more than 60V are potentially lethal in any situation. The rules of the respective regional authority must be adhered to for installation and maintenance.



For safety reasons, only an electrician may carry out the installation of the electrical connections of the generator.

Disconnect battery before working on the generator

WARNING:

The battery must always be disconnected (first the negative terminal, then the positive terminal) if work on the generator or electrical system is to be carried out, so that the generator cannot be unintentionally started.



This applies in particular to systems with an automatic start-up function. The automatic start-up function shall be deactivated before starting work.

The flooding valve must be closed. (For PMS version only.)

Also observe the safety instructions for the other components of your system.

NOTE:



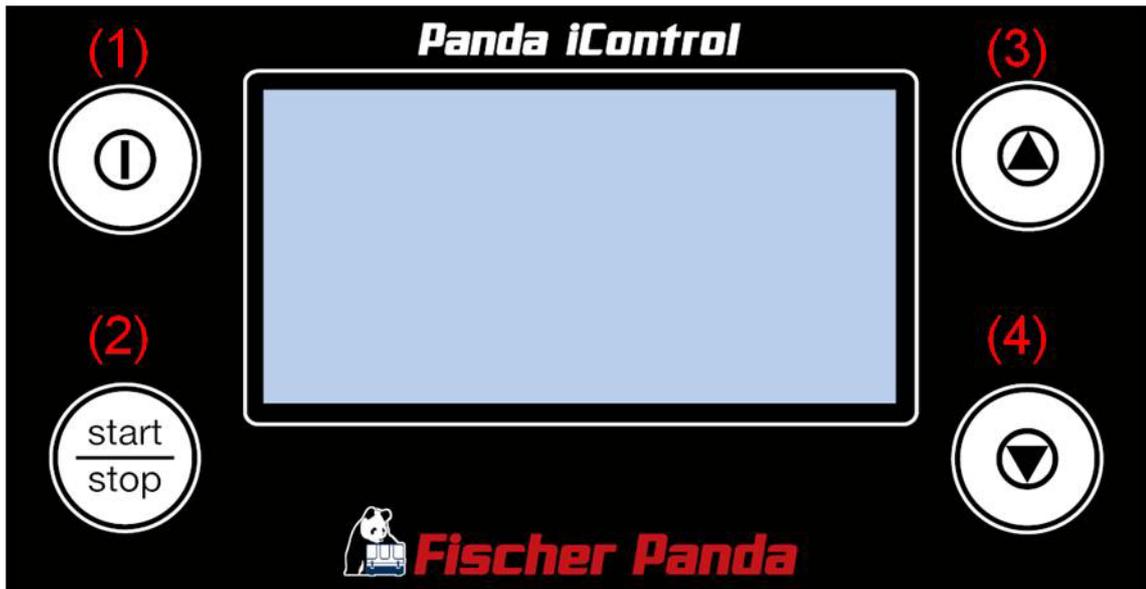
2. General operation

2.1 The Panda iControl2 panel

The "Panda iControl2 panel" control panel is the control and display unit for the Panda iControl2 control system and represents the interface between the user and the Panda iControl2 controller. The integrated display serves to present the most important data of the system as well as warnings and error messages.

The control panel is equipped with four buttons for operating the Panda iControl2 controller:

Fig. 2.1-1: Panda iControl 2 panel



1. *On/Off button*: Switching the Panda iControl2 controller on and off
2. *Start/Stop button*: Starting and stopping the generator, confirming values in selection menus (Enter key)
3. *Cursor-up button* Switching between display screens (up), counting values up in selection menus
4. *Cursor-down button* Switching between display screens (down), counting values down in selection menus.

2.2 Starting preparation / Checks (daily)

2.2.1 Marine version

1. Oil level control (ideal level: 2/3 MAX).

The level should be about 2/3 of the maximum level of a cold engine.

Further, if installed, the oil level of the oil-cooled bearing must be controlled before each start - see sediment bowl at generator front cover!.

2. State of cooling water.

The external expansion tank should be filled up to 1/3 of the maximum in a cold state. It is very important that a large expansion area remains above the cooling water level.

3. Check if sea cock for cooling water intake is open.

For safety reasons, the sea cock must be closed after the generator has been switched off. It should be re-opened before starting the generator.

4. Check raw water filter.

The raw water filter must be regularly checked and cleaned. The impeller fatigue increases, if residual affects the raw water intake.

5. Visual inspection.

Control fixing bolts, check hose connectors for leakages, control electrical connections.

6. Switch off the load.

The generator should only be started without load.

7. Open fuel valve, if installed.

8. Close battery main switch (on).

2.2.2 Vehicle version

1. Oil level control (ideal level: 2/3 MAX).

The level should be about 2/3 of the maximum level of a cold engine.

Further, if installed, the oil level of the oil-cooled bearing must be controlled before each start - see sediment bowl at generator front cover!.

2. State of cooling water.

The external expansion tank should be filled up to 1/3 of the maximum in a cold state. It is very important that a large expansion area remains above the cooling water level.

3. Visual inspection.

Control fixing bolts, check hose connectors for leakages, control electrical connections.

4. Switch off the load.

The generator should only be started without load.

5. Open fuel valve, if installed.

Close battery main switch (on).

2.3 Operation

2.3.1 Switching the controller on and off

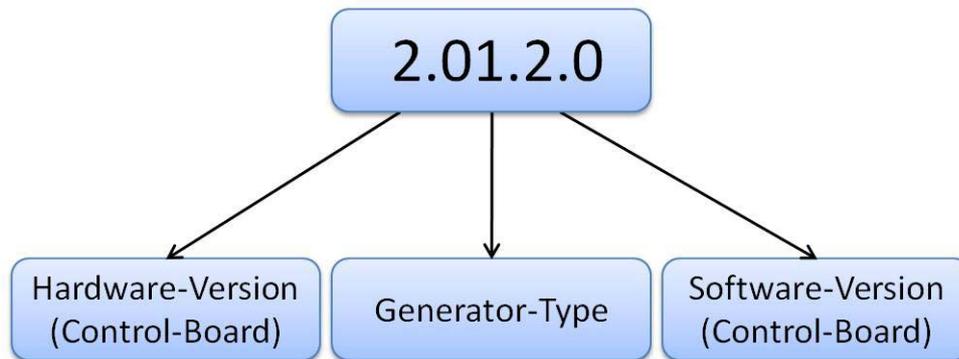
The Panda iControl2 controller is switched on and off with the On/Off button on the Panda iControl2 panel. Press and hold the On/Off button until the start screen with the panda bear appears on the display. The controller is switched off by actuating the On/Off button once more.

On the start screen, the hardware version, the generator type, and the software version are shown at the bottom left.

Fig. 2.3.1-1: .Panda iControl2 start screen



Fig. 2.3.1-2: Hardware version, generator type, and software version in default display



Example:

Hardware version:2 à iControl2 controller

Generator type:01 à Panda 5000i PMS

Software version: 2.0 à iControl2, compatible with iControl-Panel2

Note:



2.3.2 The default display screen

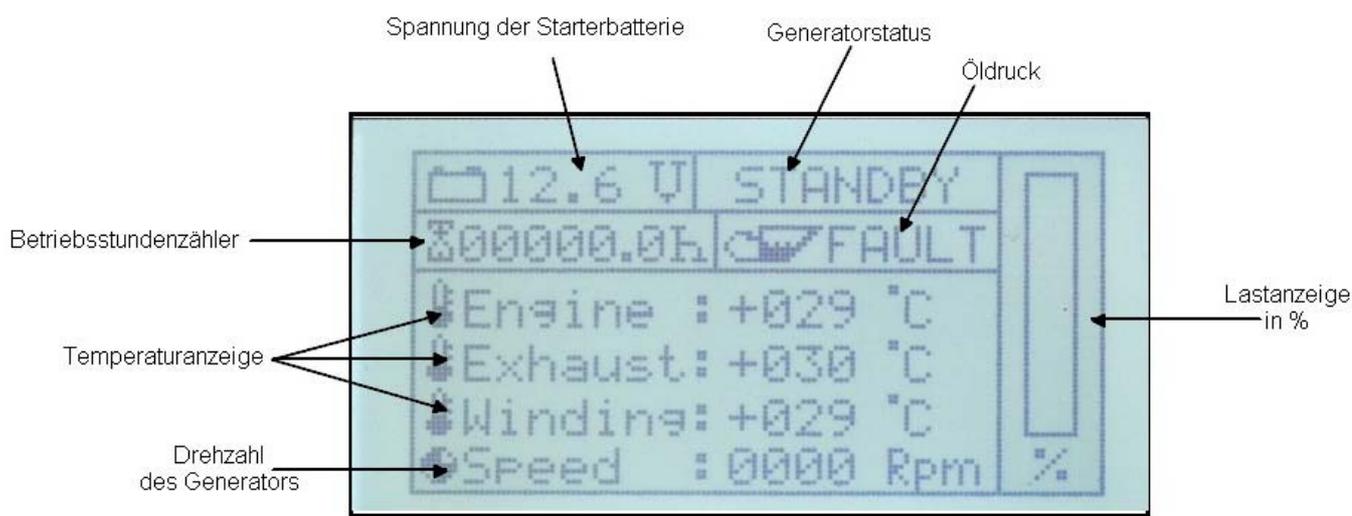
Five seconds after the controller is switched on, the display will change to the default display screen. On the default display screen, you will find information on the battery voltage, operating hours of the generator, temperatures of cylinder head, exhaust manifold, and winding, RPM, and the oil pressure status. Also, a bar graph display at the right hand edge of the display shows the utilisation of the generator in percent.

Data output on the default display screen:

- Battery voltage (supply voltage)
- Status field for operating modes (stand-by, pre-heat, starting, override, running, autostart, stopping)
- Operating hours of the generator

- Oil pressure status
- Cylinder head temperature
- Temperature of exhaust manifold
- Winding temperature
- Speed/RPM
- Utilisation in percent

Fig. 2.3.2-1: Default display screen



The Display shows the iControl board input voltage.

Note:

At generator systems with 12 V starter system these is equal with the starter battery voltage.



At generator system with 24 V starter system the starter battery voltage can not be displayed.

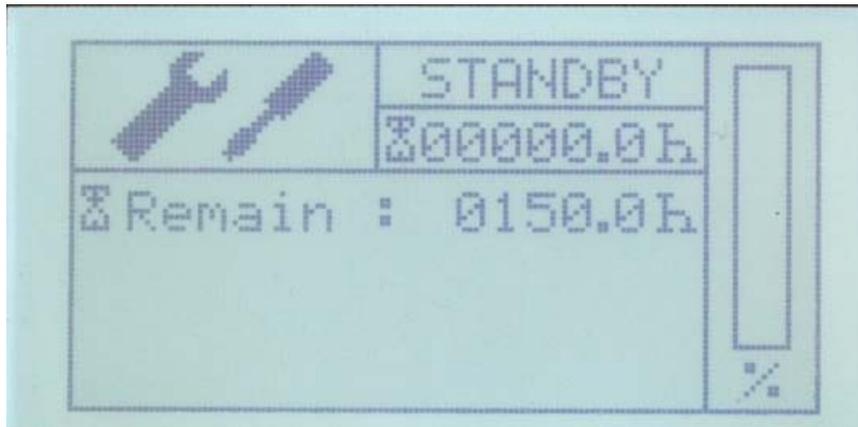
2.3.3 Operating modes

The Panda iControl2 controller offers different operating modes.

2.3.3.1 Stand-by mode

After the controller is switched on with the On/Off button, the system is in stand-by mode. This is indicated by the output "STANDBY" in the status field in the top right corner of the default display screen. In this operating mode, the system can be switched off with the On/Off button, and the generator can be started up with the Start/Stop button. With the cursor buttons, the service information screen can be accessed.

Fig. 2.3.3.1-1: Service information screen



The total operating hours of the generator are given on the default display screen and on the service information screen. By actuating the cursor-up and cursor-down button in stand-by mode, the service screen can be accessed. This screen is marked with a screwdriver/spanner symbol. Here, the time until the next service is given. By actuating the cursor-up or cursor-down button, you can return to the default screen.

With the dynamic operation hours the service interval can be raised up to 30% (200h max.). Make sure that the dynamic operation hours are not reset accidentally between the service interval. see "Resetting the service interval ("Service")" on page 21.

Note:



In the set-up menu of the controller, you can reset the service interval after performing maintenance. Siehe "Set-up menu" auf Seite 17.

2.3.3.2 Start-up mode

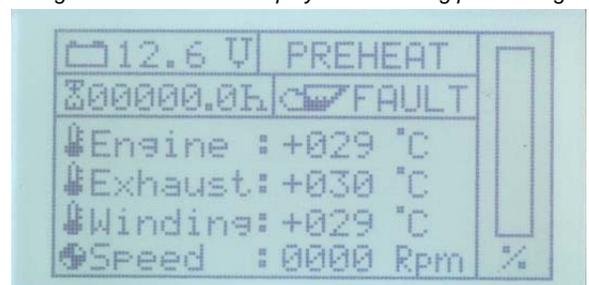
The start-up mode represents the transition from stand-by mode to operation mode, i.e., generator operation. By actuating the Start/Stop button in stand-by mode, you can initiate the start-up process of the generator.

The pre-heating is the first step. During this stage, the status field at the top right of the default display screen shows the word "PREHEAT".

The pre-heating is always implemented for a duration of 10 seconds, regardless of the cylinder head temperature.

In temperatures below 0°C, the pre-heating time is always 40 seconds.

Fig. 2.3.3.2-1: Default display screen during pre-heating



After pre-heating, the starter is initiated, accompanied by the text output "STARTING" in the status field of the default display screen.

Fig. 2.3.3.2-2: Default display screen during start-up



The controller will only perform one starting attempt. If the generator could not be started, the text output "STARTING FAILS" informs you of the failure of the generator starting attempt.

Note:



Acknowledging the message with the cursor-up, cursor-down, or the Start/Stop button on the Panda iControl2 panel will return the system to stand-by mode.

If there is difficulty in starting - close the seacock (Panda Marine Generators only) ATTENTION:



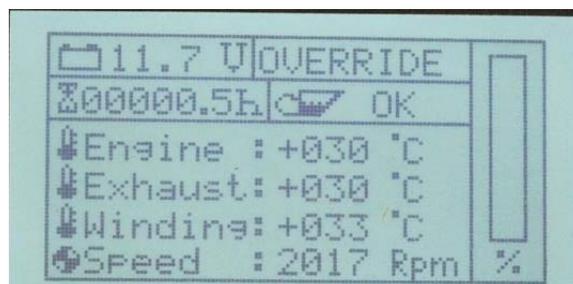
If the generator engine does not start immediately and further start attempts are necessary, then the seacock MUST be closed (i.e. for ventilating the fuel lines ect.) The cooling water impeller pump turns automatically and draws cooling water as long as the motor is turning. If the diesel motor is running, the cooling water is blown out by the exhaust system gases. The cooling water cannot be pressed through the exhaust as long as the diesel motor does not run at sufficient speed. This leads to severe motor damage.

Open the sea valve as soon as the generator is started.

2.3.3.3 Override mode

The override mode follows directly after the successful start-up of the generator. In this mode, no fault analysis is performed. The duration of the override mode is 10 seconds. The status indicator on the display reads "OVERRIDE".

Fig. 2.3.3.3-1: Default display screen in override mode



2.3.3.4 Operation mode

Operation mode signifies the operating mode in which the generator is running and all operating data are within their normal range. The status field of the default display screen shows "RUNNING".

In operation mode, the electrical load is given on the right hand side of the default display screen and in the inverter screen as a bar graph. The bar graph merely provides a guide value for the load of the generator and gives the values as a percentage.

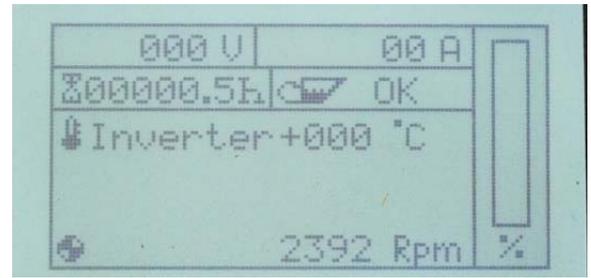
Fig. 2.3.3.4-1: Default display screen in operation mode



Display screen for single phase generators

With the single phase i-series generators, there is an additional screen in operation mode for the inverter data. This screen provides the current inverter output voltage and the inverter temperature. You can access the inverter screen by actuating the cursor-up button while in operation mode.

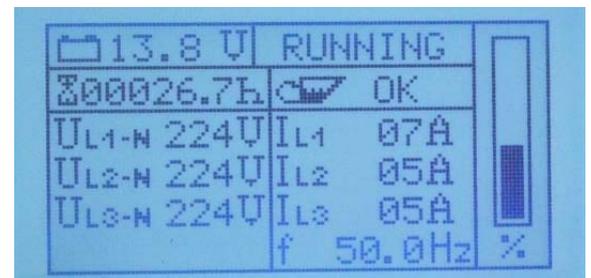
Fig. 2.3.3.4-2: Inverter screen in operation mode



Display screens for 3-phase generators

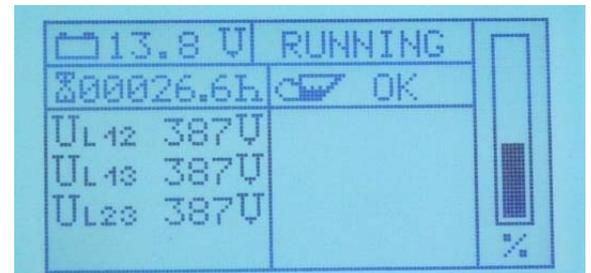
With the 3-phase i-series generators, there are 5 additional screens in operation mode for the inverter data. This screen provides the inverter coil-voltage and the conductor current. You can access the inverter screen by actuating the cursor-up button while in operation mode.

Fig. 2.3.3.4-3: Inverter screen coil-voltage and conductor current



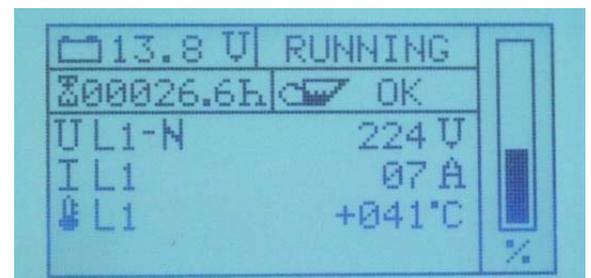
This screen provides the latest inverter phase voltages. You can access the inverter screen by actuating the cursor-up button while in operation mode.

Fig. 2.3.3.4-4: Inverter screen phase voltages



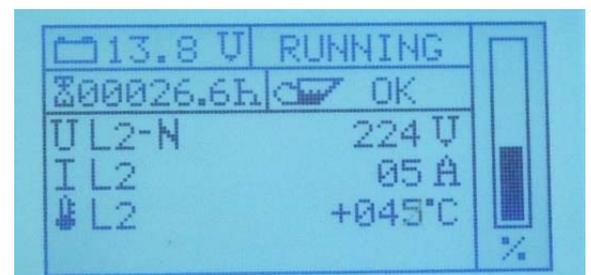
This screen provides the latest inverter output voltage of the single phases with the matching conductor current and the circuit board temperature. The inverter will be switched off at a circuit board temperature of 75 °C. You can access the inverter screen by actuating the cursor-up button while in operation mode.

Fig. 2.3.3.4-5: Phase voltage L1



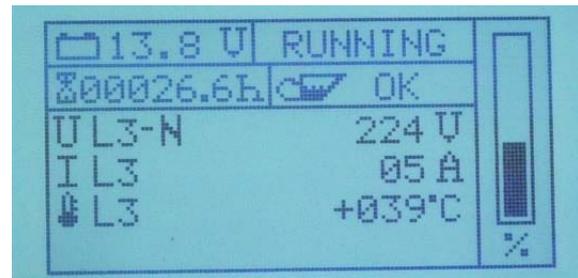
This screen provides the latest inverter output voltage of the single phases with the matching conductor current and the circuit board temperature. The inverter will be switched off at a circuit board temperature of 75 °C. You can access the inverter screen by actuating the cursor-up button while in operation mode.

Fig. 2.3.3.4-6: Phase voltage L2



This screen provides the latest inverter output voltage of the single phases with the matching conductor current and the circuit board temperature. The inverter will be switched off at a circuit board temperature of 75 °C. You can access the inverter screen by actuating the cursor-up button while in operation mode.

Fig. 2.3.3.4-7: Phase voltage L3



2.3.3.5 Panda i-Generator with electro-magnet Clutch (optional)

During the activation of the electro-magnetic clutch, the icontrol raise the generator speed to maximum.

After the clutch is released, the generator speed will drop to normal.

Attention!:



2.3.3.6 Stop mode

By activating the Start/Stop button in operation mode, i.e., while the generator is running, you will stop the generator. After stopping the generator, the system will return to stand-by mode. The display status field reads "STOPPING".

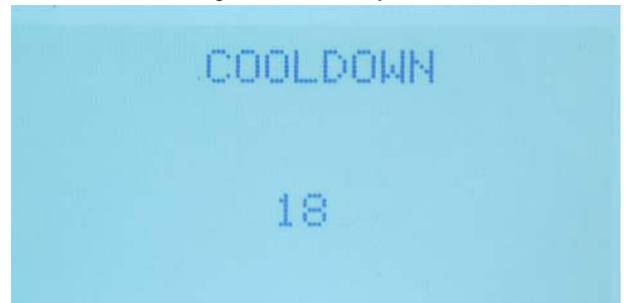
If the icontrol system detect a high cylinder head temperature (for example after a long time running with high load) the icontrol start a stopping delay timer. The Display shows „Cooldown“ and a countdown.

During this timer the icontrol system will shut of the PMGi and run the engine at idle speed. During the delay time an automatic start request will be ignored.

After the delay time, the generator will be stopped automatically.

You can interrupt the delay time by pressing the start/stop button. (Not recommend by Fischer Panda. The Engine may overheat)

Fig. 2.3.3.6-1: Delay time



Never use an emergency stop switch for a regular stop of the generator.

The engine may overheat and can be damaged/destroyed

If the generator is manually started up and stopped while in automatic start-up mode, it will switch to stand-by mode for safety reasons.

If necessary, the autostart mode must be reactivated.

Attention:



Note: Manual start in autostart mode



2.3.3.7 Autostart mode

The Panda iControl2 panel is equipped with an autostart function. A jumper between pin 6 (UBAT) and pin 7 (USTART1) of the Phoenix jack of the control panel starts up the generator with a delay of 5 seconds when the autostart function is active. Removing the jumper will stop the generator - also with a delay of 5 seconds.

To activate the autostart function, you must first check the "Autostart" flag in the set-up menu. To activate the autostart function, read Siehe "Activating/deactivating the autostart function ("Autostart")" auf Seite 19.

The display status field reading "AUTOSTART" indicates that the autostart function is active, or, if it reads "STANDBY", this means that the autostart function was deactivated.

Fig. 2.3.3.7-1: Default display screen in autostart mode



The autostart function will remain active even after the controller is switched off and on again with the On/Off button. To deactivate the autostart function, the flag in the EEPROM must be reset with "Disable". Siehe "Activating/deactivating the autostart function ("Autostart")" auf Seite 19.

If the generator is manually started up and stopped while in automatic start-up mode, it will switch to stand-by mode for safety reasons.

If necessary, the autostart mode must be reactivated.

Warning!: Automatic start-up



Note: Manual start in autostart mode



2.4 Other operating functions

2.4.1 Set-up menu

In the set-up menu, a series of parameters can be modified directly using the control panel. To access the set-up menu, you have to actuate the cursor-down button immediately after switching on the controller with the On/Off button and while the start screen with panda bear is still being displayed. This will open a menu with the following sub-items:

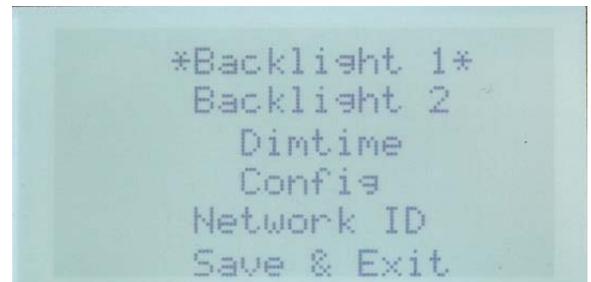
Fig. 2.4.1-1: Set-up menu

Menu item	Settings range for
backlight 1	Setting the brightness value for the standard backlighting to 0-9
backlight 2	Setting the brightness value for the dimmed backlighting to 0-9
Dimtime (dimming time)	Time until the display switches to dimmed mode, 0-225s, 0= function deactivated
Config	Password protected area for Fischer Panda associates and Fischer Panda service points
Network ID	Settings for the network ID of the panel
Save & Exit	Saving the values and exiting the set-up menu
Autostart	Activating and deactivating the automatic start-up function
Service	Resetting the "Operating hours to service" indication
Prime fuel	Activation of the fuel pump to prime the generator fuel system
Degree C/F	Switches the display between °C and °F

With the cursor-up and cursor-down buttons, you can navigate through the menu. The currently selected menu item is marked with two asterisks (*), e.g. "backlight 2*":

Set-up menu with item highlighted: *backlight 2*

Fig. 2.4-2: Set-up menu



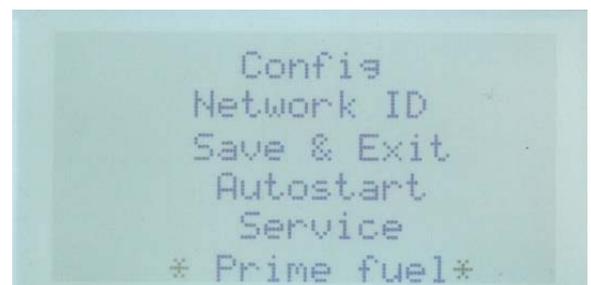
The Start/Stop button is used for confirming a selection in the set-up menu. If you confirm the row marked with the * with the Start/Stop button, you will access the selected sub-menu.

Note:



Set-up menu

Fig. 2.4-3: Set-up menu

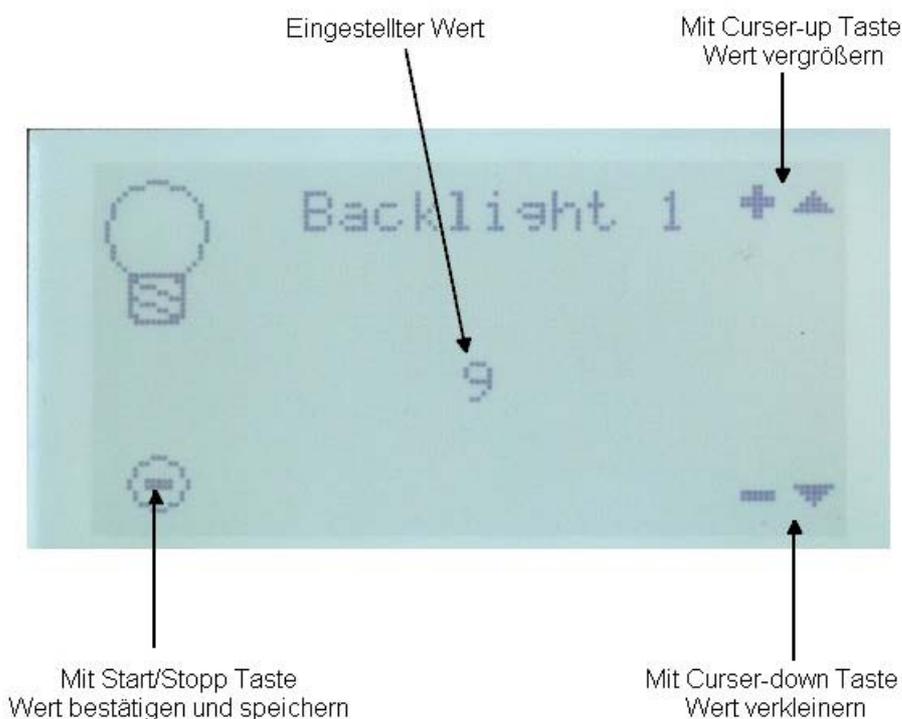


2.4.2 Setting the brightness of the backlight ("backlight" and "dimtime")

The brightness of the display backlight of the Panda iControl2 panel can be varied in ten increments (0-9). Also, the display can be dimmed with a timer if no button is actuated on the control panel for a parameter is able period. To adjust the default brightness and the dimmed brightness, the set-up menu offers the items "backlight 1" (default brightness) and "backlight 2" (dimmed brightness). These service menu screens are highlighted with the light bulb symbol:



The period after which the backlight is to switch to the dimmed level can be specified with the menu item "dimtime". In this screen, you can enter the time in seconds, values between 0s and 255s are possible.



In the sub-menus, set the desired values with the cursor buttons, and then confirm your settings with the Start/Stop button. Note:



After setting all parameters, you can exit the set-up menu with the menu item "Save & Exit". In doing so, all settings entered in the sub-menus backlight 1, backlight 2, dimtime, and Network ID are saved to the EEPROM. Then, the goodbye screen appears for 3 seconds, and the controller is switched off.

At the next start of the controller, the changes will take effect.

2.4.3 The configuration menu ("config")

Settings in this area must only be entered by Fischer Panda associates and Fischer Panda service points.

STOP!



The "config" sub-menu is a password protected area in which the generator type can be selected, and generator parameters in the EEPROM can be modified.

2.4.4 The network ID

Settings in this area must only be entered by Fischer Panda associates and Fischer Panda service points.

STOP! Network ID must not be modified



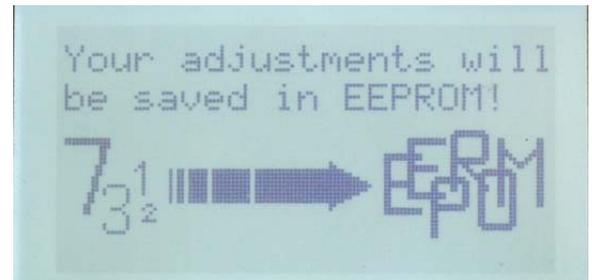
Changing the network ID can result in malfunction.

2.4.5 Saving settings and exiting the set-up menu ("Save & Exit")

After setting all parameters, you can exit the set-up menu with the menu item "Save & Exit".

In doing so, all settings entered in the sub-menus backlight 1, backlight 2, dimtime, and Network ID are saved to the EEPROM.

Fig. 2.4.5-1: Saving the values to the EEPROM



Then, the goodbye screen appears for 3 seconds, and the controller is switched off. At the next start of the controller, the changes will take effect.

2.4.6 Activating/deactivating the autostart function ("Autostart")

DANGER TO LIFE! - Improper operation can result in health impairment and death.

WARNING: Automatic start-up



While the automatic start-up function is active, the generator can start up automatically. Before activating it, ensure that the generator capsule is closed and that the corresponding warning signs are affixed to the generator.

To activate the autostart function, select the item "Autostart" in the set-up menu using the cursor buttons and confirm the selection with the Start/Stop button.

In the "Autostart" sub-menu, you can select between the options "Enable" and "Disable" using the cursor buttons:

To activate the autostart function, select "Enable" and again confirm your selection with the Start/Stop button.

To deactivate the function, use the menu item "Disable".

The Panda iControl will then confirm your input:

Message "Autostart enabled" after confirming the selection

Message "Autostart disabled" after confirming the selection

The activation/deactivation of the autostart function is then saved to the EEPROM of the control panel.

Fig. 2.4.6-1: Set-up menu

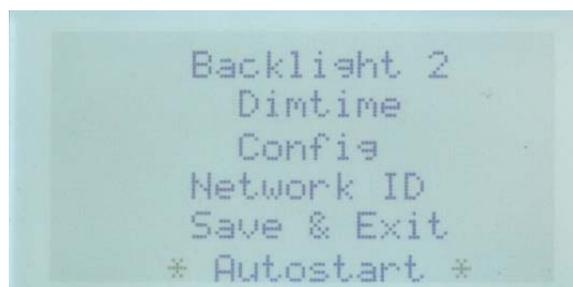


Fig. 2.4.6-2: "Autostart" sub-menu



Fig. 2.4.6-3: Message "Autostart enabled" after confirming the selection

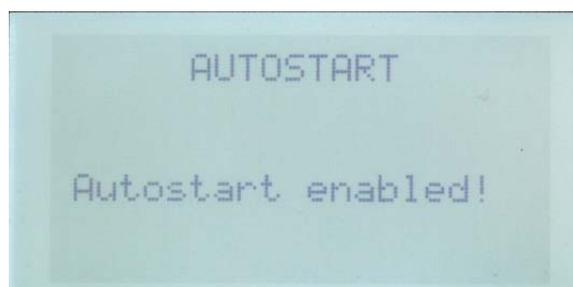


Fig. 2.4.6-4: Message "Autostart disabled" after confirming the selection

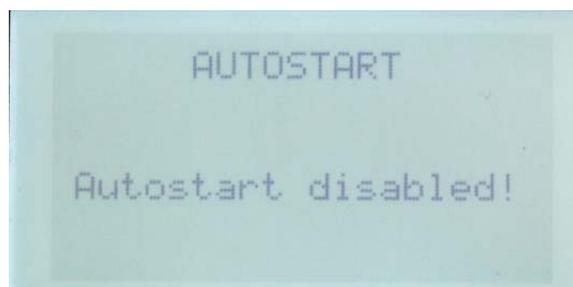
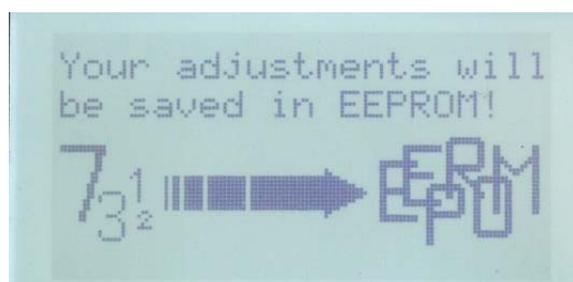


Fig. 2.4.6-5: Selection is saved to the EEPROM



Then, the controller is shut down.

Fig. 2.4.6-6: Goodbye screen prior to shutting down



After switching the controller back on, the display status field reading "AUTOSTART" indicates that the autostart function is active, or, if it reads "STANDBY", this means that the autostart function was deactivated:

Fig. 2.4.6-7: Default display screen in autostart mode



The autostart function will remain active even after the controller is switched off and on again with the On/Off button. To deactivate the autostart function, the flag in the EEPROM must be reset with "Disable" as described above.

Warning!: Automatic start-up



The autostart function of the Panda iControl2 is now ready. While the autostart function is active, you can manually start and stop the generator with the Start/Stop button, as well.

If the generator is manually started up and stopped while in automatic start mode, it will switch to stand-by mode for safety reasons.

Note: Manual start in autostart mode



If necessary, the autostart mode must be reactivated.

2.4.7 Resetting the service interval ("Service")

As the indication of operating hours remaining until the next service interval can be reset at any time, it serves only as an orientation guide. The service intervals shall be implemented using the actual operating hours and shall be properly documented in the service log of the generator.

Note



With the dynamic operation hours the service interval can be raised up to 30% (200h max.). Make sure that the dynamic operation hours are not reset accidentally between the service interval.

Note:



In the set-up menu, select the menu item "Service" and confirm as usual, using the Start/Stop button. This will open the screen with the service information discussed above, supplemented with the instruction to actuate the Start/Stop button to reset the service interval.

Resetting the time until the next service

By actuating the Start/Stop button again, you can reset the service interval to the original interval. The service interval for each generator type is stored in the software.

The controller is switched off after resetting the service interval. After restart, the new value will be displayed in the service screen.

Fig. 2.4.7-1: Resetting the time until the next service



2.4.8 Priming the fuel system ("Prime Fuel")

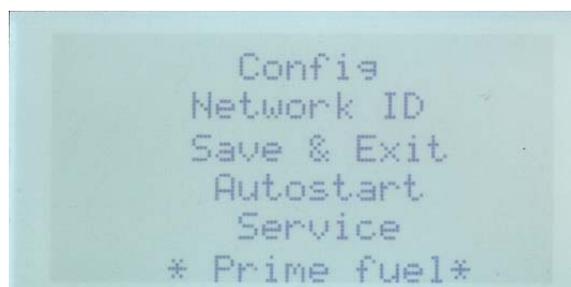
To prime the fuel system, the Panda iControl2 offers the option of separately activating the fuel pump. In the set-up menu, select the menu item "Prime fuel" and confirm your selection using the Start/Stop button.

Actuating the Start/Stop button again will switch on the fuel pump for a duration of max. 30 seconds. After that, the fuel pump will shut off automatically.

Naturally, you can also switch off the fuel pump manually.

For this purpose, confirm the menu item "Prime fuel" again, and switch off the fuel pump using the Start/Stop button.

Fig. 2.4.8-1: Set-up menu



2.4.9 Selecting and saving a unit for the temperature value output

With the Panda iControl2 panel, you can output the temperature values on the display in degrees Celsius [°C] or in degrees Fahrenheit [°F]. The unit can be switched with the control panel. In the set-up menu, select the menu item "Degree C/F" and confirm your selection using the Start/Stop button.

Using the cursor buttons, select 0' for outputting all temperatures in degrees Celsius [°C] or 1' for outputting them in degrees Fahrenheit [°F]. To confirm your selection, actuate the Start/Stop button.

You can enter additional settings in the set-up menu, or you can exit the set-up menu with "Save & Exit". Your selections will then be saved to the EEPROM of the Panda iControl2 panel.

After restarting the system with the On/Off button, your settings will take effect, and all temperatures will be output with the selected unit.

Settings options:

0 Output of all temperatures in degrees Celsius [°C]

1 Output of all temperatures in degrees Fahrenheit [°F]

2.5 iControl2-Emergency-Stop

The iControl2 is prepared for the connection of an emergency stop. The socket for the emergency stop is in the cable harness integrated and bridged (1X1, optional emergency off). The bridge must be removed and the emergency stop connected.

After the emergency stop is initiated, the servo drives to zero position, all out of the iControl controller are switched off and the power supply to the inverter is switched off.

The Panel shows „Emergency Stop“.

Damit wird auch die Spannungsversorgung für den Inverter ausgeschaltet.

Das Panel zeigt nach der Betätigung „EMERGENCY STOP!“. The message disappear as soon as the emergency switch is released.

Fig. 2.5-1: Not Stop bridge in the cable harness



Fig. 2.5-2: Panel shows Emergency Stop



3. Installation

All connecting wires and instructions for installation are designed and adequate for „standard“ installation situations.

As Fischer Panda does not know the specific installation and operating situation (e.g. special vehicle shapes, high travel speeds, and special application conditions, etc.), this installation specification can only serve as a guideline and example. The installation must be adjusted and implemented by a competent specialist based on the local conditions and requirements.

If damage occurs due to wrong installation without adjusting for specific conditions, it is not covered by the warranty.

WARNING: Properly dimension your system.



3.1 Personnel

The installation described herein must be implemented by specially trained technical personnel or by authorised workshops (Fischer Panda Service Points), only.

3.1.1 Hazard warnings for installation

Ensure compliance with the general safety instructions at the beginning of this manual.

Note:



DANGER TO LIFE! - Improper operation can result in health impairment and death.

Warning!: Automatic start-up



The battery must always be disconnected (first the negative terminal, then the positive terminal) if work on the generator or electrical system is to be carried out, so that the generator cannot be unintentionally started.

Improper installation can cause severe injury and/or substantial property damage. Therefore:

WARNING: Risk of injury!



- Always turn off motor to perform installation work.
- Ensure adequate space for assembly prior to starting work.
- Ensure order and cleanliness at the work place! Parts and tools loosely stacked or lying on the floor represent accident hazards.
- Use only standard tools and special tools for installation work. Incorrect or damaged tooling can result in injury.

DANGER TO LIFE! - Improper operation can result in health impairment and death.

WARNING: Electric voltage



Electric voltages of more than 60 V are potentially lethal in any situation. The rules of the respective regional authority must be adhered to during installation. For safety reasons,

only an electrician may carry out the installation of the electrical connections of the generator.

Generator and cooling water may be hot during and after operation. Burn/scalding hazard!

During operation, overpressure may build up in the cooling system.

For installation work, personal protective equipment is compulsory. This includes:

- Tightly fitting protective clothing
- Safety shoes
- Safety gloves
- Hearing protection
- Safety goggles if applicable

All loads must be disconnected prior to working on the generator to avoid damage to the devices.

WARNING: Hot surface/material



MANDATORY INSTRUCTION: Protective equipment required



WARNING: Switch off all loads.



3.2 Disposal of the components

Electronics components are hazardous to the environment and contain rare raw materials.

Collect and properly dispose of components that are no longer needed!

MANDATORY INSTRUCTION: Protect the environment.



The iControl2 board is typically pre-installed on the generator, and the corresponding connecting lines for connecting it to the iControl2 panel and the PMGi are prepared. See generator manual.

3.2.1 Panda iControl2 panel with installation housing

Fig. 3.2.1-1: Panda iControl2 panel with panel connecting cable and closed housing



3.2.2 Terminal assignments on the Panda iControl2 panel

The Panda iControl2 panel is connected via a 7-pin Phoenix jack.

Fig. 3.2.2-1: Terminal assignment on the Panda iControl2 panel

Terminal	Terminal description	Cable colour	Function
1	UBUS	white (WH)	Bus supply voltage
2	GND	brown + shielding (BN)	Fischer Panda bus ground, ground connection between Panda iController and Panda iControl panel
3	REIZ	green (GN)	Exciter wire, is switched to ground if the controller is to switch on
4	DATA-A	pink (PK)	Fischer Panda bus data line A
5	DATA-B	Grey (GY)	Fischer Panda bus data line B
6	UBATT	--	Autostart ^a
7	USTART/STOPP	--	Autostart ^b

a. A jumper between terminal 6 and 7 closes the autostart contact.

b. A jumper between terminal 6 and 7 closes the autostart contact.

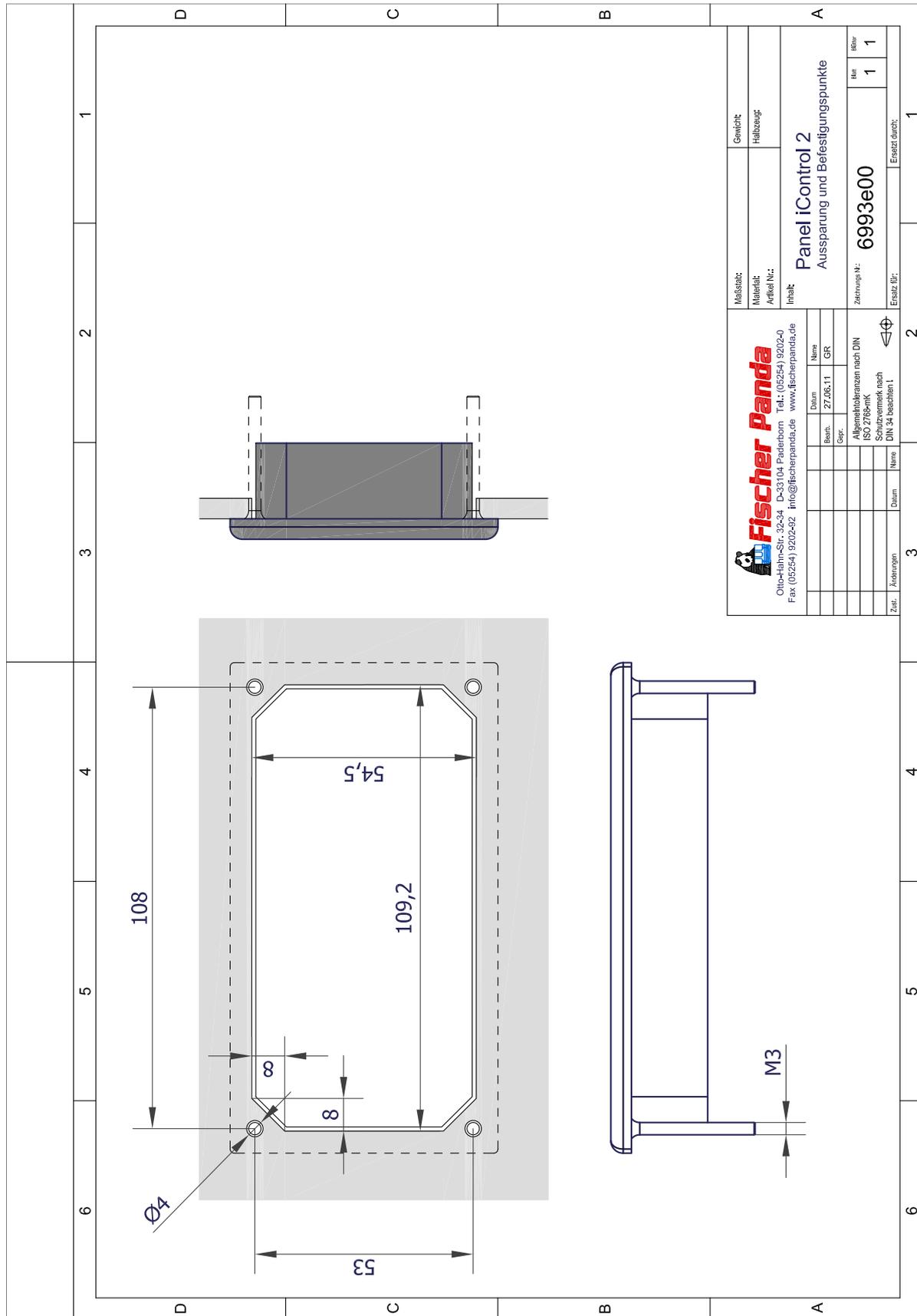
Use only original Fischer Panda connecting cables.

Note:



3.3 Dimensions

Fig. 3.3-1: Housing of the Panda iControl2 panel



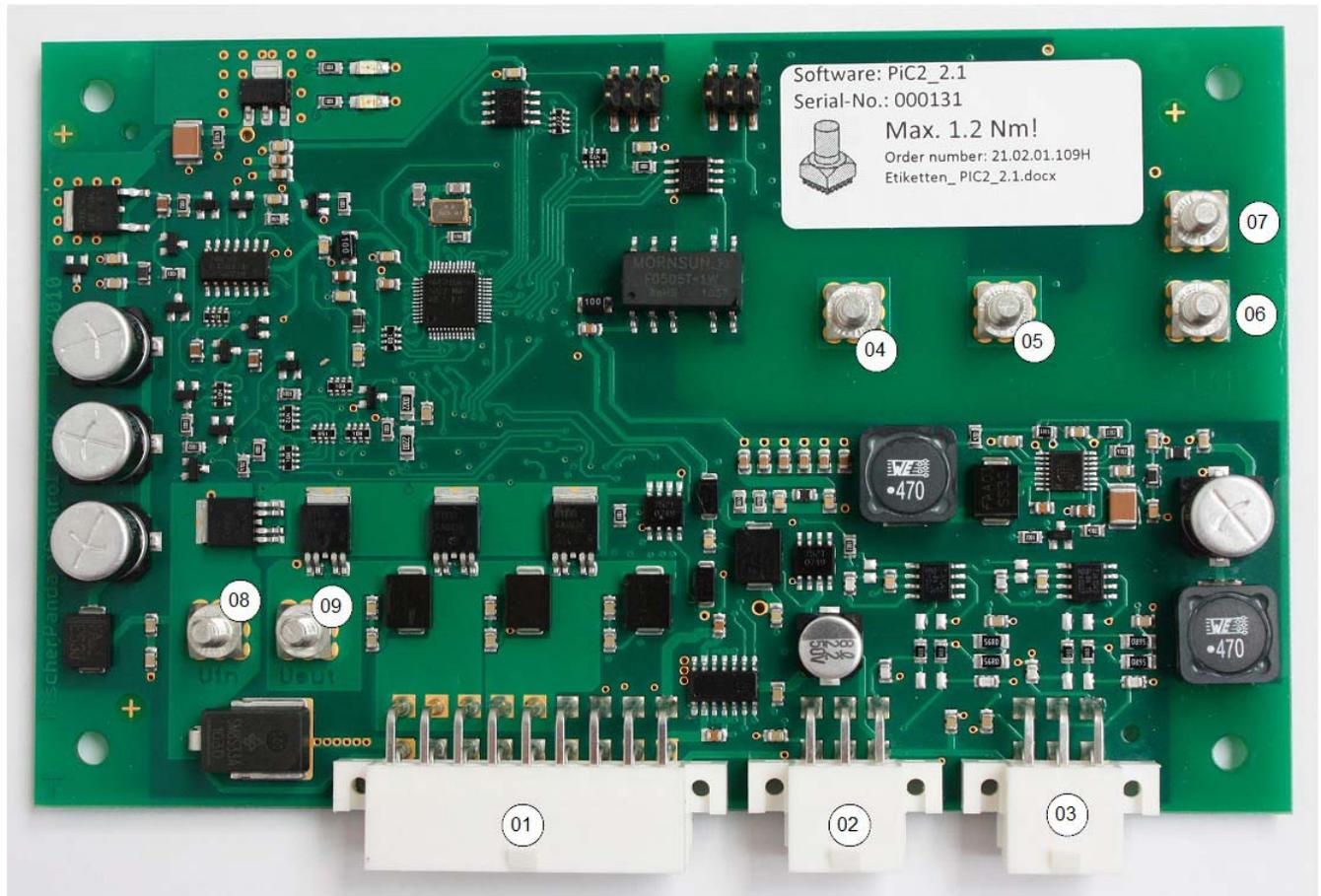
Due to the terminals being exposed, the protection class IP 04 applies to the iControl2 panel. Please note!

If properly installed with a seal (e.g. Sikaflex), up to IP66 can be achieved.



3.4 Wiring of the Panda iControl2 controller

Fig. 3.4-1: Wiring of the Panda iControl2 controller



The Panda iControl2 controller is connected to the wire harness with the 18-pin jack. The centre 6-pin jack is designed for the Fischer Panda standard bus. The Panda iControl2 panel is connected to this jack. The Fischer Panda CAN bus is connected to the 6-pin jack at the bottom right of the circuit board. The configuration of the connectors is given in the subsequent tables. Siehe "Terminal assignments on the Panda iControl2 controller" auf Seite 30.

1. Connecting jack for wire harness, 18-pin
2. Connecting jack, 6-pin, Fischer Panda standard bus
3. Connecting jack, 6-pin, Fischer Panda CAN bus for optional use
4. Connecting bolt for phase L3 (load output to inverter) and input from winding L3
5. Connecting bolt for phase L2 (load output to inverter) and input from winding L2
6. Connecting bolt for winding L1
7. Connecting bolt for phase L1 (load output to inverter)
8. Input for supply voltage +12V
9. Pre-heating output

3.4.1 Terminal assignments on the Panda iControl2 controller

3.4.1.1 Terminal assignment of 18-pin connector

Fig. 3.4.1.1-1: Terminal assignment of 18-pin connector

Terminal	IN / OUT	Function
1	--	Actuator (optional)
2	I	Cylinder head temperature
3	IN	Exhaust manifold temperature
4	IN	Winding temperature
5	IN	Reserve temperature
6	IN	Oil pressure
7	IN	Emergency stop
8	--	GND, ground for all temperature sensors
9	--	GND
10	--	Actuator (optional)
11	--	+5V servo motor (red wire)
12	OUT	PWM servo motor (yellow wire)
13	OUT	Booster (optional, depending on generator type)
14	OUT	Fuel pump
15	OUT	Fuel pump
16	OUT	Electric starter
17	OUT	Electric starter
18	OUT	Electric starter

3.4.1.2 Fischer Panda standard bus

Fig. 3.4.1.2-1: Fischer Panda standard bus terminal assignment

Terminal	Terminal description	Function
1	UBUS	Bus supply voltage
2	GND	Fischer Panda bus ground, ground connection between Panda iControl2 controller and Panda iControl2 panel
3	REIZ	Exciter line, is switched to ground by the panel if the controller is to switch on
4	DATA+	Fischer Panda bus data line A
5	DATA-	Fischer Panda bus data line B
6	UBAT	Battery voltage

3.4.1.3 Fischer Panda CAN bus

Fig. 3.4.1.3-1: Fischer Panda CAN bus terminal assignment

Terminal	Terminal description	Function
1	UBUS	Bus supply voltage
2	GND	Fischer Panda bus ground, ground connection between iControl2 controller and Panda iControl2 panel
3	REIZ	Exciter line, is switched to ground by the panel if the controller is to switch on
4	CAN-L	CAN-Low
5	CAN-H	CAN-High
6	UBAT	Battery voltage

3.5 Master and Slave Panels

With the iControl2 it is possible to have up to four remote control panels at one iGenerator. (One Master + three Slave)

The standard iControl panel has the Art. No. 21.02.02.131P. This Panel has integrated termination resistors and is the Master Panel.

The iControl2 Slave Panel has the Art. No. 21.02.02.132P. It is marked with a sticker „Slave Panel“ at the back side.

In a iControl system with Master and Slave panels, The Master must be the last one in the row, so that the termination resistor is at the end of the FP-BUS.

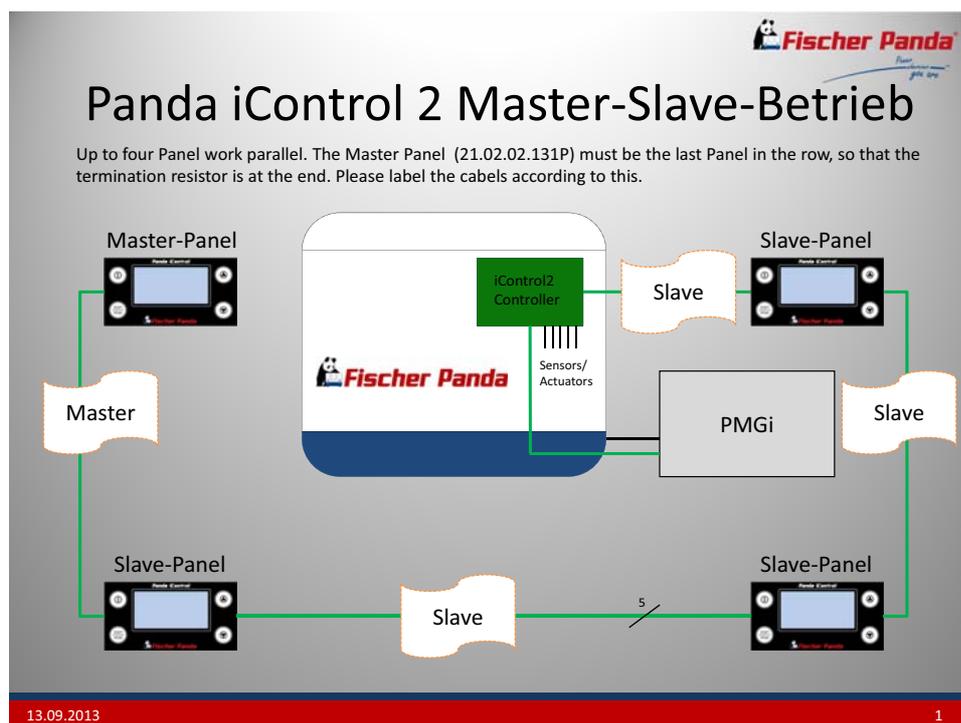
The Slave Panel can not be used alone. The Slave Panels must be connected between the iControl controller (at the iGenerator) and the Master Panel.

The Master Slave configuration can be used at iGenerators with software 2.3 at Controller and Panel.

All Panels (Master and Slave) has the Address „1“ as standard. The Address can be changed in the menu. Possible are 1, 2, 3 and 4. Each Panel must have a unique address.

To use the automatic start option, the connection of the automatic start must be at the panel with the address „1“. Activation or deactivation can be done at every panel.

Fig. 3.5-1: Master Slave configuration



3.6 Start-up

After completing the installation, the system must be started up.

For this purpose, the start-up log for the generator is processed and filled in by the specialist installing the equipment. The completed log shall be handed over to the operating company.

The operating company shall be instructed in the operation, maintenance, and hazards of the generator. This applies to both the maintenance steps and hazards described in the manual and to additional steps and hazards that result from the specific installation conditions and the connected components.

The original start-up log of the generator must be sent to Fischer Panda to obtain the full warranty. Make sure that you retain a copy for your records.

Note:



The corresponding forms are included in the generator manual.

4. Maintenance

4.1 Maintenance of the iControl2 controller

The iControl2 controller is maintenance-free. The fuses of the controller are self-healing.

4.1.1 Cleaning the iControl2 controller

The housing shall be cleaned within the scope of the overall generator cleaning. The housing can be wiped off with a soft, lightly dampened cloth. In doing so, it must be ensured that no moisture enters the jacks and the housing.

4.2 Maintenance of the iControl2 remote control panel

The iControl2 remote control panel is maintenance-free.

4.2.1 Cleaning the iControl2 controller

The display can be cleaned with a soft cloth dampened lightly with soapy water. Harsh cleaning agents are not suitable and can cause the display film to turn dull.

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5. Warnings and error messages

To enable the safe operation of the generator, the Panda iControl2 controller is programmed with a series of warnings and error messages that influence the generator operation.

5.1 Warnings

Warnings are issued when the variable being monitored, e.g. temperature, reaches a defined warning threshold. The warnings are issued on the Panda iControl2 panel display via the cyclical display of the word „HIGH“ or „LOW“, alternating with the measured value, e.g. the temperature. Warnings do not become active until the time between reaching the threshold value and the defined delay has expired.

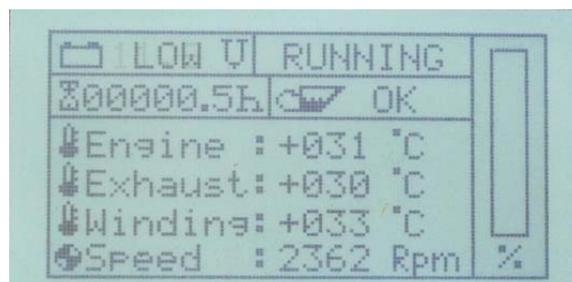
Warnings do not result in the generator or the controller being switched off. Note:



5.1.1 Examples of warnings on the display:

Warning: „Battery power too low“

Fig. 5.1.1-1: Warning: „Battery power too low“



Warning: „Winding temperature too high“

Fig. 5.1.1-2: Warning: „Winding temperature too high“



5.1.2 Warning messages

All warning messages defined for the Panda iControl 2 and the corresponding display output are compiled in the subsequent table.

Fig. 5.1.2-1: Warning messages

Warning message on the display	Meaning of warning message
„HIGH“ flashes, alternating with the temperature value of the cylinder head	Cylinder head temperature is too high, the warning threshold was reached
„HIGH“ flashes, alternating with the temperature value of the winding	Winding temperature is too high, the warning threshold was reached
„HIGH“ flashes, alternating with the temperature value of the exhaust manifold	Exhaust manifold temperature is too high, the warning threshold was reached
„LOW“ flashes, alternating with the voltage value of the starter battery	Starter battery voltage is too low, the warning threshold was reached

5.2 Faults

Error messages are issued when the monitored variable, e.g. a temperature, reaches the defined fault threshold.

With the temperature sensors, a loose connection or a broken cable will result in a fault, as well, and cause the generator to shut down.

An error message is typically preceded by a warning, as the warning threshold is reached before the fault threshold. Error messages are output on the Panda iControl2 panel display in the form of the error text shown on a cleared display page. Faults do not become active until the time between reaching the fault threshold and the defined delay has expired.

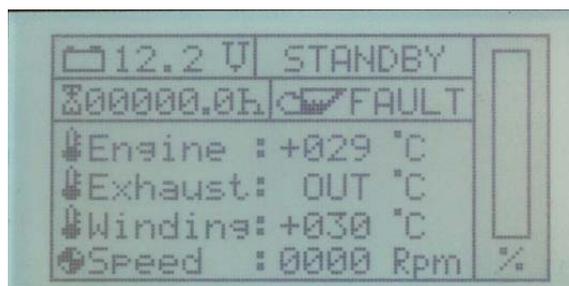
Faults result in the generator shutting down. If a fault occurs due to the battery voltage being too low, the controller is completely shut down to prevent the battery from discharging too much.

Examples of an error message on the display:

Fault: „Exhaust manifold temperature out of range“

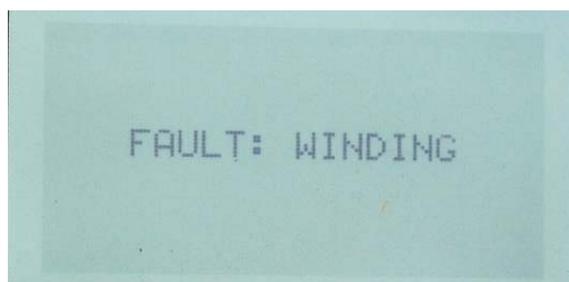
(broken cable)

Fig. 5.2-1: Fault: „Cylinder head temperature out of range“



Fault: „Winding“, winding temperature too high

Fig. 5.2-2: Fault: „STARTING FAILS“, start-up process was not successful



5.2.1 Error messages

All error messages defined for the Panda iControl 2 and the corresponding display texts are compiled in the subsequent table.

Fig. 5.2.1-1: Error messages

Error message on the display	Meaning of error message
FAULT: CYL.HEAD	Cylinder head temperature too high
FAULT: WINDING	Winding temperature too high
FAULT: EXHAUST	Exhaust manifold temperature too high
NO CONNECTION BUS ERROR	Communication error on Fischer Panda bus
STARTING FAILS	Generator start has failed
PROBLEM WITH FUEL SUPPLY!	Fuel supply not suitable
FAULT: OILPRESS	Oil pressure error
BATTERY LOW	Battery power too low
Inverter overtime	Inverter temperature too high
Inverter overload	Generator was overloaded, message is also issued when the generator output cable is not connected to the inverter
INIT FAILED!	Parameters were not correctly adopted into the EEPROM when the generator type was initialised. Generator type must be reset.
„OUT“ is output instead of a temperature	„Out of range“ - broken cable on corresponding temperature sensor

Error messages can be acknowledged with the Start/Stop button, The controller will then return to stand-by mode.

5.2.2 Warning and fault thresholds

The threshold values resulting in triggering warnings and faults depend on the generator type and are compiled in table 2-3.

Fig. 5.2.2-1: Warning and fault thresholds for different generator types

Generator type	Warning/fault	Warning threshold	Fault threshold
5000i marine	Cylinder head temperature	85 °C	95 °C
	Delay	5 s	5 s
	Winding temperature	130 °C	135 °C
	Delay	5 s	5 s
	Exhaust manifold temperature	70 °C	75 °C
	Delay	1 s	1 s
5000i vehicle	Cylinder head temperature	90 °C	95 °C
	Delay	5 s	5 s
	Winding temperature	130 °C	135 °C
	Delay	5 s	5 s
	Exhaust manifold temperature	100 °C	105 °C
	Delay	1 s	1 s
P8000i / P10000i marine	Cylinder head temperature	90 °C	95 °C
	Delay	5 s	5 s
	Winding temperature	130 °C	135 °C
	Delay	5 s	5 s
	Exhaust manifold temperature	70 °C	75 °C
	Delay	1 s	1 s
P8000i / P10000i vehicle	Cylinder head temperature	90 °C	95 °C
	Delay	5 s	5 s
	Winding temperature	130 °C	135 °C
	Delay	5 s	5 s
	Exhaust manifold temperature	100 °C	105 °C
	Delay	1 s	1 s

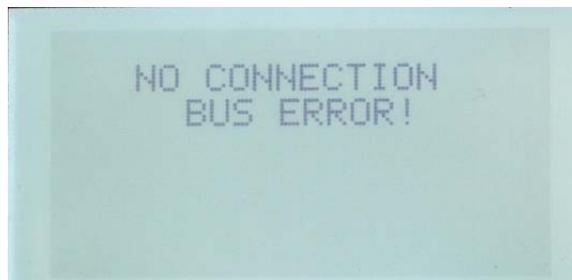
Generator type	Warning/fault	Warning threshold	Fault threshold
P8-P50 marine	Cylinder head temperature Delay	90 °C 5 s	95 °C 5 s
	Winding temperature Delay	130 °C 5 s	135 °C 5 s
	Exhaust manifold temperature Delay	70 °C 1 s	75 °C 1 s
P8-P50 vehicle	Cylinder head temperature Delay	95 °C 5 s	100 °C 5 s
	Winding temperature Delay	160 °C 5 s	165 °C 5 s
	Exhaust manifold temperature Delay	100 °C 1 s	105 °C 1 s
P15000i marine	Cylinder head temperature Delay	90 °C 5 s	95 °C 5 s
	Winding temperature Delay	130 °C 5 s	135 °C 5 s
	Exhaust manifold temperature Delay	70 °C 2 s	75 °C 2 s
P15000i vehicle	Cylinder head temperature Delay	90 °C 5 s	95 °C 5 s
	Winding temperature Delay	130 °C 5 s	135 °C 5 s
	Exhaust manifold temperature Delay	95 °C 2 s	100 °C 2 s
All generator types	Starter battery voltage low Delay	11.8 V 30 s	10.8 V 30 s
	Starter battery voltage high	15.0 V 5 s	-- --

5.2.3 Bus errors

If the communication connection is lost on the Fischer Panda bus, an error is output on the display after a period of 10 seconds:

This error will occur if at least one of the two data lines of the Fischer Panda bus is disconnected. Once the connection is restored, the error message can be acknowledged with the Start/Stop button.

Fig. 5.2.3-1: Error: „NO CONNECTION“, error in the communication (Fischer Panda bus)



If the communication connection is lost, the generator shall be secured (open battery disconnect switches), and all plug-in connections and cables shall be checked for firm seating or damage.

5.3 The error memory of the iControl 2 Panel

From Software version PiC2_2.9 (control board) and PiP2_2.9 (control panel) the Panda iControl2 has got an error memory which shows the last six errors in the plain text.

5.3.1 How to get to the error memory of the iControl2 Panel?

The error memory is easily accessible via the setup menu of the control panel which is open to every user.

The setup menu can be accessed as usual:

- To access the setup menu, please press the key "Cursor Down" directly after switching on the control while the panda bear is displayed.
- Now you can see the setup menu and its menu items.
- You can navigate through the menu via the keys
- „Cursor-Up“ und „Cursor-Down“.
- The selected menu item is marked by two *symbols.
- The start/stop key is used for validation in the setup menu. If you select and validate the row marked by the * by actuating the start/stop key, you will access the selected sub-menu.
- To display the error memory please select the menu item **Error mem.**

5.3.2 How are stored errors displayed?

The errors are displayed in the plain text. The error is preceded by the operating hour when the error occurred. The fault having the highest operating hour will be displayed in the first row. Older error entries are displayed in the rows below in descending order of the operation hour. If the memory contains already six errors, the oldest entry is deleted.

Example for displaying an error entry: **3045.2h COMMUNICATION**

This means: In operating hour 3045.2 an error in the bus communication has occurred.

5.3.3 How do I exit the error memory after having read the entries?

You can return to the standby page via the start-stop-key.

5.3.4 Can I delete the error memory?

No, it is not possible to delete the error memory.

5.3.5 Where are the errors stored?

In the EEPROM of the panel or in the storage of the control board?

The errors are stored in the EEPROM of the control board. The control panel only displays the errors which are stored there. If, for service reasons, the control panel has to be exchanged, the entries remain in the error memory.

5.3.6 In which language are the stored errors displayed?

The stored errors are displayed in the language which is set in the control panel. This can be English or German depending on your settings.

5.3.7 Is it possible to upgrade an old iGenerator model by the error memory?

Yes, if the software of the control board and the panel is updated, it is possible to upgrade an existing system by this function.

Fig. 5.3.7-1: Image: Display of the stored errors on the control panel



6. Annex

6.1 Technical data

6.1.1 Technical data for iControl2 control unit

Fig. 6.1.1-1: Technical data for iControl 2 control unit

	iControl 2 control unit
Supply voltage	12V-13.5V (12V automotive)
Current consumption, nominal	175 mA
Current consumption, stand-by	2.5 mA
Operating temperature	-20°C to +85°C
Storage temperature	-30°C*to +85°C
Current sensor Hall element	max. 20A
max. tightening torque for connecting bolts	1.2 Nm

6.1.2 Technical data for iControl2 remote control panel

Fig. 6.1.2-1: Technical data for iControl2 remote control panel

	iControl 2 control unit
Supply voltage	12V-24V (12V or 24V automotive)
Current consumption, off	0 mA
Current consumption, stand-by - backlight brightness 9	45 mA
Current consumption, stand-by - backlight brightness 4	33 mA
Current consumption, stand-by - backlight brightness 0	25 mA
Operating temperature	-20°C to +70°C
Storage temperature	-30°C*to +80°C

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