



Fischer Panda®

Power
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Generator Control Panel P6+ Manual

12 V version - 0000139

24 V special version - 0000527

Option automatic adapter - 0000521

Option master-slave adapter - 0000133

Current revision status

Document	
Actual:	Panel Generator Control P6+ RE0703_Kunde_eng.R10_10.5.17
Replace:	Panel Generator Control P6+ RE0703_Kunde_eng.R09
Revision	Page
Design review	
Neue Art.Nr eingepflegt R10	

Hardware

Generator	Revision	Modification Strike Plate	Date	Upgrade

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1. Safety Instructions Generator Control P6+

1.1 Personal requirements

The settings described here can be performed by the operator, unless otherwise indicated.

The installation should be carried out by specially trained personnel or by authorized repair shops (Fischer Panda service points).

1.2 Safety instructions

Follow the general safety instruction at the front of this manual. **Note!**

If these not exist, they can be requested at Fischer Panda GmbH, 33104 Paderborn.



Danger for life! - The generator can be equipped with an automatic start device. This means expected starting of the generator, the starter battery must be disconnected before start working at the generator.

Warning! Automatic start



The generator must not be put into operation with cover removed.

Warning!



If the generator is mounted without sound cover, the rotating parts (pulley, belt, etc.) must be covered and protected so that an injury is excluded.

All service, maintenance or repair work on the unit may be made only while the motor is off.

Danger for Life. Improper handling, operation, installation and maintenance can result in severe personal injury and/or material damage.

Warning! Danger of Life - High voltage



Electrical voltages above 48 volts (battery chargers greater than 36 volts) are always dangerous to life). The rules of the respective regional authority must be adhered to. Only an electrician may carry out installation of the electrical connections for safety reasons.

Disconnect the battery when working on the generator. **Attention!**

The battery must always be disconnected (first negative then positive pole), when work on the generator or the electrical system of the generator are made, so that the generator can not be started accidentally.



This is especially true for systems with an automatic start function. The automatic start function is to be deactivated before the work.

Sea valve must be closed. (only PMS version)

Note also the safety of the other components of your system.

Note!

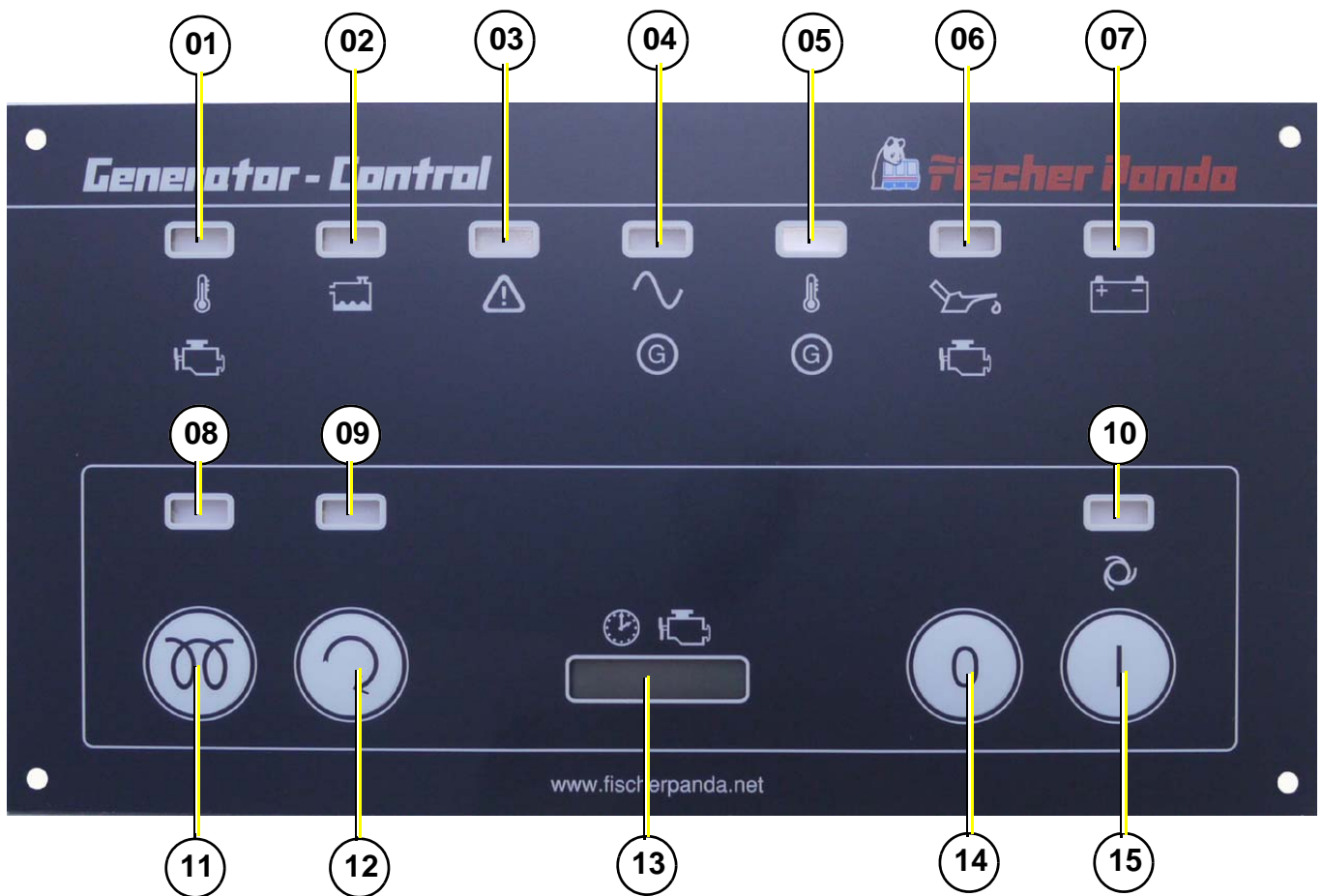


2. General operation

2.1 Panel Generator Control

Fischer Panda Art. No. 21.02.02.046P

Fig. 2.1-1: Panel front



- 01. LED for coolant temperature red¹
- 02. LED for water leak red/yellow¹ (sensor optional)
- 03. LED for AC-voltage fault red/yellow¹
- 04. LED for AC-voltage ok green¹
- 05. LED for winding temperature red¹
- 06. LED for oil pressure red¹
- 07. LED for battery charge voltage fault green/red¹

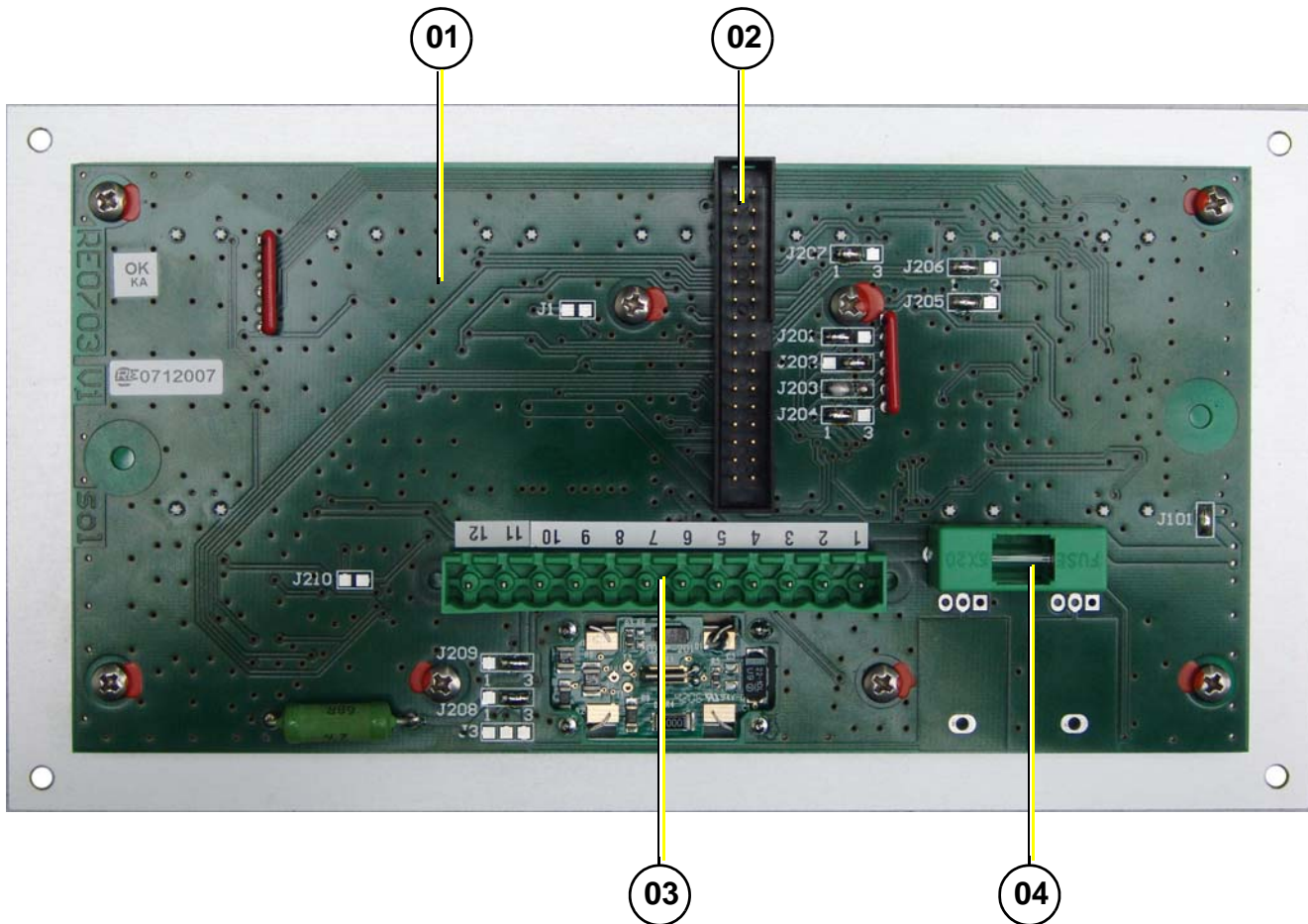
- 08. LED for pre-glow „heat“ orange¹
- 09. LED for Generator „start“ green¹
- 10. LED for Generator „stand-by“ green¹
- 11. Push button for pre-glow „heat“
- 12. Push button for Generator „start“
- 13. Operating hours counter
- 14. Push button panel „off“
- 15. Push button panel „on“

¹ LED green: normal operation mode, LED red: fault, LED yellow: warning, LED orange: active

2.1 Rear view 12 V-version

Fischer Panda Art. No. 21.02.02.046P

Fig. 2.1-1: Panel rear view 12 V-version

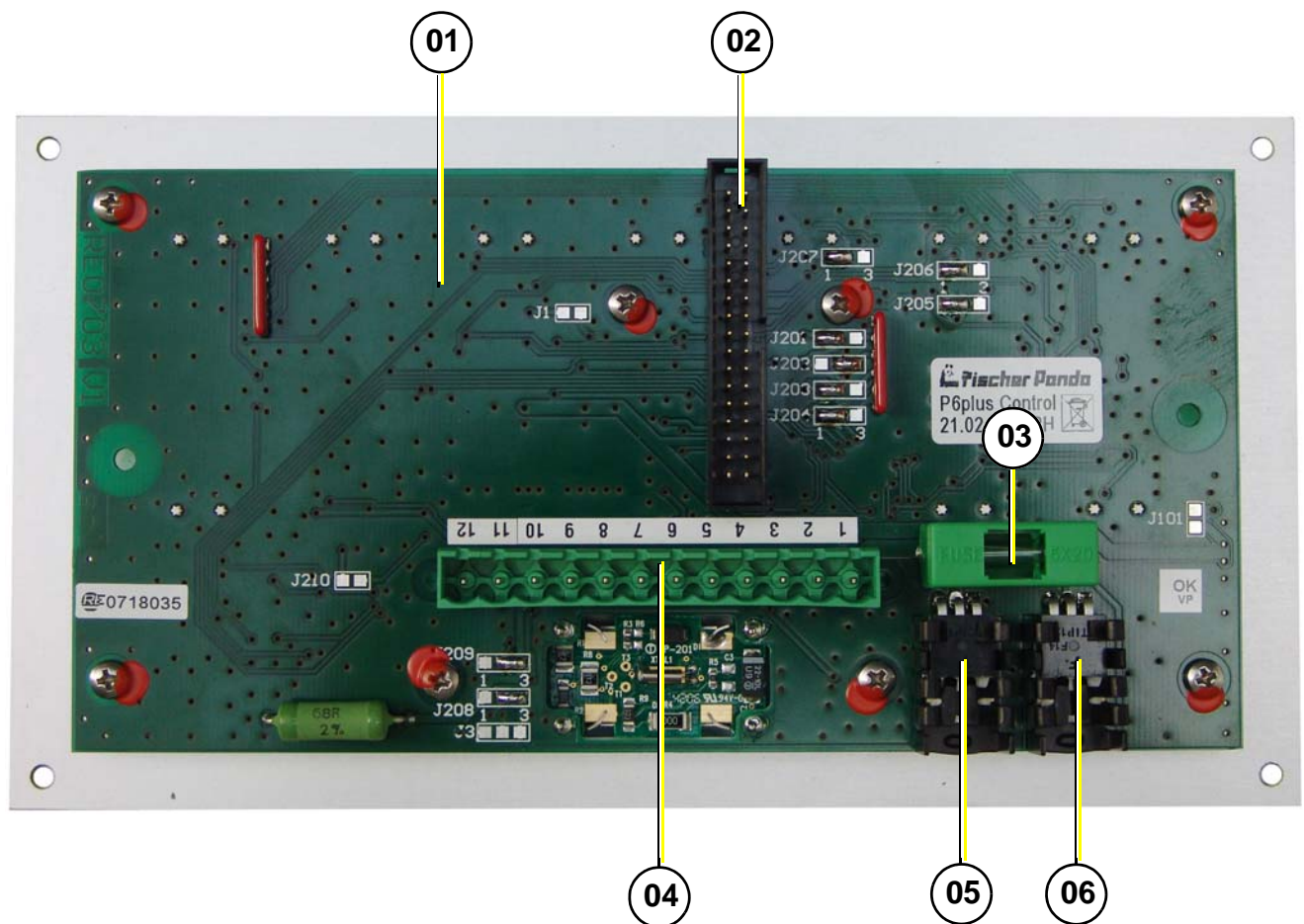


- 01. Control board
- 02. Terminal block (master-slave adapter: left row; automatic adapter: right row)
- 03. Terminals 1-12 (see section 2.3.2, "Terminal connections," on page 10)
- 04. Fuse 630 mA slow-blow

2.2 Rear view 24 V-version

Fischer Panda Art. No. 21.02.02.047P

Fig. 2.2-1: Panel rear view 24 V-version



- 01. Control board
- 02. Terminal block (master-slave adapter: left row; automatic adapter: right row)
- 03. Fuse 630 mA slow-blow
- 04. Terminals 1-12 (see section 2.3.2, "Terminal connections," on page 10)
- 05. Linear controller 24 V
- 06. Linear controller 24 V

2.3 Installation of the remote control panel

2.3.1 Placement.

Install the remote control panel at a dry, good accessible and shady place.

Connect the remote control panel to the standard 12 core cable at the generator. (1:1)

2.3.2 Terminal connections

Standard for NC temperature switch configured i.e. in case of failure „open“.

Fig. 2.3.2-1: Terminal connections

Clamp no.	Clamp name	IN / OUT	Description
1	Vbat	IN	power supply + 12 V (or optional 24 V, must be adjusted by jumper)
2	GND	IN	power supply -
3	T-Engine	IN	Error "coolant temperature". Input for thermo-switch to GND. The input is adjustable for NC/NO (N = no error) (must be adjusted by solder Jumper). The input loads the switch with ≥ 22 mA to +12 V (with 24 V-operated internally generated). The occurrence of an error is delayed, for analysis and displayed, around 100ms. Omission not. The in/out status is indicated with red LED.
4	Water leak (Replace air filter)	IN	Error "water leak". Input for sensor switch to GND. The input is adjustable for NC/NO (N = no error) (must be adjusted by solder Jumper). The input loads the switch with ≥ 10 mA to +12 V (with 24 V-operated internally generated). The occurrence of an error is delayed, for analysis and displayed, around 100 ms. Omission not. The input status is indicated with red LED. The input can be used alternatively for the signal "Replace air filter" (must be adjusted by solder Jumper). Then the signal does not lead to switching off and is indicated with yellow LED.
5	Oil-Press	IN	Error "oil pressure". Input for oil pressure switches to GND. The input is adjustable for NC/NO (N = no error) (must be adjusted by solder Jumper). The input loads the switch with ≥ 22 mA to +12 V (with 24 V-operated internally generated). The occurrence of an error is delayed, for analysis and displayed, around 1s. Omission not. The input status is indicated with red LED.
6	DC-Control	IN / OUT	Load control display. Input for signal of the dynamo. The input is adjustable for GND = OK or 12 V / 24 V = OK (must be adjusted by solder Jumper). The input loads the signal with 5 mA at 12 V and 10 mA at 24 V. The input status is indicated with red and green LED. The connection can supply an energizing current for the dynamo over a fixed resistor with 68R. Either with the control panel switched on or with "Fuel pump" switched on (must be adjusted by solder Jumper). This function is available only in 12 V-operation.
7	AC-Control	IN	AC control display. Input for NC-open-collector-sensor-switch to GND (N = OK). The input loads the switch with $\geq 2,5$ mA to +12 V (with 24 V-operated internally generated). The input status is indicated with red and green LED's.
8	Heat	OUT	Output for pre-glow relays. The output is so long active, as the button "Heat" is pressed. The output supplies, if active, the voltage of clamp 1. Additionally the output can be operated via the button "start" (must be adjusted by solder Jumper). Consider (notes 1-4).
9	Fuel-Pump	OUT	Output for fuel pump relay. The output is active, if no error is present (inputs 3, 4, 5, 11 and 12, if configured accordingly). The button "start" suppresses the error analysis and the output is then also active in the case of error, if the button "start" is pressed. The output supplies, if active, the voltage of clamp 1. Consider (notes 1-4).
10	Start	OUT	Output for starting relay. The output is active, as long as the button "start" is pressed. The output supplies, if active, the voltage of clamp 1. Consider (notes 1-4).
11	AC-Fault (Fuel Level) [former T-Oil]	IN	Error generator AC input for NC-open-collector-sensor-switch to GND (N = no error). The input loads the switch with $\geq 2,5$ mA to +12 V. (with 24 V-operated internally generated). The occurrence of an error is delayed, for analysis and displayed, around 100ms. Omission not. The input status is indicated with red LED. The input can be used alternatively for the signal "Fuel level" (must be adjusted by solder Jumper). The signal does not lead to switching off and is indicated with yellow LED. The input can be used alternatively for the signal "error oil-temperature". The input is adjustable for NC/NO (N = no error) (must be adjusted by solder Jumper). The load of the sensor switch is adjustable to ≥ 10 mA by +12 V (must be adjusted by solder Jumper).

Clamp no.	Clamp name	IN / OUT	Description
12	T-Winding	IN	Error "winding temperature". Input for thermo-switch to GND. The input is adjustable for NC/NO (N = no error) (must be adjusted by solder Jumper). The input loads the switch with ≥ 22 mA to +12 V (with 24 V-operated internally generated). The occurrence of an error is delayed, for analysis and displayed, around 100 ms. Omission not. The input status is indicated with red LED.

Notes:

Power rating of the output: max. 0,5 A in continuous operation and briefly 1,0 A.

The supply of all output currents may not exceed (less 0,2 A power consumption) the rated current of the safety device of the control panel.

The output has a free wheeling diode, which short circuits negative voltages (related to GND).

The output has a Z-diode, which prevents a supply of positive voltage (related to GND) into the output.

2.3.3 Function of the jumpers

Fig. 2.3.3-1: Function of the solder jumper

Jumper	Status	Description
J1	closed	during operation of the start button heat is along-operated
	open	Function deactivated
J3	1-2	Dynamo excitation resistor 68R is switched on with Fuel-Pump (1)
	2-3	Dynamo excitation resistor 68R is switched on with Panel-ON (1)
	open	Dynamo excitation resistor is deactivated
J101	closed	12 V - operation
	open	24 V - operation (optional)
J201	1-2	T-Engine-input, for contact, which opens in case of error (2)
	2-3	T-Engine-input, for contact, which closes in case of error (2)
J202	1-2	Water leak-input / Replace air filter, for contact, which opens in case of error (2)
	2-3	Water leak-input / Replace air filter, for contact, which closes in case of error (2)
J203	1-2	Oil-Press-input, for contact, which opens in case of error (2)
	2-3	Oil-Press-input, for contact, which closes in case of error (2)
J204	1-2	AC-Fault-input / Fuel level, for contact, which opens in case of error (2)
	2-3	AC-Fault-input / Fuel level, for contact, which closes in case of error (2)
J205	1-2	T-Winding-input, for contact, which opens in case of error (2)
	2-3	T-Winding-input, for contact, which closes in case of error (2)
J206	1-2	Input Water leak has red LED and switches off
	2-3	Input Water leak has yellow LED and does not switch off
J207	1-2	Input AC-Fault has red LED and switches off
	2-3	Input AC-Fault has yellow LED and does not switch off
J208	1-2	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	DC-Control-Signal (+) = OK three-phase DC-alternator
J209	1-2	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	DC-Control-Signal (+) = OK three-phase DC-alternator
J210	closed	Input AC-Fault has Pull-Up-current ≥ 10 mA
	open	Input AC-Fault has Pull-Up-current $\geq 2,5$ mA

The solder jumpers are marked on the printed circuit board (with jumper no. and at three-part solder jumper with soldering surface no.)

(1): Equivalent resistance for load control lamp e.g. for use with three-phase alternator also integrated automatic controller of Bosch. The resistance value is 68Ω 3 W, i.e. only for 12 V.

(2): A closed contact switches the appropriate input to GND.

2.3.4 Configuration and adjustment

2.3.4.1 Configuration and setting sheet KE01

Standard jumpering for generators with three-phase DC-alternator (Kubota Super 5 series).

Panel only for 12 V-operation.

The safety device is installed with the value 0,63 AT.

The circuit parts for 24 V-operation are not equipped.

Fig. 2.3.4.1-1: Settings of soldered jumper for this configuration (column Conf.)

Jumper	Status	Conf.	Description
J1	closed		during operation of the start button heat is along-operated
	open	X	Function deactivated
J3	1-2		Dynamo excitation resistor 68R is switched on with Fuel-Pump (1)
	2-3		Dynamo excitation resistor 68R is switched on with Panel-ON (1)
	open	X	Dynamo excitation resistor is deactivated
J101	closed	X	12 V - operation
	open		24 V - operation (not possible)
J201	1-2	X	T-Engine-input, for contact, which opens in case of error (2)
	2-3		T-Engine-input, for contact, which closes in case of error (2)
J202	1-2		Water leak-input / Replace air filter, for contact, which opens in case of error (2)
	2-3	X	Water leak-input / Replace air filter, for contact, which closes in case of error (2)
J203	1-2	X	Oil-Press-input, for contact, which opens in case of error (2)
	2-3		Oil-Press-input, for contact, which closes in case of error (2)
J204	1-2	X	AC-Fault-input / Fuel level, for contact, which opens in case of error (2)
	2-3		AC-Fault-input / Fuel level, for contact, which closes in case of error (2)
J205	1-2	X	T-Winding-input, for contact, which opens in case of error (2)
	2-3		T-Winding-input, for contact, which closes in case of error (2)
J206	1-2	X	Input Water leak has red LED and switches off
	2-3		Input Water leak has yellow LED and does not switch off
J207	1-2	X	Input AC-Fault has red LED and switches off
	2-3		Input AC-Fault has yellow LED and does not switch off
J208	1-2		DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	X	DC-Control-Signal (+) = OK three-phase DC-alternator
J209	1-2		DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	X	DC-Control-Signal (+) = OK three-phase DC-alternator
J210	closed		Input AC-Fault has Pull-Up-current ≥ 10 mA
	open	X	Input AC-Fault has Pull-Up-current $\geq 2,5$ mA

The solder jumpers are marked on the printed circuit board (with jumper no. and at three-part solder jumper with soldering surface no.)

(1): Equivalent resistance for load control lamp e.g. for use with three-phase alternator also integrated automatic controller of Bosch. The resistance value is 68Ω 3 W, i.e. only for 12 V.

(2): A closed contact switches the appropriate input to GND.

2.3.4.2 Configuration and setting sheet KE02

Standard jumpering for generators with three-phase DC-alternator.

Panel for 24 V-operation (over attitude of solder jumper J101 alternatively 12 V-operation is possible).

The safety device is installed with the value 0,63 AT.

The circuit parts for 24 V-operation are not equipped.

Fig. 2.3.4.2-1: Settings of soldered jumper for this configuration (column Conf.)

Jumper	Status	Conf.	Description
J1	closed		during operation of the start button heat is along-operated
	open	X	Function deactivated
J3	1-2		Dynamo excitation resistor 68R is switched on with Fuel-Pump (1)
	2-3		Dynamo excitation resistor 68R is switched on with Panel-ON (1)
	open	X	Dynamo excitation resistor is deactivated
J101	closed		12 V - operation
	open	X	24 V - operation
J201	1-2	X	T-Engine-input, for contact, which opens in case of error (2)
	2-3		T-Engine-input, for contact, which closes in case of error (2)
J202	1-2		Water leak-input / Replace air filter, for contact, which opens in case of error (2)
	2-3	X	Water leak-input / Replace air filter, for contact, which closes in case of error (2)
J203	1-2	X	Oil-Press-input, for contact, which opens in case of error (2)
	2-3		Oil-Press-input, for contact, which closes in case of error (2)
J204	1-2	X	AC-Fault-input / Fuel level, for contact, which opens in case of error (2)
	2-3		AC-Fault-input / Fuel level, for contact, which closes in case of error (2)
J205	1-2	X	T-Winding-input, for contact, which opens in case of error (2)
	2-3		T-Winding-input, for contact, which closes in case of error (2)
J206	1-2	X	Input Water leak has red LED and switches off
	2-3		Input Water leak has yellow LED and does not switch off
J207	1-2	X	Input AC-Fault has red LED and switches off
	2-3		Input AC-Fault has yellow LED and does not switch off
J208	1-2		DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	X	DC-Control-Signal (+) = OK three-phase DC-alternator
J209	1-2		DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	X	DC-Control-Signal (+) = OK three-phase DC-alternator
J210	closed		Input AC-Fault has Pull-Up-current ≥ 10 mA
	open	X	Input AC-Fault has Pull-Up-current $\geq 2,5$ mA

The solder jumpers are marked on the printed circuit board (with jumper no. and at three-part solder jumper with soldering surface no.)

(1): Equivalent resistance for load control lamp e.g. for use with three-phase alternator also integrated automatic controller of Bosch. The resistance value is 68Ω 3 W, i.e. only for 12 V.

(2): A closed contact switches the appropriate input to GND.

2.3.4.3 Configuration and setting sheet KE03

Standard jumpering for generators with DC-alternator.

Panel only for 12 V-operation.

The safety device is installed with the value 0,63 AT.

The circuit parts for 24 V-operation are not equipped.

Fig. 2.3.4.3-1: Settings of soldered jumper for this configuration (column Conf.)

Jumper	Status	Conf.	Description
J1	closed		during operation of the start button heat is along-operated
	open	X	Function deactivated
J3	1-2		Dynamo excitation resistor 68R is switched on with Fuel-Pump (1)
	2-3		Dynamo excitation resistor 68R is switched on with Panel-ON (1)
	open	X	Dynamo excitation resistor is deactivated
J101	closed	X	12 V - operation
	open		24 V - operation (not possible)
J201	1-2	X	T-Engine-input, for contact, which opens in case of error (2)
	2-3		T-Engine-input, for contact, which closes in case of error (2)
J202	1-2		Water leak-input / Replace air filter, for contact, which opens in case of error (2)
	2-3	X	Water leak-input / Replace air filter, for contact, which closes in case of error (2)
J203	1-2	X	Oil-Press-input, for contact, which opens in case of error (2)
	2-3		Oil-Press-input, for contact, which closes in case of error (2)
J204	1-2	X	AC-Fault-input / Fuel level, for contact, which opens in case of error (2)
	2-3		AC-Fault-input / Fuel level, for contact, which closes in case of error (2)
J205	1-2	X	T-Winding-input, for contact, which opens in case of error (2)
	2-3		T-Winding-input, for contact, which closes in case of error (2)
J206	1-2	X	Input Water leak has red LED and switches off
	2-3		Input Water leak has yellow LED and does not switch off
J207	1-2	X	Input AC-Fault has red LED and switches off
	2-3		Input AC-Fault has yellow LED and does not switch off
J208	1-2	X	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3		DC-Control-Signal (+) = OK three-phase DC-alternator
J209	1-2	X	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3		DC-Control-Signal (+) = OK three-phase DC-alternator
J210	closed		Input AC-Fault has Pull-Up-current ≥ 10 mA
	open	X	Input AC-Fault has Pull-Up-current $\geq 2,5$ mA

The solder jumpers are marked on the printed circuit board (with jumper no. and at three-part solder jumper with soldering surface no.)

(1): Equivalent resistance for load control lamp e.g. for use with three-phase alternator also integrated automatic controller of Bosch. The resistance value is 68Ω 3 W, i.e. only for 12 V.

(2): A closed contact switches the appropriate input to GND.

2.3.4.4 Configuration and setting sheet KE04

Standard jumpering for generators with DC-alternator.

Panel for 24V-operation (over attitude of solder jumper J101 alternatively 12 V-operation is possible).

The safety device is installed with the value 0,63 AT.

The circuit parts for 24 V-operation are not equipped.

Fig. 2.3.4.4-1: Settings of soldered jumper for this configuration (column Conf.)

Jumper	Status	Conf.	Description
J1	closed		during operation of the start button heat is along-operated
	closed	X	Function deactivated
J3	1-2		Dynamo excitation resistor 68R is switched on with Fuel-Pump (1)
	2-3		Dynamo excitation resistor 68R is switched on with Panel-ON (1)
	closed	X	Dynamo excitation resistor is deactivated
J101	closed		12 V - operation
	closed	X	24 V - operation
J201	1-2	X	T-Engine-input, for contact, which opens in case of error (2)
	2-3		T-Engine-input, for contact, which closes in case of error (2)
J202	1-2		Water leak-input / Replace air filter, for contact, which opens in case of error (2)
	2-3	X	Water leak-input / Replace air filter, for contact, which closes in case of error (2)
J203	1-2	X	Oil-Press-input, for contact, which opens in case of error (2)
	2-3		Oil-Press-input, for contact, which closes in case of error (2)
J204	1-2	X	AC-Fault-input / Fuel level, for contact, which opens in case of error (2)
	2-3		AC-Fault-input / Fuel level, for contact, which closes in case of error (2)
J205	1-2	X	T-Winding-input, for contact, which opens in case of error (2)
	2-3		T-Winding-input, for contact, which closes in case of error (2)
J206	1-2	X	Input Water leak has red LED and switches off
	2-3		Input Water leak has yellow LED and does not switch off
J207	1-2	X	Input AC-Fault has red LED and switches off
	2-3		Input AC-Fault has yellow LED and does not switch off
J208	1-2	X	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3		DC-Control-Signal (+) = OK three-phase DC-alternator
J209	1-2	X	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3		DC-Control-Signal (+) = OK three-phase DC-alternator
J210	closed		Input AC-Fault has Pull-Up-current ≥ 10 mA
	open	X	Input AC-Fault has Pull-Up-current $\geq 2,5$ mA

The solder jumpers are marked on the printed circuit board (with jumper no. and at three-part solder jumper with soldering surface no.)

(1): Equivalent resistance for load control lamp e.g. for use with three-phase alternator also integrated automatic controller of Bosch. The resistance value is 68Ω 3 W, i.e. only for 12 V.

(2): A closed contact switches the appropriate input to GND.

2.4 Starting preparation / Checks (daily)

2.4.1 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).

2.4.2 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.

6. Close battery main switch (on).

2.5 Starting and stopping the generators

2.5.1 Starting the generator

Danger for life! - The generator can be equipped with an automatic start device. This means the generator can be started by an external signal. To avoid an unexpected starting of the generator, the starter battery must be disconnected before start working at the generator.

Warning!: Automatic start



1. Press button „on“ (switch on).
LED for „on“ = green.

Fig. 2.5.1-1: Panel on



2. Press button „heat“ (pre-glow engine).

LED for „heat“ = orange.
Depending upon engine type and execution pre-heating can be necessary. Pre-heat is necessary at an operating temperature <20 °C.

Fig. 2.5.1-2: Pre-glow



3. Press button „start“ (start engine).

LED for „start“ = green.
The electric starter may only be used for a maximum of 20 seconds. Thereafter, a pause of at least, 60 seconds is required. If the genset does not immediately start, then the fuel intake should be checked to ensure it is flowing freely. (For temperatures below - 8 °C check whether there is winter fuel)

Fig. 2.5.1-3: Start



4. Switch on load.

The load should only be switched on if the generator voltage is within the permissible range. Parallel connection of several loads should be avoided, especially if there are loads with electric motors, such as air-conditioning units in the system. In this case, the load must be connected Step by Step.

In the event of starting problems, close the sea water inlet cock. Panda marine generators only.

Should there be any reason to turn the engine (over) or start the engine i.e. to bleed the fuel system, the sea water inlet cock must be closed! During the starting process, the cooling water pump is driven with the motor. The cooling water is discharged to the exhaust outlet and, since the motor has not run, the exhaust pressure is not high enough to expel the sea water which has been brought to the exhaust outlet. To avoid filling the exhaust outlet with water and causing further problems, close the inlet sea water valve.

Once the engine is running, be sure to open the inlet valve!

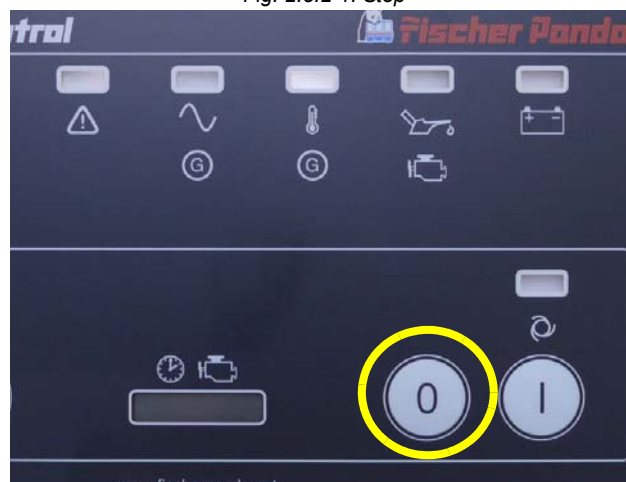
Attention!



2.5.2 Stopping the generator

1. Switch off load.
2. Recommendation: With turbo engines and during load more than highly 70 % of the rated output, stabilize generator temperature at least 5 minutes with load switched off.
At higher ambient temperatures (more than 25 °C) the generator should always run for at least 5 minutes without load, before it is switched off, regardless of the load.
3. Press button „off“ (switch off).
LED for „on“ = off.

Fig. 2.5.2-1: Stop



Never switch off the battery until the generator has stopped, if necessary close fuel valve!

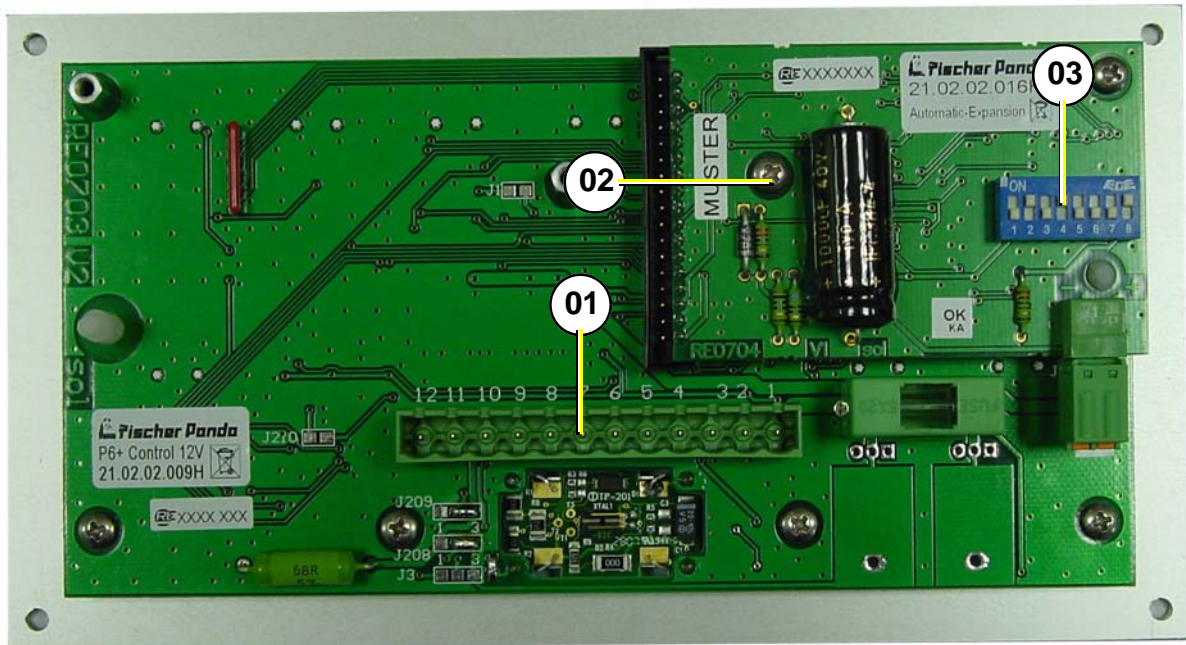
Attention!



2.6 Automatic adapter - optional

Fischer Panda Art. No. 21.02.02.016P

Fig. 2.6-1: Panel 21.02.02.046P with Automatic adapter 21.02.02.016P



- 01. Main terminals
- 02. Automatic adapter 21.02.02.016P
- 03. 8-pole DIP-switch

2.6.1 Function:

The automatic adapter RE0704 extends the generator control panel P6+ with an automatic input. A potential-free contact can be attached to this input. If this contact is closed, then the generator, which is attached to the generator control panel P6+, is started automatically. If the contact is opened, then the generator is stopped automatically.

The automatic starting procedure consists of pre-heating (heat) and operating the starter (start). It can be again aborted at any time by opening the contact at the automatic input.

For automatic stopping (stop) the output "Fuel pump" (clamp 9 generator control panel) is switched off. The time for the automatic stop procedure can be terminated only by switching off generator control panel prematurely.

The times for "heat", "start" and "stop" are separately adjustable (see below).

The additional automatic adapter switched on and off using the generator control panel with its push buttons "on" and "off".

If the contact at the automatic input is connected, while the generator control panel is switched on, then the automatic starting procedure is carried out.

If the power supply is attached or switched on using the generator control panel, while the contact of the automatic input is closed, then the automatic starting procedure won't be carried out, because the generator control panel is always switched off after attaching the power supply (generator the control panel must have been separate from the power supply for at least 60 s).

If the contact at the automatic input is closed and if the panel is switched on again after a voltage drop, the automatic start (glow, start) will be introduced. **Attention!**



2.6.2 The Automatic input:

With (-) characterized connection is connected to GND.

With (+) characterized connection is the input.

The input is connected through a resistance to 12 V (with 24 V-operated internally generated). If the two connections are short circuited over a potential-free contact, then the input current flows.

To be considered for an electronic contact the low input current and the polarity is to be selected.

The high input current is to be selected for an electromechanical contact.

The input is debounced (delay time approx.1 s).

On the input an external voltages must not be set.

Fig. 2.6.2-1: Data

Data:	
Parameter	Information
Operation voltage	The automatic adapter power is supplied via the generator control panel P6+. The same absolute maximum ratings obtain as with the generator control panel P6+.
Operation temperature	The same absolute maximum ratings obtain as with the generator control panel P6+.
Proper power consumption	10 mA - 20 mA
Tolerance of times	± 10 %

Fig. 2.6.2-2: Settings

8-pole DIP-switch S1 settings (S1.1 to S1.8):										
		standard	S1.1	S1.2	S1.3	S1.4	S1.5	S1.6	S1.7	S1.8
Heat-time	2,5 s		OFF	OFF						
	5 s		ON	OFF						
	10 s	X	OFF	ON						
	20 s		ON	ON						
Start-time	8 s	X			OFF					
	16 s				ON					
Stop-time	16 s					OFF	OFF			
	32 s	X				ON	OFF			
	64 s					OFF	ON			
	128 s					ON	ON			
Operation-mode	Normal	X						OFF		
	Test (all times over 16)							ON		
Input current	1,25 mA									OFF
	7 mA	X								ON

The automatic adapter must only be used together with an additional device. The starter should only be switched on when the generator stationary shut-down! **Attention!**



2.6.3 Terminal connections

Connection for the automatic adapter X2 (row with odd pin numbers // I/O view from operating panel)

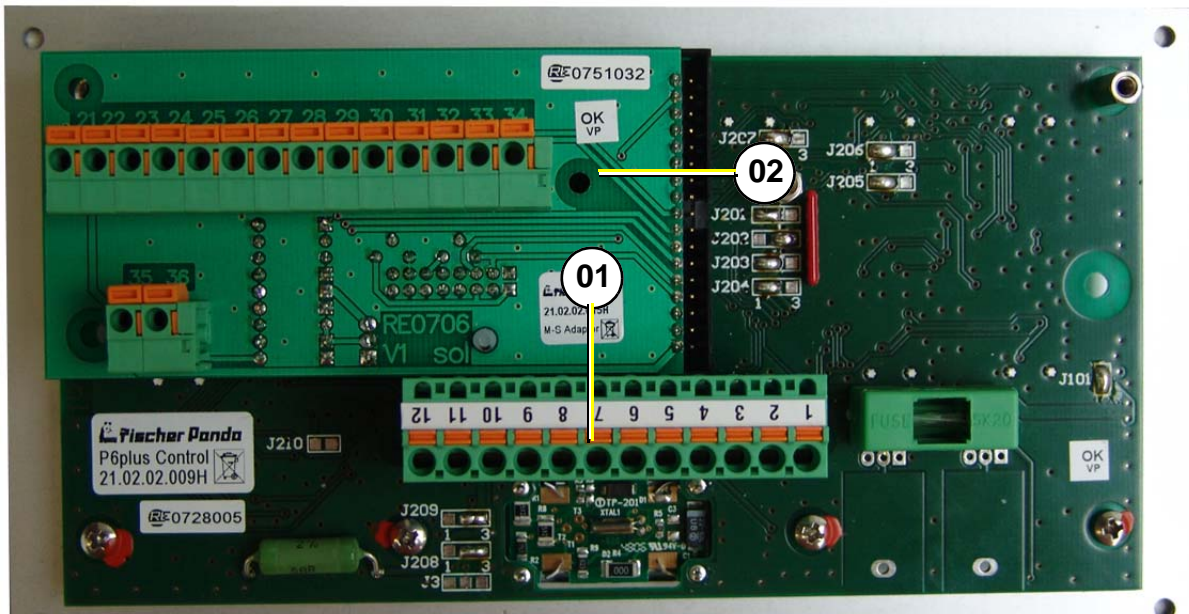
Fig. 2.6.3-1: Terminal connections automatic adapter

Pin-no.	Pin-name	I / O	Description
1	VBF	O	power supply + (operation voltage behind fuse)
3	GND	O	power supply - (ground)
5	VBFS	O	power supply + switched (voltage Pin 1, with panel switched on)
7	12V	O	power supply + switched, at 12 V-operation over closed soldered jumper J101 connected with VBFS (at optional 24 V-operation: VBFS over internal voltage regulator at 12,9 V regulated)
9	GND	O	power supply - (ground)
11	GND	O	power supply - (ground)
13	/Heat-signal	I	Heat is active, if the input is switched to GND
15	/Start-signal	I	Start is active, if the input is switched to GND
17	GND	O	power supply - (ground)
19	GND	O	power supply - (ground)
21	GND	O	power supply - (ground)
23	GND	O	power supply - (ground)
25	GND	O	power supply - (ground)
27	/Stop-signal	I	The Fuel pump signal is switched off, as long as the input is switched to GND, (also when starting)
29	FP-Int	O	Fuel pump signal internally, decoupled over diode from external signal
31	/Fault-signal	O	Output is switched to GND, if an error is present (inputs 3, 4, 5, 11 and 12, if configured and generally for 2 s, after switching on the panel)
33	GND	O	power supply - (ground)

2.7 Master-Slave adapter - optional

2.7.1 Fischer Panda Art. No. 21.02.02.015P, 12 V-version

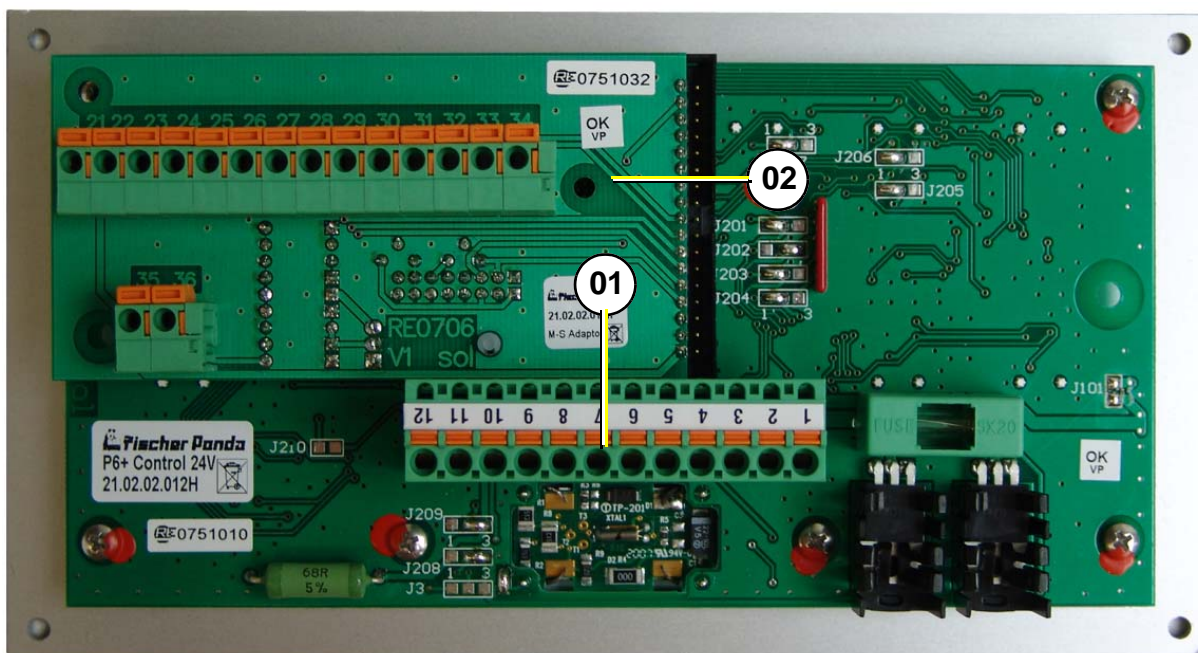
Fig. 2.7.1-1: Panel 21.02.02.046P with master-slave adapter 21.02.02.015P



- 01. Main terminals
- 02. Master-slave adapter 21.02.02.015P

2.7.2 Fischer Panda Art. No. 21.02.02.015P, 24 V-version

Fig. 2.7.2-1: Panel 21.02.02.047P with master-slave adapter 21.02.02.015P



- 01. Main terminals
- 02. Master-slave adapter 21.02.02.015P

With the Master-Slave-Adapter RE0706 two Generator Control Panels P6+ RE0703 can be connected to a Master-Slave-Combination. In addition on each Generator Control Panel P6+ an Master-Slave-Adapter RE0706 is installed. The Generator Control Panel P6+ is interconnected by the 14pole connecting terminals on the Master-Slave-Adapters 1:1. The Master-Panel is hereby defined when the generator is connected to the main connector. Thus, the main connector of the Slave-Panel should not be occupied (unconnected).

The solder jumpers on the Master-Panel have to be coded in the same manner as for a Master-Panel without a Slave-Panel as in normal operation. The solder jumpers on the Slave-Panel are coded as for slave operation (please see the appropriate adjustment pages for the Generator Control Panel P6+ RE0703).

The Master-Panel and Slave-Panel are identical, and only differs as a result of the coding. Both Master-Slave-Panels are also identical.

2.7.3 Terminal connections:

- X2: (14polig, 21 - 34) master Slave connection (1:1 wire)
- X3: (2polig, 35 - 36) 35: Panel on signal of the Generator Control Panel P6+ RE0703
36: Error signal of the Generator Control Panel P6+ RE0703

The Panel-ON-Signal is active when the panel is switched on.

The error signal is so long active, as the panel recognizes an error, which must lead to switching the generator off.

The output voltage corresponds to the operating voltage of the Generator Control Panel P6+ less 0,7 V - 1,4 V. Each output has a free wheeling diode which short circuits externals voltage supplies under 0 V and a decoupling diode which decouples the circuitry from external power feeding.

2.7.4 Fuse:

A 0,8AT fuse must be installed on the Master-Panel.

2.7.5 Terminal connections

2.7.5.1 Terminal X2 (IN/OUT from view Master-Operating-Panel)

Fig. 2.7.5-1: Terminal connections terminal X2 (IN/OUT from the view of the master-control-panel)

Pin-No.	Pin-name	IN / OUT	Description
21	VBF	O	power supply + (operation voltage behind fuse 12 Vdc or 24 Vdc depending on system)
22	GND	O	power supply - (ground)
23	ON-Signal	I / O	Panels are switched on, if the connection is switched using a push button (on master or slave) to VBF
24	OFF-Signal	I / O	Panels are switched off, if the connection is switched using a push button (on master or slave) to VBF
25	/Heat-Signal	I / O	Heat is active, if the connection is switched over a push button (on master or Slave) to GND
26	/Start-Signal	I / O	Start is active, if the connection is switched over a push button (on master or Slave) to GND
27	LED-T-Engine	O	Output for LED T-Engine on the Slave panel, is switched to GND, if the LED is illuminated
28	LED-Water leak (Replace Air filter)	O	Output for LED Water leak on the Slave panel, is switched to GND, if the LED is illuminated
29	LED-Oil-Press	O	Output for LED Oil-Press on the Slave panel, is switched to GND, if the LED is illuminated
30	LED-AC-Fault (Fuel Level)	O	Output for LED AC-Fault on the Slave panel, is switched to GND, if the LED is illuminated
31	LED-T-Winding	O	Output for LED T-Winding on the Slave panel, is switched to GND, if the LED is illuminated
32	DC-Control	O	Output for LED DC-Control-display on the Slave panel. The DC control signal is ground through 1:1.
33	AC-Control		Output for LED AC-Control-display on the Slave panel. The AC control signal is ground through 1:1.
34	VBFS	O	power supply + switched (otherwise like 21, VBF)

The use of these connections for other purposes, other than the master-slave connection of two generator control panels, is generally forbidden. In individual cases, after consultation and clarifying the technical details, a release for another use can, if technically possible, be allowed.

2.7.5.2 Terminal X3

Fig. 2.7.5.2-1: Terminal connections terminal X3

Pin-No.	Pin-name	IN / OUT	Description
35	Panel ON	O	With panel (ON/OFF) switched voltage of clamp X2.1 (VBF). (Consider notes 1-4)
36	Error	O	Output is switched on, if a critical error is present. (Consider notes 1-4)

Notes:

1. Power rating of the output: max. 0,5 A in continuous operation and briefly 1,0 A.
2. The supply of all output currents may not exceed (less 0,2 A power consumption) the rated current of the safety device of the control panel.
3. The output has a free wheeling diode, which short circuit negative voltages (related to GND).
4. The output has a Z-diode, which prevents an overvoltage (related to GND) into the output.

2.7.6 Configuration and adjustment

2.7.6.1 Configuration and setting sheet KE05

Standard jumpering for use as Slave-Panel in connection with **two** Master-Slave-Adapters RE0706 and a Generator Control Panel P6+ RE0703 as Master-Panel. Panel only for 12 V-operation.

The safety device is installed with the value 0,63 AT. The circuit parts for 24 V-operation are not equipped.

Fig. 2.7.6-1: Settings of soldered jumper for this configuration (column Conf.)

Jumper	Status	Conf.	Description
J1	closed		during operation of the start button heat is along-operated
	open	XM	Function deactivated
J3	1-2		Dynamo excitation resistor 68R is switched on with Fuel-Pump (1)
	2-3		Dynamo excitation resistor 68R is switched on with Panel-ON (1)
	open	XM	Dynamo excitation resistor is deactivated
J101	closed	M	12 V - operation
	open	M	24 V - operation (not possible)
J201	1-2		T-Engine-input, for contact, which opens in case of error (2)
	2-3	XM	T-Engine-input, for contact, which closes in case of error (2)
J202	1-2		Water leak-input / Replace air filter, for contact, which opens in case of error (2)
	2-3	XM	Water leak-input / Replace air filter, for contact, which closes in case of error (2)
J203	1-2		Oil-Press-input, for contact, which opens in case of error (2)
	2-3	XM	Oil-Press-input, for contact, which closes in case of error (2)
J204	1-2		AC-Fault-input / Fuel level, for contact, which opens in case of error (2)
	2-3	XM	AC-Fault-input / Fuel level, for contact, which closes in case of error (2)
J205	1-2		T-Winding-input, for contact, which opens in case of error (2)
	2-3	XM	T-Winding-input, for contact, which closes in case of error (2)
J206	1-2	M	Input Water leak has red LED and switches off
	2-3	M	Input Water leak has yellow LED and does not switch off
J207	1-2	M	Input AC-Fault has red LED and switches off
	2-3	M	Input AC-Fault has yellow LED and does not switch off
J208	1-2	M	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	M	DC-Control-Signal (+) = OK three-phase DC-alternator
J209	1-2	M	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	M	DC-Control-Signal (+) = OK three-phase DC-alternator
J210	closed		Input AC-Fault has Pull-Up-current ≥ 10 mA
	open	XM	Input AC-Fault has Pull-Up-current $\geq 2,5$ mA

The solder jumpers are marked on the printed circuit board (with jumper no. and at three-part solder jumper with soldering surface no.)

X = Jumper must be so set

XM = Jumper, function must be so set on the master panel is selected

M = Jumper must be set exactly the same, as on the master panel.

(1): Equivalent resistance for load control lamp e.g. for use with three-phase alternator also integrated automatic controller of Bosch. The resistance value is 68Ω 3 W, i.e. only for 12 V.

(2): A closed contact switches the appropriate input to GND.

2.7.6.2 Configuration and setting sheet KE06

Standard jumpering for use as Slave-Panel in connection with **two** Master-Slave-Adapters RE0706 and a Generator Control Panel P6+ RE0703 as Master-Panel. Panel for 24 V-operation. (over attitude of solder jumper J101 alternatively 12 V-operation is possible)

The safety device is installed with the value 0,63 AT.

The circuit parts for 24 V-operation are not equipped.

Fig. 2.7.6.2-1: Settings of soldered jumper for this configuration (column Conf.)

Jumper	Status	Conf.	Description
J1	closed		during operation of the start button heat is along-operated
	open	XM	Function deactivated
J3	1-2		Dynamo excitation resistor 68R is switched on with Fuel-Pump (1)
	2-3		Dynamo excitation resistor 68R is switched on with Panel-ON (1)
	open	XM	Dynamo excitation resistor is deactivated
J101	closed	M	12 V - operation
	open	M	24 V - operation
J201	1-2		T-Engine-input, for contact, which opens in case of error (2)
	2-3	XM	T-Engine-input, for contact, which closes in case of error (2)
J202	1-2		Water leak-input / Replace air filter, for contact, which opens in case of error (2)
	2-3	XM	Water leak-input / Replace air filter, for contact, which closes in case of error (2)
J203	1-2		Oil-Press-input, for contact, which opens in case of error (2)
	2-3	XM	Oil-Press-input, for contact, which closes in case of error (2)
J204	1-2		AC-Fault-input / Fuel level, for contact, which opens in case of error (2)
	2-3	XM	AC-Fault-input / Fuel level, for contact, which closes in case of error (2)
J205	1-2		T-Winding-input, for contact, which opens in case of error (2)
	2-3	XM	T-Winding-input, for contact, which closes in case of error (2)
J206	1-2	M	Input Water leak has red LED and switches off
	2-3	M	Input Water leak has yellow LED and does not switch off
J207	1-2	M	Input AC-Fault has red LED and switches off
	2-3	M	Input AC-Fault has yellow LED and does not switch off
J208	1-2	M	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	M	DC-Control-Signal (+) = OK three-phase DC-alternator
J209	1-2	M	DC-Control-Signal (-) = OK dynamo 12 V at Kubota Z 482 / D 722 engines
	2-3	M	DC-Control-Signal (+) = OK three-phase DC-alternator
J210	closed		Input AC-Fault has Pull-Up-current ≥ 10 mA
	open	XM	Input AC-Fault has Pull-Up-current $\geq 2,5$ mA

The solder jumpers are marked on the printed circuit board (with jumper no. and at three-part solder jumper with soldering surface no.)

X = Jumper must be so set

XM = Jumper, function must be so set on the master panel is selected

M = Jumper must be set exactly the same, as on the master panel,

(1): Equivalent resistance for load control lamp e.g. for use with three-phase alternator also integrated automatic controller of Bosch. The resistance value is 68Ω 3 W, i.e. only for 12 V.

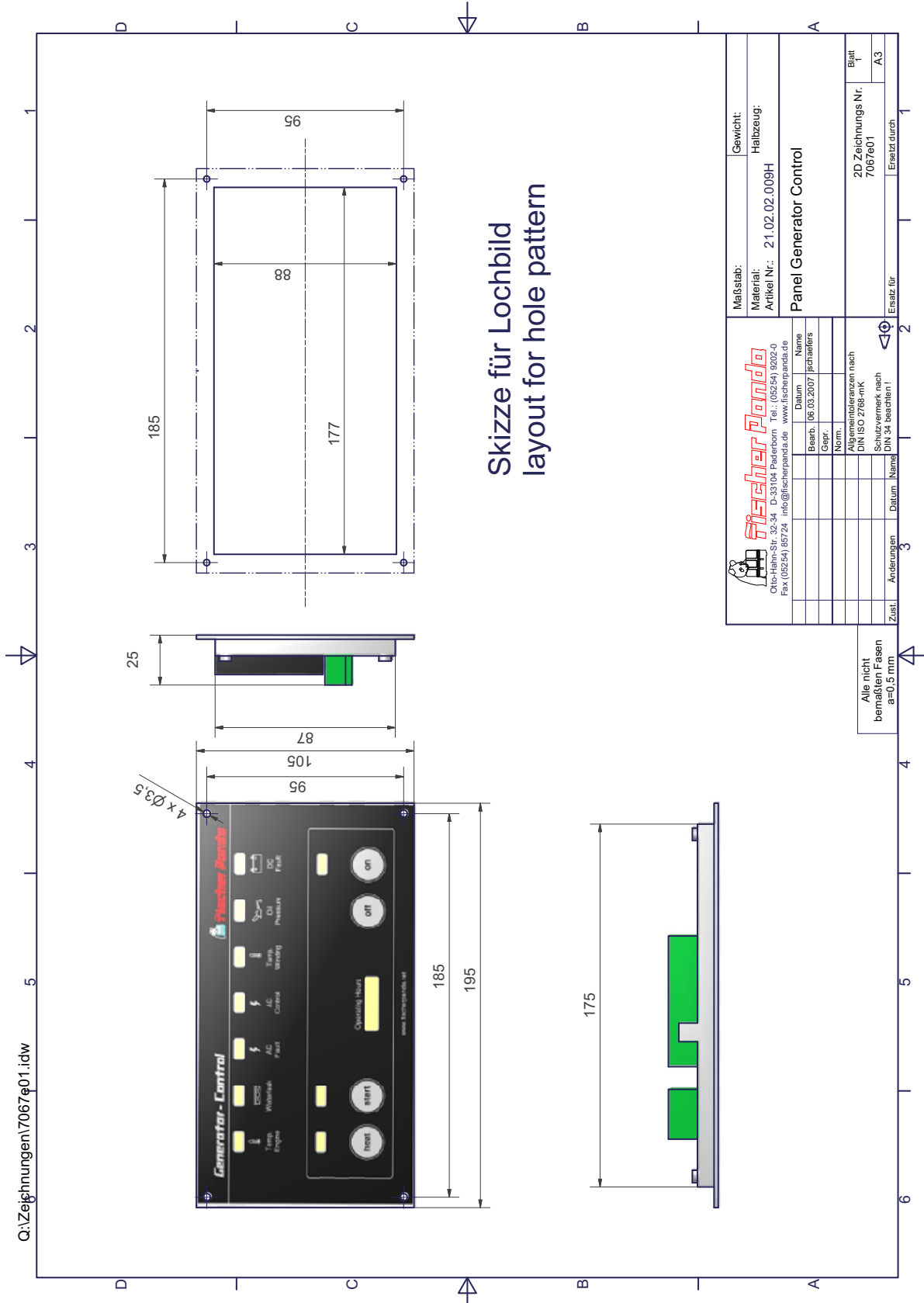
(2): A closed contact switches the appropriate input to GND.

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3. Measurements

3.1 Hole pattern

Fig. 3.1-1: Hole pattern



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