Original operating instructions

5.2

Read the "Quick start" menu item carefully before operating!

From serial number
5.2-02863 –

Version: 01/2012, V.2.0

Order No.: 00602-3-649

It should NOT be

an inconvenience or a luxury to read and comply with the operating instructions; you cannot simply experience from others that something is a good product, then make the purchase and assume everything will be self explanatory. Those who go down this route not only inflict damage on their own property, but make the mistake of attributing the cause of any failure to the machine, and not to themselves. In order to be sure of success you must get into the spirit of the thing, by learning about the purpose of each individual device on the machine and by gaining experience in how to use it. Only then will you be satisfied both with the machine and with yourself. These operating instructions are intended to help you achieve this.

Leipzig-Plagwitz 1872

Table of contents

1 Warranty

Please check machine immediately upon receiving for any damage from transport. We can not acknowledge any claims grounded with damage from transport later on. One-year warranty from date of delivery (your bill or delivery note counts as a certificate of warranty) are warranted.
The warranty is granted in case of material or constructional errors and does not include parts that are damaged by normal or excessive use.

The warranty expires:

- when damages occur through external forces (e.g. opening the control)
- when faulty operation is at hand
- wenn das Steuermodul geöffnet wird
- when the stipulated requirements are not met
- when the machine is altered, augmented or equipped with other parts without our consent.

2 Quick start

2.1 Scope of delivery and fastening

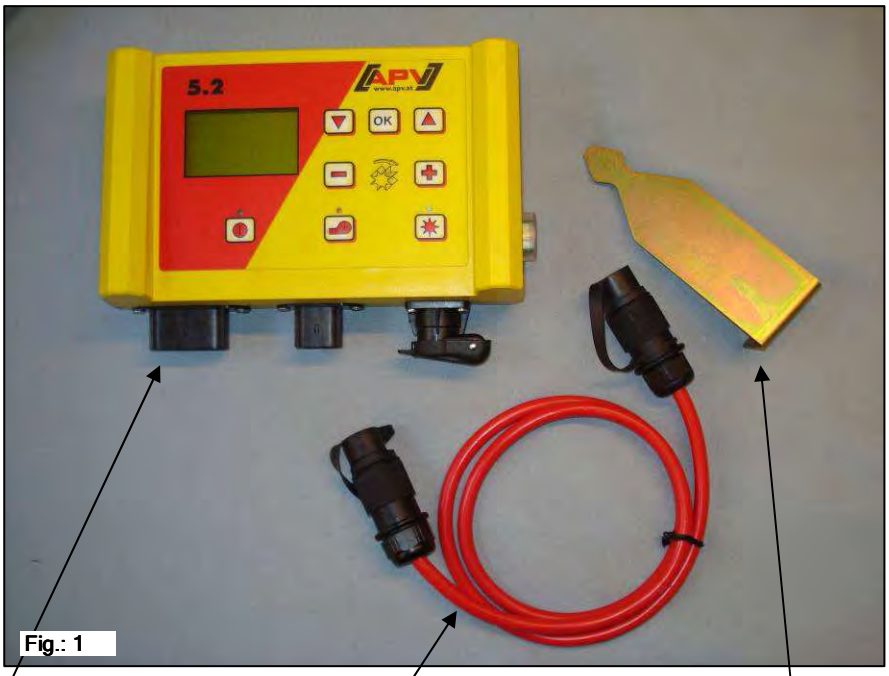


Fig.: 1

Control module Power cable Module mount

Fasten the mount (provided as part of the standard delivery) into the cab with two screws.

TIP: Pay attention to the angle at which you are viewing the module to ensure optimum readability of the display. You may have to bend the mount slightly to set the correct angle.

ATTENTION: If possible, do **not** roll the cable into a coil!

2.2 Electrical connection


Fig.: 2

You can connect the cable, provided as part of the standard delivery, directly to the 3-pin standard socket in the tractor cab. Connect the other end to the control module.

The (30 A) fuse is on the right side of the control module.

Store excess cable in the driver's cab to avoid trapping it.

IMPORTANT NOTES:
The 12 volt power supply must NOT be connected to the cigarette lighter!

After using the device, the controller should be disconnected (for safety reasons).

ATTENTION: Failure to observe these instructions can result in damage to the control module!

TIP: If your tractor does not have a standard socket, it can be retrofitted with the **Complete Cable Kit for Power Sockets, Tractor Retrofit (Item no. 201921)** (special accessories).

ATTENTION: If the battery is charged by a charger which is in the "Start" operating mode, this may result in voltage peaks! These can damage the control module's electrical system if the control module is also connected when charging the battery!

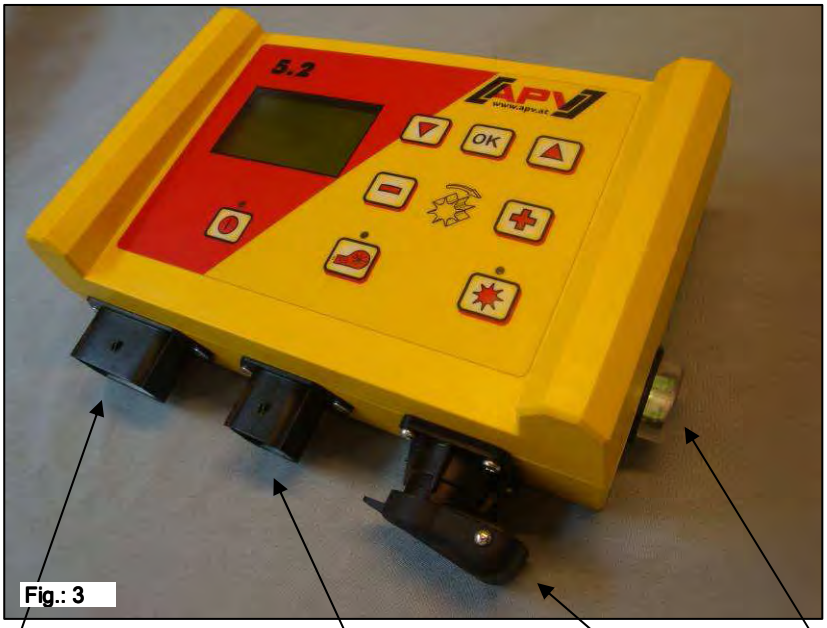


Fig.: 3

30 A fuse

12-pin connector	6-pin connector	3-pin connector
Ground wheel	Connection to the sowing implement (equipment cable)	Connection to the battery (power cable)
Amphenol (for standard socket)		
Hoisting system sensor		
Wheel sensor		
Radar sensor		
GPS sensor		

More specific details of the different sensor types are provided under Accessories.

These are available to the customer as accessories upon request!

2.3 Control module

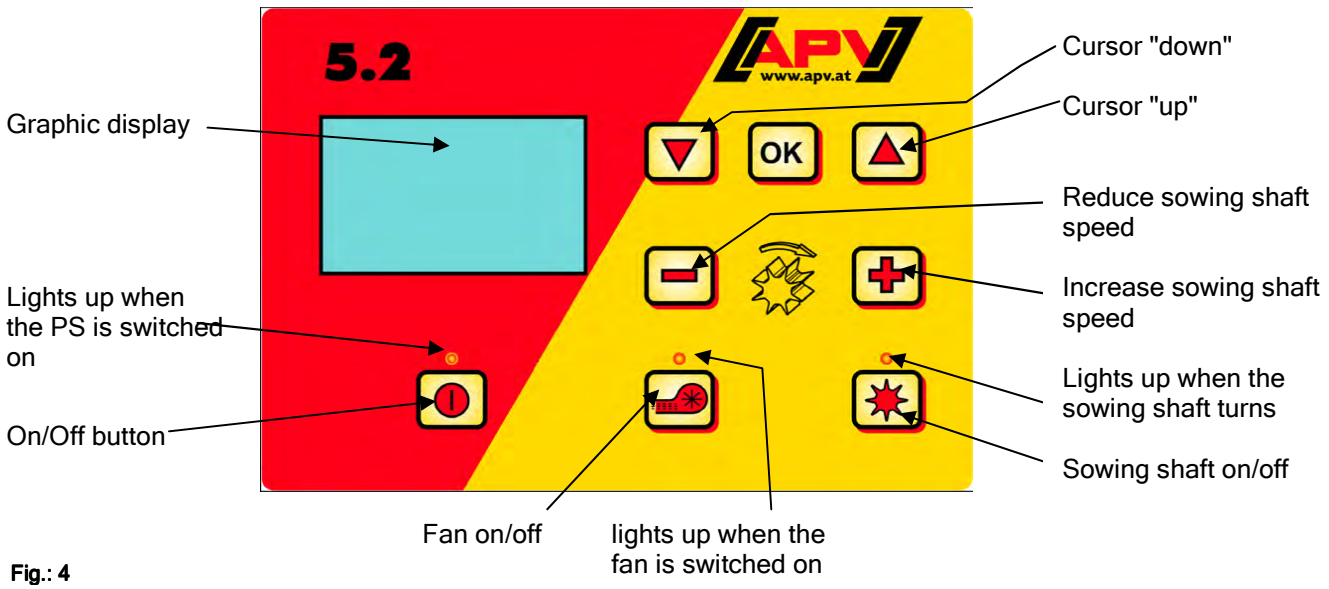
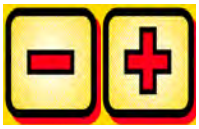


Fig.: 4

The "On/Off" button, which is used to switch the device on and off, is located at the bottom left.



The speed of the sowing shaft can be adjusted with these buttons.

Below this is the button for the sowing shaft, "on" and "off". The sowing shaft starts to turn when the "on/off" button is pushed. The indicator light starts to light up at the same time.

On-board computer controller (e.g. surface calculation, seed rate calibration test, emptying), selection of menu items

Switches the fan on or off.

-) for electric fans:
The indicator light lights up when the fan starts. The indicator light lights up if the fan runs continuously.

-) for hydraulic fans (with pressure sensor):
The indicator light lights up as soon as the fan has built up pressure.

2.4 Main display

Power-up message: This message is displayed during the switch-on procedure and shows the type and device version!
This information is very useful during servicing and is necessary for fault diagnostics!

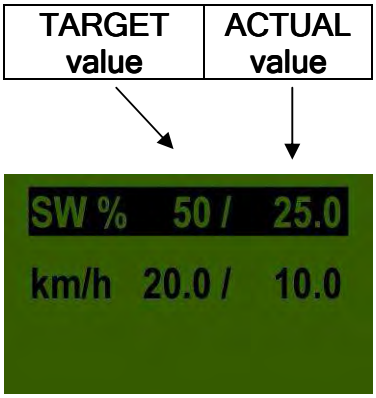
During operation without speed sensor

SW %: Set sowing shaft speed (in %)

Set by using the  buttons on the control module

km/h: The driving speed [km/h] can be set under the "seed rate calibration test" menu item.

During operation with speed sensor



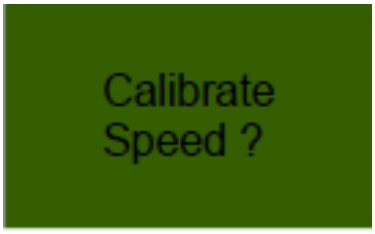
	TARGET value	ACTUAL value
SW % (sowing shaft)	Set sowing shaft speed (in %) Set by using the  buttons on the control module.	Actual sowing shaft speed (in %). This is calculated by the sensor as a function of the driving speed and displayed on the control module.
km/h (driving speed)	This can be set under the "seed rate calibration test" menu item.	Actual driving speed in km/h. This is measured at the sensor and displayed on the control module. Main menu – Selection menu.

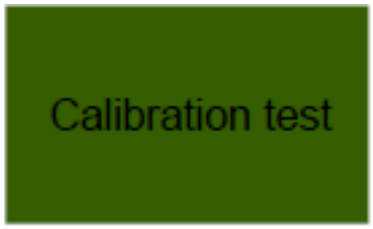
2.5 Selection menu

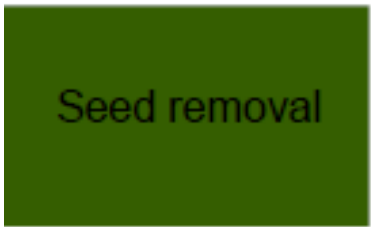
After the device has been switched on, you can navigate through the menu using the following three buttons:

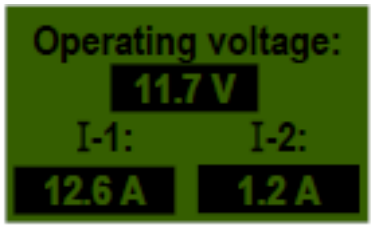
In the menu, the  cursor buttons are used to move up or down one menu item at a time.

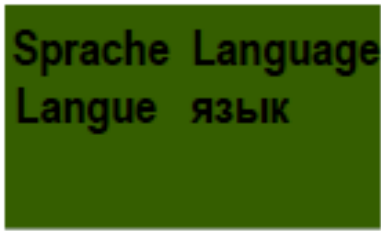
The following menu items are available:









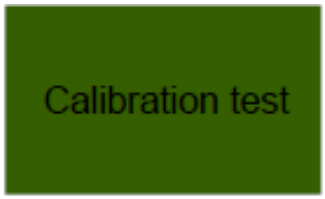


If you have selected a menu item that allows values to be set, use the  button to open the value setting mode.

Here, the values can be changed using the  buttons.

2.6 Seed rate calibration test

Note: This menu item is used both to carry out a seed rate calibration test and to set the target value for the sowing shaft speed, the working width and the driving speed! The input values are also used for the surface calculation (seeded area).



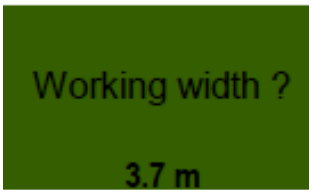
Go to the "seed rate calibration test" menu item and set the following values:

The corresponding settings are made using the  buttons.

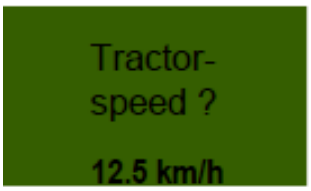
If you want to change a value, select the value using the  button and change the value using the  buttons.

Confirm the input value with the  button.

The following points must be input for the automatic seed rate calibration test:

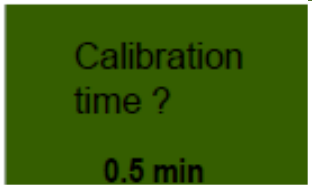


The working width must be input here.



Input the driving speed here.

Input the desired output volume here.
(e.g.103.5 kg/ha)

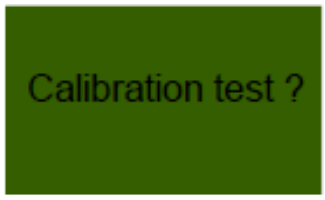


Set the duration for the seed rate calibration test here.

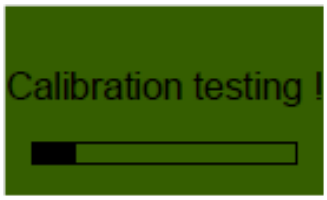
TIP:

- For smaller seeds, such as rape, phacelia, poppy, etc., it is best to calibrate for 2 minutes.
- The standard calibrating time is 1 minute
- For larger seeds, such as wheat, barley, peas, etc., it is best to calibrate for 0.5 minutes.

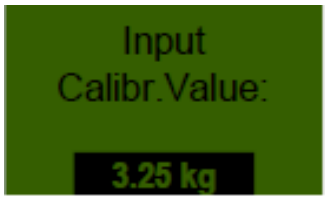
NOTE: Before starting the test, make sure that you have also removed the calibration cover and determine whether you will use the calibration cover or the calibration slide for testing. Make sure that you have installed the calibration sack or the vessel so that they are precisely positioned!



If all values are correctly set, commence the test.



Seed rate calibration test runs:
After starting, the sowing wheel starts to turn automatically without fan motor. The sowing shaft stops automatically once the set time has elapsed.



Now weigh the calibrated seed and input the value.

This message appears if the sowing shaft speed has increased too much.

TIP: To be able to spread the desired output volume, we recommend repeating the seed rate calibration test until the "Test not precise! Repeat?" message no longer appears.

Note: The "tick symbol" and the output volume in kg/ha only appear on the main display if the automatic re-adjustment of the sowing shaft is below 3% (difference).

The sowing shaft speed now automatically calculates correctly. The display then returns to the main menu.

Note: The seed rate calibration test can be cancelled at any time by pressing the  or the  button on the control module.

TIP: The test will continue if your PS is equipped with a level sensor and if the "Container almost empty" message appears on the display. However, insufficient seed in the container can distort the precision of the seed rate calibration test.

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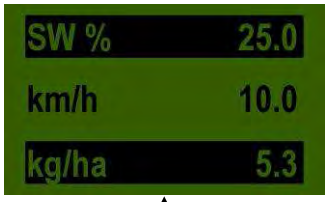
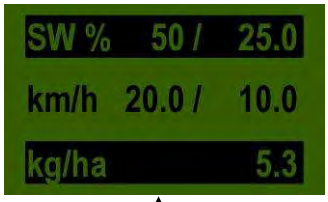
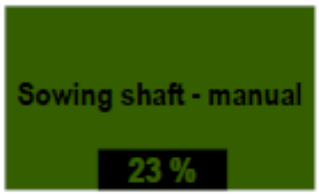




The set kg/ha values are now displayed.	The two-digit display appears if you are working with a speed sensor, for example.



This menu item is used to approximately preset the speed of the sowing shaft. Because the settings are automatically saved from the seed rate calibration test, there is no need to change the sowing shaft's speed (%).

3 Advanced settings

3.1 Surface area meter (seeded surface area)

Indicates the surface area (in hectares) that has been seeded.

TIP: Values are adjusted automatically during the seed rate calibration test. See menu item 2.6. Starts to measure the surface area to be seeded when the sowing shaft starts turning.

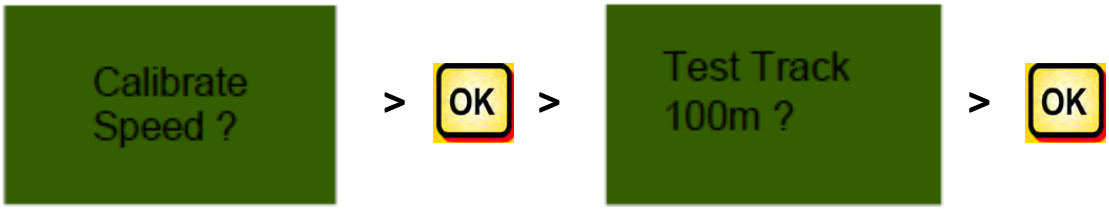
The surface area OK can be reset to zero by pressing and holding the button for 5 seconds. The entire surface area cannot be set to zero.

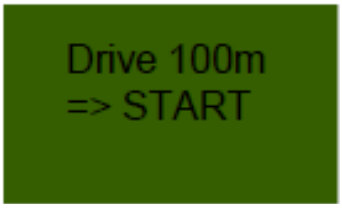
3.2 Calibrating the driving speed (tachometer)

Calibration must be carried out because the control module uses this value as a basis for all calculations (speed display, dosing, surface area calculation).

There are 3 calibration options:

3.2.1 Test distance 100m

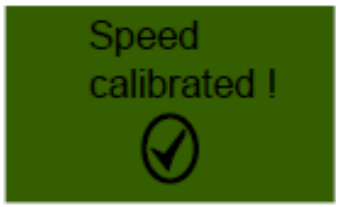




Drive exactly 100 m.

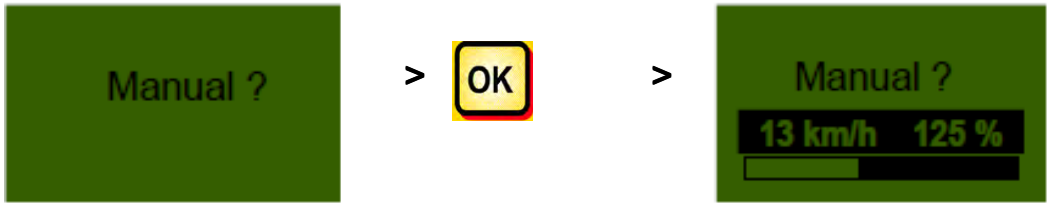
TIP: To simplify the test, measure a distance of exactly 100 m in advance and mark the start and end points.
Guide posts on the road are ideal for this purpose. The distance from one post to another is exactly 33.3 m. Drive a distance of 3 guide posts.

After 100 m, use the OK button to stop



This is displayed when calibration is complete.

3.2.2 Manual calibration

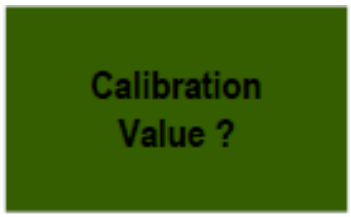


While driving, compare the speed on the display with the speed on the tractor's display.

Using the  buttons, correct the values until the two values are the same.

TIP: The calibration can be carried out here without having to drive the 100 m distance.

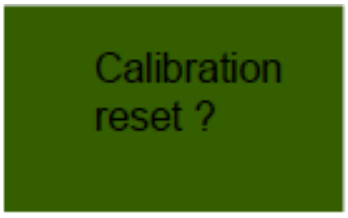
3.2.3 Calibration value



The pulses/100 m can be set here.

TIP: Once the device has been calibrated, note the value and readjust the setting as necessary.

3.2.4 Resetting the calibration



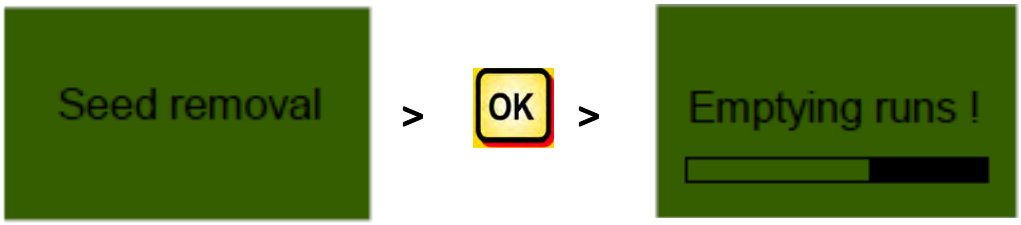
Confirm using the OK button.

Resets the value to the factory setting.

This is displayed after the resetting of the calibration.

3.3 Emptying

This menu item is used to empty the container (e.g. when work has ended, when changing seed, when replacing the sowing shaft).



The motor turns at its highest speed (without fan).

TIP: Emptying can be stopped at any time by pressing the  buttons or the  button. The display then returns to the main menu.

TIP: Before starting the emptying, make sure that you have also removed the calibration cover and determine whether you will use the calibration cover or the calibration slide for testing. Make sure that you have installed the calibration sack or a vessel so that they are precisely positioned!

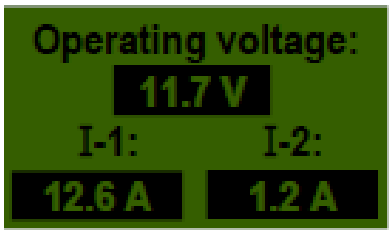
3.4 Operating hours counter

Operating hours counter = running time of sowing shaft.
Shows the total hours and the hours per day.

TIP: The hours per day can be reset to zero by pressing and holding the  button for 5 seconds. Total hours cannot be set to zero.

3.5 Operating voltage / power display

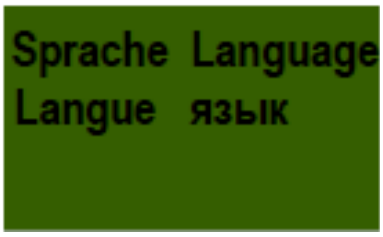
Displays the current operating voltage.
If this value begins to fluctuate significantly during operation, there are problems with the on-board electronics. This can lead to a poor scatter result!



I-1: Displays the fan motor's power consumption in amperes.

I-2: Displays the electric sowing motor's power consumption in amperes.

3.6 Languages



Select the desired language and confirm with OK!

TIP: Proceed as follows if you want to change the language and if your PS is equipped with a hydraulic fan.

If the **"Motor not connected! (fan)"** message appears, press the OK button. You then have 15 seconds in which to change the language of the menu. You can then make the desired adjustments in the programming menu in your selected language.

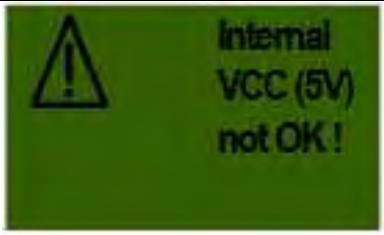
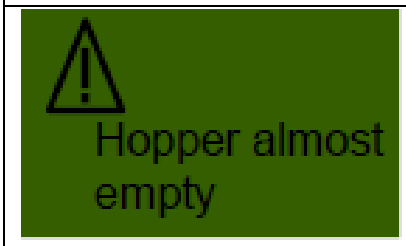
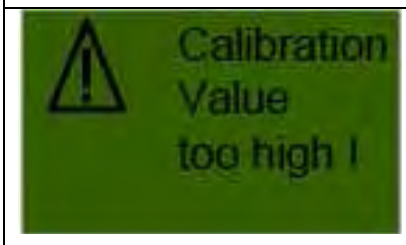
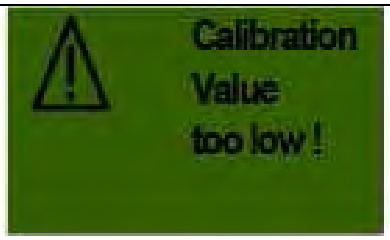
Control module 5.2 (language selection)

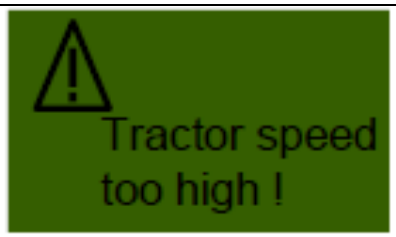
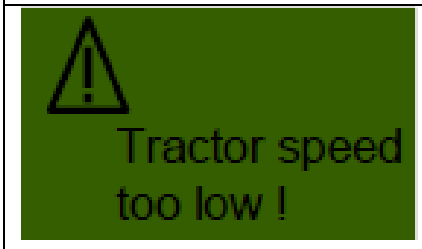
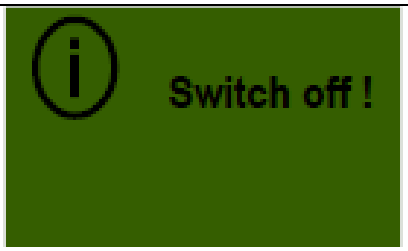
The following languages are available beginning with software version V1.19.

- German (Deutsch)
- English
- French (Français)
- Dutch (Nederlands)
- Danish (Dansk)
- Polish (Polski)
- Italian (Italiano)
- Spanish (Español)
- Czech (Česky)
- Hungarian (Magyar)
- Finnish (Suomi)
- Portuguese (Português)
- Romanian (Romana)
- Swedish (Svenska)
- Estonian (Eesti)
- Latvian (Latvian)
- Lithuanian (Latvijas)
- Norwegian (Norske)
- Slovenian (Slovenski)
- Russian (Русский)

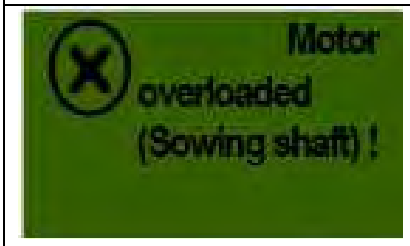
4 Control messages

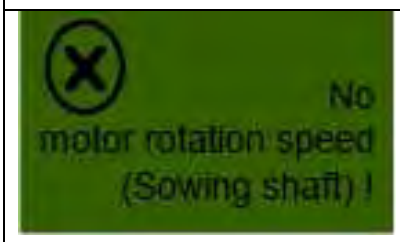
4.1 Notes

Display	Cause	Solution
	Displayed if the internal control voltage is below a minimum value.	Return to factory.
	Displayed if the operating voltage is too low.	Minimise consumers; check battery; check cabling; check generator.
	Indicates that the operating voltage is too high.	Check generator.
	This message is displayed if the level sensor has not been covered by seed for more than 30 seconds.	Refill seed. In the PS 800, the sensor can be moved (turned further downward).
	Displayed if the pulse count is too high when calibrating.	For wheel sensors, reduce the number of magnets. For all other sensors, please contact customer service.
	Displayed if the pulse count is too high when calibrating.	For wheel sensors, add more magnets. For all other sensors, please contact customer service.

	Displayed if the driving speed is too high.	Compare the settings with the actual driving speed and reduce the speed.
	Displayed if the driving speed is too low.	Compare the settings with the actual driving speed and increase the speed.
	Shown during the switch-off procedure. Message disappears after a few seconds.	

4.2 Faults

Display	Cause	Solution
	Displayed if the operating voltage falls below a minimum value or if there are significant voltage fluctuations.	Check the connectors and cabling; check the battery; check the generator; switch off other consumers (e.g. working lights).
	Displayed if the sowing wheel cannot turn or if the motor is used for too long at its threshold!	If this message appears on the display, you must switch off the device and check whether solids or similar materials are preventing or impeding the sowing shaft or the mixer from turning! The mixer can be switched off for well flowing seed.
	Displayed if the motor is used for too long at its threshold!	If this message appears on the display, you must switch off the device and check whether objects are preventing or impeding the fan from turning.
	If you have not switched on the hydraulic fan, the pressure sensor will not be not actuated in the air current and this status message appears!	Switch on the hydraulic fan and wait until the LED lights up. The sowing shaft can then be switched on. If there is no pressure sensor installed, see Pressure sensor under item 6.10.
	Displayed if cables are not connected or if cabling is faulty.	Check the cabling and connectors!

	Displayed if cables are not connected or if cabling is faulty.	Check the cabling and connectors!
	Displayed if the motor is connected and not overloaded but does not turn.	Please contact customer service.
	Displayed if the motor is connected and not overloaded but does not turn.	Please contact customer service.
	This is displayed when the control module does not receive a signal from the speed sensor!	Check the cable and the connectors! If the ground wheel does not have a defect for which the source is a malfunction, contact customer service.

5 Accessories

5.1 Molex ground wheel connector (item no.: 04000-1-002 / 202016)


Fig.: 5

Connection	12-pin connector on the control module
Calibration:	See under item 6.3
Scope of delivery:	1 ground wheel, 1 ground wheel installation forming tube and 1 ground wheel mounting plate

A sensor mounted on the ground wheel measures the driving speed [km/h]. This is displayed on the control module and the seed volume is automatically regulated by the sowing shaft speed control. This ensures that the required seed volume per hectare is always kept constant regardless of the tractor speed. All procedures such as control and checking are provided for the user during the work process by the control module.
Even when making turns, you do not need to manually operate the control module. This is automatically detected by the ground wheel when lifting or lowering the tillage implement.

Note: The ground wheel's scope of delivery also includes an installation kit (see figure above) that allows it to be easily fit to a range of tillage implements.

5.2 Amphenol Molex sensor (item no.: 202027 / 00410-2-006)

Fig.: 6

Connection 12-pin connector on the control module

Settings See under item 6.5

Scope of delivery: 1 sensor cable (Amphenol)

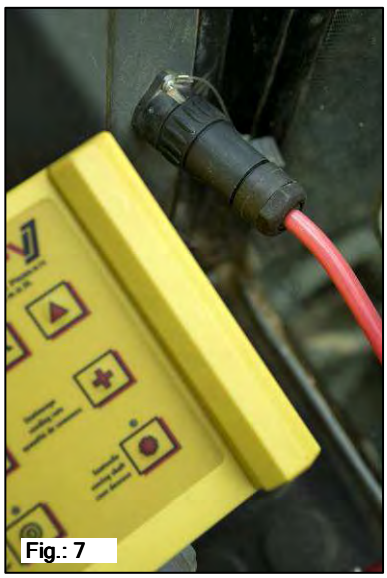


Fig.: 7

A connection from the tractor to the control module can be made using the 7-pin cable. Three signals pass through this cable from the tractor to the control module (DIN 9684 standard). This transmits the actual driving speed [km/h] and the hoisting system signal from the tractor to the control module. This is displayed on the control module and the seed volume is automatically regulated by the sowing shaft speed control.

This ensures that the required sowing volume per hectare is always kept constant regardless of the speed of the tractor.

All processes such as control and checking are provided to the user during the work process by the control module. Because of the hoisting system signal, you do not need to manually operate the control module, even when making turns.

On some tractors, the hoisting system signal is inverted. If there is a need to reverse the hoisting system signal (method of operation) for another use, this is explained more precisely under item 6.7.

5.3 GPS sensor (item no.: 00410-2-011)

Fig.: 8

Connection 12-pin connector on the control module

Settings: see item 6.4

Mode of operation: The GPS sensor converts GPS data into a pulse signal which is compatible with the **radar sensor** (item no.: 201889).
Once switched on, it takes several minutes until the connection to the satellite has been established.

Installation: The GPS sensor is installed on the roof (using the installation material provided in the scope of delivery) which leaves the field of vision unobstructed.

Scope of delivery: 1 GPS sensor, cable binders, 1 installation plate

2 LEDs display the current status:

LED 1	LED 2	Display status
Off	Off	No power
Rapid flashing	Off	Power but no GPS signal (no measured value)
Slow flashing	Flashes	Power and a single GPS signal (should operate optimally when measured subsequently)
Lights up	Flashes	Power and several GPS signals (optimum measurement results)

5.4 Radar sensor (item no.: 201889 / 00410-2-009)

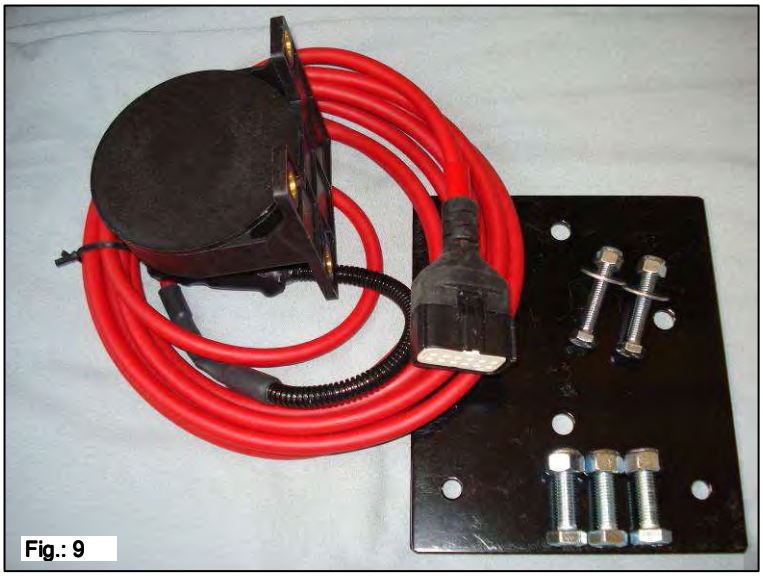


Fig.: 9

Connection 12-pin connector on the control module

Scope of delivery: 1 radar sensor, 1 installation plate incl. fastening material

Settings: see item 6.6

Where installed: Should be between the wheels. See figures below for positioning (45° in the direction of travel or opposite).

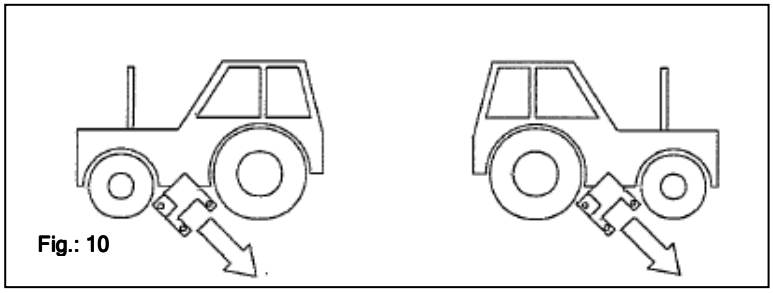


Fig.: 10

Installation: To fasten the radar sensor, please use the screws/bolts, nuts and the mounting plate provided in the scope of delivery.

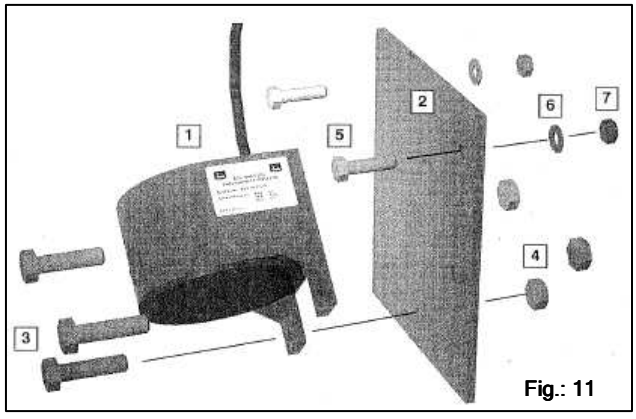


Fig.: 11

The radar sensor works on almost all surfaces (e.g. earth, sand, asphalt, etc.). The radar sensor's detection can become imprecise in the event of snow or thick layers of ice or if the on-board voltage falls below 9 V.

5.5 MX wheel sensor (potential free) (item no.: 201970 / 00410-2-007)

Fig.: 12

Connection 12-pin connector on the control module

Settings See under item 6.4

Where installed: The magnet is installed on the inside of the wheel rim. The sensor must be fastened at a distance of min. 5 mm to max. 30 mm from the magnets.

Scope of delivery 1 sensor, 8 neodymium magnets (very strong), cable binders, 2 PVC nuts for the sensor

Number of magnets

	Wheel diameter in mm			
km/h	**200**	**500**	**1500**	**2000**
5	1 magnet	2 magnets	6 magnets	8 magnets
15	1 magnet	1 magnet	4 magnets	6 magnets
30	1 magnet	1 magnet	2 magnets	4 magnets

Tip: To align the 6 magnets optimally, it is best to use a circle (e.g. string) to make a uniform hexagon.

Attention: Keep the neodymium magnet away from the heart. This can affect the function of cardiac pacemakers!!

Note: The sensor must not be over-tensioned.
Screws/bolts must not be used to fasten the magnets. The strong magnetic force holds the magnet to steel wheel rims.

Note: To prevent possible damage to the cable, lay it so as to avoid any damage (e.g. caused by the wheel).

5.6 MX chassis hoist sensor (item no.: 201971 / 00410-2-008)


Fig.: 13

Connection 12-pin connector on the control module

Calibration: See under item 6.7

Thanks to this sensor, the sowing shaft of the PS can automatically unlock and stop when the working tool is being raised or lowered.

Where installed: Because most tillage implements are raised and lowered when being used, it is best to install the sensor at, or on, the tractor's lever arm (see figure above).
The sensor can also be installed elsewhere where there is a mechanical movement of more than 50 mm. There should be a distance of at least approx. 5 mm between the sensor and the magnet.
For coupled tillage implements, the sensor can be installed on the chassis because the hoist is not being used here. The programming (for the position in which work is to be carried out) can be adjusted for this.
This is explained in item 6.7.

Scope of delivery 1 sensor, 2 magnets incl. screws/bolts, cable binders, 1 fastening plate, 2 PVC nuts for the sensor.

Note: The sensor must not be over-tensioned.

5.7 MX upper linkage hoist sensor (item no.: 202424 / 00410-2-074)


Fig.: 14

Connection 12-pin connector on the control module

Calibration: See under item 6.7

Thanks to this sensor, the sowing shaft of the PS can automatically unlock and stop when the working tool is being raised or lowered.

Where installed: Because most tillage implements are raised and lowered when being used, it is best to install the sensor on the tillage implement's three point. The sensor can also be installed elsewhere where there is mechanical movement. For coupled tillage implements, the sensor can be installed on the chassis because the hoist is not being used here. The programming (for the position in which work is to be carried out) can be adjusted for this.
This is explained in item 6.7 .

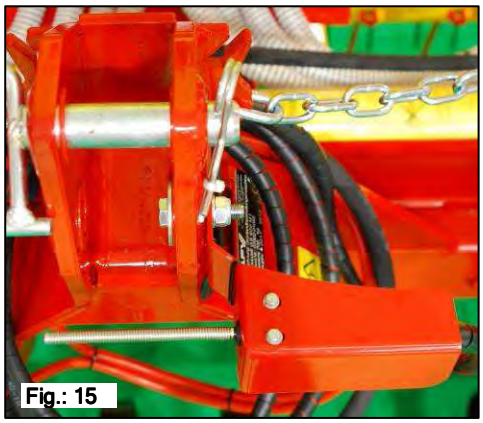


Fig.: 15

Scope of delivery: 1 sensor,
1 fastening plate incl. screws/bolts

5.8 Sensor splitter (item no.: 202029 / 00410-2-010)

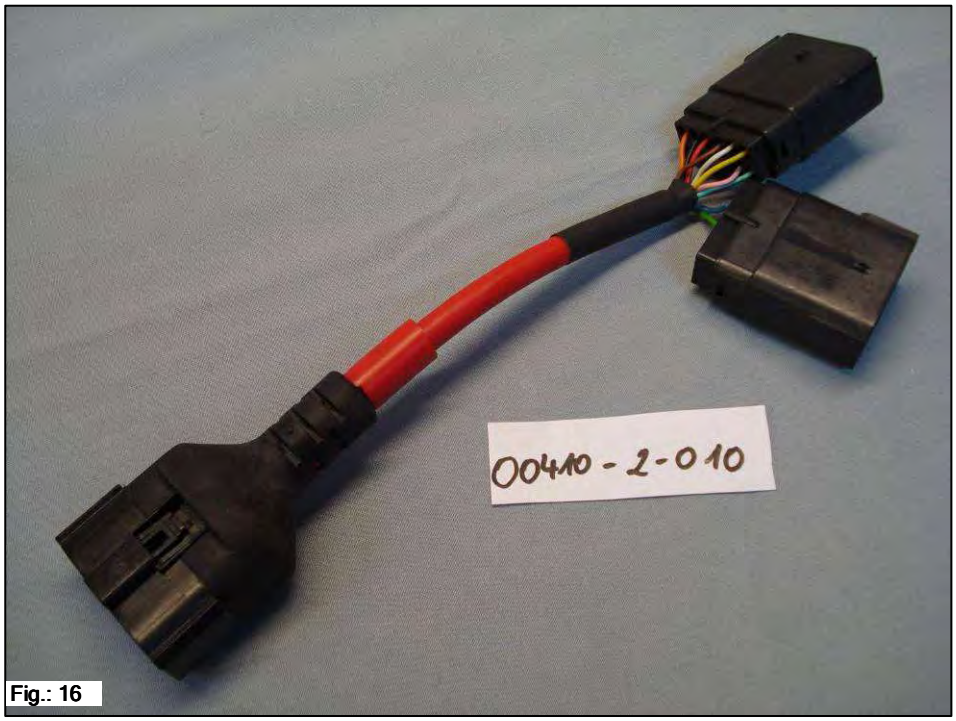


Fig.: 16

Connection 12-pin connector on the control module

Function This is required when working with 2 sensors (e.g. with the wheel sensor and with the hoist sensor).

Connection diagram:

12-pin sensor for the control module

If 2 cables are connected to the connector, this multi-pin connector is specified for the speed sensors.

If 2 cables are connected to the connector, the 2-pin connector (with the yellow shrink tubing) is specified for the hoist sensor.

5.9 Complete Cable Kit for Power Sockets (item no.: 201921), Tractor Retrofit (item no.: 00410-2-022)

Fig.: 17

There is a retrofit kit as an accessory for the control module power supply equipped without the standard 3-pin socket on the tractor. This is a 8 m long cable.
At the battery, this is screwed right to the battery terminals, a standard three-pin socket is mounted at the other end.

Connection diagram:

Red (2.5 mm² cable)	=	+ 12 volt
Red (2.5 mm² cable)	=	+ 12 volt
Black (2.5 mm² cable)	=	earth

6 Programming 5.2 (customer service)

To call up the programming menu, the following buttons (see figure) must be held pressed at the same time until the customer service menu appears.

Fig.: 18

 - Browse through programming menu

 - Modify parameters

 - Ends programming

Note: If set to **AUTO**, the module automatically detects which sensor is connected and sending signals.

6.1 Fan

This menu item is necessary if, instead of an electric fan, a hydraulically or PTO shaft driven fan is installed. For example, the PS 120/150/200/250 M2/300/500 M1 can be converted from an electric to a hydraulic fan or the PS 800 M1 has a hydraulic fan as standard equipment.

YES – an electric fan is installed.

NO – a hydraulic fan is installed.

Use the  buttons to select.

6.2 Ground wheel

In this menu item, you can select whether to work with or without a ground wheel.

Use the  buttons to select.

6.3 Wheel sensor

Here you can select whether or not to work with the speed sensor on the tractor.

Using the  buttons, select

YES/NO/AUTO.

6.4 DIN 9684 signal

Here you can select whether or not to work with the signals from the tractor.

3 different signals are available:

- Hoisting system signal
- Theoretical speed (from the transmission)
- Actual speed (from the radar sensor on the tractor, wheel sensor or inductive sensor)

TIP: The control module uses the same signal used by the tractor (usually radar sensor - if installed!!!)

Here you can set whether or not the tractor has an actual speed signal from the 7-pole signal socket (DIN 9684).

Using the  buttons, select

YES/NO/AUTO.

Here you can set whether or not a theoretical speed signal is available.

Using the  buttons, select

YES/NO/AUTO.

6.5 Radar sensor

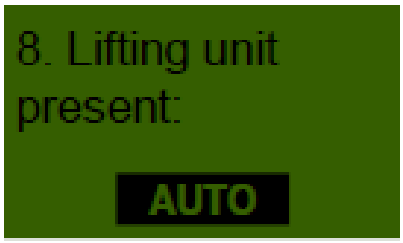
Here you can select whether to work with or without radar sensor.

Using the  buttons, select

YES/NO/AUTO.

6.6 Hoisting system sensor

If the device has to be operated with the hoisting system signal from the tractor or from a hoisting system sensor, this must be adjusted here.



Using the  buttons, select

YES/NO/AUTO.

6.7 Hoisting system signal

If working with the hoisting system signal from the tractor or the hoisting system sensor, the position of the hoisting system sensor can be set here.
The position of the sensor can be inverted here and adjusted to the data.

Using the  buttons, select

HI or LO.

Note: If your PS is sowing from the incorrect hoist position, for example, the position can be adjusted here.

6.8 Buzzer (warning signal)

This menu item can be used to set whether or not to work with an audible buzzer (e.g. warning signal in the case of fault messages).

Using the  buttons, select

ON or OFF.

6.9 Sowing shaft motor

The motor to be controlled is selected here.

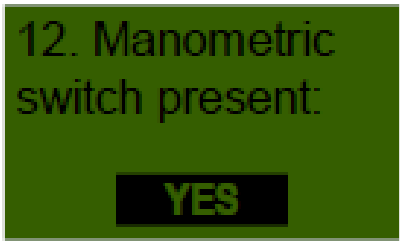
Using the  buttons, select one of the following

P8 motor	(installed on the PS 120-500)
P16 motor	(installed on the PS 800)
P17 motor	(do not use – has no function)
KVDU motor	(do not use – has no function)

Note: The P17 motor and the **KVDU Motor** currently have no function!
DO NOT USE !

6.10 Pressure sensor

Whether your PS has a pressure sensor (measures the air current from the hydraulic fan) is set here.



Using the  buttons, select

YES or **NO**.

7 Notes

Quality for Professionals

A realisation of the requirements of farmers and professionals

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