

ALPETRONIC ISO RUS



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A matr:				

ORIGINAL DIRECTIONS



ALPEGO S.p.a.

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Codice / Code:	MC SEMINATRICI «S	DDELLO MACCHINA SEMIN_AS340032_I	DRO_PLUS»	° matricola / serial n°:
È' Conforme ai requisiti Essenziali di Sicurezza e di Tutela della Salute di cui alla Direttiva CE 2006/42 Per l'adeguamento delle macchine sono state adottate le norme:	to which this applies, conforms to the basic safety and health requirements of EC Directions 2006/42 For the adaptation of it blots some have been adopted the norms:	auf das sich diese Erklarung bezeith, den einschlagigen grundlegenden Sicherheits und Gesundheitsan- forderungen der EG-Richtlinie 2006/42 EWG Für die Anpassung von ihr befleckt einiges sind angenommen worden den Normen:	faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sècuritè et de santè stipulèes dans la Directive de la CE 2006/42 Pour l'adaptation d'elle en éponge ont été adoptés les normes :	està conforme a los requisitos esenciales de seguridad y de defeusa de la salud de la directiva CE 2006/42 Para la equparación de las màquinas nan sido adoptado las normas
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Please read this owner's manual carefully before starting the implement. The knowledge of its contents is essential for the safe use of the machine and it must be kept during the entire lifespan of the implement.

We thank you for choosing this product. You have purchased a high-quality implement, guaranteed by an experience of dozens of years.

Each implement is carefully checked before it leaves our Company, so as to guarantee that it is

free of defects. However, should a defect in the material still occur, please contact your Dealer

immediately.

In order to constantly improve our products and to keep them at the highest quality levels we are

gladly at your disposal for any explanation or piece of information you may require.



THE TERM MACHINE REPLACES THE COMMERCIAL BRAND NAME WHICH THE PRESENT OWNER'S MANUAL REFERS TO



The illustrations in this Owner's Manual have a purely indicative value. They may, therefore, present some small differences which are, however, uninfluential as far as the directions given in this Owner's Manual are concerned.

N.B. : Machine view **ALPEGO** normally considers **the machine seen from behind in relation to the forward driving direction.** This in order to correctly identify the details and the assembly positions, which must be carefully observed with pieces that have "**left**" or "**right**" in their description (e.g.: left or right universal joint, left or right tine, etc.)

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MANUALE ALPETRONIC ISOBUS



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1. FOR YOUR OWN SAFETY

1.1. BASIC SAFETY DIRECTIONS

Operation



Always follow these Always follow these directions while operating with the instrument:

- Read the directions concerning the operation of the farm implement you wish to control with the use of this instrument.
- Before leaving the tractor cabin make sure that all automatic mechanisms are de-activated or that the manual mode has been activated.
- Keep children away from both the implement and the computer

Assistance



Keep the system in good operating conditions. In order to do that, follow these directions:

- Do not perform any unauthorized modifications of the product. Unauthorized modifications or usages may compromise the safety and shorten the lifespan or the operation efficiency of the unit. Modifications are to be considered as unauthorized if they are not described in the documents pertaining to the product.
- Never remove safety devicesor labels from the product
- Before recharging the tractor battery always disconnect the computer from the tractor. The product does not include any parts which can be repaired by the user. Do not open the case.

1.2. INSTENSIVE USE

The computer is only meant for use in the agricultural field. The manufacturer cannot be held responsible for any other application or use of the computer.

The manufacturer cannot be held responsible for personal violations or damages to property resulting from lack of conformity. All risks arising from improper use are the responsibility of the user.

The intensive use includes also the conformity with the operating conditions and the repairs prescribed by the manufacturer.

All applicable rules for the prevention of accidents and all other safety, industrial and medical standards which are generally known, as well as the rules concerning circulation on public roads are to be complied with. Any unauthorized modification performed on the product voids the manufacturer's warranty

1.3. FORMA E SHAPE AND MEANING OF THE SYMBOLS

All safety directions are included in the operating directions of this manual and they are arranged in accordance with the following pattern:



WARNING: This signal identifies a medium risk which can potentially cause death or serious physical wounds, if it is not avoided.



CAUTION: This signal identifies risks which can potentially cause minor or moderate physical wounds or damages to property if disregarded.

ADVICE: This signal identifies risks which can potentially cause damages to property if disregarded.

FOR YOUR OWN SAFETY - 1



There are some actions which need to be performed in several steps. If, in order to perform some of these steps, there is a certain risk, a safety warning will appear in the directions themselves.

Safety directions are always given directly before the step involving a risk and they can be identified by bold type and a signal word.

Example

1. WARNING! This is an advice. It suggests that the next step involves a risk.

2. Step involving a risk.

1.4. SAFETY LABEL ON THE PRODUCT

Label on the computer



Do not clean with high-pressure cleaners.

1.5. DISPOSAL



Once its service life has come to an end, please, dispose of this product as electronic waste in accordance with all the applicable rules for waste disposal.

FOR YOUR OWN SAFETY - 2

2. GENERAL DESCRIPTION

2.1. FUNZIONI DEL COMPUTER

The ECU-MIDI computer for seed-drill is a ISOBUS computer which can control the performance of the machine.

The ISOBUS computer is the control center of the seed-drill. Many sensors are connected with the computer. They monitor important parts of the implement. The computer controls the implements based on the collected acoustic signals. An ISOBUS terminal acts as an interface. All the specific data of the implement are registered in the computer and are, therefore, stored even when the terminal is replaced.

Among other things, the computer can perform the following tasks:

- Monitor the shaft of the metering unit
- Control the ramline valves
- Activte the calibration by using the switch for the calibration test
- Speed registration from diffrent sources
- Control of the pre-emergency discs
- Monitor the fan speed

2.2. OVERVIEW OF THE SYSTEM

The system consists of one or more computers mounted on the seed-drill which control various operations.



System with one computer:

1. ECU-MIDI Computer	4. Box for the wiring of the sensors/actuators
2. ISOBUS cable	
3. Termination CAN	

Each computer is responsible for the control of specific functions of the seed-drill and it receives its signals from selected sensors.



Fan sensor	Radar sensor
	Push-button of the calibration test Seed level 1 Seed level 2
ECU-MIDI Computer	Box for the wiring of sensors / actuators Box for the wiring of lights Set of front lights





2.2.1. ELECTRIC WIRING

Marks identifying sensors and actuators

Х	Sensor of working position (micro switch	S1	Control sensor for the rotation of metering unit 1
PE1	Cable for the control of the hydraulic electro-valve of the pre-emergency discs, controlled by the TL1 frequency	S2	Control sensor for the rotation of metering unit 2
	Cable for the control of the air electro-valve for the	Т	Sensor counting the fan r.p.m.
TL1 tramline (check which side of the distribution head is connected)		н	Sensor registering the progress via radar or GPS which may not be available on the implements
PE2	Cable for the control of the hydraulic electro-valve of the pre-emergency discs controlled by the TL2 frequencies	Y	Push-button for the calbration test
TL2	TL2 Cable for the control of the air electro-valve for the tramline (check which side of the distribution head is connected)		Sensor of seed level 1
			Sensor of seed level 2



ADVICE

Periodically check the voltage of the tractor battery, because the electric system requires 12 volts constant: if it is lower possible malfunctions may occur.

Connect the ISO connector of the implement A with the ISO connector of tractor B

Periodically make sure that the radar is clean

Visually check the condition of the magnets and of the sensors: they must always be whole and with their respective connectors.



ELECTRIC WIRING OF THE FRONT HOPPER WITH A DOUBLE MOTOR



ELECTRIC WIRING OF THE FRONT HOPPER WITH A SINGLE MOTOR





ELECTRIC WIRING OF THE REAR HOPPER WITH A SINGLE MOTOR





2.3. ABOUT THE TAG

On the body of the computer you will find a tag. This tag supplies a single identification: computer



Information on the tag::

 Item Number: option for personalization purposes Hardware version 	 Operating voltages The product may only be connected with voltages within this range.
3. Serial number of Müller-Elektronik	5. Software version at the time of delivery. If you update the software this version will no longer be updated6. Serial Number

3. IN THIS SERVICE MANUAL

3.1. CONFIGURATION OF THE OPERATING DIRECTIONS

The operating directions explain step by step how you can perform some operations with the product.

We use the following symbols for these operating directions in order to identify the different operating directions:

TYPE OF DESCRIPTION	MEANING
1.	Actions which must be performed in sequence
2.	
⇔	Result of the action. This will occur when you perform the action
¢	Result of an operating direction This will occur once you have completed all the passages.
	Requirements. Should some requirements be specified, they must be performed before the action is carried out.

3.2. CONFIGURATION OF THE REFERENCES

If references are given in these operating directions, they will appear as:

Example of a reference : [→ Errore. Il segnalibro non è definito.]

The references may be identified by square parentheses and an arrow. The number following the arrow shows at which page the section begins, where you can find further information.



4. ASSEMBLY AND INSTALLATION

4.1.1. WIRING THE AMP CONNECTORS

Procedure

This shows how to wire the AMP connectors:

1. Push out completely the red shutting device of the AMP socket \Rightarrow



- \Rightarrow You will hear a loud click
- \Rightarrow The grooves of the connector guide are visible.
- 2. Insert the connector into the socket following the guiding grooves.



⇒ The connector is slightly inserted into the socket.

3. Push in the red shutting device.



- ⇒ You will hear a loud click
- ⇒ One part of the shutting device will come out at the opposite end of the socket.
- \Rightarrow You have connected and blocked the connector with the socket.



4.1.2. SEPARATING THE AMP CONNECTORS

Procedure

This is how the AMP are separated:

1. Press both ends of the red shutting device toward the connector



 \Rightarrow You will hear a loud click



- \Rightarrow The shutting device has been released.
- 2. Completely push out the red shutting device of the AMP socket.
- 3. Remove the connector from the socket.

4.2. CONNECTING THE COMPUTER WITH THE ISOBUS

In order to supply power to the computer, you must connect the ISOBUS cable of the instrument with the ISOBUS cable of the tractor.

Procedure This is how to connect the computer with the ISOBUS::

- 1. Get the ISOBUS cable from the computer.
- 2. Unscrew the dust protection cap.



3. Insert the ISOBUS connector into the ISOBUS socket of the tractor



- 4. Block the connector: in order to do this you have to turn the knurled metal ring in the clockwise direction
- 5. By using the extension cable it is possible to screw together the protecting cap of the connector and the one of the socket.



6. When the instrument is disconnected from the tractor instrumentation, remove the ISO cable and screw on the dust protection cap



4.3. INSTALLING THE SENSORS ON THE IMPLEMENT

The following sensors can be mounted on the implement:

PURPOSE	TYPE OF SENSOR – IN RELATION WITH THE OPERATING MODE	
R.p.m. sensor	Hall-effect sensor	
Seed-level sensor	Capacitive sensor	
Work position sensor	Reed contact sensor	
Vehicle speed sensor	Radar sensor	



4.3.1. INSTALLATION OF THE R.P.M. SENSOR

The Hal-effect sensors are suitable as sensors for reading the r.p.m.



Function Principles

The Hall effect creates a conncection between the poles of the green and white cable. For this to occur it is necessary for the magnet to be in front of the blue head of the sensor.

Chart

1. Min. 25 mm
2. Distance 5-10 mm
3. Ring with magnets
4. Fixing point
5. Sensor (blue head)

Connector Chart

POLE	CABLE COLOR	DESIGNATION
1	White	OVE
2	Brown	12VE
3	Green	signal

4.3.2. INSTALLATION OF THE LEVEL SENSOR

The capacitative sensors are suited as level sensors.



Function Principles

A signal is sent when the flat upper part is covered, for instance with seeds.

Chart



- Flat upper part of the sensor
 Capacitive sensor
 Adjusting screw for modifying the reaction distance
 LED; it shows whether the sensor reacts
 - 5. Wires

Connector Chart

POLE	CABLE COLOR	DESIGNATION		
1	blue	OVE		
2	brown	12VE		
3	black	signal		

4.3.3. INSTALLATION OF THE SPEED SENSOR

The Radar sensors are suited as speed sensors.

Check the operating directions for the radar sensor, in order to understand how it must be installed.

MAIN CONTROLS - 16



5. MAIN CONTROLS

5.1. TURNING ON THE COMPUTER

Procedure

1. Connect the ISOBUS cable of the seed drill with the ISOBUS cable of the tractor.

- 2. Turn on the ISOBUS terminal
 - ⇒ The computer is started up with the terminal of the tractor or with the one supplied on demand.
 - ⇒ When the computer is started up for the first time, it must initially send a lot of information to the terminal. This may require a few minutes.
 - ⇒ Once all the data have been uploaded the following icon will appear on the terminal. It will be used to start the seed drilling operation.



3. Press the push button with the above icon and the main screen shot will open.

5.2. MAIN SCREEN SHOT DISPLAY

The main screen shot is the part wherein the actual status of the machine will be displayed, depending on the icons shown and present in the terminal.



Schermata principale

- 1. Area of metering unit information
- 2. Area of information about the seed-drill rows
- 3. Area of additional active functions
- 4. Area of information on the seed-drill status

Area of metering unit information

In this section you can see:

51 kg/ha The seed quantity for each metering unit. The number ("01"- "02") indicates which metering unit is involved. The seed quantity value is shown in real time next to each metering unit.

100 % The bar is for viewing the percentage of seedi quantity manually increased or reduced by the operator



Area of information about the seed-drill rows

In this area you can see :

What is being put into the ground:

- 🩋 seed
- 🍄 Solid fertilizer
- Whether the exclusion of the rows (through tramline programs) has been created on the right or the left side of the implement



- The exclusion of the rows is represented by ths icon and, depending on the selected program, it can be viewed on the right or the left side (asymmetrical programs) or they can be turned on at the same time (symmetrical programs)

Area of additional active functions

In this area you can see whether some specific functions are activated

- Pre-Start function active
- the ISOBUS-TC application has been activated
- **W** the SECTION-Control is active in automatic mode.
- Seed reserve in one of the hoppers
- Research of the seed-drill is in the working position.
- Weiler Pre-Stop function active.

Area of information on the seed-drill status

In this area you can see:

- The forward speed of the seed-drill in Km/h
 Fan speed in r.p.m.
 Exclusion of rows when the trasmline is active.
 Control of tramline when it is manually de-activated.
 - 10 The bout number which is being worked during the use the the tramline rhythms



6. USE OF THE SEED DRILL IN THE FIELD

6.1. DEFINING THE SEED QUANTITY TO BE DRILLED

In the menu "metering unit/settings", you can program or view the following parameters for each metering unit:

• "Metering unit"

It defines the number of the selected metering unit ("01"- "02") . If the implement has a single metering unit only the value "1" will be present. Otherwise with 2 metering units there will be the values "1" and "2"

• "Value nominale"

It defines the quantity in Kg. per Hectare of seed or of fertilizer one wants to drill.

• If one wants to drill a single product with 2 metering units, it will be necessary to set the same desired nominal value into both metering units;

Example: if it is wished to drill a total of 300 Kg/Hectare it will be necessary to set the nominal value of metering unit 01 at 300 Kg/HA and the nominal value of metering unit 02 at 300 Kg/HA

Should one want to drill two different products at the same time (one product for each metering unit) it will be necessary to input the desired nominal value for each metering unit

Example: if it is wished to drill a total of 300 Kg/HA of seed and a total of 100 Kg/HA of fertilizer, it will be necessary to input the nominal value "300 Kg/HA in the metering unit 01 and the nominal value of 100 Kg/HA in the metering unit 02

• "Calibration Factor"

It defines how much seed or fertilizes is distributed at each revolution of the rotor of the metering unit.

• "Min. Speed"

It defines the minimum forward speed in Km per Hectare for the distribution of the seed or of the fertilizer.

"Max Speed"

It defines the maximum forward speed in Km per Hectare for the distribution of the seed or of the fertilizer

"Adjustment"

It defines the value in percentage of the increase or reduction of the nominal input value manually set by the operator. (see page 37).

Procedure

1. In the main screen shot press:



⇒ "Settings/Metering unit" will be displayed

2. Configure the parameters.

6.2. PERFORM THE CALIBRATION TEST

You can perform the calibration test when:

- The implement is securely hitched to the tractor
- The seed-drill is connected with the tractor through the ISOBUS cable
- The hopper contains a correct quantity of seeds or fertilizer, so that it is easy to empty it should it be necessary to adjust the metering unit.



Procedure

1. In the main screen shot press:



⇒ the menu "Settings / Metering unit" will be displayed

2. Select the metering unit which you want to perform the calibration test on. ⇒ You can see the number of the metering unit on the upper part of the screen.

1	Difference and the
350.8 ko/ha	INPOSTAZIONI 1/3
1098	Bezature ±
350.3 kg/ha	Dosatore
	1
	Valora nominale 360.0 terna Fattore di calibratura 360 generatura Uelocită san 3.7 men Valocită sax. 14.2 men
358.8 kg/ha 100% 358.3 kg/ha 188%	Desatore
	- Uslors naminale 359.0 April Fattore di calibratura 388.0 April Uslocità sin 3.7 Non Valocità sex. 14.2 April

- 3. Select the quantity of seed you want to distribute
- 4. . Press one of the icons here below for the metering unit on which you want to perform the calibration test:



1

Metering unit 1

Metering unit 2



⇒ The screen shot "CALIBR. OF METERING UNIT" will appear.





5. In the section "Correct Speed?", put in the average forward speed which you will use while drilling.

6. Fill the rotor of the metering unit with seed or fertilizer.

7. Start the calibration test.

8. Weigh the empty container for the collection of the seed and place it under the corresponding metering unit.

9. Press the push-button of the calibration test which is to be found on the seed drill and keep it depressed for a period of time necessary to sufficiently fill the container. The computer will calculate a theoretical weight which will be shown in the section "Calculated value".

10. Release the push-button of the calibration test. ⇒ the screen shot "**RESULT**" will be displayed.

- 11. Weigh the seed in the container.
- 12. . Put in the weight (NET WEIGHT) IN THE SECTION "WEIGHED VALUE"
- ⇒ The computer will calculate the variation in percentage between the calculated and the weighed values.
- ⇒ The computer will calculate again the minimum and maximum forward speed at which the regular distribution is guaranteed.
- ⇒ If you press again the push-button of the calibration test to perform other calibration tests , the calibration will continue to count from the "weighed value"



Confirm and the computer will store the data.

We recommend the performance of more than one calibration test for each single metering unit, so as to increase the drilling precision.



6.3. PRE-START (MANUAL)

This function is particularly used in order to avoid undrilled areas when starting at the beginning of the field: it allows the seed to reach the drilling elements while the machine is still inoperative. In order to exploit this function it is necessary to bring the fan for the distribution of the seed to its operating speed and to bring the implement into its working position.

0.0 kg/ha 100%	i	
0.0 kg/ha		
		<u>e</u> k
0.0 km/h 1	150	
0 1/min / 1	۲	*

Procedura

1. In the main screen shot with the machine not in operation press the function with the icon we have a simulated speed until the system registers the forward speed of the seed drill

2. Whenever you start again from a stopped position you must press again this push button manually.

6.4. STARTING THE SEED DRILLING PROCEDURE

Procedure

- The implement is in motion.
- The implement is lowered to the ground.
- The cells of the metering unit rotor are filled with seed /fertilizer
- The fan has reached its minimum rotation speed (3000 r.p.m.)



6.5. STOPPING THE SEED DRILLING PROCEDURE

Procedure

1. The seed drilling operations are interrupted.



 \Rightarrow The following message "**Application has been stopped** " will appear on the main screen shot". \Rightarrow All the metering units are stopped.



You can adjust the nominal value while you are working

If you work with different products, you can adjust the nominal value of each individual product.

ICON	MEANING
	Increase of the nominal value The nominal value is modified based on the value which has been defined in the "Adapt." parameter
	It reduces the nominal value
ĨĨ.	It restores the initial nominal value

Procedure The parameters "Nominal value" and "Adapt." have been defined

1.

1. In the main screen shot press:



 \Rightarrow The icons for the adjustment of the nominal value are displayed.

2. Modify the nominal value.



 \Rightarrow The nominal value of the metering unit will be changed (+20% of the nominal value):

🚺 🛛 kg/ha 🕺

 \Rightarrow The computer adjusts the drilling based on the new input nominal value

⇒ After one minute of working with the modified nominal value the display will begin to blink



6.7. USING THE TRAMLINE

The computer can help you to create the undrilled bouts (Tramline) for the later passage of the sprayers. The tramline is created by shutting off some of the seed-drilling pipes connected with the coulters. Thus a non-drilled area is created behind the seed-drilling bar.

When the tramline is used the seed-drilling bouts are counted, so as to create the passage when the seed-drilling bouts are shut off.



Area of the main screen shot where the tramline is displayed:

A tramline is being created
 A tramline is being created on the left side of the seed drill.
 The tramline is not active on this side of the seed drill. Therefore no tramline will be made in this bout. No icon will appear..
 Total number of bouts within which the tramline will be activated.
 Number of current bout (i.e. bout which is being worked in).

Controls

ICON	MEANING
	Increases the number of the bout. For instance, when resuming work after leaving the field. This icon is displayed only when the metering units are blocked (implement not in working position)
	It reduces the number of the bout. For instance, when operations are performed in the field but with the implement lifted off the ground. This icon is displayed only when the metering units are blocked (implement not in working position)
	It de-activates the tramline control. If the tramline control is de-activated the bout number is no longer counted. For instance, when working the heads of the field the tramline is not relevant. If the tramline control is de-activated, the following icon will be displayed in the main screen shot:
	It opens the screen shot for the selection of the tramline program.



Procedure

1. . In the main page press:



 \Rightarrow It is possible to access the menu of the settings for the selection of the tramline program. \Rightarrow It is possible to change the bout number or to manually de-activate the tramline

l in

6.7.1. CONFIGURATION OF THE TRAMLINE PROGRAM

Procedure

On this page press:



⇒ The screen shot "SETTINGS" will be displayed.

ref. No	Number of tramline program	C T	■ Files512 瞬間になったり たり、Alimes12日 m しかって10日 m	í D
Length	Total number of bouts within which the tramline bouts will be created.		N ref Lung. Sx Dx	
Sx	Here you can see the tracks where the drilling pipes are shut off; Left side of the coulter bar "SX"; right side of the coulter bar		Indiv. Lung. Sx Dx	
Dx	"Dx"			
	There can be 2 track numbers for each side.			5
Indiv.	Here a personalized tramline program can be defined.	-		-

⇒ A tramline program can be chosen from the available list.

⇒ It is possible to personalize a tramline program by manually inputting the bouts when the valves will be shut off.

It is necessary to know the dimensions of your sprayer



Their shutting off is controlled by the computer based on the selected program, which will also automatically decrease the rotation speed of the metering unit.

Electric wiring of the valves	Tramline valves arranged according to a chart for symmetrical programs. Ref. No: 2S – 4S – 6S-8S-10S-12S
Electric wiring of the valves	 Tramline valves arranged according to a chart for asymmetrical programs (beginning to work from the left side of the field) Ref. No: 2L – 4L– 6L- 8L- 10L- 12L – 14L Tramline valves arranged according to a chart for asymmetrical programs (beginning to work from the right side of the field) Ref. No: 2R– 4R – 6R- 8R- 10R- 12R – 14R
Electric wiring of the valves	 Tramline valves arranged according to a chart for special left-side asymmetrical programs (beginning to work from the left side of the field) Ref. No: 24 Tramline valves arranged according to a chart for special right-side asymmetrical programs (beginning to work from the right side of the field) Ref. No. : 21
Electric wiring of the valves	 Tramline valves arranged according to a chart for special right-side asymmetrical programs (beginning to work from the right side of the field) Ref. No. : 20 Tramline valves arranged according to a chart for special left-side asymmetrical programs (beginning to work from the left side of the field) Ref. No. : 25

The following charts show the possible arrangements depending on the type of selected program.



6.7.2. SELECTING THE TRAMLINE PROGRAM

In order to select the correct tramline program it is not sufficient to know the main dimensions of your sprayer and the arrangement of the tramline valves in your coulter bar, it is also necessary to know from which side of the field you will begin working.



Make the following calculation:

Working width of the sprayer / working width of the coulter bar

Procedure For instance:

12:3=4; 15:3=5; or 20:3=7

- ⇒ The results obtained can be: even numbers (2: 4; 6; etc.), uneven numbers (3; 5; 7; etc.) and decimal numbers (1.5; 4.5; 6.67; etc.)
- ⇒ Based on the result you can choose the necessary tramline by consulting the following charts under the heading "Result"



		Sprayer width (III)																		
		10	12	14	15	16	18	20	21	24	27	28	30	32	33	36	40	42	44	48
	3	20	4S 4L 4R	999 (4.67)	5	24	6S 6L 6R	999 (6.67)	7	8S 8L 8R	9	999 (9.33)	10S 10L 10R	\bigvee	11	12S 12L 12R		14L 14R		
3.5	3.5			4S 4L 4R					6S 6L 6R			8S 8L 8R		$\left \right\rangle$	X		$\left \right\rangle$	12S 12L 12R	$\left \right\rangle$	
m)	4	15 16	3	28 29		4S 4L 4R	18 19	5	$\left \right\rangle$	6S 6L 6R		7	30 31	8S 8L 8R	X	9	10S 10L 10R		11	12S 12L 12R
coulter bar (i	4,5		999 (2.67)		20 21		4S 4L 4R		999 (4.67)	24 25	6S 6L 6R		999 (6.67)			8S 8L 8R	$\left \right\rangle$	999 (9.33)		\mathbf{X}
idth of the c	5	2S 2L 2R			3			4S 4L 4R					6S 6L 6R				8S 8L 8R			$\left \right\rangle$
2	6		2S 2L 2R		15 16	999 (2.67)	3	20 21	28 29	4S 4L 4R	18 19	999 (4.67)	5	24 25	999 (5.50)	6S 6L 6R	999 (6.67)	7		8S 8L 8R
	7			2S 2L 2R					3			4S 4L 4R								$\left \right\rangle$
	8		22			2S 2L 2R		15	999 (2.67)	3		28		4S 4L 4R		18	5		999 (5.50)	6S 6L 6R

EXAMPLES OF AVAILABLE PROGRAMS BASED ON THE SPRAYER AND THE COULTER BAR



6.7.3. CHART OF SYMMETRICAL AND ASYMMETRICAL TRAMLINE PROGRAMS

RESULT	RHYTHM TYPE	SIDE OF FIELD	REF.N	LENG TH.	SX (TL1)	DX (TL2)	
2	SYMMETRICAL + HALF MACHINE	Left or right	2s	2		1		1
	ASYMMETRICAL	Left	2L	2			2	1
	ASYMMETRICAL	Right	2R	2	2	1		
3	SYMMETRICAL	Left Or Right	3	3		2		2
4	SYMMETRICAL + HALF MACHINE	Left Or Right	4s	4		2		2
	ASYMMETRICAL	Left	4L	4	3	2		
	ASYMMETRICAL	Right	4R	4			3	2
5	SYMMETRICAL	Left or Right	5	5		3		3
6	SYMMETRICAL + HALF MACHINE	Left or Right	6s	6		3		3
0	ASYMMETRICAL	Left	6L	6			4	3
	ASYMMETRICAL	Right	6R	6	4	3		
7	SYMMETRICAL	Left Or Right	7	7		4		4
8	SYMMETRICAL + HALF MACHINE	Left Or Right	8s	8		4		4
Ū,	ASYMMETRICAL	Left	8L	8	5	4		
	ASYMMETRICAL	Right	8R	8			5	4
9	SYMMETRICAL	Left Or Right	9	9		5		5
10	SYMMETRICAL + HALF MACHINE	Left Or Right	10s	10		5		5
	ASYMMETRICAL	Left	10L	10			6	5
	ASYMMETRICAL	Right	10R	10	6	5		
11	SYMMETRICAL	Left Or	11	11		6		6



RESULT	RHYTHM TYPE	SIDE OF FIELD	REF.N	LENG TH.	SX (TL1)		DX (TL2)	
		Right						
12	SYMMETRICAL + HALF MACHINE	Left Or Right	12s	12		6		6
	ASYMMETRICAL	Left	12L	12	7	6		
	ASYMMETRICAL	Right	12R	12			7	6
14	SYMMETRICAL + HALF MACHINE	Left Or Right	999	14		7		7
	ASYMMETRICAL	Left	14L	14			8	7
	ASYMMETRICAL	Right	14R	14	8	7		



The program number indicated in the above chart with 999 does not exist in the list input in the computer. However it is sufficient to input the data concerning the shutting off of the bouts as explained in the chart in the area concerning manual programming



6.7.4. CHART OF TRAMLINE SPECIAL PROGRAMS

RISULT	RHYTHM TYPE	FIELD SIDE	REF.NO	NO LENGT SX (TL1) DX (SX (TL1)		TL2)
1 33	ASYMMETRICAL Special	Left	<u>999</u>	4	3	2	1	4
	ASYMMETRICAL Special	Right	<u>999</u>	4	1	4	3	2
1.5	ASYMMETRICAL Special	Left	22	6	4	3	6	1
	ASYMMETRICAL Special	Right	23	6	6	1	4	3
2.5	ASYMMETRICAL Special	Left	16	10	7	4	9	2
	ASYMMETRICAL Special	Right	15	10	9	2	7	4
2.67	ASYMMETRICAL Special	Left	<u>999</u>	8	5	4	7	2
	ASYMMETRICAL Special	Right	<u>999</u>	8	7	2	5	4
3.33	ASYMMETRICAL Special	Left	20	10	9	2	6	5
	ASYMMETRICAL Special	Right	21	10	6	5	9	2
3.5	ASYMMETRICAL Special	Left	28	14	13	2	9	6
	ASYMMETRICAL Special	Right	29	14	9	6	13	2
4.5	ASYMMETRICAL Speciale	Left	18	18	16	3	12	7
	ASYMMETRICAL Special	Right	19	18	12	7	16	3
4.67	ASYMMETRICAL	Left	<u>999</u>	14	3	12	7	8


RISULT	RHYTHM TYPE	FIELD REF.NO LENG		LENGT H	SX (TL1)		SX (TL1) DX (TL2)	
	Special							
	ASYMMETRICAL Special	Right	<u>999</u>	14	7	8	3	12
5.33	ASYMMETRICAL Special	Left	24	16	9	8	14	3
	ASIMMETRICO Special	Right	25	16	14	3	9	8
5.5	ASYMMETRICAL Special	Left	<u>999</u>	22	14	9	3	20
	ASYMMETRICAL Special	Right	<u>999</u>	22	3	20	14	9
6.67	ASYMMETRICAL Special	Left	<u>999</u>	20	10	11	4	17
	ASYMMETRICAL Special	Right	<u>999</u>	20	4	17	10	11
7.5	ASYMMETRICAL Special	Left	30	30	27	4	19	12
	ASYMMETRICAL Special	Right	31	30	19	12	27	4
9.33	ASYMMETRICAL Special	Left	<u>999</u>	28	14	15	5	24
	ASYMMETRICAL Special	Right	<u>999</u>	28	5	24	14	15



The program number indicated in the above chart with 999 does not exist in the list input in the computer. However it is sufficient to input the data concerning the shutting off of the bouts as explained in the chart in the area concerning manual programming.





Ref. No. 2s In order to use this program, the seed drill must be equipped with a system capable of excluding half a machine. It is necessary to perform one passage with the tramline not activated (See passage 0 in the chart) and half a machine activated and then select the program 2S and the calculation of the tracks will be made automatically. Image: the set of the set of the track of the

6.7.5. CHARTS OF RHYTHMS OF THE SYMMETRICAL TYPE









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6.7.6. CHARTS OF RHYTHMS OF THE ASYMMETRICAL TYPE (Left side of field)











6.7.7. CHARTS OF RHYTHMS OF THE ASYMMETRICAL TYPE (Right side of field) POSITION OF THE TRAMLINE VALVES ON THE COULTER BAR ᇉ COLLEGAMENTO ELETTRICO TL1 TL2 2 2 ΑI В A= Axle width of the sprayer B= Width of sprayer S= Width of coulter bar T Ó Ref.N R 0 2R Ref.N 16 Ο 4R



	POSITION OF THE TRAMLINE VALVES ON THE COULTER BAR
Ref.N o 6R	
Ref.N o 8R	



6.7.8. SPECIAL TYPES OF RHYTHMS



RISULT	REF.NO	LENGTH	SX (TL1)		DX (TL2)	
		•				-
1.33	999	4	1	4	3	2
2.67	999	8	7	2	5	4
3.33	20	10	9	2	6	5
4.67	999	14	3	12	7	8
5.33	25	16	14	3	9	8
6.67	999	20	4	17	10	11
9.33	999	28	5	24	14	15



The program number indicated in the above chart with 999 does not exist in the list input in the computer. However it is sufficient to input the data concerning the shutting off of the bouts as explained in the chart in the area concerning manual programming.













RESULT	REF.N O.	LENGTH	SX (TL1)	DX (TL2)
1.33	999	4	3	2	1	4
2.67	999	8	5	4	7	2
3.33	21	10	6	5	9	2
4.67	999	14	7	8	3	12
5.33	24	16	9	8	14	3
6.67	999	20	10	11	14	17
9.33	999	28	14	15	5	24



The program number indicated in the above chart with 999 does not exist in the list input in the computer. However it is sufficient to input the data concerning the shutting off of the bouts as explained in the chart in the area concerning manual programming.













RESULT	TYPE OF RHYTHM	SIDE OF FIELD	OFREF.NLENGTSX (TL1)DXLDO.H		SX (TL1)		DX (TL2)
15	ASYMMETRICAL Special	Left	22	6	4	3	6	1
1.5	ASYMMETRICAL Special	Right	23	6	6	1	4	3
2.5	ASYMMETRICAL Special	Left	16	10	7	4	9	2
2.0	ASYMMETRICAL Special	Right	15	10	9	2	7	4
3.5	ASYMMETRICAL Special	Left	28	14	13	2	9	6
5.0	ASYMMETRICAL Special	Right	29	14	9	6	13	2
4.5	ASYMMETRICAL Special	Left	18	18	16	3	12	7
4.0	ASYMMETRICAL Special	Right	19	18	12	7	16	3
5.5	ASYMMETRICAL Special	Left	999	22	14	9	3	20
5.5	ASYMMETRICAL Special	Right	999	22	3	20	14	9
	ASYMMETRICAL Special	Left	30	30	27	4	19	12
7.5	ASYMMETRICAL Special	Right	31	30	19	12	27	4









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6.7.9. Personalized tramline programs

If you realize that the program you want is not in the list input in the computer, you can program a personalized rhythm.

Procedure



⇒ The screen shot "SETTINGS" will be displayed.

2. In the field "Ref.No." select the rhythm number "999".

 \Rightarrow All stored tramline data are hidden.

3. Put in the parameters in the fields "Length", "Sx", "Dx".

4. The values which have been put in remain displayed on the screen, even if a different program is chosen. In order to use the personalized tramline it is always necessary to select" **Ref. No. "999".**

6.7.10. Section control (half machine)

With the section control it is possible to use one of the 2 sections of the coulter bar.

In the main screen shot you will be able to see which one of the 2 sections is active and which one is shut off.

If a single product is distributed with both metering units, the shutting off of one of the 2 sections will exclude the use of one of the electric motors connected with one of the sections of the coulter bar.

If a different product is distributed with each metering unit, it means that each metering unit will have to distribute both seed and fertilizer during the entire duration of the operation.

The shutting off of one of the sections is determined by the shutting off of half of the outlets of the distribution head to which the metering unit is connected through the relevant device.



Example of machine distributing a single product with both metering units



Example of a machine for the distribution of a different product for each metering unit.







Example: Both sections are active.



Example: The right-side section of the coulter bar is shut off.

ICON	MEANING
	It turns on or off the left side of the coulter bar: the electric motor of the left side coulter bar is temporarily turned off
	It turns on or off the right side of the coulter bar: the electric motor of the right side coulter bar is temporarily turned off

Procedure

1. From the main screen shot press one of the 2 necessary icons



2. Lower the machine to the ground and drill: only half of the nominal value quantity will be

distributed over the section of the active coulter bar.



6.8. VIEWING THE DATA

6.8.1. **RESULTS**

The screen shot "Results" displays the quantity of the product distributed in the worked area.

You can erase the data displayed on the screen before you begin the next drilling operation

It is also possible to view the results for each product in the screen shot "PRODUCT DATA BANK".

ICON	MEANING
I I I I I I I I I I I I I I I I I I I	It erases the displayed values
Σ=	It brings back the screen shot "General Results"

The following meters are present

- "Surface" Area wherein the implement was in the working position.
- ""Quantity" Drilled quantity
- "Surface yield" Extension of worked area per hour (ha/h).

Procedure



 \Rightarrow The screen shot "**Results**" will be displayed.

6.8.2. General Results

In the screen shot "**General Results**", you will see all the parameters documenting the work performed by the system from the time when the first start-up has occurred (the time for the configuration by the manufacturer is also included

- "Usage time" time during which the system has remained turned on (min.)
- "Total Time" time during which the system is in the working phase (drilling time) (min.)
- "Total Distance" Worked distance (Km)
- "Tot. Surface" worked area (ha)
- "Surface yield" Extension of worked area (ha/h.)
- "Total Quantity " Total quantity of seed for each metering unit (to be selected manually)

Procedure



1. In the main screen press

 \Rightarrow The " **General Results**" screen will be displayed



7. CONFIGURATION OF THE COMPUTER FOR THE WORKING PHASE

7.1. INPUT OF THE DIMENSIONS (GPS ANTENNA ON THE TRACTOR)

The geometry of a farm implement is defined by a series of parameters which describe its dimensions. The geometry is very important for all systems controlled by GPS.

The distances shown depend on whether the implement is on wheels, is mounted on the tractor or is self-propelled.

It is necessary to input the distances of the coulter bar and of the connectors.

This pictures shows a machine on wheels: input the values as listed below:

Geometry of the coulter bar







Procedure

1. In the main screen press::



- ⇒ The screen shot "Geometry" will be displayed.
- ⇒ On the screen you will be able to see which dimensions are needed and then you will input them manually.

2. Put in the dimensions

 \Rightarrow In addition you can put in the delay times for the startup of the implement.

If the implement starts up with too much delay, increase "INERTIA" with on

If the implement starts up too soon increase "INERTIA with OFF"".

7.2. SELECT AND PROGRAM THE SPEED SOURCE

It is possible to choose the source from which to receive the signal for the forward speed.

- Speed source from tractor
- Speed source from implement
- Simulated speed source

7.2.1. Using the speed of the tractor

The seed drill may be supplied without the sensor for detecting the speed (radar). In the ISOBUS tractors the signal can be sent to the control unit of the seed drill through the ISO cable.





7.2.2. Calibration of the speed sensor (radar) with 100 meter test

The calibration of the speed sensor with the 100 meter method is necessary to determine the number of impulses received by the sensor over a distance of 100 meters.

When the number of impulses is known, the computer is able to calculate the current speed. After the first calibration it is possible to manually input the number of impulses in the parameter "**Calibration Factor**".

Procedure

With the tractor in parking position, stop the drilling procedure



- 1. Enter the field with the implement
- 2. Set a reference mark in the field with a stick identifying a part of the tractor which can be easily seen (For example the axle of the wheels)
- 3. Measure a distance of 100 meters in a straight line and set in the field a reference mark for the end of the test.
- 4. From the main screen shot press:

X		000		000		Δ
10.002	then		then () and I	~~

 \Rightarrow The screen shot "Calibration/Speed" will be displayed.



5.

6.

⇒ In the parameter "Speed Source" the words "Implement at work" will appear.



⇒ The screen shot "Calibration" will appear.

- 7. Press to start calibration
- 8. Drive at the most constant speed possible between the reference marks set in the field.

⇒ While driving the counted impulses will be displayed in the field "Number of impulses"



9. Press once the reference mark of the 100 meters has been reached. ⇒ The calibration has been completed

7.2.3. Using the simulated speed

In order to check the correct operation of a sensor it is possible to simulate a speed; it can also be used if there are problems in the reading of the speed signal from the tractor or from the implement. The distribution of the seed will be in relation with the (preset) speed. Therefore, it is necessary to drive at the simulated speed.



CAUTION



Damages caused by the implement.

Should this function be activated when the implement is standing still, the driver may activate functions which would otherwise be activated while the implement is moving.

This may cause injuries to people standing near the implement.

Make sure that nobody is standing near the implement





ress to confirm.

 \Rightarrow When the computer is turned on again the simulated speed will automatically be set on the "0" value.

7.3. CONFIGURATION OF THE PRODUCTS

The data for the configuration of the products are stored and they can be re-used whenever you wish. The selected product will change the parameters which are present in the main screen shot "Setting the seed quantity", but before starting the seed drilling operations IT IS ALWAYS NECESSARY TO PERFORM THE SEED CALIBRATION TEST – AND TO MAKE SURE THE METERING UNIT IS OPEN, because the opening of the metering unit is not a stored parameter.

It is possible to program all the products you work with in the data bank of the products.





3. Configure the parameters

⇒ You must have configured a product



4. By pressing you also have the possibility of erasing the configuration of a product. In addition you can see the results of each product in the screen shot "**Product data bank**"

The configuration data of the products are stored and they can be used again whenever you wish , but before starting the seed-drilling operations <u>IT IS ALWAYS NECESSARY TO PERFORM THE SEED</u> <u>CALIBRATION TEST – AND TO MAKE SURE THE METERING UNIT IS OPEN</u>, because the opening of the metering unit is not a stored parameter.

7.3.1. Parameter "Rename"

Input a name or a number to identify the product

7.3.2. Parameter "Product Type "

Input the type of product. The icons displayed in the work screen shot depend on the type of the selected product.

You must always select a type of product.

- 🧭 " Seed "
- 🔭 " Fertilizer "

7.3.3. Parameter "Working speed"

The working speed which had been determined during the seed calibration test is displayed.

7.3.4. Parameter "Nominal Value"

The value input for the seed calibration test is displayed.

7.3.5. Parameter "Adapt."

Input the percentage value of increase of the nominal value when you perform manual variations.

7.3.6. Parameter "Calibration Factor"

The value determined during the seed calibration test is displayed

7.3.7. Parameter "Transmission Ratio"

Input the transmission ration of the metering unit;

Example: A transmission ratio 2/1 means that one revolution of the motor shaft produces half a revolution of the metering unit shaft.

7.3.8. Parameter "Minimum r.p.m. of the fan"

Input the min. r.p.m. of the fan for the drilling of the seed. If during the working phase the minimum speed of the fan drops below the stored limit an alarm will be displayed.





The minimum and maximum speeds of the fan must always be set within the limits set by the manufacturer (see chart).

The minimum speed of the fan must always be the same, even if you distribute 2 different products

7.3.9. Parameter "Maximum r.p.m. of the fan"

Input the max. r.p.m. of the fan for the drilling of the seed. If during the working phase the maximum speed of the fan rises above the stored limit an alarm will be displayed.

The maximum speed of the fan must always be the same, even if you distribute 2 different products

7.3.10. Parameter "Limit of level alarm"

Select the limit when the alarms of the seed reserve must be displayed.

The following limits are possible:

- " Low "
 - Both the "Low level in hopper" and "Empty hopper" alarms are activated
- " Empty " Only the "Empty hopper" alarm is activated "
- "De-activated "
 All seed level alarms are de-activated.

7.3.11. Parameter "Difference tolerance "

For each product input a tolerance limit of the parameter "Nominal value" beyond which an alarm will be activated. The left-side value is valid for the upper limit and the right-side value is valid for the lower limit.



7.4. ASSOCIATION OF PRODUCTS WITH A HOPPER

In the screen shot "Settings / Hopper", input one product for each hopper. The following parameters are possible:

• "Hopper "

It determines the hopper selected at present - Hopper 1 Metering unit 1 - Hopper 2 metering unit 2



"Assigned Product"

It defines which product should be associated with a hopper.

• "Status"

It indicates whether the assigned product is already active **Procedure**

1. From the main screen shot press:



⇒ The scree shot "Settings / Hopper" will be displayed.

2. Configure the parameters

3. By pressing you can change the "Status" of the selected product.

7.5. SELECTION OF THE UNIVERSAL TERMINAL (UT) AND OF THE TASK CONTROLLER (TC)

If you are using more than one terminal or more than one Task Controller you can select the one you wish to use

1. From the main screen shot press:



- 2. Select which Universal Terminal (UT) you wish to use.
- 3. Select which Task Controller (TC) you wish to use



DIAGNOSIS - 60



8.1. DIAGNOSTIC

In the diagnostic you can read the measured values for all the poles which are connected with the wiring box of the Sensor/Actuators In addition you can test whether the functions of the computer are working as desired.

The diagnostic of the system can only be performed if the seed-drilling procedure has been stopped the words "Application has been stopped" will appear.



and on the screen

In the diagnostic you will see the following screen shot:



3.

- 1. Number representing a specific function
- 2. Parameters and measured values

"Number of the pole of the cable connected (referred to the connector with 42 poles).You can find the meaning of the symbols and abbreviations in this section.



ICON	MEANING
	It recalls the "Version Number" on the screen
	It activates the transmission of the diagnosis data to the CAN Bus. It only appears when a password has been previously input.
	It de-activates the transmission of the diagnosis data to the CAN Bus.
	It only appears when a password has been previously input.





ICON	MEANING
B	It sets at "0" the actually measured values.
000	It recalls the next function

It is possible to find the following abbreviations on the poles of a cable:

- "MA"

MA means the No. of pole of the cable with 42 poles which a sensor/actuator is associated with

• "1S"... "4S"

I It indicates the computer number which a certain sensor is connected with

Example: 1S14 means first secondary computer, pole No. 14

Depending on the functions of the individual components, the following measured values are possible

- ""Frequency" Measured frequency of the current function.
- "Rotational Speed" Measured rotational speed of the current function
- "Impulses"
 Measured number of impulses of the function
- "Analogous values"
 Current analogous measured value of the function. The analogous value always increases or decreases proportionally.
- "Power Measuring"

Current measured power flow of the function. The value of the power measured must always increase or decrease proportionally.

Example: the faster the r.p.m. of the electric motor, the higher will be the value of the measured power.

- "Input"
 - "low" The function is de-activated. There is no voltage in the input
 - "high" The function is activated. There is voltage in the input.

You can input the following parameters:

- "Output value LS"
 - "PWM"

The percentage of speed at which one wants the electric motor to turn is input from 0% to 100% in order to check whether the encoder is connected, for instance.

• "Rev."

The r.pm. at which one wishes the electric motor to turn are input (min. 430 – max. 2500), in order to check, for instance, if the encoder is connected.



• "Output valore HS"

- "low" The function is de-activated. There is no voltage in the input

- "alto" La funzione è attivata. C'è voltaggio nell'input

• "Output valore HS/LS"

- "Low" The function is activated or de-activated. It depends how the function is turned on: there may be or not be any voltage.

- "**High**" The function is activated or de-activated. It depends how the function is turned on: there may be or not be any voltage.

"Pieno ponte"

With the relevant selection you can test the linear actuators.

- "Stop" The function is de-activated. The linear actuator does not move

- "+/-" The linear actuator moves in one direction. The direction it moves in depends on its relevant connection..

- "-/+" The linear actuator moves in one direction. The direction it moves in depends on its relevant connection.

Procedure





- Empty the hopper or, as an alternative, open the flaps of the seed calibration test and place some containers underneath, if you want to check the working of the electric motors.



⇒ The screen shot "**Diagnostic**" will appear.

⇒ On the screen you can see the measured values and the possible settings for individual functions..

Tables of the abbreviations to be checked

MA	SENSOR / ACTUATOR
MA2	Micro switch / work sensor
MA3	SEED LEVEL 1
MA14	Push-button for the calibration test
MA19	Pre-emergency TL1
MA20	Pre-emergency TL2
MA21/MA22	TRAMLINE 1
MA25/MA26	TRAMLINE 2
MA34	Encoder of electric motor 1
MA35	Fan Speed
MA36	Sensor of metering unit 1
MA37	RADAR
MA38	Sensor of metering unit 2
MA39	Encoder of electric motor 2
MA40	SEED LEVL 2



In order to verify the correct operation of the sensor of metering unit 1(MA36) and its corresponding encoder, which is connected with that motor, it is necessary to let the motor 1 turn and then input a value into "PWM".

For the working sensor all you have to do is bend the stick of the micro switch (MA2)

For the sensors of the seed level let a second person help you. Put one hand on the sensor and then move it away (MA3-MA40)

For the radar all you have to do is wave a hand in front of the radar surface (MA37)

For the fan start the hydraulic fan (MA35)

For the line of tramline1 and the line of tramline 2 check the opening and shutting of the valves which are present on the distribution head.

For the hydraulic electro valves of the rear pre-emergency discs make sure that MA19/MA20 commute.

8.2. CHECK THE VERSION NUMBER

Procedure

To check the version number do the following:





⇒ La schermata "Numero Versione" apparirà

 \Rightarrow All the version numbers will be visible.

The following version numbers are possible:

VERSION NUMBER	MEANING
Version number	Serial number of the computer
HW version	Hardware version of the computer
SW (inizial)	Delivered software version of the computer
SW (current)	Current software version of the computer
Pool version	Version of the whole with texts and pictures
Hydr. version	Version of the configuration of the hydraulic system
CL version MA	Version of the control configuration of the main computer
CL version S	Version of the control configuration of the secondary computer



8.3. LIST OF ALARMS

8.3.1. ISO Alarms

Overview of the alarm messages

ID	ALARM TEXT	POSSIBLE CAUSES	REMEDY
001 /011	The system has been stopped. Re-start is required .	The connection between the second computer ECU midi and the first one has been interrupted .	Re-start the computer.
		The operative system Download manager for the update of the program has been started	
002	The configuration has been modified. The computer is restarting	La configuration has been changed	Wait for the computer to re-start
003	Value is too high.	The input value is too high.	Input a lower value
004	Value is too low	The input value is too low.	Input a higher value.
005	Error in the reading or writing of the data in the flash memory or EEPROM.	An error has occurred while the computer was booting up	Re-start the computer.
006	The data have been successfully imported.		
007 /012	Error registered in the configuration	Wrong configuration.	Check the configuration
008	Procedure not allowed while a function is active in the ISOBUS-TC application.	A function is active in the ISOBUS-TC application.	De-activate the function
009	The speed signal from CAN BUS has been lost.	The cable has been disconnected	Check the connection of the cable
010	Error in the initialization of the configuration Control Layer.	There is an error in the configuration of the Control Layer.	Check the configuration.
017	The Application has been interrupted.		

8.3.2. Adjustment alarms

Overview of the alarm messages

ID	ALARM TEXT	POSSIBLE CAUSES	REMEDY
401	Fan speed too low	The actual speed is lower than the value of the parameter "Minimum fan speed"	Increase the rotation speed or change the alarm and lower the parameter "Minimum fan speed"
402	Fan speed too high	The actual speed is higher than the value of the parameter "Maximum fan speed"	Decrease the rotation speed or change the alarm and increase the parameter "Maximum fan speed"
407	The metering unit motor is idle.	The current forward speed is lower than the minimum calculated speed	Stop immediately! Decrease the opening of the metering unit and do the calibration test again, until the minimum calculated forward speed is of about 1 to 1.5 Km.
408	The shaft of the metering unit is still.	The sensor on the metering unit shaft does not register any motion in the metering unit.	Stop immediately! Visually check whether there are any damaged components in the transmission between the metering unit and the electric motor (This operation must be performed with disconnected power).
			 -Check the distance between the sensor and the magnet Make sure that the magnets are present on the axle of the metering unit
409	The motor of the metering unit turns too fast.	You are driving too fast.	Slow down the forward speed or change the opening of the metering unit (and perform the calibration test again)
410	The motor of the metering unit turn outside of the adjustment range.	The current speed of the metering unit is either higher or lower than the values of the calculated speeds.	Decrease or increase the forward speed or change the opening of the metering unit (and perform the calibration test again)
411	The motor of the metering unit does not keep the nominal value.	You are driving too fast or too slow and it is not possible to reach the "nominal value" at the current speed.	Drive more slowly or faster, so that the computer can control the nominal value



ID	ALARM TEXT	POSSIBLE CAUSES	REMEDY
412	The application has been interrupted because of a critical error		
413	The application has been interrupted because the forward speed is too high.	The forward speed is too high.	Decrease the forward speed.
414	The calibration has been interrupted because of an alarm.		
611	Low level in the hopper.	There is not enough seed or fertilizer in the hopper.	Fill up the hopper
612	The hopper is empty.	There is no seed in the hopper	Fill up the hopper
622	Battery charger is defective	The alternator of the battery charger is malfunctioning	Check the alternator of the battery charger.

8.4. COMPATIBILITY BETWEEEN THE TERMINAL OF THE TRACTOR AND THE COMPUTER OF THE SEED-DRILL

If the following icon appears after the application has been started, it means that the terminal is not compatible with the computer of the seed-drill. You will need a different terminal in order to be able to work with the computer of the seed-drill.



The terminal can be incompatible with the computer of the seed-drill because of the following reasons

ID	MEANING
018	An unidentified error has occurred
019	There is insufficient storage space available in your terminal
020	The height resolution of the icons is too low (less than 60 pixel).
021	The width resolution of the icons is too low (less than 32 pixel).
022	The number of physical or virtual icons is too low (less than 8).
023	The terminal does not support a color depth of 256 colors.
024/025	The resolution of the terminal for screen shots is too low (less than 200 pixel).
026	The configuration of inputs and outputs seems to be wrong


8.5. COMPATIBILITY WITH ISOBUS TERMINALS

8.5.1. 01.08.00

Computer Ecu Midi: V01.08.00

TERMINAL	SW	ISOBUS- TC	UT	SC	SC: DELA YS	SC: GEOM.	AU X2	MULTI- CONTR OL
Muller Elektronik Terminals of the " Touch " type	- 2.10.14	>	~	~	 	 Image: A start of the start of	~	MB: MD: MP: MR: MR: MS:
Muller Elektronik Terminals of the " Basic - Confort " (no Touch) type	4.12.00	>	~	~	 	×	~	MB: 1) MD: 4 MP: 4 MR: 6 MS: 4
Amapad	3.17.53a z	✓	~	~	0	~	~	MB: MD: MP: MP: MR: MS:
Amatron 3	01.06.00	>	~	2)	 	×	~	MB: ○ 2) MD: n.t. MP: ✓ MR: ○ MS: ○
Case AFS 700-Pro	30.4.0.0	~	\checkmark	n.t.	\checkmark	~	\checkmark	0
Fendt 7"		0	\checkmark	0	0	0	0	0
Fendt 10"	779	~	~	~		~	~	MB: MD: MP: MR: MS:
JD 1800	2.13.102 3	0	~	0	0	0	0	0
JD 2600	2.8.1033	0	0	0	0	0	0	0
JD 2630	3.30.123 2	~				 ✓ 	n.t.	MB: MD: MP: MR:

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TERMINAL	SW	ISOBUS- TC	UT	SC	SC: DELA YS	SC: GEOM.	AU X2	MULTI- CONTR OL
								MS: 🛇
Kverneland Isomatch Tellus Go	V1.02	0	~	0	0	0	~	0
Kverneland Isomatch Tellus Pro	V1.12	~	~	~	~	~	~	0
Topcon X30	3.18.43	~	~	~	0	~	~	MB: ✔ MD: ♥ MP: ♥ MR: ♥ MS: ♥
Trimble TMX-2050	3.5.1.3	✓	\checkmark	0	0	0	\checkmark	0

Notes:

1) If there is more than one coulter bar, the coulter bar for SECTION-Control can be selected in the ISOBUS-TC application.

2) If there is more than one coulter bar, only the first bar is used for the SECTION-Control.

Legenda:

- Terminal = The computer has been tested with this terminal.
- SW = Software version of the terminal has been tested .
- ISOBUS-TC or TC = is the "nominal value" correctly transmitted from the Task-Controller of the terminal to the computer of the seed-drill ?
- ISOBUS UT or UT = Does the computer of the implement have access to the terminal? Is it possible to work with the computer of the implement using the terminal?
- Section-Control or SC = Can the SECTION-Control activate the sections of the computer of the implement?
- SC: Delay = Is the delay input in the work computer? If so, is it correctly transmitted to the terminal?
- SC: Geom. = Has the terminal loaded the geometry input into the work computer?
- Aux1 = Can the computer of the implement be activated through a joy stick in Aux1 mode?
- Aux2 = Can the computer of the implement be activated through a joy stick in Aux2 mode?
- Read FS = Can the computer of the implement use the function of the server file of the terminal for reading?
- Write FS = Can the computer of the implement use the function of the server file of the terminal for writing?
- MULTI-Control = Is the computer of the implement able to use the following functions together with the Task Controller of the terminal?

- MB – MULTI-Boom – For the computers of the machine ISOBUS which must control different metering units and different widths. Example: Seed-drill with fertilizer control and seed control

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- MD – MULTI-Device – For systems which adopt at the same time more than one computer on the implement. In this case each computer controls at least one metering system.

Example: A sprayer with 2 manifolds, one computer for each manifold.

- MP – MULTI-Product – For computers which are capable of distributing more than one product. In this case each product may have its own hopper and its own metering unit.

- MR – MULTI-Rate – For computers which, besides activating different metering units are also able to assign to each metering system a "nominal value" from a defined map.

- MS – MULTI SECTION-Control –For computers which support the "MULTI-Device" or the "MULTI-Boom" and are therefore capable of automatically controlling the section control of each working element. For each work element a configuration is created and stored.

Example: Sprayer with 2 bars and 2 manifolds. The automatic Section control automatic functions for both manifolds.



9. TECHNICAL SPECIFICATIONS

9.1. TECHNICAL SPECIFICATIONS OF THE COMPUTER

Processor:	Fujitsu MB96F338RS 48MHz with 32kByte RAM and 544kByte flash ROM
Memory:	64kBit I2C-EEPROM and 32MBit SPI flash memory
Connections:	 16-pin plug for power supply and CAN (J1939 or ISO 11783) Optional second 16-pin plug for cascading other ECUs 42-pin plug for sensors and actuators
Power:	9 - 32 V DC
Consumption:	110 mA (at 13.8V without power to the Power exits and without power to the sensors)
Temperature Range :	-20 to +70 °C
Frame	Case made of anodized aluminum,
Degree of protection:	IP66K (dust resistant and protected against high-pressure water jets in accordance with DIN40050 Part 9: 1993)
Environmental tests:	Vibration test and anti-collision test in accord. with IEC68-2
Dimensions:	262mm x 148mm x 62mm (WxHxD)
Weight:	0.84 kg

9.2. AVAILABLE LANGUAGES

You can select the following languages to operate your implement

SOFTWARE VERSION	AVAILABLE LANGUAGES
01.05.21	BG, CS, DE, EN, ES, FR, IT, NL, PL, RU, TR
01.06.04	HU
01.07.xx	DA, PT, SK, UK
01.08.00	EL, ET, FI, HR, LT, LV, NO, RO, SL, SR, SV



NOTE:





NOTE:





NOTE:



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EMPLOYEZ TOUJOURS LES PIECES DE RECHANGE ORIGINALES IMMER DIE ORIGINAL-ERSATZTEILE VERWENDEN ALWAYS USE ORIGINAL SPARE PARTS USAR SIEMPRE REPUESTOS ORIGINALES



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