



ENG

**ISOBUS ECU1224 SPRAYER
INSTRUCTION AND USER MANUAL**

WARNING

Do not use this device before reading the manual

Items :

8410073, 8410074,
8410075, 8410076,
8410077, 8410078;
D00600006, D00600009.



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2 INTRODUCTION

Congratulations Dear User,

You have chosen a product by Tecomec, a leading company in the development and production of electronic systems for agriculture. This manual provides information about operating and maintaining. For your safety and the safety of the people working with this equipment, it is very important that you read the manual carefully before using this system.

Proper maintenance extends the life of the product and ensures the safe operation of the system.

The manufacturer reserves the right to redesign and change the system as necessary without notification.

ECU 1224 is an Electronic Control Unit ISOBUS certified, dedicated to sprayer implement. ECU 1224 is a rate controller capable of Automatic Section Control when connected to ISOBUS Virtual Terminal enabled for GPS navigation. This device works only with certified ISOBUS VT, please verify documentation of your VT installed on the tractor.

3 LEGEND

This user's manual uses some conventional signs, to lead the user during the reading of important instructions and advices; these concern especially the setting of the parameters of the system and thus its correct working.

Please pay attention to the following icons:



Info: Indicates further explaining and information.



DANGER: Indicates an imminently hazardous situation that, if not avoided, could result in DEATH OR VERY SERIOUS INJURY.



WARNING Indicates a potentially hazardous situation that, if not avoided, may result in MINOR INJURY or system damage



Indicates an operation that can be repeated many times, cyclically.

4 INTENDED USE

ISOBUS ECU 1224 is high performance electronic control unit for liquid distribution, specially designed to work on agricultural machinery for spraying. The accurate control of the sprayer parameters increases the effectiveness and efficiency of the treatments, reducing the waste of chemicals.

ISOBUS ECU 1224 is certified ISO 11783. The ISO 11783 standard protocol usually called ISOBUS protocol is the result of an agreement between the main manufacturers of agricultural machinery and equipment. ISOBUS allows communication between the ISOBUS display installed in most recent tractors and sprayers, seeder etc. A unique display in the cabin (called Virtual Terminal) will control your implement, avoiding expensive and bulky proprietary displays. The certification guarantees you full compatibility with all ISOBUS certified tractor's consoles.

5 WARNINGS



WARNING The power supply must be protected with fuse (10A recommended). If it is not the case, Tecomec s.r.l is not responsible for damages to ISOBUS ECU 1224.



WARNING: Disconnect power supply cable ECU when battery is undergoing recharge. If it is not the case Tecomec s.r.l is not responsible for damages to the ECU.



WARNING: Disconnect power supply ECU before reparations, or welding procedure on the vehicle. If it is not the case, Tecomec s.r.l is not responsible for damages to the ECU.



WARNING: For a correct functioning, please make sure that the battery voltage is higher than 10, 5 Volt.



WARNING: This marking on the product or on its packaging illustrates that this product may not be disposed of with normal household waste.



The user is responsible for the disposal of this equipment through a designated collection of electrical and electronic equipment. To determine where to dispose of such electrical and electronic waste, contact the government office, the waste disposal organization serving the family, or the company where the product was purchased.



WARNING: Before cleaning the implement with high pressure water jets, protect the equipment from water. Do not orientate high pressure water jet directly on ECU or cables connected to ECU.



WARNING: Clean equipment using a soft, damp, lint-free cloth. Do not use sprays, solvents, abrasives, or sharp or pointed objects that could damage equipment



WARNING: Before operating or installing this equipment read and understand manual and all safety information. Good safety practices protect operators from

injuries. Safety practices reported in this manual do not override standard good practice.



WARNING: Always check that any suspended vehicle attachments are lowered to the ground before beginning repair or maintenance work on a vehicle.



WARNING: Wear appropriate protective clothing for the task being undertaken and conditions.



WARNING: ECU helps the operator to regulate rate control and automatic section control, but the operator remains the responsible for all the activities. Operator must keep the control of the vehicle all time. The operator is ultimately responsible for safe operation of this equipment, preventing and repairing faulty parts and calibration.

6 PACKAGE CONTENT

6.1 *Product description*

ISOBUS is the term used to denotate standard ISO11783 “tractors and machinery for agriculture and forestry”. It proposes a standard for the control system and man-machine interface for systems consisting of tractors and implement such as spraying machines, wagons for transportation of agricultural products etc. Before the introduction of ISOBUS every equipment was equipped with its own monitor, which must be positioned in the cab. Thanks to ISOBUS technology a single graphical console called “Virtual Terminal” is in the cab, and now installed on

the most modern tractors. Virtual Terminal can control any ISOBUS compatible implement. Can record data about production process and apply varying doses of plant protection products based on prescription maps using data from the navigation system (GPS) of the tractor.

ISOBUS ECU 1224 regulate chemical quantity, assuring high protection at your crop. Ratio controller keeps constant and uniform chemical coverage on crop. Compensate speed variation regulating pressure in sprayer boom using accurate flow measurement.

Automatic Section Control will avoid spraying overlap in case Virtual Terminal is enabled for GPS section control

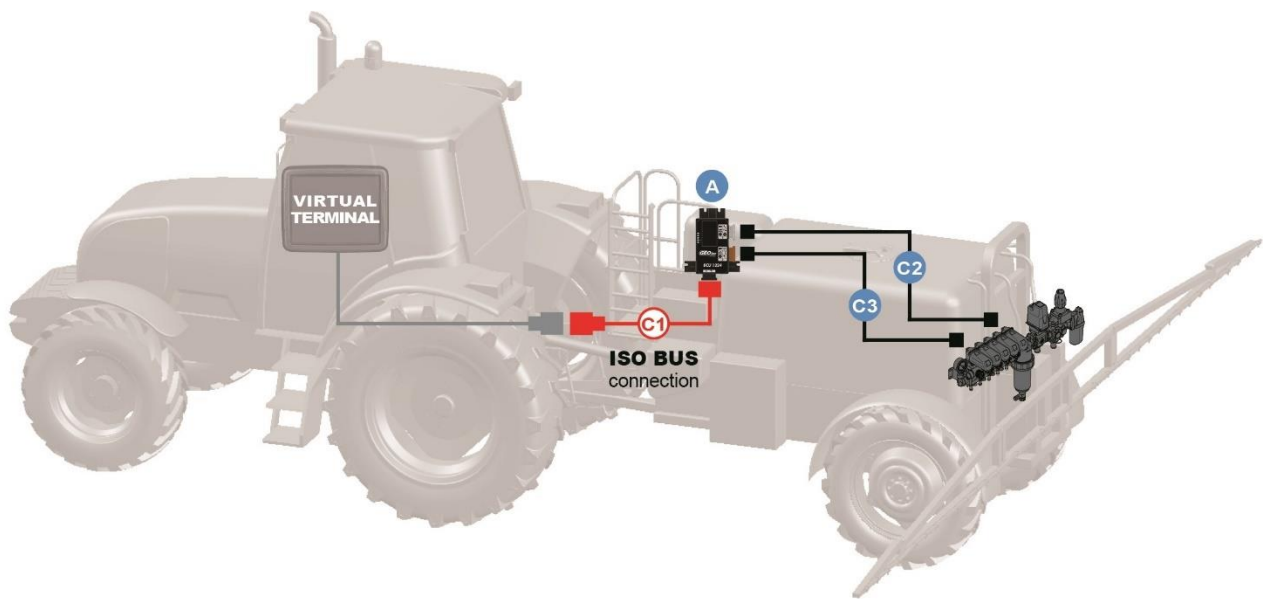


Figure 1

6.2 Kit part number

ECU 1224 Kit contains ECU 1224 and all cables necessary for valves and sensors connection.

Kit is composed by Electronic ECU (A), and cables for valve connections: (C2), (C3) see. Main connection cable (C1) with ISOBUS connector is not included; it must be ordered separately according the minimum length required. See chapter ACCESSORIES.

Depending on harness included in ISOBUS ECU 1224 can operate:

- From 2 up to 11 motorized valves (use 2 Wires valve connection, 12 Volts: 9 section valves, main valve, and regulation valve)
- from 2 up to 18 motorized valves (use 3 Wires valve connection, 12 Volts: 16 section valves, main valve, and regulation valve)

Here reported codes for ordering

Table 1

8410075	ISOBUS ECU 1224 SPRAYER from 2 up to 6W 2WIRES VALVE
8410074	ISOBUS ECU 1224 SPRAYER from 2 up to 7W 2 WIRES VALVE
8410073	ISOBUS ECU 1224 SPRAYER from 2 up to 9W 2 WIRES VALVE
8410076	ISOBUS ECU 1224 SPRAYER from 2 up to 11W 3 WIRES VALVE
8410077	ISOBUS ECU 1224 SPRAYER from 2 up to 13W 3 WIRES VALVE
8410078	ISOBUS ECU 1224 SPRAYER from 2 up to 16W 3 WIRES VALVE

6.3 ISOBUS ECU 1224 Sprayer Kit Content

- User manual and instruction
- A) ISOBUS ECU 1224
- C2) Valve/sensors connection cable (Gray connector)
- C3) Valve/sensors connection cable (Brown connector) *
- T1) ISOBUS terminator (connect on ISOBUS cable , ISOBUS Cable must be purchased apart)

*C3 cable can be present or not depending on Kit composition, in case your kit drives more than 6 section valves Brown connector cable is included in kit



Figure 2

7 INSTALLATION SCHEME

In this chapter are reported schemes and information about hardware installation

7.1 Harness and cables

ISOBUS ECU 1224 is a full electronic integrated system for dose regulation and Automatic Section control if connected to an ISOBUS Task Controller enabled for this function.

Kit is composed by Electronic ECU (A), and cables for valve connections: (C2), (C3) See Figure 2 . Main connection cable (C1) must be ordered separately according to the minimum length required. See chapter ACCESSORIES.

Use only cables designed and produced by Tecomec for ISOBUS ECU 1224, the use of non-original parts invalidates the product warranty and does not guarantee the correct operation of the device

7.1.1 ISOBUS ECU 1224 Scheme up to 9 Sections

Here below schematic connection for (Kit part number 8410073) scheme report 9 section valves sprayer.

Kit part number 8410073 include harness for 2 wires operated valves

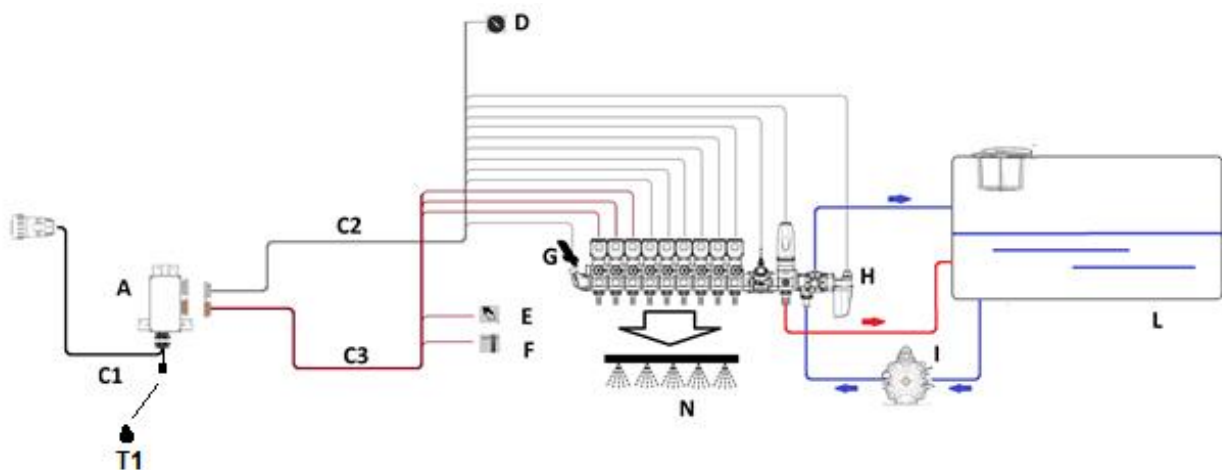


Figure 3 Kit part number: 8410073 includes A, C2, C3.

Table 2

PART	Description	PART	Description
A	Driver ISOBUS ECU 1224	I	Pump
--	-----	L	Tank
--	-----	--	-----
D	Speed sensor (Optional)	N	Sprayer Boom
E	Foam marker (Optional)	C1	Main cable
F	Level Sensor (Optional)	C2	Gray connector valve cable
G	Pressure sensor (Optional)	C3	Brown connector valve cable
H	Electric valves	--	-----

7.1.2 ISOBUS ECU 1224 Scheme up to 9 Sections + Hydraulic

This configuration requires additional ECU for Hydraulic distributor Here below schematic connection for a 9 section valves sprayer with Hydraulic electric distributor. In this example we suppose we are using 2 wires operated valves

External ECU for hydraulic management must be purchased separately contact your supplier for part number.

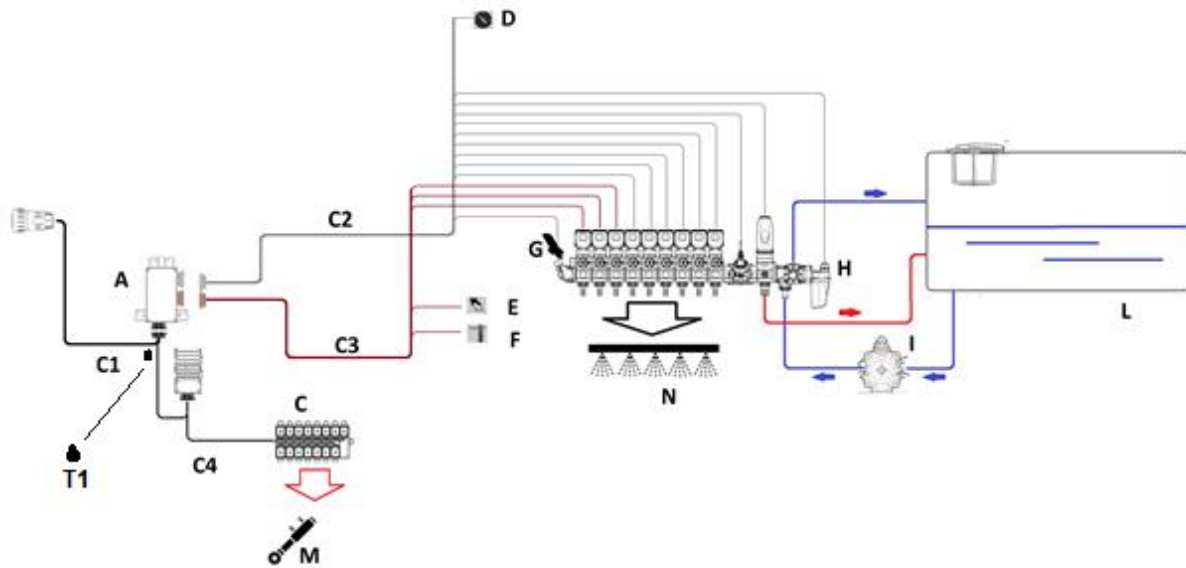


Figure 4

Table 3

PART	Description	PART	Description
A	Driver ISOBUS ECU 1224	I	Pump
B	ECU Hydraulic function	L	Tank
C	Hydraulic electric distributor	M	Hydraulic sprayer system
D	Speed sensor (Optional)	N	Sprayer Boom
E	Foam marker (Optional)	C1	Main cable
F	Level Sensor (Optional)	C2	Gray connector valve cable

G	Pressure sensor (Optional)	C3	Brown connector valve cable
H	Electric valves	C4	ECU Hydraulic cable adapter

7.1.3 ISOBUS ECU 1224 Scheme up to 16 Sections

Here below schematic connection for a 16 section valves sprayer with Hydraulic electric distributor. In this example we suppose we are using 3 wires operated valves

Example of kit: 8410078 ISOBUS ECU 1224 from 2 up to 16W 3 WIRES VALVE

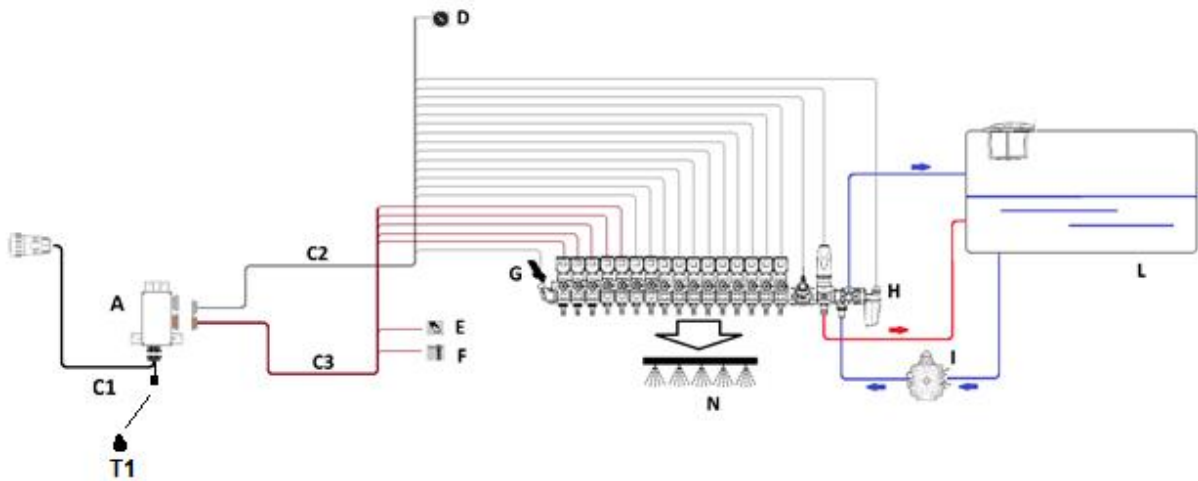


Figure 5

Table 4

Part	Description	Part	Description
A	Driver ECU 1224	I	Pump
		L	Tank
C	Hydraulic electric distributor		
D	Speed sensor (Optional)	N	Sprayer Boom
E	Foam marker (Optional)	C1	Main cable
F	Level Sensor (Optional)	C2	Gray connector valve cable
G	Pressure sensor (Optional)	C3	Brown connector valve cable
H	Electric valves 3 wires		

8 INSTALLATION

8.1 ECU 1224 Installation

ECU 1224 must be installed near electric valves in an area protected by accidental shock and reduced vibrations.

Protect ECU 1224 by heat produced by implement

8.1.1 ECU 1224 Positioning

Fix driver box on a flat surface applying 4 screws into the predefined holes. For better sealing performance set ECU top down as reported in table below.

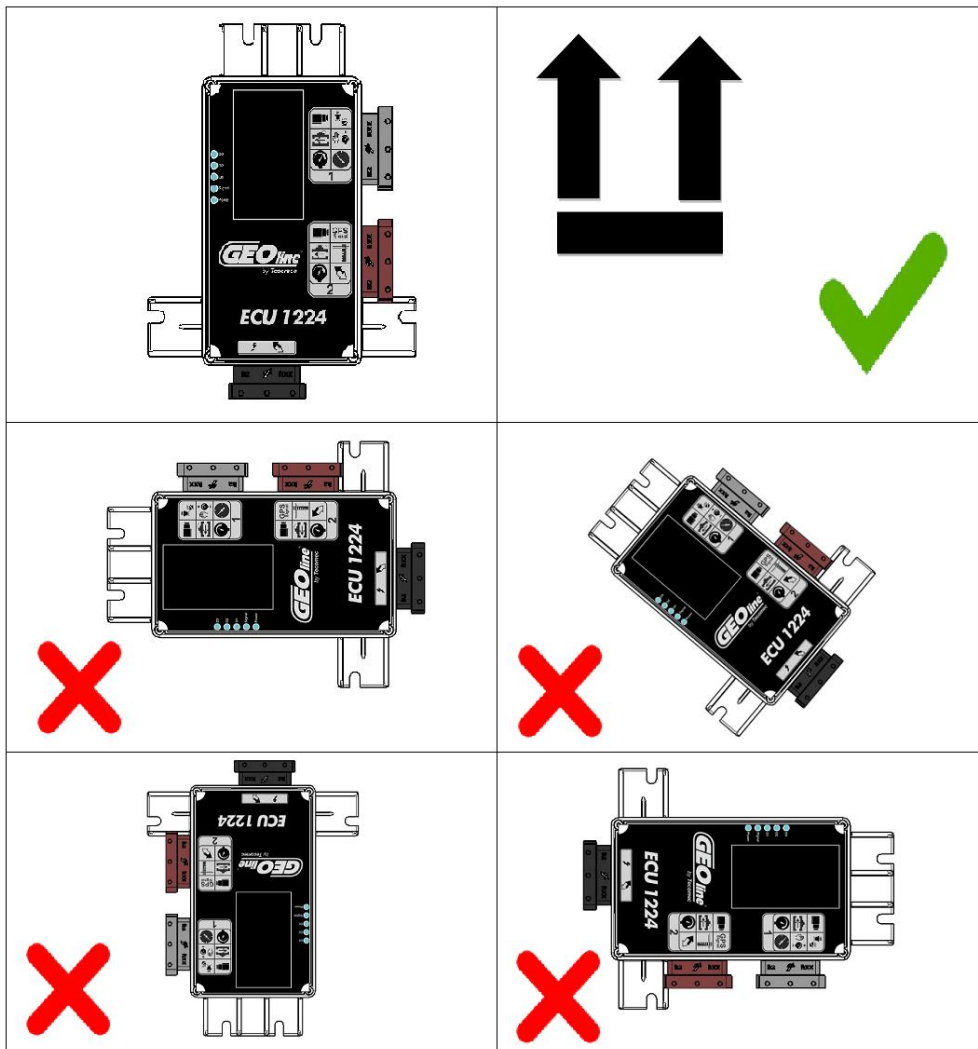


Figure 6

8.1.2 Cables connecting ISOBUS ECU 1224



Figure 7

Table 5

Connector	Description	Connector	Description
C1	Black connector for ISOBUS main cable connection	C3	Brown connector for valves, flowmeter and optional sensors
C2	Grey connector for valves and optional sensors		

The cabling of Input sensors and Output need to be completed before the main cable is plugged to tractor.

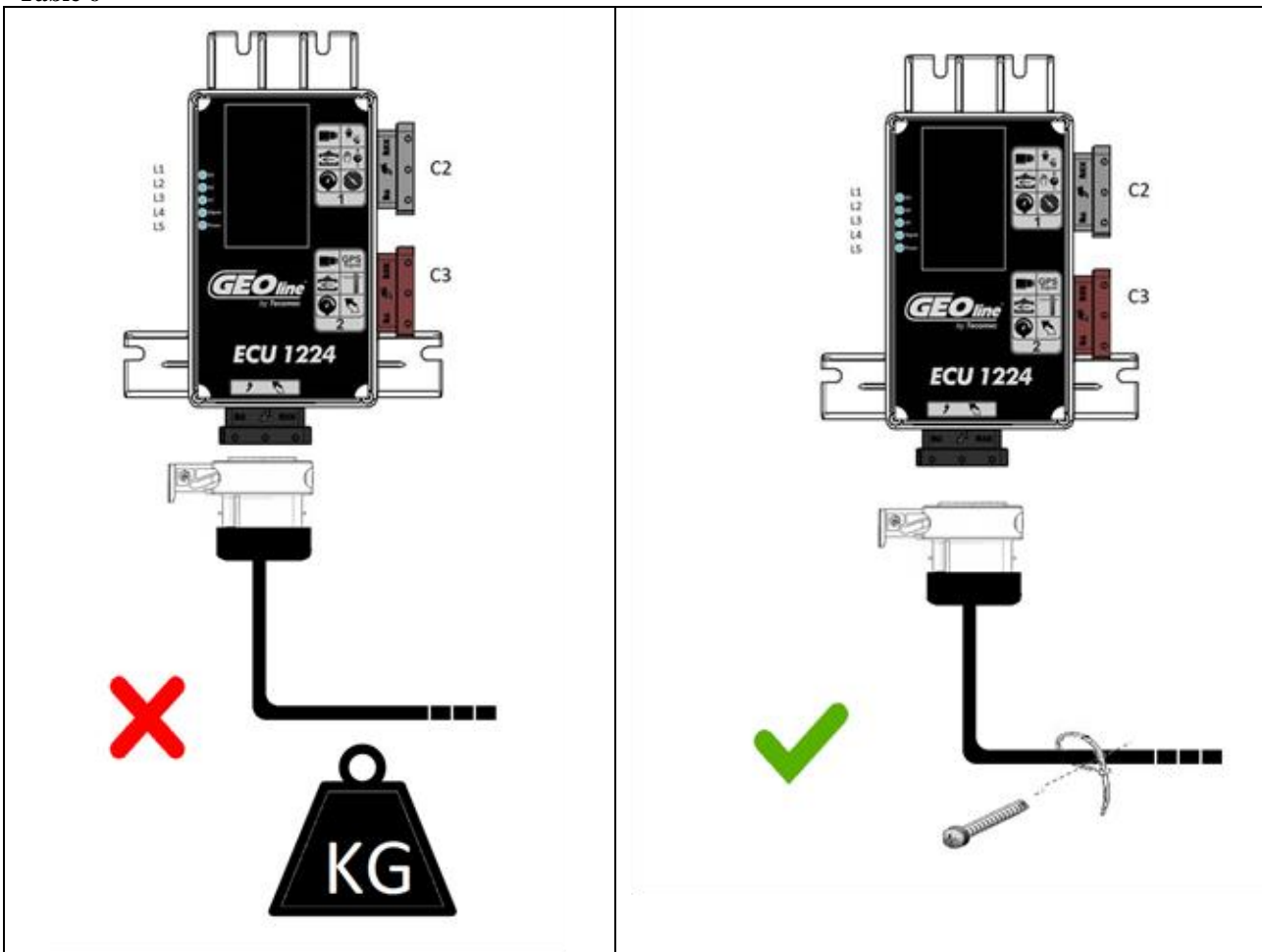
Unused connectors should be protected with a blanking plug or plastic bag to prevent oxidation



Figure 8

Do NOT use high pressure washing machines directly on harness and ISOBUS ECU 1224.

Table 6



Power cable should be fixed to a support at a distance of at least 30cm from the connector itself to relieve the weight of the cable.

Secure the cables with ties where possible. Repeat this operation for all the connectors of the driver box.

8.2 Speed sensor installation

The wheel speed sensor is directly connected to ISOBUS ECU 1224 driver and when used as speed source, it shall be correctly configured in the SETUP page of the user interface (refer to chapter 9) It shall be mounted in the proximity of the rim's bolts (refer to Figure 9) and by detecting the transit of every bolt, it will be able to determine the distance covered in a time base.

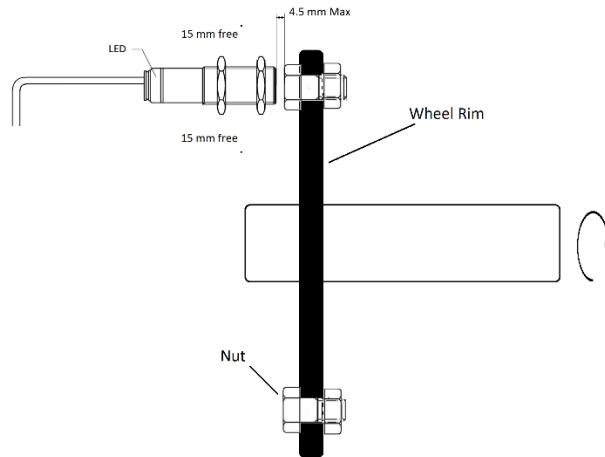


Figure 9

The speed sensor is provided with a cable terminating with a 3-poles male connector, plug this connector in the female multi connector cable provided with the ISOBUS ECU 1224 . Sensor input plug is part of harness Connector C3 (Gray connector 24 pin), Label “S”

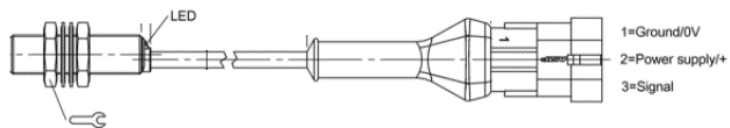


Figure 10

The pinout of the female connector provided with the ISOBUS ECU 1224

Table 7

	Description	Color
1	GND	BLACK
2	Power	BROWN
3	Signal	BLU

8.2.1 Tips for installation

- Install the sensor at 4-5 mm maximum distance from the nut to be detected.
- Do not install the sensor body too close to other metal objects which could affect the operation of the detector.

8.3 Flowmeter installation

The flowmeter is directly connected to ISOBUS ECU 1224 and measure flow in the control unit during a spraying treatment, it shall be correctly configured in the SETUP page of the user interface (refer to Flowmeter setup Chapter 9.3.2)

The flowmeter shall be provided with a cable terminating with a 3-poles male connector, that will be plugged with the related female of the connection cable provided with ISOBUS ECU 1224. Sensor input plug is part of harness Connector C2 (Gray connector 24 pin), Label "F"

The pinout of the female connector provided with the ISOBUS ECU 1224 driver cable is the following

Table 8

PIN	Description	Color
1	GND	BLACK
2	Power	RED
3	Signal	GREEN

8.4 Pressure sensor installation

The pressure sensor is optional. can be used for pressure measure or flow regulation. For specific applications, user can decide to use Pressure sensor instead of flow sensor.

Sensor is connected to the ISOBUS ECU 1224 and can measure the liquid pressure during a spraying treatment, it shall be correctly configured in the SETUP page of the user interface (refer to chapter 9)

The pressure sensor shall be provided with a cable terminating with a 3-poles male connector, that will be plugged with the related female of the connection cable provided with the ISOBUS ECU 1224. Sensor input plug is part of harness Connector C2 (Gray connector 24 pin), label "P"

The pinout of the female connector provided with the ISOBUS ECU 1224 driver cable is the following

Table 9

PIN	Description	Color
1	GND	BLACK
2	Power	RED
3	Signal	GREEN

8.5 Tank-level sensor installation

The tank-level sensor is optional. Level sensor is noyt used for rate regulation. Level sensor is directly managed by the ISOBUS ECU 1224 driver and if installed to manage the detection of the

product quantity currently contained in the tank, it shall be correctly configured in the SETUP page of the user interface (refer to sections 9.3 and 9.3.5).

The tank-level sensor shall be provided with a cable terminating with a 3-poles male connector, that will be plugged with the related female of the connection cable provided with the ISOBUS ECU 1224. Sensor input plug is part of harness Connector C3 (Brown connector 24 pin), label "L".

The pinout of the female connector provided with the ISOBUS ECU 1224 driver cable is the following

Table 10

PIN	Description	Color
1	GND	BLACK
2	Power	RED
3	Signal	GREEN

8.6 Check hardware installation

Before plug ISOBUS ECU 1224 connector to ISOBUS PLUG installed on the tractor check the correct installation of each component:

- Check that the connectors are in the right locations
- Check that the cables have the right length
- Check that all screws are tight
- Check the polarity and the supply voltage
- Verify there is enough space for folding unfolding sprayer.



8.7 Chemical compatibility

The table below shows the material used for ISOBUS ECU 1224.

Please verify compatibility with chemical products used for spraying.

Table 11

DESCRIPTION	
Body	Nylon reinforced with fiber glass
Connectors	PA6
Screws	Stainless steel
Resin	Bicomponent poliuretanic

9 PROGRAMMING USER INTERFACE

9.1 Introduction

When ISOBUS ECU 1224 is connected to the tractor ISOBUS plug, shares its application data with the Virtual Terminal (VT) installed on the tractor cabin. Virtual terminal is the monitor, installed in the cabin.

Using the interface shown on the VT, the user can manage all the functionalities offered by ISOBUS ECU 1224 driver related to crop spraying treatment.

The ISOBUS ECU 1224 driver is compatible with standard VT version 3 (UT 1.0) or superior.

9.2 HOME page

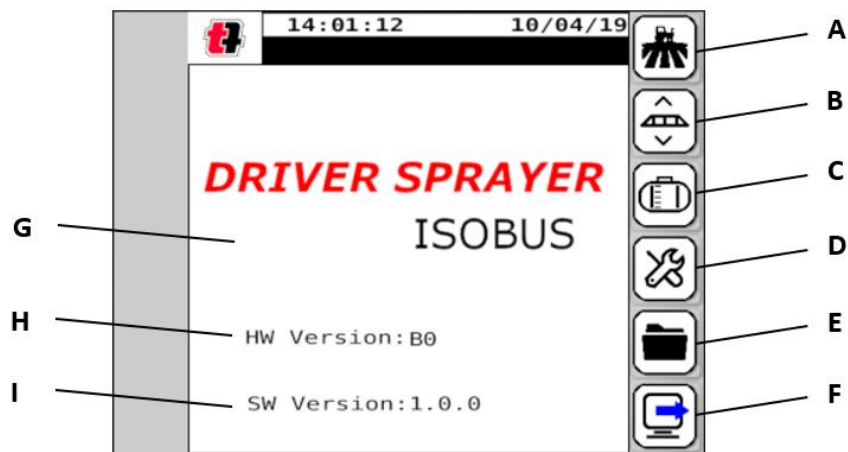


Figure 11

This screen appears automatically shown when ISOBUS ECU 1224 is connected to Tractor ISOBUS plug

Keys on the right side allow you enter different system application environments.

- (A): WORK
- (B): BOOM HANDLING (hydraulic cylinders)
- (C): TANK CALIBRATION
- (D): SETUP
- (E): HISTORICAL DATA
- (F): CHANGE VT NUMBER

- (G): WORKING DISPLAY AREA
- (H): Hardware revision of Electronic Control Unit

- (I): Software revision of Electronic Control Unit

9.3 SETUP page

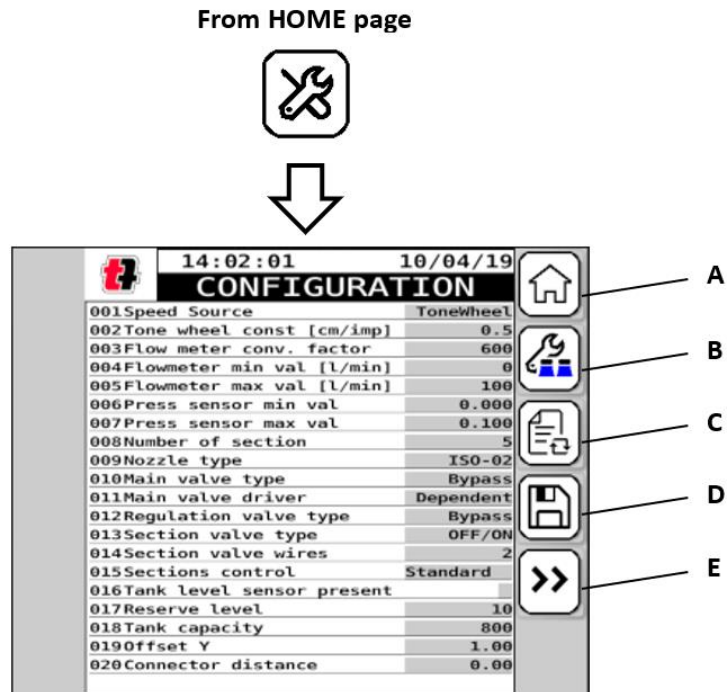


Figure 12

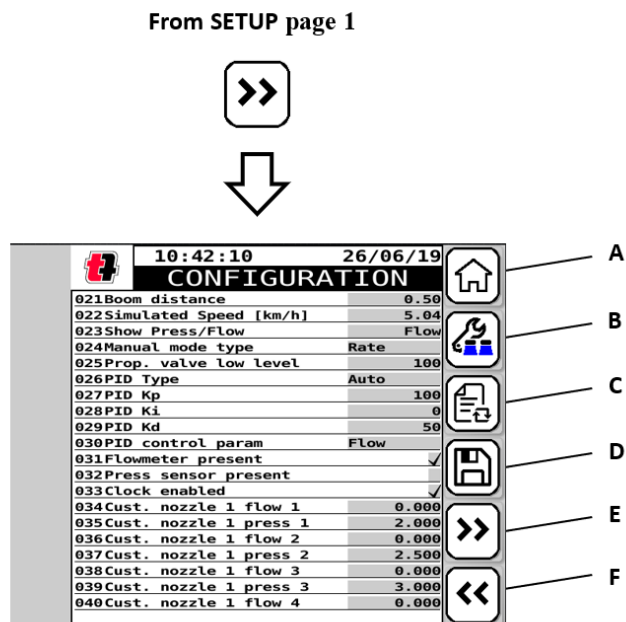


Figure 13

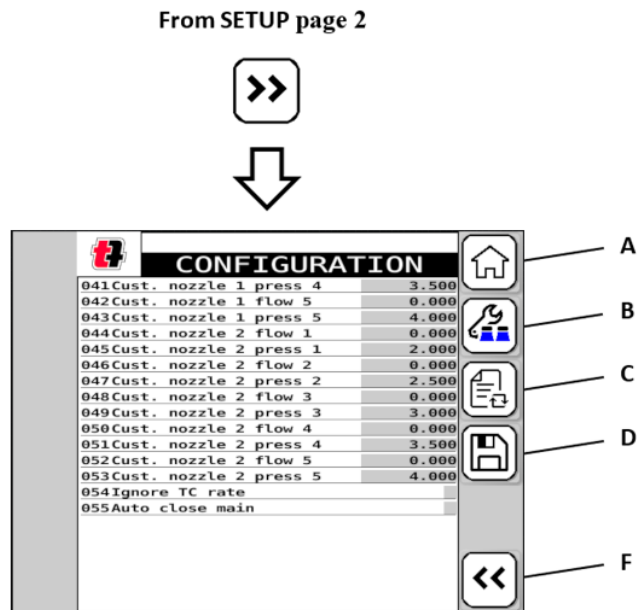


Figure 14

The above setup pages contain all sprayer machine configuration parameters. Parameter configuration should be edited during electronic hardware installation. Only properly trained people should modify the contained configurations.

All parameters entered are stored within the device's non-volatile memory.

The keys on the right column have the following functions:



Back to Home menu (A)



Enter sections and Boom Menu (B)



Reset to default (C)



Save current configuration (D)



Next setup page (E)



Previous setup page (F)

Parameters list

Table 12

Menu item	Description	Eligible range
Speed Source	Define which sensor used for speed measurement of sprayer.	Ground: from TC Vehicle: from TC Tone Wheel: wheel sensor Simulated: simulated speed
Tone wheel const (cm/imp)	Number of cm per pulse, used for speed calculation in the case of Tone Wheel	1 ÷ 6000 0 ÷ 600,0
Flow meter conv. Factor	Flowmeter calibration, number of pulses per liter	1 ÷ 10000
Flow meter min val. (l/min)	Flow meter lower range limit	0 ÷ 500
Flow meter max val. (l/min)	Flow meter upper range limit	0 ÷ 500
Press sensor min val.	Minimum value of the pressure sensor (Zero Pressure)	-100 ÷ 100 -100,000 ÷ 100,000
Press sensor max val.	Sensor Full Scale	0 ÷ 100 0,000 ÷ 100,000
Number of sections	Number of boom's sections	1 ÷ 16
Nozzle type	Type nozzles mounted on the bar. Refer Iso Table. If your Nozzle is not conform to ISO specification use "Custom Nozzle" option and define Custom table (pressure/ flow) for the nozzle	ISO-01 ISO-015 ISO-02 ISO-025 ISO-03 ISO-04 ISO-05 ISO-06 ISO-08 ISO-10

		ISO-15 ISO-20 Custom 1 ^(*) Custom 2 ^(*)
Main valve type	Type of main valve	Bypass Dump
Main valve driver	How the main valve is managed	Independent Dependent
Regulation valve type	Define what time of regulation valve is installed in the control unit	Bypass (3 ways) Throttling (2 ways)
Section valve type	Section valve type	ON-OFF OFF-ON ON-OFF met. OFF-ON met.
Section valve wires	Number of Wires for each valve 2 Wires: Polarity inversion 3 Wires : Power and driving pin. Note: Require correct type of harness.	2 or 3
Sections control	Modify the way section valves are manually opened/closed (refer Chapter 10.4 for a description of these parameters)	Standard Extended
Tank level sensor present	Tank level sensor presence/absence	yes/no (check box)
Reserve level	Number of liters of the tank reserve	0 ÷ 10000
Tank capacity	Tank capacity in liters	0 ÷ 20000
Offset Y ^(**)	Distance of the center of the spray bar, relative to the center axis facing in the direction of movement (mm) – positive if moved to the right and negative when moved to the left	-100,00 ÷ 100,00

Connector distance (**)	Distance between wheel axis of the implement and Hitch point point (mm). In case of a three-point linkage this parameter must be 0.	-100,00 ÷ 100,00
Boom distance (**)	Distance of the bar from the wheel axis of the towed tool (mm). In the case of a three-point linkage point sprayer report distance between the Boom and the hitch point	-100,00 ÷ 100,00
Simulated speed (Km/h)	Simulated speed value	0,00 ÷ 99,00
Show Press/Flow	Selecting data shown in the left indicator of the WORK environment	Pressure Flow
Manual Mode Type	How to operate in manual	Rate: The “+/-” keys modify current setpoint Direct: the “+/-” keys act directly on the proportional valve
Prop. Valve low-level	Minimum value of the proportional valve duty-cycle (default: 100 → 10%) Only technical operator should change this value	0 ÷ 500
PID Type	Selecting the sprayer regulation response. Response depends on internal algorithm (PID) parameters (Kp, Ki, Kd) AUTO is recommended.	Low: set of parameters for low flow rates Medium: parameter set for average flow High: parameter set for high flow Custom: User-set parameters Auto: ECU automatically select best response based

		on current flow rate
Kp	Proportional coefficient of PID algorithm (Custom mode) Only technical operator should change this value	0 ÷ 500
Ki	User-settable PID supplementary coefficient (Custom mode) Only technical operator should change this value	0 ÷ 500
Kd	User-settable PID derivative (Custom mode) Only technical operator should change this value	0 ÷ 500
PID control param	Define the parameter used to control the rate	Flow Pressure
Flowmeter present	Thick indicates the presence of the flowmeter in the control unit	yes/no (check box)
Press sensor present	Thick indicate the presence of the pressure sensor in control unit	yes/no (check box)
Clock enabled	Enables or the use of the date and time from the tractor	Yes/no (check box)
Cust nozzle [1/2] flow [1/2/3/4/5]	Flow associated to the sample point [1/2/3/4/5] of the custom nozzle 1 or 2 – expressed in l/min	0,000 ÷ 50,000 l/min
Cust nozzle [1/2] press [1/2/3/4/5]	Pressure associated to the sample point [1/2/3/4/5] of the custom nozzle 1 or 2 – expressed in bar	0,000 ÷ 100,000 bar
Ignore TC rate	If selected, doesn't accept the rate set-point received from the Task Controller	Yes/no (check box)
Auto close main	If selected, automatically closes the main valve when all the section valves are closed	Yes/no (check box)

(*) "Custom 1" and "Custom 2" nozzles characteristics shall be defined by the user by mean of the "Cust nozzle [1/2] flow" and "Cust nozzle [1/2] press" sample points of the SETUP menu.

(**) These values could be read and used by the TC to automatically configure the geometry of the implement. However, they could also be completely overlooked.

Editing SETUP page is allowed only when no treatment is running (it is assumed that a treatment is running when the main valve is open).

9.3.1 Section Width

This configuration page can be accessed from the SETUP one (page 1 or page 2) by pressing the




key. Specify here the boom the size (expressed in meters with 2 decimal places) and the number of nozzles present (refer to figure 15 and 16).

From SETUP page 1, 2 or 3



23:12:06		21/10/18	
CONFIGURATION			
100	Section 1 width		4.00
101	Section 1 num of nozzle		8
102	Section 2 width		4.00
103	Section 2 num of nozzle		8
104	Section 3 width		4.00
105	Section 3 num of nozzle		8
106	Section 4 width		4.00
107	Section 4 num of nozzle		8
108	Section 5 width		4.00
109	Section 5 num of nozzle		8
110	Section 6 width		4.00
111	Section 6 num of nozzle		8

Figure 15

The  key returns to the first setup page.

If the number of sections changes, the system will automatically reboot when the new configuration is saved. This allows the system to actualize the new boom configuration.

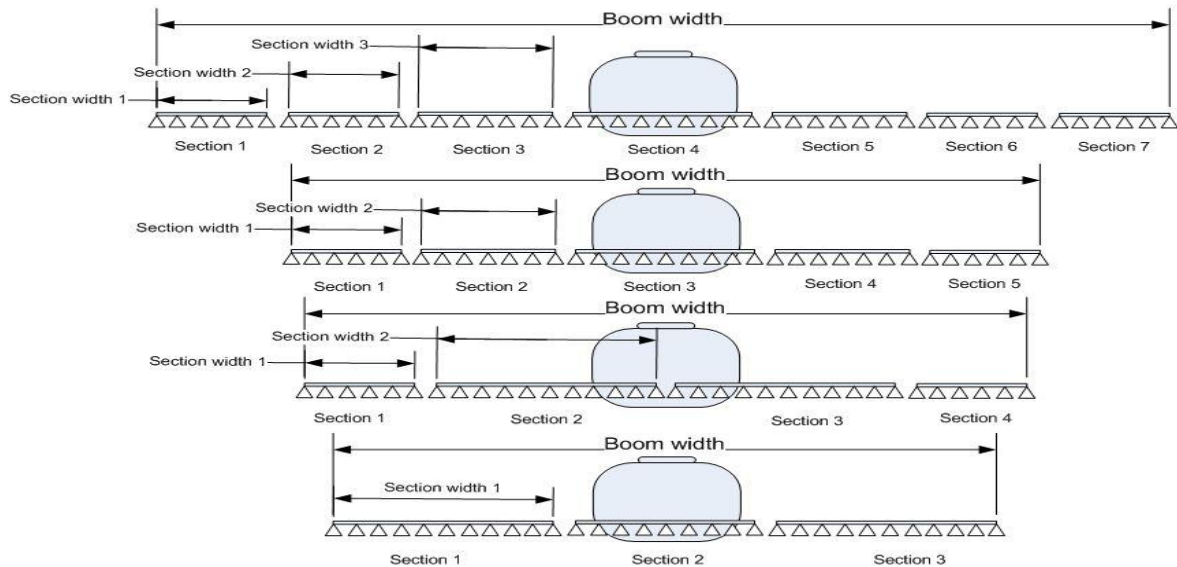


Figure 16

9.3.2 Speed source setup

ISOBUS ECU 1224 can measure speed from different sources. In particular 4 sources can be selected:

- **Ground:** the speed measure is received from the ISOBUS TC component (derived from GPS antenna)
- **Vehicle:** the speed measure is received from the ISOBUS TC component (derived from tractor vehicle data)
- **Tone Wheel:** sensor mounted to the wheel axel connected to ISOBUS ECU 1224 (pulsed signal). In this case the user shall configure also the “Tone wheel const” parameter to set the distance (expressed in cm) associated to each pulse of the sensor. This distance shall be computed using the wheel circumference and the number of proximity tags installed (they must be placed at the same distance).

To determine the “Tone wheel const” parameter, the following formula shall be used:

$$\text{Tone wheel const} = (6,283 \times R) / N$$

Where:

R = wheel radius (including the tire) – expressed in cm

N = number of tags

- **Simulated:** constant value defined by the user with the “Simulated speed” parameter (it may be useful when a malfunction on the other sources is detected)

9.3.3 Flowmeter setup

The flowmeter is used by ISOBUS ECU 1224 for the automatic regulation of the flow according to the current set-point configured (manually by the user or received from the ISOBUS TC).

The flow-meter output is captured by the ISOBUS ECU 1224 and is represented by a pulsing signal with a frequency proportional to the measured flow. In order to determine the flow, it is necessary to configure the “Flow-meter conversion factor” representing the amount of pulses corresponding to one liter. This parameter can be found on the flowmeter documentation.

This parameter depends on the flowmeter and the conversion factor may vary according to the sensor range and/or constructor.

The configuration page contains also the “flow-meter min/max value” parameters that are used by system for graphical and consistency check purposes.

We recommend the use of Tecomec flowmeters having the following characteristics:

#8404012	range (10÷200) l/min
#8404023	range (3÷60) l/min
#8404024	range (5÷100) l/min
#8404025	range (10÷200) l/min

In “WORK” page (fig 20),t the flow is reported in the indicator (lower left area)

That indicator can be used to show the measured pressure. To show the flow in the WORK page check the “Show press/flow” parameter must be set to “flow”).

9.3.4 Pressure sensor setup

The pressure sensor is optional Can be used to measure the pressure in the control unit or regulate the Ratio. Check specific parameters in the SETUP Page If the sensor pressure is present, the “Pressure sensor min/max value” parameters shall be defined.

The pressure sensor must supply signal 4-20 mA, proportional to pressure.

9.3.5 Tank level sensor setup

This sensor is Optional.

ECU-1224 can manage a level sensor (4-20 mA output) mounted on the sprayer tank, to determine the current level of the agronomic product available.

In case level sensor is installed, enable “Tank level sensor present” parameter of the configuration.

After sensor installation run level sensor calibration (refer to chapter 9.7 for more details).

If the use of the level sensor is disabled, ISOBUS ECU 1224 calculates tank level using flowmeter to determine the amount of product distributed and consequently the residual quantity available in the tank.

9.3.6 Sprayer geometry

For correct functions of automatic section control and ratio regulation edit correctly geometrical parameters related to the sprayer implement where it is mounted. The following image describes the meanings of each parameter.

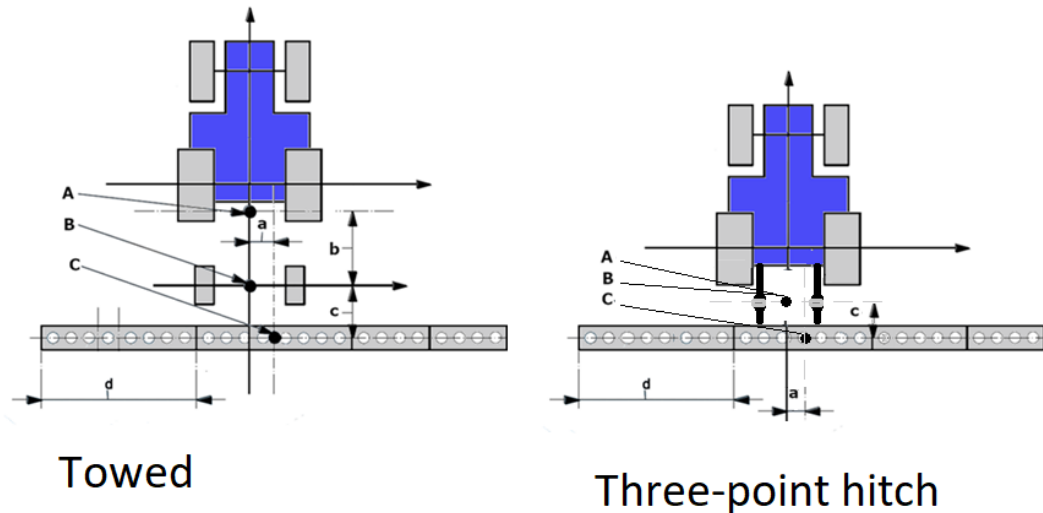


Figure 17

- A. Connector reference point (joint)
- B. Device reference point (implement axle middle point)
- C. Boom center

According to the above schema set the following parameters in the SETUP page:

- a. "Y Offset" (positive to the right and negative to the left)
- b. "Connector distance" (set to 0 for a mounted sprayer / shall be different from 0 for a trained one)
- c. "Boom distance"
- d. "Section 1 width" (every section may have different width)

Consider that the above geometrical parameter may or not be used by the Task Controller (TC) of the Virtual terminal VT. Some TC allows the setting of these parameters with own specific user interface and in this case, it is not sure that the ones received from ISOBUS ECU 1224 will be actualized (may depends on TC settings). Verify documentation of your Virtual Terminal

9.3.7 Date-time from tractor TECU

The "Clock enable" parameter of the SETUP page (refer to figure 13), allows the use or not of the date-time information that may be received from the tractor TECU (Tractor Electronic Control Unit). Not all TECU support this option.

When changing this parameter, ECU-1224 automatically reboot. In this case the following message will appear on the monitor and when the user confirms, the driver restarts and the new setting will be effective.



Figure 18

When "Clock enable" is not selected, the current date-time information is not show in the upper bar of every screen and the HISTORY page contains a progressive number for each treatment, instead of the starting data-time.

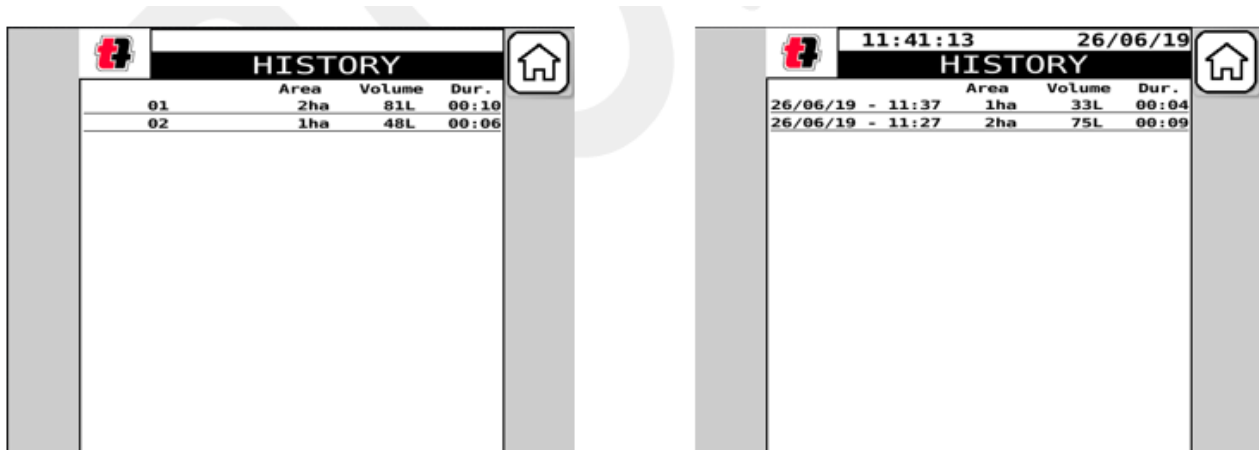


Figure 19

"Clock enable" not selected

"Clock enable" selected

9.4 WORK page

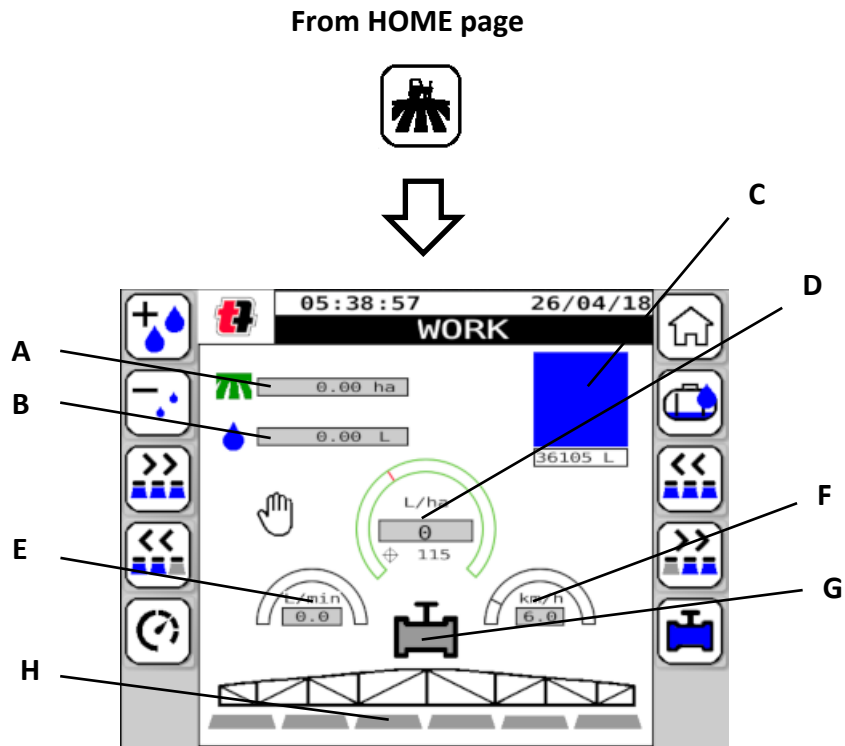


Figure 20

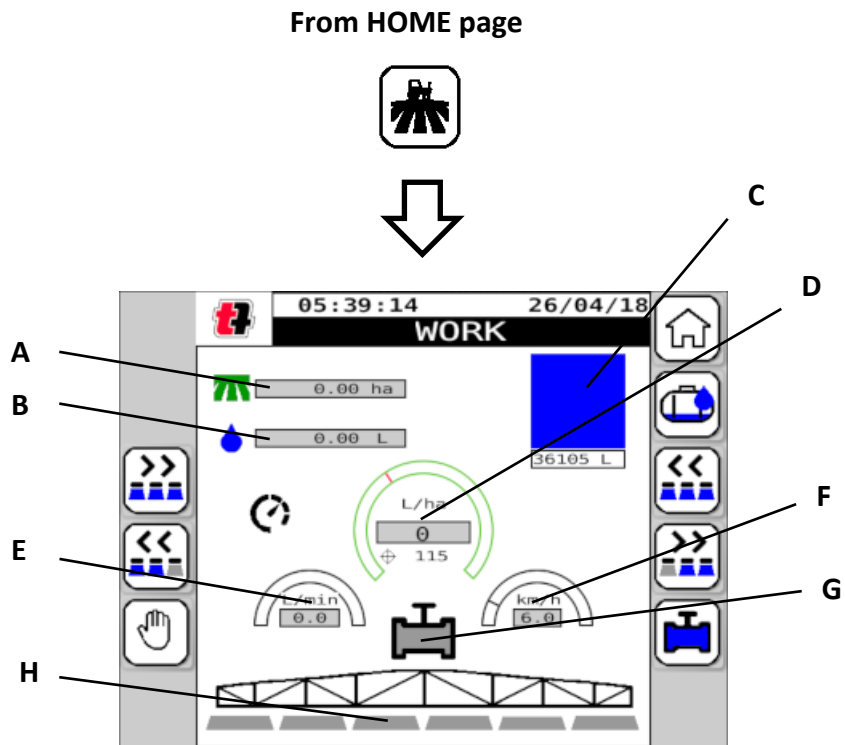


Figure 21

This user interface environment controls all the activities related to the execution of a treatment in the field. The function buttons available in this environment are listed below.

Referring the above figures ~~20,21~~, representing the two pages according to the control mode selected (manual or automatic), the following screen areas are represented:

During operation, the following information is shown in this environment:

- A. Total treated area (ha) – top left screen area
- B. Total sprayed quantity (l) – top left screen area
- C. Tank level (l) – top right screen area
- D. Current flow rate (l/ha) and set-point (l/ha) – central indicator
- E. Current flow(l/min) or current pressure (bar), depending on the setup configuration (*) – left indicator
- F. Tractor speed (Km/h) – right indicator
- G. General valve status indication (blue: open / grey: closed) – centered icon over the boom
- H. Sections valves status indication (blue: open / grey: closed / orange: disabled) – below the boom icon
- I. Manual/automatic mode indication (icon) – left screen area

(*) This label may show the instantaneous flow or pressure according to the current setting of the “Show press/flow” setup parameter. The value displayed depends also on the sensor currently installed: if pressure sensor is not installed, this label display the flow value measured, and pressure is calculated mathematically according to the type of nozzle currently selected

The available keys and their function are described in the following:



Return to HOME page



Tank refill: definition of the quantity of chemical product present in the tank (it must be greater than 0 to perform a treatment)



Do not spray without liquid in the tank, pump could get damaged, ECU 1224 cannot avoid it.



Left side boom sections opening. The opening logic depends on the current configuration of the “Sections control” setup parameter - standard or extended (refer to section 10.3 Table 11).

- **Standard:** opening the last closed valve encountered from the left

Example



Figure 22

- **Extended:** Opening the first closed section valve further to the right along the bar

Example



Figure 23



Left side boom sections closing. The closing logic does not depend on the current configuration of the “Sections control” setup parameter (standard or extended).



Main valve opening/closing. For example, pressing this key when icon is blue, main valve open.



Increase current flow set-point (l/ha). Note this button is available only when manual mode is active.



Decrease current flow set-point (l/ha). Note this button is available only when manual mode is active.



Right side boom sections opening. The opening logic depends on the current configuration of the “Sections control” setup parameter - standard or extended (refer to section 10.3 Tab. 11).

- **Standard:** opening the last closed valve encountered from the right

Example

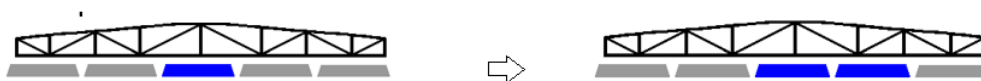


Figure 24

- **Extended:** Opening the first left-hand closed section valve along the bar

Example



Figure 25



Right side boom sections closing. The closing logic doesn't depend on the current configuration of the "Sections control" setup parameter (standard or extended).



Set the manual control mode. This button is available only when the automatic mode is currently active (refer to figure 21)



Set the automatic control mode. This button is available only when the manual mode is currently active (refer to figure 20).

9.5 HISTORY page

From HOME page



Start time	Area	Volume	Dur.
01/01/19 - 00:01	5ha	446L	00:27
01/01/19 - 00:00	0ha	3L	00:00
20/10/19 - 12:27	0ha	24L	00:05

Figure 26

This page is the history of the latest treatments carried out. The following information is shown for each treatment:

- Date/time of start of treatment.
- Covered area (expressed in ha)
- Sprayed volume (in liters)
- Treatment duration (in hh:mm)

Once the number of 10 stored treatments is reached, newest treatment is included in the list and the oldest one is deleted. Measure unit displayed depend on the VT configuration.

9.6 HYDRAULIC CONTROL page

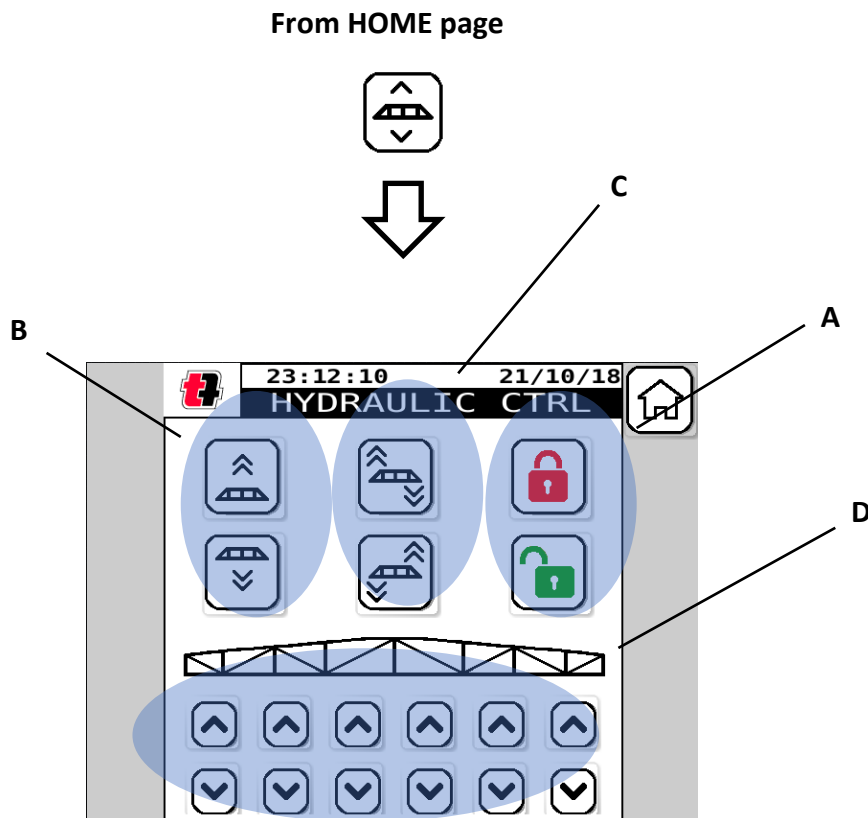


Figure 27

Through this page it is possible to manage the hydraulic pistons of the spray bar, by doing the following actions:

- Lock/unlock bar handling
- Raise/lower bar
- Right/left - tilt

D. Open/close mechanical segments of the boom (maximum 6) – fold/unfold

This feature requires an additional hydraulic control unit that can handle the driving valves. This control unit must be connected directly by ECU-1224.

NB: This feature requires an additional ECU for electric hydraulic distributor

9.7 TANK CALIBRATION page

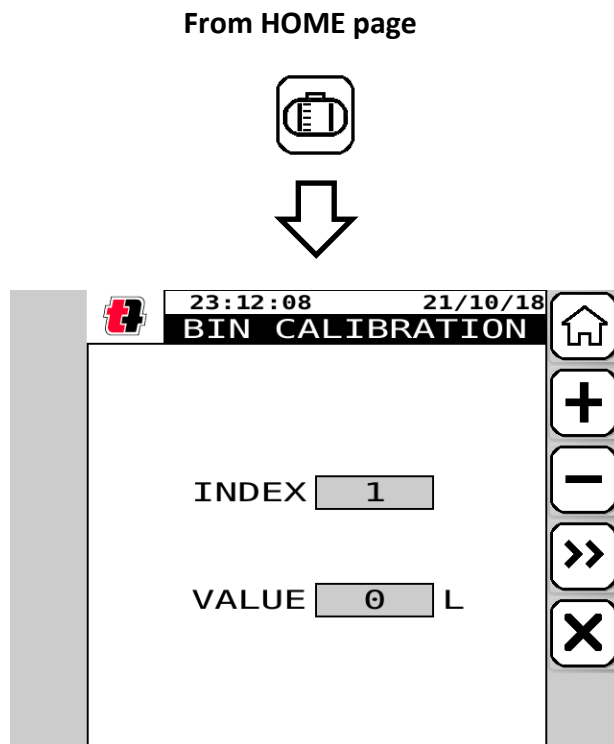





Figure 28


Installing level sensor, you can measure the tank level. After calibration you get an accurate measure of the level.

Calibration procedure defines a table of calibration points, reporting tank capacity and level sensor measure. Calibration is necessary due to the irregular geometry of the tank

User must calibrate at least 2 calibration points, up to 50 calibration points

Example Select Index 1, add a measured quantity of water (example, 100 liters), type 100 in the value input label and pass to next calibration point. 

To define any additional calibration point, the  key shall be pressed, while if there are no other points to be defined the key  shall be pressed and the procedure ends confirming the points so far acquired.

If the key  is pressed at any time during the definition of the input calibration points, the procedure is aborted (the calibration data contained in the non-volatile memory are not updated).

Tank level calibration settings are considered only if the “Tank level sensor present” parameter in the SETUP page is checked.

If “Tank level sensor present” is not enabled, the tank level is calculated using the data from the flow-meter sensor (quantity of sprayed product).

The access to the TANK CALIBRATION page is allowed only when no treatment is running (it is assumed that a treatment is running when the main valve is open).

9.8 External warning lights LEDs

The ISOBUS ECU 1224 driver, is equipped with 5 green LEDs visible on the upper surface of the box (the one indicated with L1, L2, L3, L4 and L5 in the following figure).

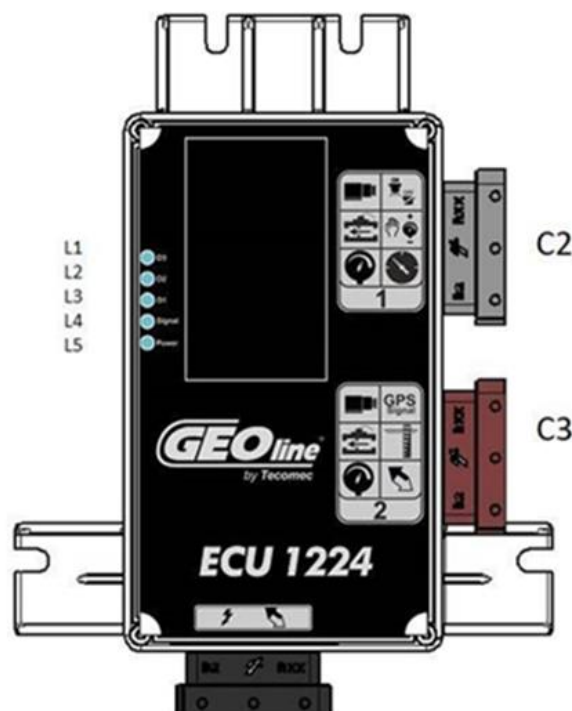


Figure 29

LEDs L4 and L5 are always turned on when the ISOBUS ECU 1224 is correctly powered.

LEDs L1, L2 and L3 display the ISOBUS ECU 1224 current status.

Following the description of LED Status

Table 13

Status	LED Light description
Off	Always turned OFF
On	Always turned ON
Flash Slow	1500 ms ON, 1500 ms OFF
Flash Normal	700 ms ON, 700 ms OFF
Flash Fast	250 ms ON, 250 ms OFF
Pulse 1	One pulse (200 ms ON, 200 ms OFF) followed 1000 ms OFF
Pulse 2	Two pulses (200 ms ON, 200 ms OFF) followed 1000 ms OFF
Pulse 3	Three pulses (200 ms ON, 200 ms OFF) followed 1000 ms OFF
Pulse 4	Four pulses (200 ms ON, 200 ms OFF) followed 1000 ms OFF

9.8.1 Led L1: main status

L1 display the status of the ISOBUS ECU 1224. The following notation is used:

- **IDLE status:** the driver is ready, but no treatment is running → **Flash Slow**
- **WORK status:** the driver is managing a treatment (main valve open) → **Flash Fast**

9.8.2 Led L2: ISOBUS connection status

L2 display the current connection status of the ISOBUS ECU 1224 with the ISOBUS network. The following notation is used:

- **OFFLINE status:** the ISOBUS network is not detected → **Flash Fast**
- **ONLINE status:** the ISOBUS network is detected → **On**

9.8.3 Led L3: error codes

L3 display the last error code detected by the ISOBUS ECU 1224 driver. It uses the **Pulse 1÷4** modes to indicate specific errors and the **Off** state for no errors.

10 IN FIELD USAGE

ISOBUS ECU 1224 is dedicated to sprayer machine, and at least a Virtual Terminal device (VT), necessary to display the sprayer application user interface.

The tractor ISOBUS network may also include a Task Controller device (TC), generally integrated in the terminal that implements the VT. In this case the sprayer application implemented in the ECU-1224 can offer increased functionalities.

The sprayer application can work in two different modes: Manual Mode and Automatic Mode.

Refer to Chapter 10.4.1 for a detailed description of the sprayer functioning mode, but at this stage it is important to notice that the manual mode is always available (only a connected VT is necessary), meanwhile the automatic mode works only when a TC is present.

In case TC and a GPS antenna (that give the real-time position of the sprayer) are present, the ECU-1224 driver can work using prescription maps. This functionality shall be implemented in the TC side, but the ECU-1224 configured in automatic mode is able to receive a flow-rate set-point variable continuously according to the current position. Please refer to Virtual terminal manual for this topic.

10.1 Display

ISOBUS ECU 1224 sprayer application, uses the VT display available on the tractor as user interface (refer to Chapter 9 for a detailed description of all the “application pages”).

According to the ISOBUS standard, the VT screen is divided into 3 different areas, as show in the Figure 23

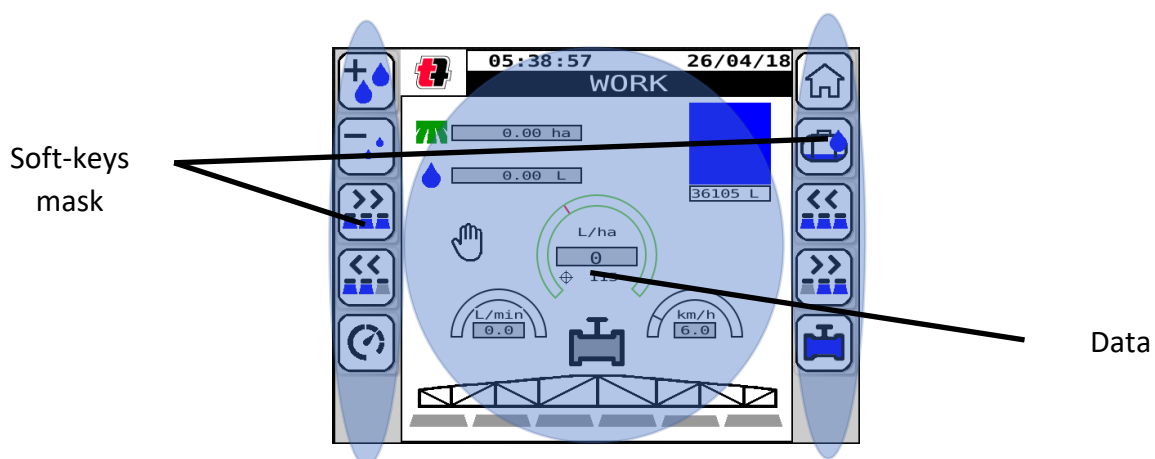


Figure 30

Depending on the configuration of the VT used, the Soft-keys mask may be on the left and right side of the Data mask or both on the same side (left or right).

Depending on the Virtual terminal, you can activate software functions using physical buttons located on the border of the display, or directly by the touchscreen if available.

10.2 Switch-On/Off the ISOBUS ECU 1224

ISOBUS ECU 1224 is automatically switched-on/off when the tractor is turned on/off. There is no physical switch on the ECU

If the user turn-off the VT or disconnects it for any reason, the ISOBUS ECU 1224 automatically puts the sprayer to a safe-state represented by the closing of the main valve (if a treatment is running, it will be suspended). When the connection with the VT returns available, it is necessary to manually resume any suspended treatment.

10.3 Execution of a Treatment

ISOBUS ECU 1224 controls spraying treatments, consisting in the distribution of a specific chemical product on a field using the spraying boom.


Assuming that ISOBUS ECU 1224 was correctly configured (refer to section 10.3), to **start a new treatment** the user shall maintain the open valve key  pressed till a message box is shown Figure 24 requesting for a confirm about the starting of the new treatment.



Figure 24

If the user confirms, all the cumulative counters are reset (treated area and sprayed product) and the new treatment is started by opening the main valve. In this phase the ISOBUS ECU 1224 also creates a new record into its non-volatile memory that will contain all the treatment data. This record will be updated during the current and all successive spraying activities, till a new treatment is created in the same manner.

If the main valve is closed, the current treatment is not stopped but only suspended. The ending of a treatment is automatically assumed when a new one is started using the above procedure. This means that operator can continue the same treatment also over more days (case of a large field).

The meaningful data related to the current treatment are always saved into the ISOBUS ECU 1224 non-volatile memory. indicators shown on the WORK page, display the data related to the last treatment suspended. They will be reset only starting a new treatment.

ISOBUS ECU 1224 executes some checks before start/resume a treatment. In particular:

- The tank shall not be empty: if it is empty the user is requested to fill it and to specify the amount of product loaded (only if a tank level sensor is not present)
- The rate set-point must be different from zero.



If one of the above conditions is not fulfilled, a message-box signaling the warning is shown and the main valve is not opened.

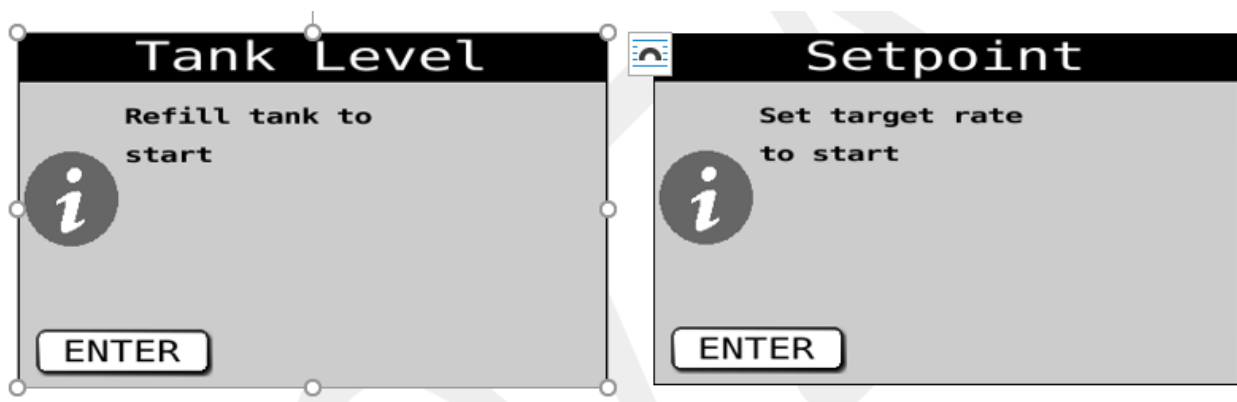


Figure 32

10.4 Operating modes

ISOBUS ECU 1224 can work in different operating modes, both selectable by the user by mean of the dedicated key in the WORK page (👉 to pass in **manual mode** and 🔄 to pass in **automatic mode**).

Only the WORK page is affected by the modality setting; all the other pages remain the same.

10.4.1 Manual Mode

This functioning mode is always available and requires only the presence of a VT connected to the ISOBUS ECU 1224 to show its graphic user interface.

Refer to Figure 18 for a representation of the WORK page in Manual Mode.

This mode the following actions are demanded to the user:

- Define the Rate (liters/ha) set-point to be maintained during the treatment (can be manually changed during the spraying operation)
- Define the sections of the boom to be open/closed

All the above actions can be performed using the controls contained in the WORK page.

10.4.2 Automatic Mode


This function shall be activated by the user only if your Virtual Terminal includes a Task Controller.

Refer to Figure 19 for a representation of the WORK page in this modality.

In this case the following actions are directly managed by the Task Controller included in your Virtual Terminal.

- Define the rate (liters/ha) set-point.
- Define the sections of the boom to be open/closed according to GPS position and overlap. In automatic mode the keys dedicated to change the flow-rate set-point are hidden; so, the user is not able to do any change on this value.



The key  open/close boom and sections remain available. User can interrupt spraying using this key

In Automatic Mode if VT/TC can handle prescription map and Automatic Section Control, ISOBUS ECU 1224 can spray with a flow-rate set-point variable according to the position of the sprayer in the field and automatically open/close the boom sections when the field boundaries are reached or an overlap is detected.

If your Virtual Terminal does not include a Task Controller or it is not enabled, the ISOBUS ECU 1224 signals to the user this situation showing the automatic icon of the WORK page with an overlapped red X, as indicated in the following image 33

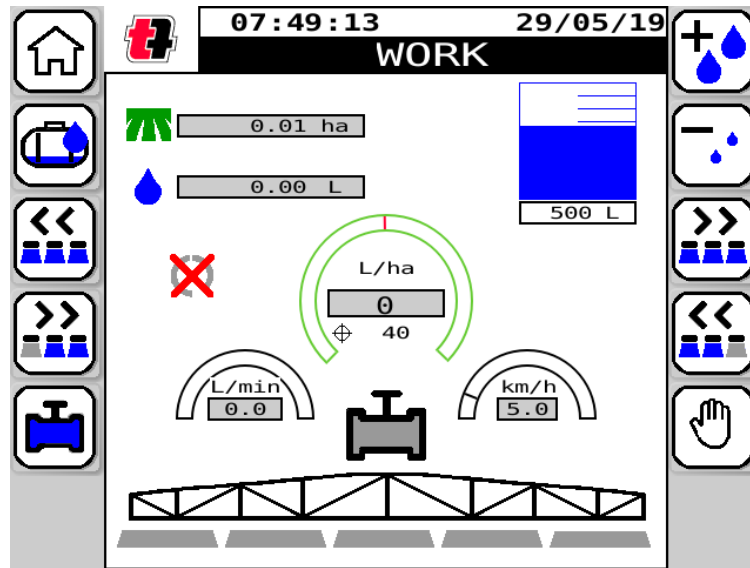




Figure 33


In this case the  and  buttons are available, and the user can adjust the rate set point (l/ha)

10.5 Main Valve Driver

ISOBUS ECU 1224 driver allows the selection of the main valve operating mode (refer to parameter “Main Valve Driver” of the SETUP page – Chapter 10).

This configuration defines how the main valve status affects the state of the section valves along the implement boom. The possible configurations are independent or dependent.

10.5.1 Independent Mode

Opening or closing main valve  nothing happens to section valves. This means that when the main valve is open or closed, the section valves remain open or closed.

In this configuration, when user closes the main valve during a treatment some section valves may remain open and other remain closed. the representation of the sections on the WORK page may be for example as the following:



Figure 34

The orange color is used for the section currently open, but not spraying because the main valve is closed (in the above case only the right left section is closed, and all the other open).

When the user opens the main valve all the orange sections will start spraying and the grey ones will remain closed.

10.5.2 Dependent Mode

Main valve operates as a master driving also the status of all the section valves.

When the main valve is closed, all the section valves will be closed and when the main valve is open all the section valve will be open (the orange color in the WORK page will be never used for sections in this case).

10.6 Rate indicator

The central area of the WORK page, contains an indicator that display the currently measured rate and its desired setpoint (defined by user in manual mode or by TC in auto mode).

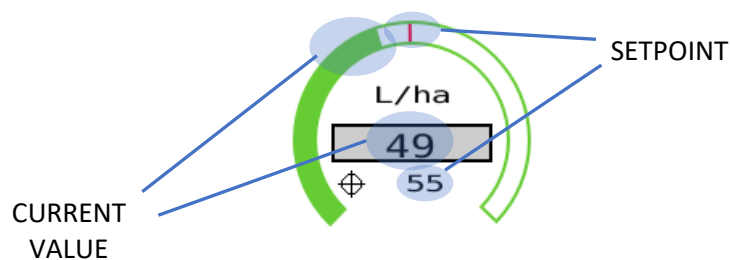


Figure 35

Inside the meter, the rate setpoint indicator is always positioned in the center of the indicator (red vertical line in the above figure). This implies that the maximum value that the meter can show corresponds to 2 x SETPOINT (the numerical value may be greater).

This logic is independent from the functioning mode (manual or automatic).

10.7 Tank Replenishment

The tank can be refilled at any time.

If ISOBUS ECU 1224 is configured to use a tank level sensor and it was correctly calibrated (refer to Chapter 9.7), the new quantity is automatically shown on the top-right area of the WORK page (refer to Figure 20 Figure 21).

If the tank level sensor is not installed, the user shall manually specify the new level of the tank.


This can be done by pressing the  key that causes the showing of a dialog box where the user can specify the new level.



Figure 36

10.8 *Historical Treatments*

ISOBUS ECU 1224 save into non-volatile memory data related to the last 10 treatment performed by the sprayer.

All these data are always available and visible by accessing to the HISTORY page of the user interface (refer to Chapter 9.5).

The current treatment is always the first record shown at the top of the list. All the others are reported using a chronological order (the oldest one is at the bottom of the list).

If a new treatment is started when the maximum number of 10 records is reached, the oldest one is deleted.

The information reported for each record, are the following:

- Start Time/Index: date and time of the treatment start or treatment index (according to "Clock Enabled" setting – refer to section 9.3.7)
- Area: total amount of area covered (cumulative to all the sessions performed)
- Volume: total amount of product distributed (cumulative to all the sessions performed)
- Duration: total time (cumulative to all the sessions performed)

11 ALARMS

11.1 Introduction

When the ECU-1224 detects an alarm situation, a red alarm icon and a message box describing the error type are shown in the WORK page.



When the user acknowledges the error by confirming the message box, it is closed but the alarm icon persists until the alarm situation is not fixed.

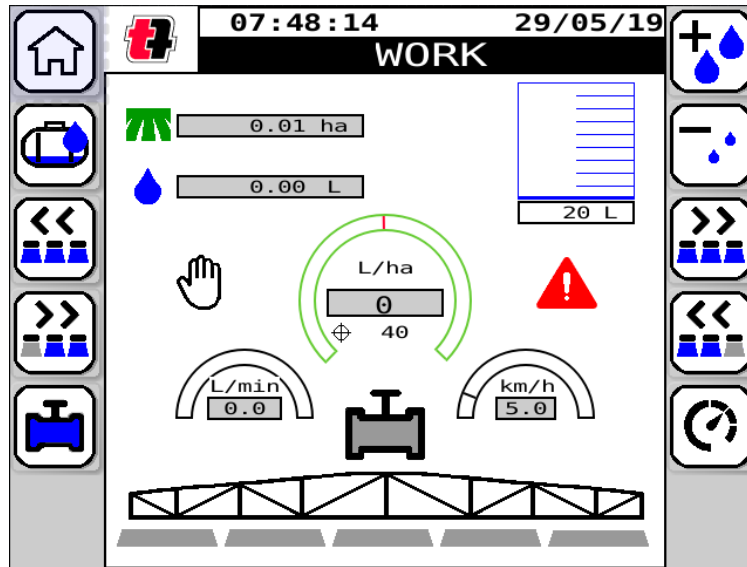


Figure 37

11.2 ALARMS

11.2.1 Low level

Alarm is signaled by the ECU-1224 when tank level is lower than the reserve quantity specified in the SETUP page ("Reserve Level" contained in SETUP page 1 – refer to figure 12).

In this case, when the tank level goes below the reserve level, the following message box is shown



Figure 38

Pressing the ENTER button the dialog box is closed, but the alarm icon remains (figure 37).

12 TROUBLESHOOTING

Table 14

DISPLAY	CAUSE	SOLUTION
The display does not turn on	There is not power.	Check the connections on the power cable.
	The indicator is turned off.	Press the turning on button.
The valves can not be controlled	The valves are not connected.	Connect the connectors
A valve does not open	The valve has not power.	Check the electric connection and the functioning of the valve
The counter of the travelled distance shown on the computer is different from the real one.	Wrong programming	Check the speed sensor configuration.
	The reset of the treatment has not been effectuated	Reset the treatment
The counter of the travelled surface shown on the computer is different from the real one.	Wrong programming	Check the bar width programming
	The reset of the treatment has not been effectuated	Reset the treatment
The instant pressure is not shown.	The indicator has not signal from the pressure sensor	Check the connections with the pressure sensor
	Wrong installation of the pressure sensor	Check the bottom scale programming for the pressure sensor
The instant pressure visualized is inaccurate.	Wrong programming	Check the bottom scale programming for the pressure sensor
	Wrong installation of the pressure sensor	Check the connections with the pressure sensor
The tank level visualized is inaccurate.	The level sensor is not calibrated.	Do the calibration. Repeat the level sensor calibration.
	Wrong installation of the level sensor.	Check the connection with the level sensor
Led L1 (refer to figure 22) is always Off	The ECU-1224 has an hardware or software problem	Call the technical support
Led L2 (refer to figure 22) is always Off	The ECU-1224 has an hardware or software problem	Call the technical support
Led L2 (refer to figure 22) remains always On (doesn't flash) when the ECU is connected to the ISOBUS network	Problems on ISOBUS network connection	Verify that your Virtual Terminal is correctly installed and turned on. If the problem persists, call the technical support.
Leds L4 and L5 (refer to figure 22) remains always Off.	The ECU-1224 is not correctly powered.	Check the ECU-1224 connection cable.

		If the problem persists, call the technical support.
--	--	--

13 ACCESSORIES

ISOBUS ECU 1224 can be equipped with these accessories:

13.1 Main cable Connection

Cable between ISOBUS ECU 1224 and Tractor

Table 15

Purchase CODE	Description	Note
C00902169	CABLE ECU 1224 POWER ISOBUS 10m	ISOBUS standard connector 10m
C00902177	CABLE ECU 1224 POWER ISOBUS 5m	ISOBUS standard connector 5 m

13.2 Pressure sensor

Table 16

Purchase CODE	Description	Note
Ask Reseller	Analogic pressure sensor G1/4 20 bar full scale	Output:3 wires 4-20 mA (5 m cable included)
Ask Reseller	Analogic pressure sensor G1/4 50 bar full scale	Output: 3 wires 4-20 mA(5 m cable included)

13.3 Speed sensor

Table 17

Purchase CODE	Description	Note
Ask Reseller	Digital speed sensor	Output: 3 wires Square wave 12 V NPN (5m cable included)

13.4 Level Sensor

Table 18

Purchase CODE	Description	Note
Ask Reseller	Analogic level sensor	Output: 3 wires 4-mA order apart cable c00902046

14 SPARE PARTS

Here list of spare parts and purchase codes.

All parts ECU and cables include label reporting Item code.

Please verify code on your damaged part and place order using relative ordering code. Spare ordering code will include packaging and instructions for part handling.

All parts ECU and cables include label reporting Item code.

In case your label is not readable contact supplier

Table 19

Damaged part Item Code	Description	Ordering Item code	Notes
D0600006	Driver ISOBUS ECU 1224	D0600009	
C00902167	CABLE ECU 1224 GRAY 6W + P + G	C00902170	
C00902168	CABLE ECU 1224 BROWN 3W +GPS+ LIV	C00902171	
C00902172	CABLE ECU 1224 GRAY 5W + P + G	C00902173	
C00902180	CABLE ECU 1224 GRAY 11W + P + G 3 Wires Valve	C00902186	*
C00902181	CABLE ECU 1224 BROWN 5W +GPS+ LIV 3 Wires Valve	C00902187	*
C00902182	CABLE ECU 1224 BROWN 2W +GPS+ LIV 3 Wires Valve	C00902188	*
C00902166	CABLE ECU 1224 POWER ISOBUS 10m	C00902169	
C00902176	CABLE ECU 1224 POWER ISOBUS 5m	C00902177	

- Do not mix two wires valves cables series with three wires valves cables series

15 DIMENSIONS

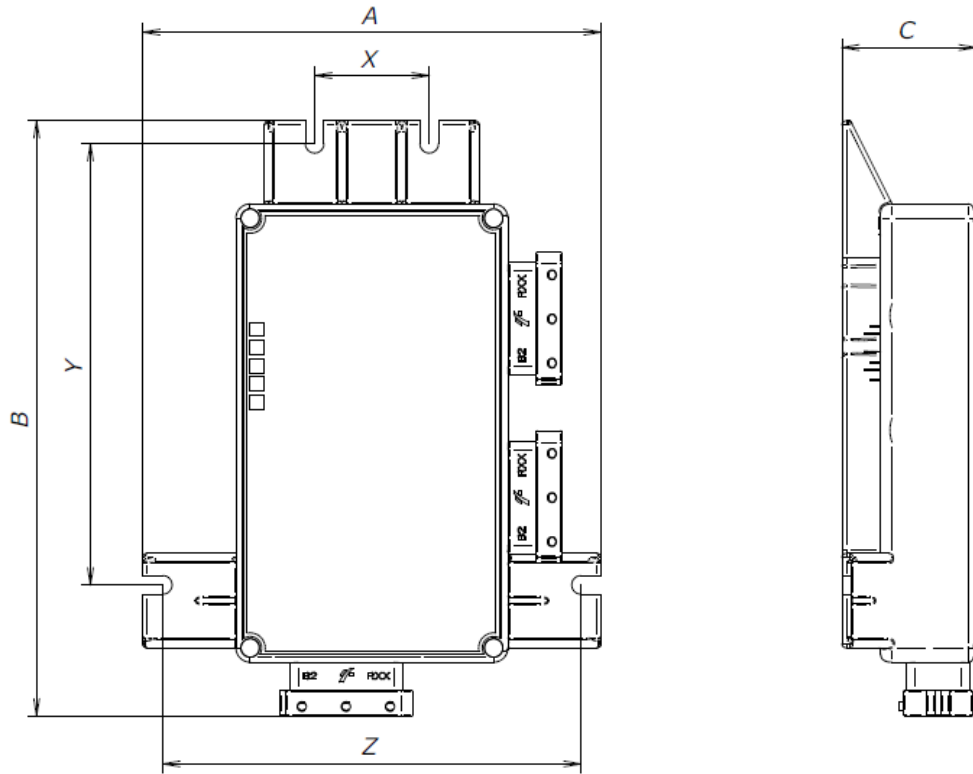


Figure 39

Table 20

Dimension	(mm)
A	160
B	208
C	47
X	40
Y	154
Z	146

Notes: Recommended Cylindrical head screws with hexagon socket M6

16 TECHNICAL DATA

ECU features:

Table 21

Parameter	Description	Unit
CPU	ARM® 32-bit Cortex®-M3 CPU (120 MHz max)	
ECU Dimensions	110 x 180 x 45	mm
Weight	400	g
Connectors	3 x FCI: 24+24+24	pcs
Operating Temperature	- 40 + 85	°C
Supply Voltage	9 to 32	V
Max Idle Current	<120	mA
Max current load	14	A
ECU sealing	IP 67	
4 Digital INPUT PNP	max 100	mA
3 Analogic INPUT	4-20	mA
18 Digital OUT High side switch with overload and Short circuit protection	max 2.5	A
4 Digital OUT High side switch with overload and Short circuit protection	max 5	A

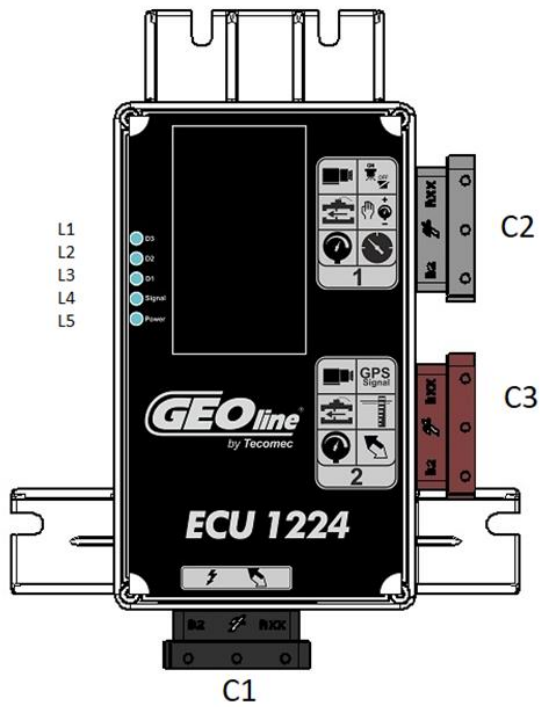


Figure 40

Table 22

CONNECTOR	PIN	DESCRIPTION
BLACK		
C1	A1	PWR -VBATT
C1	A2	ECU -VBATT
C1	B1	ECU + VBATT
C1	C1	ECU + VBATT
C1	B3	CAN1-H
C1	B4	CAN1-L
C1	C8	PWR +VBATT
C1	All Other	All other pins are RESERVED

Table 23

CONNECTOR	PIN	DESCRIPTION
BROWN		
C3	A1	GND
C3	B1	OUT 1
C3	B2	SECTION PIN
C3	B3	SECTION PIN
C3	B4	SECTION PIN

C3	C2	SECTION PIN
C3	C3	SECTION PIN
C3	C4	SECTION PIN
C3	C8	12 Vdc valve (3 wires valve)
C3	All Other	All other pins are RESERVED

Table 24

CONNECTOR GRAY	PIN	DESCRIPTION
C2	A1	GND
C2	A2	FLOW IN SIGNAL
C2	A3	WHEEL SENSOR IN SIGNAL
C2	A5	MAIN VALVE PIN
C2	A6	MAIN VALVE PIN
C2	A7	12V PWR SENSOR
C2	A8	REGULATION VALVE PIN
C2	B1	GND
C2	B2	SECTION PIN
C2	B3	SECTION PIN
C2	B4	SECTION PIN
C2	B5	SECTION PIN
C2	B6	SECTION PIN
C2	B7	SECTION PIN
C2	B8	REGULATION VALVE PIN
C2	C1	GND
C2	C2	SECTION PIN
C2	C3	SECTION PIN
C2	C4	SECTION PIN
C2	C5	SECTION PIN
C2	C6	SECTION PIN
C2	C7	SECTION PIN
C2	C8	12 Vdc valve (3 wires valve)
C2	All Other	All other pins are RESERVED

17 DECLARATION OF CONFORMITY



Dichiarazione di conformità UE
 (ai sensi della Direttiva 2014/30/UE)
UE declaration of conformity
 (according to Directive 2014/30/UE)

PRODOTTO: : ISOBUS ECU 1224 SPRAYER

TECOMEC S.r.l.
Strada della Mirandola, 11 - 42124 Reggio Emilia (RE) – Italy

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.

This declaration of conformity is issued under the sole responsibility of the manufacturer

OGGETTO DELLA DICHIARAZIONE: ISOBUS ECU 1224 SPRAYER

Object of the declaration: ISOBUS ECU 1224 SPRAYER

Item codes:

8410073, 8410074, 8410075, 8410076, 8410077, 8410078; D00600006, D00600009

L'OGGETTO DELLA DICHIARAZIONE DI CUI SOPRA E' CONFORME ALLA PERTINENTE
 NORMATIVA DI ARMONIZZAZIONE DELL'UNIONE:

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Direttiva 2014/30/UE Compatibilità elettromagnetica
Directive 2014/30/UE Electromagnetic compatibility

Riferimento alle pertinenti norme armonizzate utilizzate o riferimenti alle altre specifiche tecniche in relazione alle quali è dichiarata la conformità:

References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:

UNI EN 14982:2009 Agricultural and forestry machinery
 —Electromagnetic compatibility

Informazioni supplementari:

Additional information:

Si dichiara anche che sono state rispettate le restrizioni previste dalla Direttiva 2011/65/UE (RoHS) sull'uso di sostanze pericolose nelle apparecchiature elettriche ed elettroniche.

We declare also that the restrictions foreseen by the Directive 2011/65/EU (RoHS) concerning the use of hazardous substances in electrical and electronic equipment have been respected.

Firmato a nome e per conto di:
Signed for and on behalf of:

Reggio Emilia, 01/11/2020

Bianchini Daniele
 (Legale Rappresentante di Tecomec S.r.l.)
 (Legal Representative of Tecomec S.r.l.)

Tecomec S.r.l. Strada della Mirandola, 11 - 42124 Reggio Emilia (RE) - Italy
 Tel. +39 0522 959401 - Fax +39 0522 952727
 www.tecomec.com

Figure 41

18 ISOBUS CERTIFICATION



Figure 42

19 WARRANTY

This product has been designed and manufactured using the most modern techniques. The manufacturer guarantees the products for 24 months from the date of purchase.

Tecomec S.r.l. guarantees that ISOBUS ECU 1224 SPRAYER labeled products are covered against manufacturing defects during the following periods.

19.1 Warranty periods

- Finished products – 2 years from Invoice date to end user
- Warranty on parts or reparation made during warranty period will end at the end of initial warranty period.

19.2 Product warranty terms

1. The warranty period starts at the date of purchase. The guarantee will be applied upon presentation of the purchase invoice. The manufacturer, acting through the sales and technical assistance network, shall replace free of charge any defective component. The warranty does not modify the purchaser's rights as established under legislation governing the consequences of defects in the product.
2. The technical staff will intervene as soon as possible within the time limits granted by organizational arrangements.
3. Any claim under the warranty, must include details of invoice or receipt showing the date of purchase.
4. The manufacturer excludes consumables and parts subject to normal wear and tear.
5. The guarantee excludes intervention for updating and improvement of product.
6. The warranty does not cover the tuning maintenance interventions which should occur during the period of guarantee.
7. Any damage caused during transport must be reported immediately to the carrier or warranty will be void.
8. The warranty does not cover any damage, direct or indirect, caused to people or things
9. The warranty is void in the event of:
 - Obvious lack or wrong installation or maintenance.
 - Use of not original spare parts or accessories
 - Interventions carried out by non-authorized personnel.

19.3 Returning goods

To have an effective guarantee, it is necessary to comply with the following requirements:

- The product must be delivered in the original packaging and with all the accessories (if applicable) in good condition.
- Provide a copy of the purchase invoice.
- Attach a letter in writing (from the distributor or user) explaining in detail the equipment failures and / or anomalies, mentioning the device serial number.
- Get the official approval from the seller before returning any goods

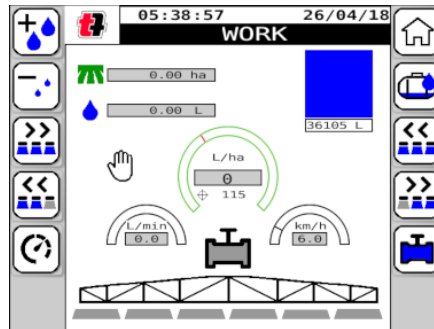
19.3.1.1 Notes

- Customer is not allowed to rework or try to repair the device under any conditions. Reworked devices will not be covered by warranty.
- The guarantee will be applied after the analysis of technical staff which will carry out the necessary tests for diagnosis.
- Parts warranty, will start from the seller sales invoice.
- The serial number must appear on the sales invoice to the final customer.
- Repair and maintenance must be carried out only by Agres, Tecomec s.r.l. or authorized centers
- As indicated in the Returning goods topic, the documentation must be correct for the equipment analysis to begin.


20 QUICK REFERENCE

20.1 Switch-On/Off the ISOBUS ECU 1224

The ISOBUS ECU 1224 is automatically switched-on/off when the tractor is turned on/off. There is no physical switch on the ECU



20.2 Start new treatment

Assuming that the ISOBUS ECU 1224 was correctly configured to **start a new treatment** the user Keep pressed valve key  button, till a message box is shown requesting your OK (ENTER).



20.3 Operating modes: Automatic, Manual




to pass in **manual mode** (User open and close valves manually)



to pass in **automatic mode** (Automatic Section Control is enabled if your Virtual terminal is enabled for GPS ASC)

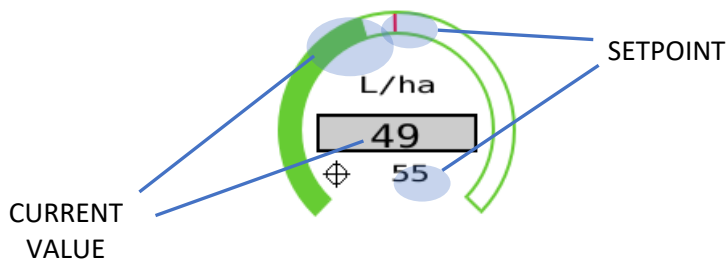
20.4 Tank Replenishment



If the tank level sensor is not installed, the user shall manually specify the new level of the tank. This may be done by pressing the  key that causes the showing of a dialog box where the user can specify the new level. In case level sensor is installed, ISOBUS ECU 1224 automatically measure tank level

20.5 Ratio

The central part of the WORK page, contains a meter used to show the currently measured rate and its desired setpoint (defined by user in manual mode or by TC in auto mode).



20.6 Change Rate – Manual Mode



Increase current rate set-point (l/ha). Note this button is available only when manual mode is active.



Decrease current rate set-point (l/ha). Note this button is available only when manual mode is active.

20.7 Change Rate – Automatic Mode

Check user manual of the Task Controller included in your Virtual Terminal.

20.8 Terminate treatment

Treatment will be closed and data stored in the Virtual terminal when you start a new treatment.



Tecomec S.r.l.

Strada della Mirandola, 11 - 42124 Reggio Emilia - Italy

Tel +39 0522 959001 - Fax +39 0522 959060

www.tecomec.com - www.geoline.it

sales_dept@geoline.it



21/10/2020

