

**OSCAR**

agrotechnology &amp; industrial solutions



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Reg.Impr.Brescia n.29-30417  
Cap. Soc. Eur 500.000,00 I.V.

## APPLICATION FOR APPROVAL OF ESA PURSUANT TO THE ECE REGULATION R10.06

### UNIFORM PROVISIONS CONCERNING THE APPROVAL OF MOTOR VEHICLES WITH REGARDS TO ELECTROMAGNETIC COMPATIBILITY

**TYPE OF ESA: ES2**

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# OSCAR

agrotechnology & industrial solutions



N.9190.0 S C 2

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## Confirmation

We declare hereby that the specimen submitted for this approval test have been manufactured and assembled in conditions of ordinary mass production and that they are compatible with the enclosed documentation.

OSCAR s.r.l.  
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E8\*10R06/02\*14411\*00

Total number of pages 2/19



ANNEX 2B to ECE Regulation n. 10.06  
**INFORMATION DOCUMENT**  
**No. ES2\_ID Rev.0 dated 15.12.2023**

**For type approval of an electric/electronic sub-assembly with respect to electromagnetic compatibility**

1. Make (trade name of manufacturer): **OSCAR srl**

Trade marks: **OSCAR**

2. Type: **ES2**

0.2.1 Variants/Versions: **ES2, TUBE, ELS, EKS, ETS, EFS (all variants can be equipped with "8IO" expansion board)**

0.2.2 Commercial name of the ESA: **PowerCAN ISOBUS**

3. Means of identification of type, if marked on the component / ~~separate technical unit~~: **printed on self-adhesive label**

3.1. Location of that marking: **on top, front side, placed on PCB support**

4. Name and address of manufacturer: **OSCAR S.r.l.**

**Via Cornali, 2 25013 Carpenedolo (BS) Italy**

5. In the case of components and separate technical units, location and method of affixing of the approval mark: **indelible label placed on PCB support, top part, front side**

6. Address(es) of assembly plant(s): **OSCAR S.r.l. , Via Cornali, 2 25013 Carpenedolo (BS) Italy**

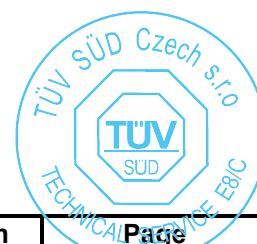
7. This ESA shall be approved as a **component**

8. Any restrictions of use and conditions for fitting: **See user manual.**

9. Electrical system rated voltage: **9-18V DC**

Appendix 1:

Description of the ESA chosen to represent the type (electronic block diagram and list of main component constituting the ESA (e.g. make and type of microprocessor, crystal, etc.).



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## Appendix 1. Technical documentation

### Description:

The Electronic Control Unit PowerCAN ISOBUS (type ES2) is responsible for control, management and movement of agricultural machineries and equipment. ES2 is a steering system for trailers and semitrailers with very heavy loads, which simplify and help their use and optimizes their maneuverability.

### Variants

- **ES2:** management of 3 steering axles through the processing of trigonometric calculations during the maneuvering and working phases of an agricultural equipment which involves the reading of 4 analogue inputs and 2 digital inputs with the simultaneous control of no.8 12V solenoid valves. This is the most complex configuration in terms of HW and SW (SW Version: ES2\_V2.xx.xx)
- **TUBE:** Drip Tape Layer management which involves the reading of 7 digital inputs and the simultaneous control of no.5 12V outputs (SW Version: TUBE\_V2.xx.xx)
- **ELS:** suspensions management of agricultural equipment which involves the reading of 3 digital inputs and 1 analogue input with simultaneous control of no.5 12V solenoid valves (SW Version: ELS\_V2.xx.xx)
- **EKS:** movements management of agricultural equipment which involves the reading of 3 digital inputs and 1 analogue input with the simultaneous control of no. 5 12V outputs (SW Version: EKS\_V2.xx.xx)
- **ETS:** commands management of the of a hydraulically driven agricultural trailer which involves the simultaneous control of no. 3 12V solenoid valves (SW Version: ETS\_V2.xx.xx)
- **EFS:** commands management of organic or chemical fertilizer spreader which involves the reading of 3 digital inputs and 1 analogue input with the simultaneous control of 5 12V outputs (SW Version: EFS\_V2.xx.xx)

All variants above can be equipped with “8IO” expansion board for managing 8 generic 12V IOs (SW Version: 8IO\_V2.xx.xx).

All variants described above use the same PCB HW: PCB0100/2.xx (where xx identify minor differences not relevant for EMC testing). SW version is identified by “variant”\_V2.xx.xx (where xx identify minor differences not relevant for EMC testing)

### Block/wiring diagram:

See attachment “IMPIANTO STERZATURA ES2 4 ASSI”

### Drawings and functional data:

See attachment “User manual and fitting instruction”

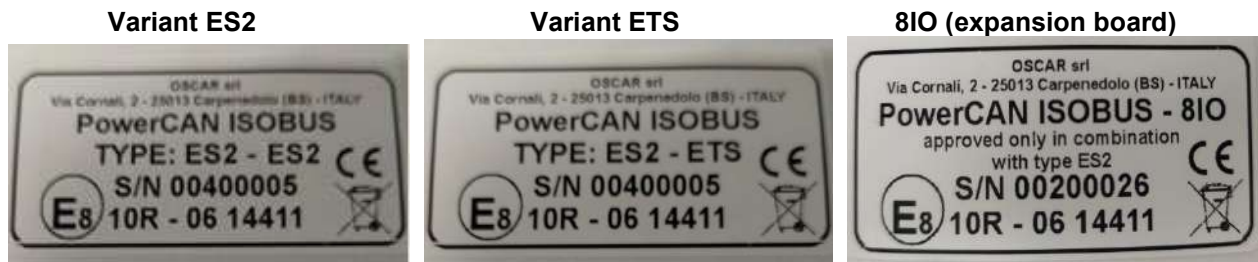


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Label and approval mark:

**Example of identification label:**



**Approval mark positioning:**



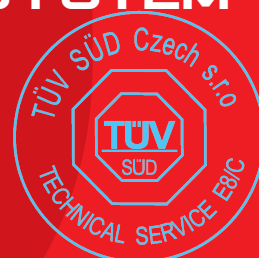
- attached to this Appendix:
- Technical Manual
  - Technical drawings



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**USE AND  
MAINTENANCE MANUAL**

**ES2 & ES2 PLUS**  
**ELECTRONIC STEERING SYSTEM**



# **ES2 & ES2 PLUS**

**ELECTRONIC STEERING SYSTEM**



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## 1. ES2 AND ES2 PLUS SYSTEM DESCRIPTION

### 1.1. WARNINGS AND GUARANTEE CONDITIONS

We strongly recommend that you read this manual carefully before using the ES2 and ES2 plus. Only use the system for the purpose for which it is intended. Oscar srl reserves the right to make changes to improve this manual at any time without prior notice.

The equipment is guaranteed for 12 months from the date of purchase certified by a transport or delivery document showing the model of the equipment and the name of the purchaser.

Guarantee means the replacement or repair, free of charge, of parts of the equipment acknowledged to be defective due to manufacturing or material defects.

The purchaser is only entitled to the replacement of the defective parts, excluding transport and packaging costs, which shall be borne by the purchaser.

The replacement or repair of the equipment does not confer the right to an extension of the guarantee.

Replaced defective parts will remain the property of Oscar srl, which is the manufacturer of the electronic kit.

Excluded from the guarantee are damages resulting from faulty or incorrect installation, falls, improper use of the system, failure to observe the most elementary rules of maintenance and care, incorrect handling by the operator, or unsuitable power supply.

This guarantee does not cover faults due to tampering or intervention by personnel other than the manufacturer.

Oscar srl disclaims all liability for any direct or indirect damage to persons or property as a result of improper use of the equipment or failure to observe the warnings regarding installation, use and maintenance of the equipment.

### 1.2. ES2 DESCRIPTION

ES2 (Electronic Steering System), is a product designed and engineered by OSCAR srl.

ES2 is a steering system for trailers and semi-trailers with very heavy loads, which facilitates its use and optimises manoeuvrability.

We set out to create something that would be innovative, simple and improve the efficiency of commercially available trailers and semi-trailers while complying with road traffic regulations. A complete system, that is easy to install and quick to maintain.

### 1.3. ES2 PLUS DESCRIPTION

ES2 PLUS is a product designed and engineered by OSCAR s.r.l. ES2 PLUS is a self-leveling system for hydraulic suspensions.

The system makes it possible to change the alignment of the platform for both safety and utility reasons.

The aim was to provide a system controlled entirely by an in-cab ISOBUS display that could act directly on the suspension to change its set-up.

### 1.4. OPERATING CONDITIONS

**Power supply:** 10÷18VDC with protection against reverse polarity and impulse overvoltage.

**Temperature:** Power-Can-40°C to +70°C

**Maximum humidity:** 90% non-condensing.

**Protection:** IP67 master unit, IP67 slave unit protection.

### 1.5. SCOPE OF THE SYSTEM

The ES2 and ES2 PLUS systems are designed to be applied to trailers generally equipped with hydraulic suspension and steering controlled by a hydraulic cylinder.

The system finds its greatest expression in the application on Sidra suspensions with "ONE" cylinder.

The Sidra suspension has independent axles, allowing independent movement between the left and right wheel, thus allowing the possibility of managing the level of the floor or frame.

The platform can be raised or lowered at will or tilted to one side or the other.

The presence of the ONE cylinder allows for "mechanical" wheel realignment while in motion, thanks to its design conformation. In the application with standard cylinders, realignment is still possible by exploiting electronics that define an electronic "0".

## 2. ES2 SYSTEM COMPOSITION

### 2.1. SUPPLY AND PACKAGING

The ES2 and ES2 PLUS are delivered packed in a box with dimensions 60X40X40 cm.

The system is a kit that must be assembled strictly according to the instructions in the manual.



Figure 1 Box

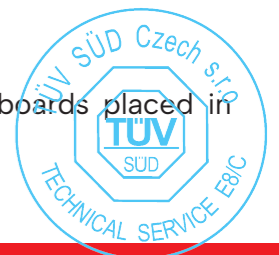


Figure 2 Packaging

### 2.2. ES2 SYSTEM COMPONENTS

#### 2.2.1. POWERCAN

PowerCANs are electronic boards placed in



series, where the first is the master board and the others are slave boards.

A micro-processor that controls the entire steering management system is built into the master board.



Figure 3 Master and Slave Cards

### 2.2.2. DRAWBAR SENSOR

The drawbar sensor is an angle sensor encased in an aluminium capsule that must be attached to the drawbar of the trailer.

The sensor has the function of detecting the relative angle between the trailer and the tractor.



Figure 4 Drawbar sensor

### 2.2.3. AXLE ANGLE SENSOR

The axle angle sensor is a magnetic angle sensor which has the function of detecting the steering angle of the driven axle.



Figure 5 Angle sensor unit and support

### 2.2.4. ISOBUS CABLE

The ISOBUS cable supplied is used to connect the master board to the ISOBUS output on the tractor.



Figure 6 ISOBUS cable

**Note:** a necessary condition for operation is to have a tractor with ISOBUS output with PGN 65096 WHEEL- BASED SPEED AND DISTANCE and/or 65097 GROUND-BASED SPEED AND DISTANCE.

### 2.2.5. ELECTRO-HYDRAULIC UNIT

The electro-hydraulic unit consists of an aluminium block with applied solenoid valves to manage all the functions provided.



Figure 7 Electro-hydraulic unit with solenoid valves

**Note:** the steering management solenoid valves are proportional. This results in a continuous and uniform steering movement.

**Note:** the unit is already prepared for ELS (Electronic Load Sensing) connection if the tractor is equipped with it.

### 2.2.6. WIRING

The kit contains all the wiring that connects the different sensors to the master and slave boards.



Figure 8 Wiring

**Note:** each wiring harness has numbering that corresponds to the numbering on the circuit boards..

**Warning:** position all components on the trailer so that they can be reached with the supplied cables.

### 3. ES2 PLUS SYSTEM COMPOSITION

#### 3.1. ES2 SYSTEM COMPONENTS

##### 3.1.1. INCLINOMETER OR "ELECTRONIC BUBBLE" SENSOR

The inclinometer sensor supplied has the function of determining the horizon and returning the position of the trailer bed in relation to the absolute horizontal line.



Figure 9 "Electronic bubble"

##### 3.1.2. ANGLE SENSOR ON THE SUSPENSION

The angle sensor on the suspension is intended to read the inclination of the swinging part of the Sidra arm in order to provide the position of motion of the suspension cylinder.



Figure 10 Angle sensor

**Note:** the application of this sensor is only possible with Sidra suspension.

##### 3.1.3. ADDITIONAL POWERCAN

It is necessary for the self-levelling system to add one or more slave boards depending on the number of steering axles to be connected in series to the other boards present.



Figure 11 Slave card

### 4. INSTALLING COMPONENTS ON THE TRAILER

#### 4.1. INSTALLATION OF THE ES2 / ES2 PLUS SYSTEM ON THE TRAILER

##### 4.1.1. POWERCAN

Place the master and slave board unit on the trailer in a protected position and if possible in the central part of the trailer so that all the sensors to be connected can be reached with the cables.

The master and slave boards should be positioned close to the electro-hydraulic unit.

**Note:** boards can be screwed to a plate in a toolbox.

##### 4.1.2. DRAWBAR SENSOR

Position the sensor at the front of the drawbar with the lever pointing to the left.

Fasten the counter-plate to the frame, which is supplied, so as to comply with the TOP indication in the direction of motion.

There are two indications on the counter-plate, TOP for the direction of motion and SX for the position of the sensor lever at the drawbar.



Figure 12 Counter-plate

Connect the rod to the tractor with the tie rod provided, which is equipped with ball joints.



Figure 13 Drawbar sensor application

**Warning:** position the lever with the sensor holes perfectly perpendicular to the drawbar and keep the linkage at the same distance from the centre of the eye and the sensor centre.

##### 4.1.3. ANGLE SENSOR AT THE STEERING HINGE

Remove the **left** steering hinge cap, tighten the screw fitted with the magnet on the steering pin, making sure that the notch indicating NORTH is positioned in the same direction as the sensor output.

Place the sensor-support unit on the left hinge.

Close with the previously unscrewed cap using long screws.

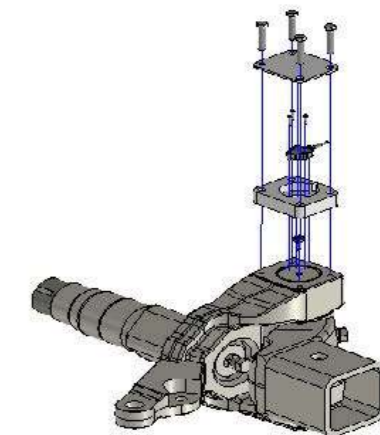


Figure 14 Exploded view of sensor unit

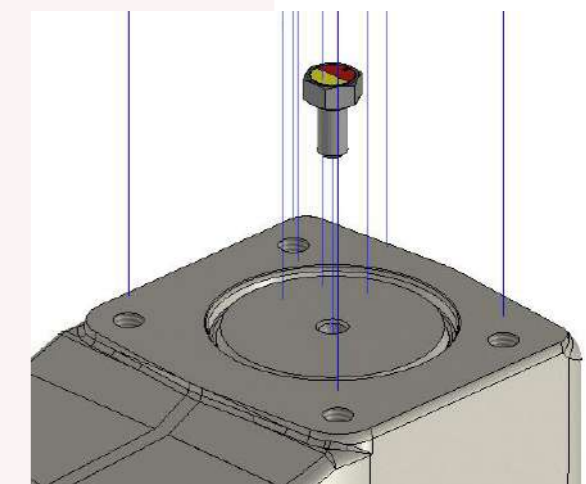


Figure 15 Magnetic screw with indication of direction of motion





Figure 16 Mounting support with sensor

**Note:** add a drop of threadlocker to orientate the screw correctly.

**Warning:** place the sensor on the left side of the machine

#### 4.1.4. INSTALLATION OF INCLINOMETER "ELECTRONIC BUBBLE" SENSOR

**Note:** this sensor is only to be installed if the ES2 PLUS is present.

The inclinometer sensor must be installed in the vicinity of the "PowerCAN" master board.

#### 4.1.5. LEVELLING ANGLE SENSOR INSTALLATION

**Note:** this sensor is only to be installed if the ES2 PLUS is present.

There are 2 sensors to be installed.

The angle sensor should be installed on the swing arm of the Sidra suspension as shown below.

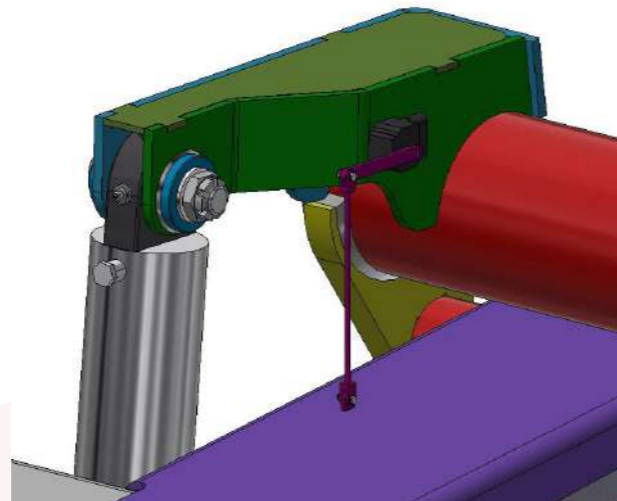


Figure 17 Angle sensor application

### 5. ELECTRO-HYDRAULIC CONNECTIONS ON THE TRAILER

#### 5.1. 3-AXLE HYDRAULIC STEERING SYSTEM WITH 1ST AXLE LIFT

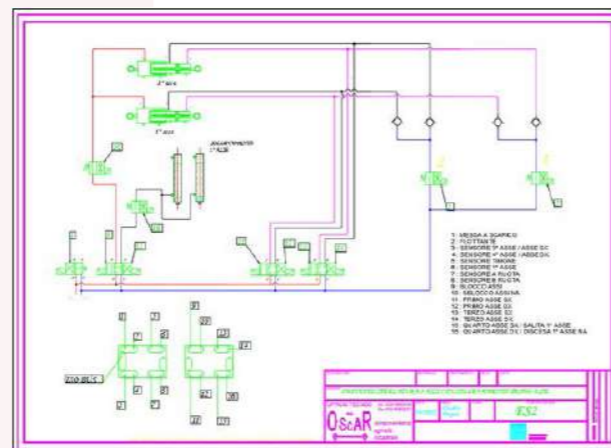


Figure 18 Electro-hydraulic diagram

The diagram represents the hydraulic steering system of a "tridem" trailer with a steered first and third axle, the second is fixed.

The system also provides a lifting function for

the first axle through the use of hydraulic suspension cylinders.

**Note:** the system diagram is supplied with the kit.

#### 5.2. 3-AXLE HYDRAULIC STEERING AND AUTO-LEVELLING SYSTEM

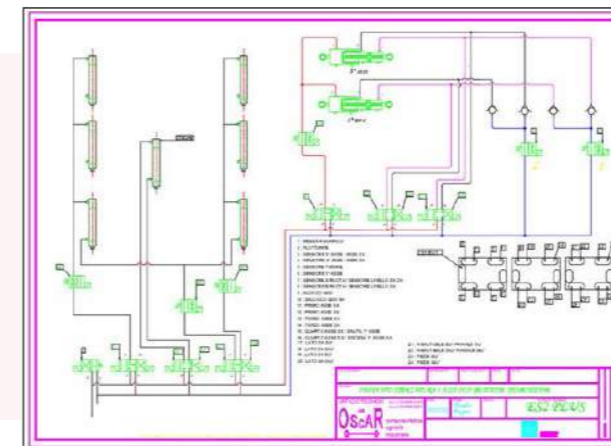


Figure 19 Electro-hydraulic diagram

The diagram represents the hydraulic self-levelling steering system of a "tridem" trailer with first and third steered axles, the second is fixed.

The system also provides a lifting function for the first axle.

The hydraulic suspension cylinders are highlighted for handling.

**Note:** the system diagram is supplied with the kit.

#### 5.3. 3-AXLE ELECTRICAL STEERING SYSTEM WITH 1ST AXLE LIFT

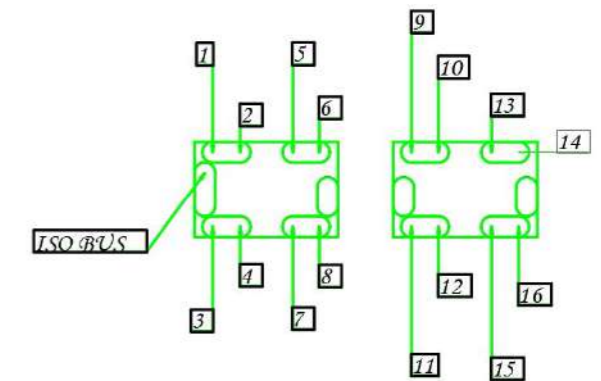


Figure 20 Power-can diagram

- 1 : MESSA A SCARICO
- 2 : FLOTTANTE
- 3 : SENSORE 3° ASSE / ASSE SX
- 4 : SENSORE 4° ASSE / ASSE DX
- 5 : SENSORE TIMONE
- 6 : SENSORE 1° ASSE
- 7 : SENSORE A RUOTA
- 8 : SENSORE B RUOTA
- 9 : BLOCCO ASSI
- 10 : SBLOCCO ASSI NA
- 11 : PRIMO ASSE SX
- 12 : PRIMO ASSE DX
- 13 : TERZO ASSE SX
- 14 : TERZO ASSE DX
- 15 : QUARTO ASSE SX / SALITA 1° ASSE
- 16 : QUARTO ASSE DX / DISCESA 1° ASSE NA

Figure 21 Electrical connection references

The circuit diagram shown refers to the steering of a "tridem" trailer with a steered first and third axle, the second is fixed.

The numbers to be connected between: master boards, slave boards, sensors and solenoid valves are shown.



### 5.4. 3-AXLE ELECTRICAL STEERING AND AUTO-LEVELLING SYSTEM

- 1 : MESSA A SCARICO
- 2 : FLOTTANTE
- 3 : SENSORE 3° ASSE / ASSE SX
- 4 : SENSORE 4° ASSE / ASSE DX
- 5 : SENSORE TIMONE
- 6 : SENSORE 1° ASSE
- 7 : SENSORE A RUOTA / SENSORE LIVELLO DX DX
- 8 : SENSORE B RUOTA / SENSORE LIVELLO SX
- 9 : BLOCCO ASSI
- 10 : SBLOCCO ASSI NA
- 11 : PRIMO ASSE SX
- 12 : PRIMO ASSE DX
- 13 : TERZO ASSE SX
- 14 : TERZO ASSE DX
- 15 : QUARTO ASSE SX / SALITA 1° ASSE
- 16 : QUARTO ASSE DX / DISCESA 1° ASSE NA
- 17 : LATO DX SU\*
- 18 : LATO DX GIU'
- 19 : LATO SX SU\*
- 20 : LATO SX GIU'
- 21 : RIBALTABILE SU/ PIANALE SU\*
- 22 : RIBALTABILE GIU'/PIANALE GIU'
- 23 : PIEDE SU\*
- 24 : PIEDE GIU'

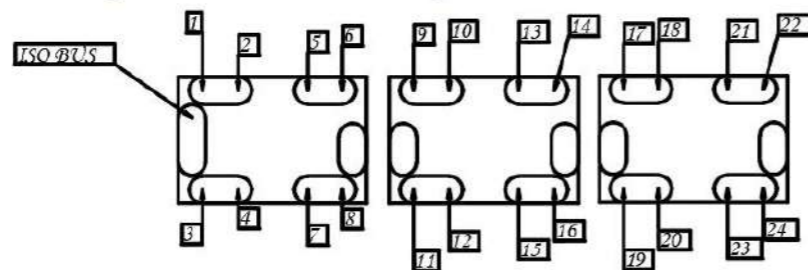


Figure 22 Power-can diagram and electrical connections

The circuit diagram shown refers to the auto-levelling steering of a "tridem" trailer with a steered first and third axle, the second is fixed.

The numbers to be connected between: master boards, slave boards, sensors and solenoid valves are shown.

### 6. CONFIGURATION FROM THE ISOBUS DISPLAY

#### 6.1. SWITCHING ON AND FIRST START-UP

Before starting parameter configuration, it is important to ensure that the connections have been made correctly, verifying that the voltage is as required by the system (12V dc).

##### 6.1.1. PARAMETER CONFIGURATION WITH DESCRIPTION

Switch on the tractor and wait until the ISO-BUS display is operational, then pressurise the system oil.

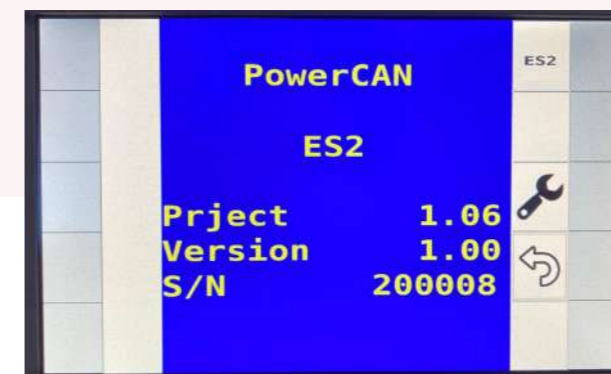


Figure 23 Initial screen

The following key combination (highlighted in yellow Sk1 and Sk6) must be entered to enter the configuration:

SOFT KEY 1 – SOFT KEY 6 – SOFT KEY 1

**Note:** the time interval of keying in one key with another must be within 2 seconds.

**Warning:** if you exceed 2 seconds, press "X" to return to the previous screen.

This key combination will lead directly to the ISOBUS configuration.



Figure 24 Configuration screen

In the configuration menu, you will be able to enter and or change specific parameters.

In the first button we find the "machine constants", which allows us to modify and enter the correct data provided by the machine manufacturer.



Figure 25 Parameter screen

- "Ang. Axles" → by default an angle of 20° is set. Set the actual steering angle provided by the machine manufacturer with a tolerance of +1°. So if the assumed steering angle is 14° in the ISOBUS enter 15°.
- "Ang. Drawbar" → by default is set to 90° (do not change).
- "Distance 1" → enter the distance between drawbar eye and 1st axle centre.



- "Distance 2" → enter axle wheelbase
- "Vmax Steering." → default parameter 15 km/h (**do not change**). This is the maximum speed at which steering is deactivated in the direction of motion, the system becomes floating.
- "Vmax Float." → default parameter 40 km/h. This is the speed where the axle lock occurs, it is only activated with straight axles and is automatically deactivated below 35 km/h and the system goes back to floating.
- "Dead band" → default parameter (**do not change**).

Once you have established all the parameters on this screen and checked that they are correctly entered, press the "NEXT" button in the bottom right-hand corner to continue to the second "machine cost" screen.



Figure 26 Parameter screen

On this screen, tick the three green boxes according to the type of object proposed.

- Cylinder "ONE": if the steering cylinder "one" is present, tick the box;
- TOP sensor: indicates the position of the sensor, "green" if positioned at the top or "red" if positioned at the bottom;

- "Crab" function: the crab function is an optional extra, if purchased please tick the box which will be "green".

**Warning:** if the "crab" function has not been purchased, the box is disabled and coloured "grey".

**Note:** for the crab function, an optional expansion board must be added for lifting the fixed axle.

**Note:** if the box next to the object is green, it indicates that it is active. If it is "red", it is deactivated.

"Type steer" indicates the number of axles of the trailer, including both steered and fixed, below is an example of configurations:

- "1" steered single-axle;
- "2" fixed 1st axle and steered 2nd axle;
- "3" 1st steered axle, 2nd fixed axle, 3rd steered axle;
- "4" 1st steered axle, 2nd fixed axle, 3rd steered axle, 4th steered axle.

Once the parameter configuration is complete, save by pressing the green button in the top right corner or the red button in the top left corner to cancel the changes. To return to the previous page, press the "NEXT" button.

### 6.1.2. AXLE TEST

In the second button we find "axle test", which allows us to check that the previous parameter entries are correct.

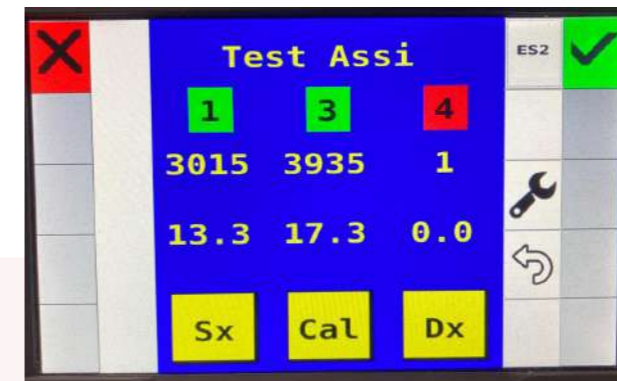


Figure 27 Test screen

The "axle test" consists of calibrating the steering axles.

First check that the steering axles are in the green background in the display, i.e. active. In the example above, the active ones are the first axle and the third. The fourth is red because the car is a tridem and there is no fourth axle. Before starting calibration, check that pressing the "LEFT" button with a yellow background makes the axles steer to the left, and pressing the "RIGHT" button makes the axles steer to the right.

**Note:** the direction that establishes the left and right steering does NOT correspond to the correct steering of a running trailer.

**Warning:** when calibrating, the numerical values circled in red must increase in value and have a small difference between them. Steering to the RIGHT with sensor positioned TOP (GREEN FLAG IN MACHINE COST.) Steering to the LEFT with sensor positioned BOTTOM (RED FLAG IN MACHINE COST.).

**Warning:** if the axles do not steer as described above, reverse the electric or hydraulic cable connections. Then repeat the test.

Once you have verified the correct connection of the cables and the resulting steering, you can press the "CAL" button with a yellow background to start calibration.

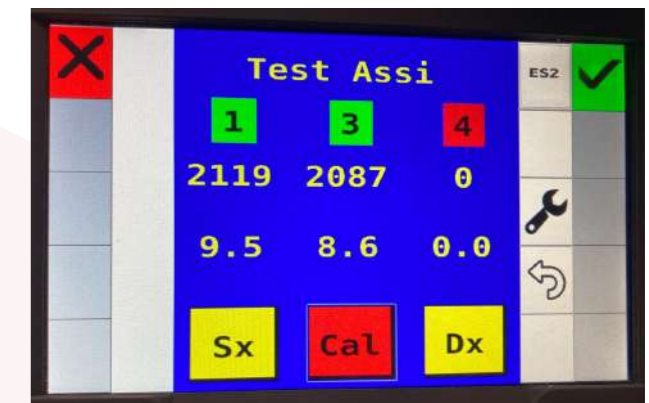


Figure 28 Test screen

Once calibration has started, the "Cal" button changes from a yellow background to a red background until the end of the calibration operation, where it returns to a yellow background.

Once calibration is complete, save by pressing the green button in the top right corner or the red button in the top left corner to cancel changes.

**Warning:** calibration must always be carried out after installation of the sensors on the hinges.



### 6.1.3. DRAWBAR TEST

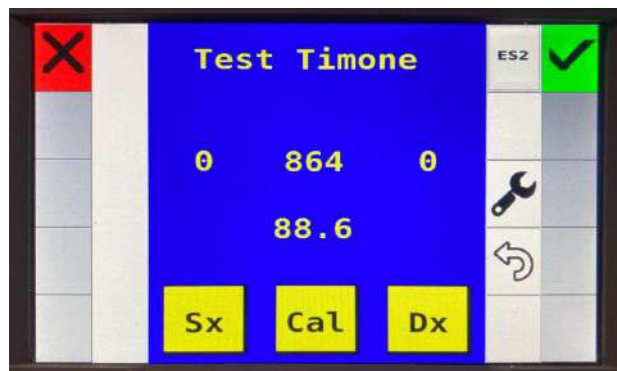


Figure 29 Drawbar test screen

The drawbar test screen is used to check the correct steering of the wheels according to the drawbar position.

Check that when the tractor steers to the right, the sensor reading increases and when the tractor steers to the left, the reading decreases.

**i Calibration note:** to calibrate the sensor, position the lever near  $-45^\circ$ , press "Left", then move the lever to  $+45^\circ$  and press "Right". When done, press "Cal".



Figure 30 Indication on  $45^\circ$  and  $135^\circ$  angle counter-plate

**i Note:** calibration is already factory default.

### 6.1.4. STEERING TEST



Figure 31 Steering test screen

"Test steer" is used to verify the correct functioning of the steering algorithm. Proceed by manually moving the sensor at the drawbar, checking that the axles move in line with the steering.

**Warning:** if axle oscillations occur, reduce the oil flow rate.

When finished, press the Green flag to confirm and exit the changes, or press the Red flag to exit without confirming the changes.

## 7. OPERATING INSTRUCTIONS FOR THE ISOBUS DISPLAY

### 7.1. OPERATING INSTRUCTIONS

After the tractor has been switched on and the ISOBUS cable has been connected correctly, an "ES2" icon will appear on the screen.

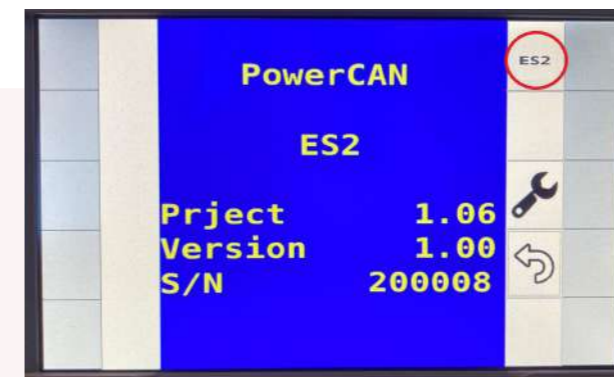


Figure 32 Initial screen

Selecting it takes you to a screen with a series of yellow-coloured buttons useful for managing the different system functions.

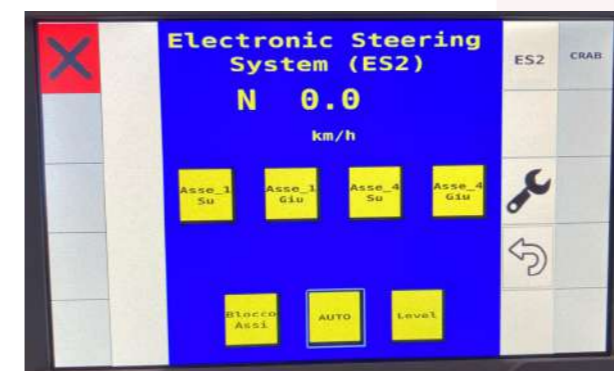


Figure 33 Disabled buttons screen

**i Note:** when the buttons are activated they turn red.

**i Note:** the letter "N" indicates that the machine is stopped.

### 7.1.1. AUTOMATIC REVERSE FUNCTIONS WITH FLOATING SYSTEM



Figure 34 Reverse gear screen

The automatic insertion system of the REVERSE GEAR is signalled by colouring the "AUTO" button orange.

**Warning:** the only function possible in reverse gear is "Axle lock".

**i Note:** in this phase the state of the axles changes from floating to driven. They will return to the floating phase as the vehicle moves forward.

**i Note:** the letter "R" indicates that the machine is in reverse gear.

7.1.2. FUNCTIONS SET IN AUTOMATIC FORWARD MOTION



Figure 35 Forward motion screen

In forward motion up to a speed of less than 15 km/h, the automatic steering system is active.

**Note:** "AUTO" button is highlighted in red.

**Note:** the letter "D" indicates that the machine is in motion.



Figure 36 Floating phase screen

Above the 15 km/h threshold, the axles will switch from driven to floating phase.

**Note:** the "AUTO" button will be highlighted in grey.



Figure 37 Active axle locking

Once the maximum speed set for the floating axle phase (parameter in MACH. COST.) is exceeded, the system will cause the steering axles to lock.

**Note:** the "AUTO" button will still be displayed in grey because the vehicle speed is above 15 km/h, while the "AXLE LOCK" button will be displayed in orange.



Figure 38 Floating phase screen

By slowing down to the maximum speed set for the floating axle phase, "AXLE LOCK" will be disabled and the system will return to floating.

**Note:** the "AXLE LOCK" button will change from orange to yellow.

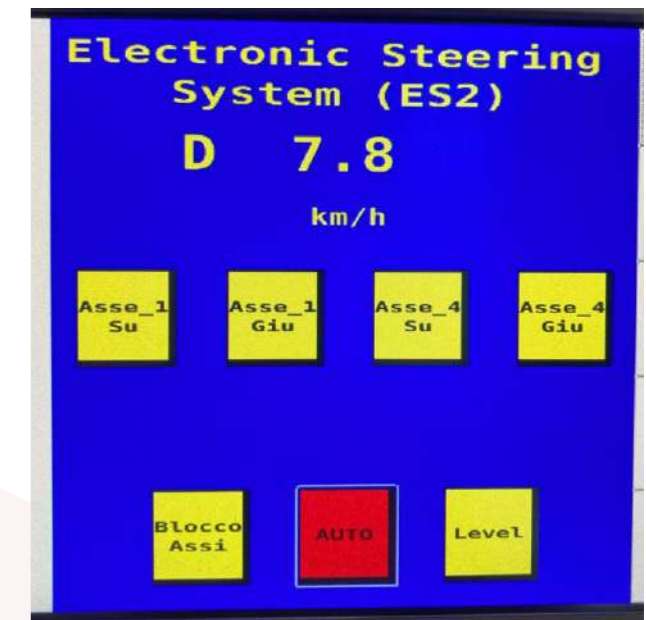


Figure 39 Forward motion screen

By slowing down further to a speed below 10 km/h, the system reactivates THE automatic steering.

**Note:** the "AUTO" button will change from orange to yellow.

7.1.3. LIFTING FUNCTION 1ST OR 4TH AXLE



Figure 40 Disabled buttons screen

To use the 1st axle lift function, press and hold the "Axle\_1 up" button until the axle is fully raised. Once the button is released, the axle remains raised and the button is red. When





the "Axle\_1 down" button is pressed, the axle goes down and the "Axle\_1 up" button turns yellow again. The operation for lifting the 4th axle is similar.

**⚠ Warning:** when descending, the axle will drop to the ground and return to floating.

#### 7.1.4. SELF-LEVELLING FUNCTION

The "Level" button activates the self-levelling function with inclinometer (bubble).

#### 7.1.5. "CRAB" FUNCTION

The "crab" function is activated by pressing the "CRAB" key, if enabled the colour is Green. If disabled, the colour is Grey.

**ⓘ Note:** for the crab function, an optional expansion board must be added to lift the fixed axle.



# OSCAR

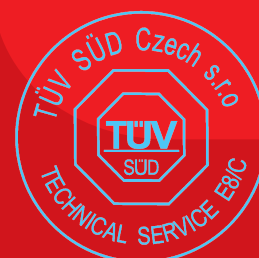
agrotechnology & industrial solutions

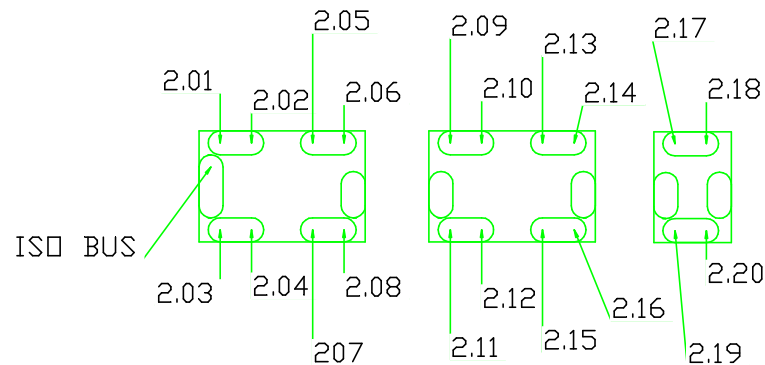
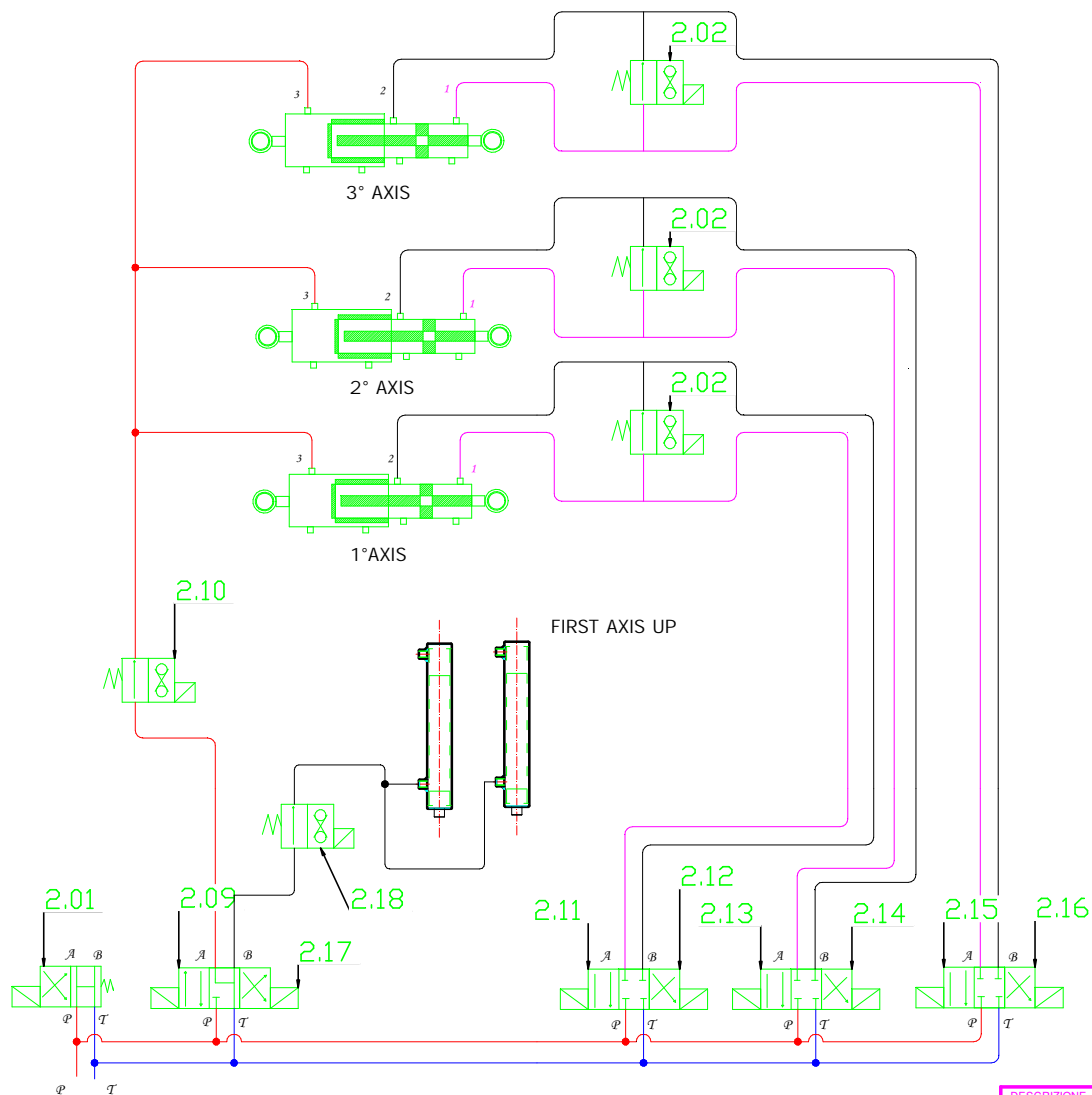
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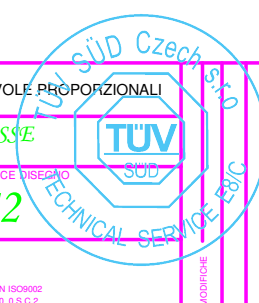
P.IVA 00627530983 REA 29-30417





- 2.01 : PILOT VALVE
- 2.02 : FLOATING
- 2.03 : THIRD AXLE / LEFT AXLE SENSOR
- 2.04 : FOURTH AXIS / RIGHT AXIS SENSOR
- 2.05 : FIRST AXIS SENSOR
- 2.06 : RUDDER SENSOR
- 2.07 : SENSOR A WHEEL
- 2.08 : SENSOR B WHEEL
- 2.09 : AXIS BLOCK
- 2.10 : UNLOCKING AXES
- 2.11 : FIRST LEFT AXIS
- 2.12 : FIRST RIGHT AXIS
- 2.13 : THIRD AXIS LEFT
- 2.14 : THIRD RIGHT AXIS
- 2.15 : FOURTH AXIS LEFT
- 2.16 : FOURTH AXIS RIGHT
- 2.17 : FIRST AXIS UP
- 2.18 : FIRST AXIS DOWN

DESCRIZIONE	MATERIALE	TRATTAMENTO	NOTE
CON ASSALI FAD E VALVOLE PROPORZIONALI			
GRUPPO <i>IMPIANTO STERZATURA ES2 4 ASSI CON SOLLEVAMENTO 1° ASSE</i>			
UFFICIO TECNICO	tel. 030/9965450 fax. 030/9965621	DATA 06/12/23	FIRMA <i>Claudio Fregoni</i>
 componentistica agricola industriale		SCALA	CODICE DISSEGNO <b>ES2</b>
		 UNI EN ISO 9002 N.9180 - 03-C-2	



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