859-uk

ISOBUS Artemis

Seed Drill Controller
Calibration and Operation Manual

TOPCON
Agriculture

Electromagnetic Compatibility (EMC)

This product complies with European Council Directive 2014/30/EU when installed and used in accordance with the relevant instructions.

Preface

This manual provides information about calibrating and operating the RDS "ISOBUS Artemis" system. Correct use and maintenance is important for safe and reliable operation. Please take time to read this manual and complete appropriate training before use before using the system.

Information in this manual is correct at the time of publication. The system may vary slightly from that described herein. Topcon reserves the right to redesign and change the system as necessary without notification.

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Warning

Please read the following important information very carefully.

TERMS AND DEFINITIONS:

Console – The Topcon Agriculture console mounted inside the cab of the tractor used for primary control of the Machine.

Application – Topcon Agriculture mobile application product that allows features of Topcon Console(s) to be monitored and controlled from a Device.

Device – A mobile device (e.g. phones and tablets) on which the Application is installed and operated.

System – The combination of the Device and the Console used to control and monitor the Machine.

Machine – The combination of a tractor and associated farming implements (whether self-propelled, towed by the tractor or mounted to the tractor).

You – The person using the application to control and monitor the Machine.

Device – A mobile device (e.g. phones and tablets) on which the Application is installed and operated.

Documentation – The user documentation and manuals relating the use and operation of the covered Topcon Agriculture product, including, but not limited to, the Console user manuals/materials and Application end user license agreement.

IMPORTANT: You must read and follow the Documentation and complete appropriate training before use. If You do not operate the System properly, it may not correctly apply the Application to Your requirements. This can result in damage to property and/or malfunction of the product, death or serious injury to persons, poor yields and/or crop damage or failure. If You are in any doubt regarding any aspect of operating the System, then before commencing operation You should obtain further guidance from a suitably qualified source.

WARNING: It is YOUR responsibility to read and understand the safety sections in this book before operating the system. Remember that YOU are the key to safety.

PRODUCTS/MATERIALS APPLICATION: As limited by the applicable software, You are responsible for accurately entering the information required for the Machine to apply products/materials to Your requirements, including measurement units (e.g. metric or Imperial), vehicle dimensions, rate of application, vehicle speed, weight or other required input.

As limited by the applicable software, You are responsible for the calibration of the Machine and ensuring products/materials are applied in accordance with their specifications (including wind, temperature and moisture conditions, material properties, dilution and withholding periods).

Without prejudice to the generality of the above You hereby acknowledge and agree that the system or application is not designed nor intended to:

- originate variable treatment plans; or
- achieve or avoid any application rate or other target setting outside application parameters, which in both cases are Your responsibility.

Failure by You to comply with the above may result in incorrect operation of the System, or injury to You or others. You should monitor at all times that the System is performing as required.

General Safety

DANGER! It is essential that the following information and the product-specific safety information is read and understood.

Most incidents arising during operation, maintenance and repair are caused by a failure to observe basic safety rules or precautions. Always be alert to potential hazards and hazardous situations. Always follow the instructions that accompany a Warning or Caution. The information these provide aims to minimize risk of injury and/or damage to property. In particular follow instructions presented as Safety Messages.

Safety Messages and Warnings

The safety symbol is used with the relevant word : DANGER, WARNING or CAUTION. Messages marked in this way recommend safety precautions and practices. LEARN and apply them.

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, could result in DEATH OR SERIOUS INJURY.

CAUTION : Indicates a potentially hazardous situation that, if not avoided, could result in MINOR INJURY.

Operator Safety

Good safety practices not only protect you, but also the people around you. Study this manual as part of your safety program. This safety information only relates to Topcon equipment and does not replace other usual safe work practices.

- **WARNING: Never operate the machine with any panels or safety guards removed. Any illustrations or photos in this manual that show panels or guards removed are solely for demonstration purposes. If the removal of panels and guards is necessary for calibration or maintenance, they MUST be replaced before operation.**
- **Always check that any suspended vehicle attachments or load arm(s) are lowered to the ground before beginning repair or maintenance work on the machine.**
- **Machine and implement parts can become hot during operation and may be under pressure. Refer to the machine/implement manual(s).**
- **Wear appropriate protective clothing for the task being undertaken.**
- **Check the Machine is correctly setup/configured and ready for the intended use.**
- **Be aware of safety instructions for/on the Machine including hazards such as crush zones.**
- **Prevent the Machine from being accidentally started if working on it e.g. remove the ignition key, place a warning notice in the cab etc.**
- **Check that the area of Machine operation is clear of people, animals, and obstacles and identify any other possible hazards.**
- **Keep other persons required to be in the vicinity of the Machine fully aware of Your immediate intentions.**

If a Topcon Agriculture mobile application is used to augment Your ability to perform tasks that are traditionally performed on the Console directly, then in addition to observing the above warnings and all other pre-determined site safety requirements that apply when operating a Machine from the Console, You must also observe the following additional requirements when operating the Machine via the Application:

- **WARNING: The Application must only be operated by You, the single Console operator wholly responsible for the operation of the Machine.**
- **The Application must only be used when the Machine is not on public roads.**
- **The Device must be affixed to a rigid mount when used inside the cab while the Machine is moving to avoid a temporary loss of control if the Device is dropped or misplaced.**
- **The Application must only be used outside of the Machine cab when the Machine is stationary.**
- **When operating the Application outside of the cab of the Machine You must remain within a reasonable distance such that You can return to the cab-mounted Console in a timely manner to resume control of the Machine under any of the following circumstances:**
  - Battery failure on the Device
  - Wifi signal is lost or signal strength is too weak for proper operation
  - The Device is redirected to another application (e.g. a phone call is received)
  - The Device becomes incapacitated (e.g. device is dropped and damaged)
  - Any other event that causes the Device to no longer be fit for control of the Application and/or Machine.
- **Stand well clear of any moving parts of the Machine (e.g. hydraulic folding booms, spreader spinners, etc.) and areas of product application (e.g. Spray Nozzles, NH3 appliers, etc.).**
- **The Device and Machine must be locked when not in use.**

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1 Introduction

This manual provides operator basic instructions for both single-channel and multi-channel generic Isobus "Artemis" Seed Drill Controller application. It also includes settings in the "Drill Setup" menu accessible by the operator. Information on Technician and Factory level settings are not included in this manual.

NOTE: Illustrations in this manual are based on a Topcon X25 terminal. The actual Artemis app screen display/button layout and functions may vary slightly from that shown, depending on the specific implement being controlled, the UT the app is being run on, its GUI and user-defined settings. If necessary, please refer to the manufacturers user manual for setup and loading the Artemis app on other UT's.

1.1 System Overview

The Artemis is an ISOBUS-compatible, monitoring and application control system for seed drills. It may be configured with up to 4 control channels. Forward speed measurement and cutout sensing enables full proportional control, to maintain (within limits) a set application of one or more products irrespective of changes in forward speed.

In its simplest application, the Artemis may be setup in a single-channel configuration to control a single motor as shown in figure 1. Additional CAN modules enable multi-channel configurations for combined seed/fertiliser/pellet application (including electro-hydraulic control), to suit a wide range of drill makes and models.

1.1.1 System Components

The system will vary depending on the drill make and model, but will be some combination of one or more of the following,

The main electronic components are,

- **ISOBUS UT**
- **ISOBUS/CAN Bridge Module** – the "brains" of the system, containing the control software. It also contains the graphics (the 'Object Pool"), for the GUI to be displayed on any ISOBUS-compliant terminal.
- **Motor Control (MCM) CAN Module** – CANBUS interface for a gearmotor and sensors.
- **Applicator Control (APM) CAN Module** – CANBUS interface for an Applicator system (optional).
- **I/O (HBM) CAN Module** – CANBUS interface for other switches, sensors and actuators.

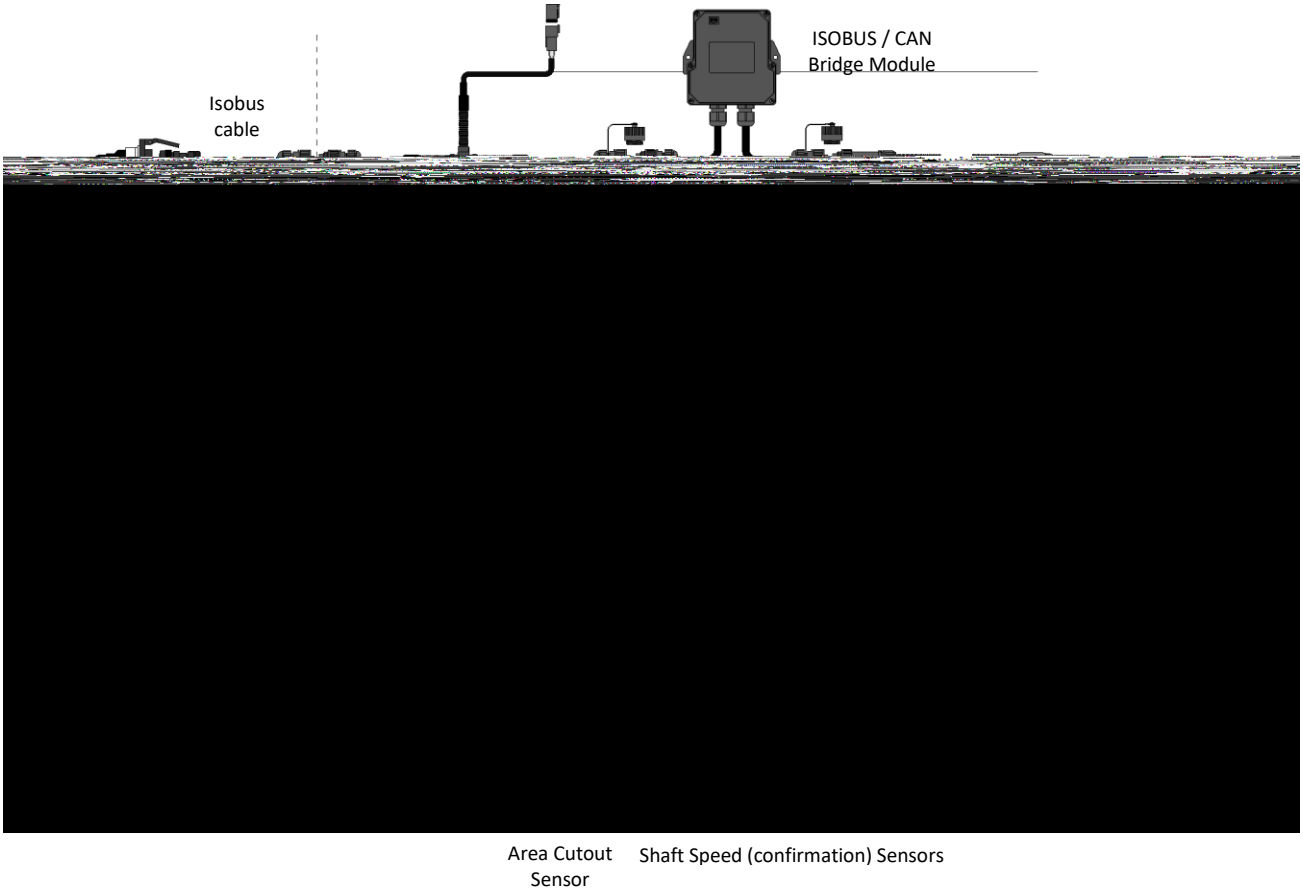
<u>Connected via the Motor Control Module ('MCM')</u>

- **Gearmotor** –driving either single or multiple metering units.
- **Shaft Speed Confirmation sensor** – a magnetic sensor that confirms that the motor is driving the metering unit.
- **Forward Speed Sensor** –Speed signal sent from ISOBUS UT.
- **Area Cutout Switch(s)** - one or two magnetic sensors or finger switch positioned to detect when the drill is lowered/raised into or out of work. It can be configured to also provide the tramline advance signal.
- **Priming Switch** – manually operates the metering motor to dispense product for calibration purposes.

<u>Connected via the Tramline Control Module ('HBM')</u>

- **Fan Speed Sensor(s)** - a magnetic sensor on the fan drive.
- **Hopper Level Sensor(s)** – An upper "pre-level" sensor provides an early-warning alarm, giving the operator advance notice to refill. A lower sensor provides a second warning when the hopper is about to run out.
- **Tramline Advance Switch** - provides the tramline advance signal (if not a function of the Area Cutout Switch).
- **Tramline mechanism (existing)** – the solenoid or motor-type mechanisms are rewired into the HBM connection box to be controlled by the Artemis.
- **Pre-emergence Markers (existing)** – re-wired into the HBM connection box to be controlled by the Artemis.
- **Bout Marker Sensors (optional)** – magnetic sensors detect when the Marker arms are lifted/lowered.

Figure 1: Single-motor Artemis System



1.2 Artemis Main Functions

The Artemis is designed to allow automatic, variable rate control of any drill. Also it can control an auxilliary Applicator system e.g. for Slug Pellets etc. You can at any time manually override the predetermined rate as field conditions require.

The basic functions are:

- Variable Rate Control
- Tramline Control
- Forward Speed Alarms
- Hopper Level alarm
- Fan Speed & alarm
- Information totals

The instrument has a special software routine that makes calibration of the metering unit(s) very easy. In the calibration mode each metering unit is controlled via a 'priming switch' to dispense the product. During normal operation the control system is started and stopped automatically via magnetic sensor(s) as the drill is put into and taken out of work.

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A	14.10.16	1st Draft : Derived from UK805200
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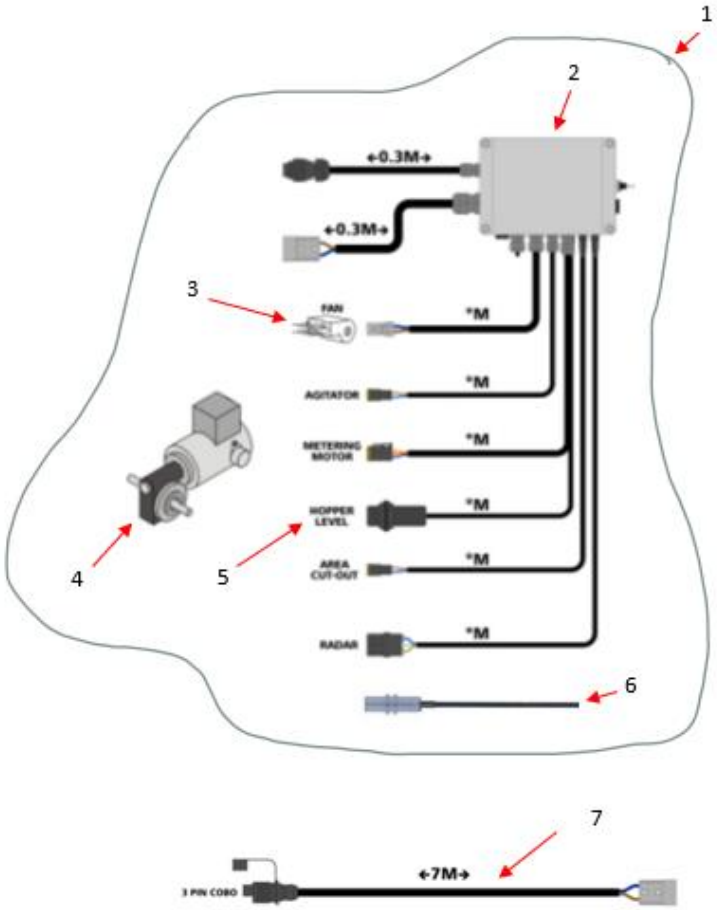
C	23.3.17	3nd draft : (Section 1 added note)
1.0	25.02.20	Released (no changes)

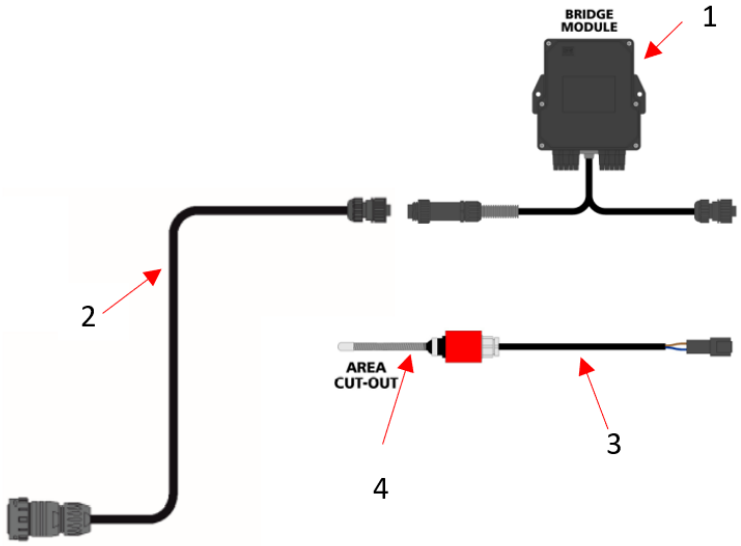
Spare part list

Base Kit



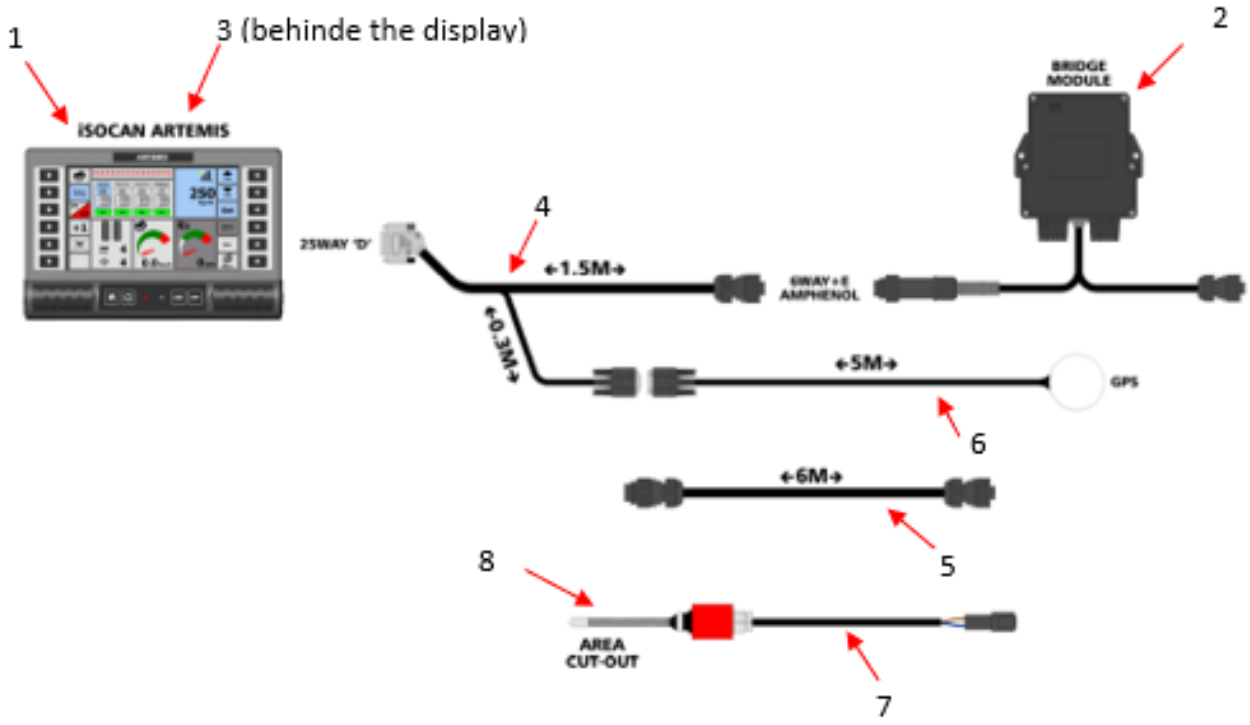
Pos	Item no.	Designation
1	0520002	Base Kit
2	0520010	Junction box for ISOBUS/ISOCAN
3	0539042	Fan (el)
4	0520474	Motor
5	332052778	Sensor f/tank capacity
6	332052777	Sensor f/metering roller
7	0520015	Light Duty Power Cable (only for lite Machines)

ISOBUS ECU Kit



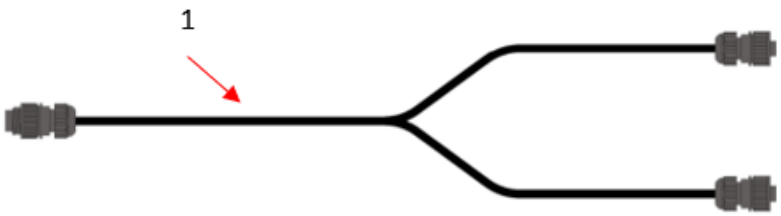
Pos	Item no.	Designation
	0520000	ISOBUS Kit
1	0520011	Bridge Module
2	0520018	Cable ISOBUS
3	0520021	Cable f/finger Switch
4	0520464	Finger Switch

ISOCAN Display Kit



Pos	Item no.	Designation
	0520001	ISOCAN Kit
1	0520005	ISOCAN display
2	0520011	Bridge Module
3	0520006	Mount Kit for ISOCAN display
4	0520019	Headunit Cable
5	0520017	Extension Cable
6	0520030	GPS 16 D9
7	0520021	Cable f/finger Switch
8	0520464	Finger Switch

Additional Seeder Kit



Pos	Item no.	Designation
1	0520040	Seeder T Piece

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