

Electro-Magnetic Compatibility (EMC)

This product complies with Council Directive 89/336/EEC when installed and used in accordance with the relevant instructions.



Service and Technical Support

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User Guide

"SAM 100"

Speed-Area Meter

Calibration and Operation

Software Reference WZ306-001

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Overview

The RDS *SAM 100 Speed Area Meter* is a versatile simple to use, two channel instrument.

It displays forward Speed (km/hr or miles/hr) and area covered (hectares or acres) to the vehicle operator,

The displayed information can be converted from Metric to Imperial units at any time.

The *SAM 100* can be programmed by the operator for implements of any practical width and for any sensing wheel size.

The *SAM 100* system comprises :

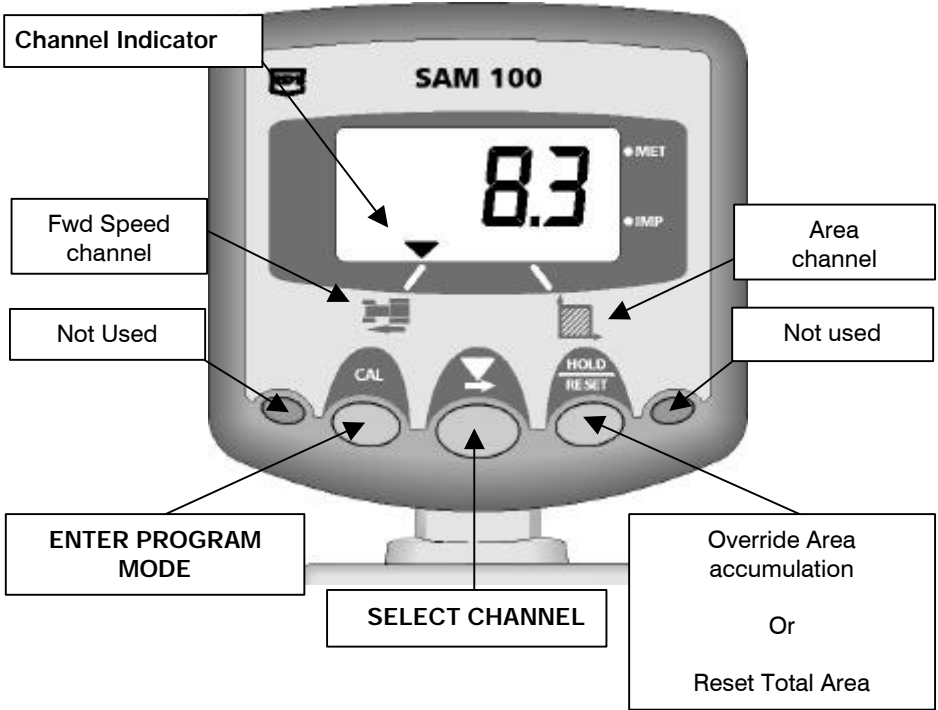
- The Head Unit.
- A Forward Speed Sensor kit.
- An automatic cut-out switch to prevent area accumulation when turning on headlands etc.
- A power supply kit.

If the *SAM 100* is to be used on a number of vehicles, each vehicle can be equipped with a 'transfer kit' to enable the head unit only to be transferred simply between vehicles.

The *SAM 100* can also be used in conjunction with the RDS Area Compensation Interface (ACI) or Width Compensation Interface (WCI) to ensure accurate area monitoring when using partial implement width.

The Control Switches


The front panel has five buttons. Only the middle three are normally used.



The instrument will normally be powered through the vehicle ignition system and will be on whenever the vehicle ignition is on. The display is permanently illuminated.

Channel Selection



Simply press the  button to switch between Forward Speed and Area displays.

Area Override

If an automatic override switch is installed, the area will automatically stop accumulating when the implement is put out of work. The channel indicator will flash when area accumulation is overridden and will be on permanently when area is being recorded.

Area accumulation can also be overridden at any time by pressing the $\frac{\text{HOLD}}{\text{RESET}}$ button.

The display will flash 'heLd'

Press $\frac{\text{HOLD}}{\text{RESET}}$ a second time to continue area accumulation.



Figure 2: Area Override

Reset Area Total

Select the Area Channel then press and hold the $\frac{\text{HOLD}}{\text{RESET}}$ button.

The display will start flashing.

Press the \blacktriangledown button to reset the area total to zero.

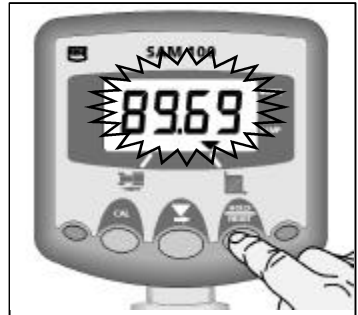


Figure 3: Reset Area Total

Check Working Width

If you have an ACI or WCI fitted, you can see the part width selected (with a WCI), or the number of nozzles switched on (with an ACI).

With either display channel selected,

1. Press and hold the **HOLD**/**RESET** switch.
After a two-second delay, the display will show one of the following,
 - (i) If a standard on-off override switch is fitted, the display will show 'n 01' when the machine is in work and 'n 00' when the machine is out of work (or the hold button is pressed).
 - (ii) If a Width Compensation Interface (WCI) is fitted the display will show 1, 0.75 ($\frac{3}{4}$ width), 0.5 ($\frac{1}{2}$ width), or 0.25 ($\frac{1}{4}$ width) corresponding to the switch position on the WCI.
 - (iii) If an Area Compensation Interface (ACI) is fitted on a sprayer,

E.g. An ACI is fitted on a 24 metre sprayer with 5 boom sections. The nozzle spacing is 0.5 metres and there are 10, 10, 8, 10, and 10 nozzles respectively on each section, giving 48 nozzles in total.

The instrument should be programmed with a implement width of 0.5 metres. When all boom sections are on, the ACI will signal the instrument that there are 48 nozzles in use, e.g. the display will show 'n 48', ($48 \times 0.5 \text{ m} = 24 \text{ metre full width}$).

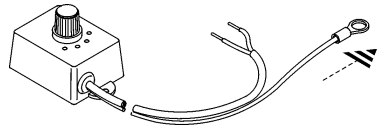


Figure 3b : Width Compensation Interface

Metric/Imperial Selection



1. Press and HOLD . After a few seconds, an indicator bar will appear on the right-hand side of the display showing the units currently selected (fig. 4).



Figure 4: View Units

2. Still holding , press and hold the CAL button. The indicator will switch between "MET" for metric units and "IMP" for Imperial units.

Imperial	Metric
Miles/hr	Km/hr
Acres	hectares

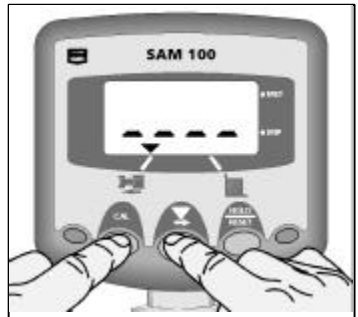


Figure 5: Change Units

Calibration

Speed Sensor Factor

The forward speed is displayed either in miles/hr or km/hr according to the units selected in the CAL Mode. In order to display the correct speed and accumulate area correctly, the instrument must be programmed with the correct Speed Sensor Factor (SSF). This is the distance travelled between three pulses received from the sensor.

Default = 2.000m (78.78 inches)

The S.S.F. can be calculated theoretically and then manually programmed, or the instrument can automatically calculate it via the "Autocal" function. Carry out this test whenever soil conditions or wheel sizes change.

NOTE: An 'Autocal' simpler to perform and is more accurate in field conditions

Manual Calibration

Calculate as follows;

- (i) ***If a conventional wheel sensor with two magnets is installed***, this distance is the effective rolling circumference of the wheel. To determine this circumference, drive the vehicle forward in field conditions with the implement attached, for exactly 10 revolutions of the sensed wheel. Measure this distance (metres) and divide by ten to find the Speed Sensor Factor.
Carry out this test whenever soil conditions or wheel sizes change.
- (ii) ***If a prop shaft sensor with a single magnet is installed***, the distance travelled for two turns of the prop shaft must be determined. To determine this distance, drive the vehicle forwards for exactly 20 revolutions of the prop shaft. Measure this distance (metres) and divide by ten, to find the Speed Sensor Factor.
- (iii) ***If a Radar sensor is installed***, the Speed Sensor Factor is 0.016m (0.613in)

Changing the Speed Sensor Factor

Having established the Speed Sensor Factor, programme this figure into the channel as follows.


1. Select the Forward Speed channel.
2. Press and hold the **CAL** button. The display will show the existing calibration factor.

Default = 2.000m (78.74in).


The left-hand digit will be flashing.




Figure 6: View Speed Sensor Factor

3. While holding the **CAL** button, **PRESS** and **RELEASE** the  button to advance to the digit you want to change.

1.000, 1.000, 1.000, 1.000

4. **HOLD** the  button to cycle the digit from 0 to 9 (fig. 7).

1.100, 1.200, 1.300, 1.400

5. Release the  button and the next digit will flash.
6. Repeat step 4 for other digits (or if you need to correct a mistake).

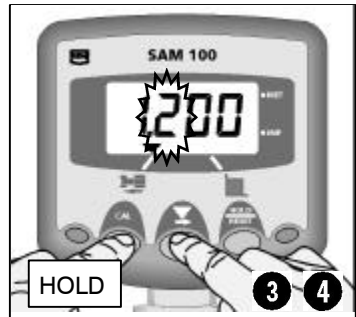



Figure 7: Edit Speed Sensor Factor

'Autocal'

For maximum accuracy, perform an auto-calibration in field conditions.

1. Set two markers at 100 metres apart (328 feet). Choose a convenient reference point on the tractor/implement and position this point opposite the first marker.
2. Select the  channel.
3. **HOLD** the **CAL** button and the **HOLD/RESET** button for 5 seconds until the display flashes "**Auto**", then release the button.

4. Drive the vehicle until the chosen reference point on the tractor/implement is opposite the second marker.

The instrument counts and displays the sensor pulses received over the distance travelled.

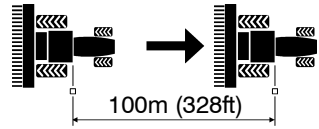


Figure 7b: 'Autocal' distance

5. Press the **HOLD**/**RESET** button again to complete the Autocal routine.

The calibration factor is automatically calculated and stored in memory.

Set Implement Width

The factor to be programmed is the full, effective working width of the implement.

If an ACI is connected on a sprayer, the implement width is equal to the nozzle spacing, e.g. 0.5 metres. The ACI is already programmed for the number of boom sections and nozzles per section.

Check whether metric or imperial units are currently selected

1. Select the *Area* channel.
2. Programme the width in metres or inches as appropriate (in the same way as for the Speed Sensor Factor).



Figure 8: View Implement Width

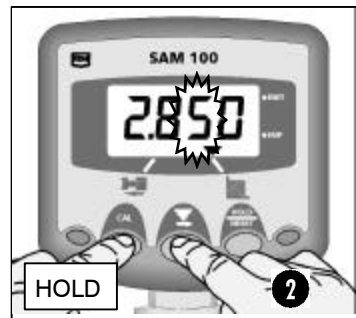


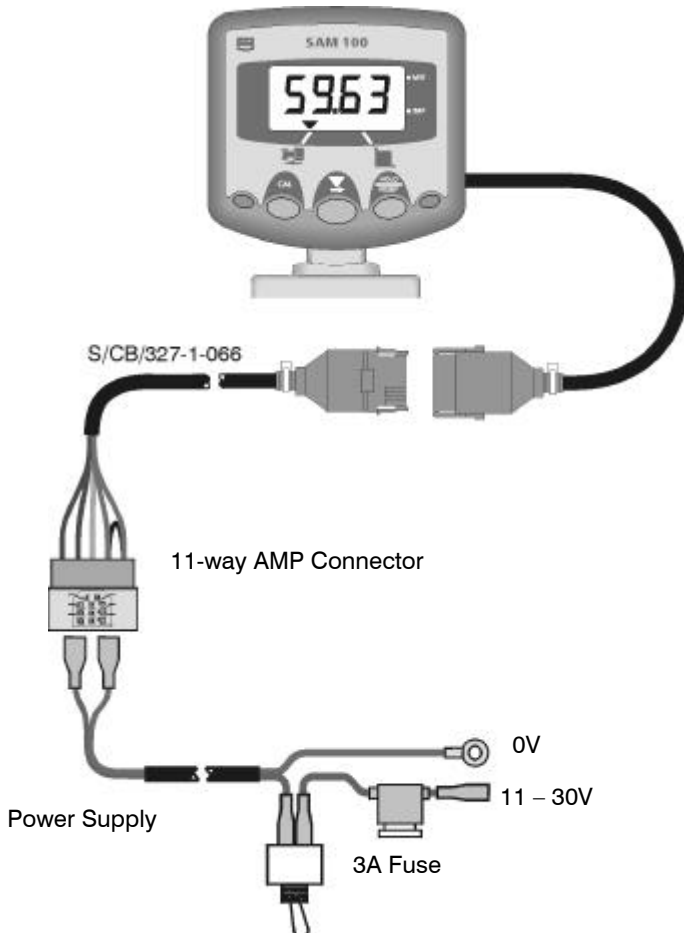
Figure 9: Set Implement Width

Wiring Connections – SAM 100

Your instrument is supplied with one of two types of interconnection cable, to connect to the sensors, power supply etc.

Early Type:- Pt No. S/CB/327-1-053 (8-way AMP) - see “Work Measurement Installation” manual for connections.

Late Type: Pt No. S/CB/327-1-066 (11-way AMP)



Refer to the “Work measurement Installation” manual S/DC/500-10-261 for details on power supply, fitting sensors / cutout switches etc.

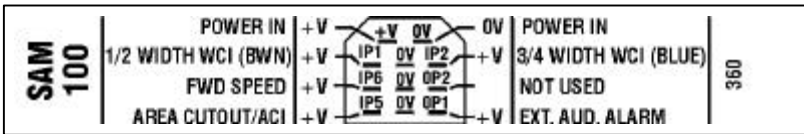
Connections for Cable S/CB/327-1-066

11-WAY AMP CONNECTOR			
TERMINAL	KEY	COLOUR	FUNCTION
11	+V	RED	+V IN
10	0V	BLACK	0V IN (+ 3 x COMMON 0V FOR SENSORS)
9	IP1	GREEN	½ WIDTH WCI* (BROWN WIRE) +V
7	IP2	YELLOW	¾ WIDTH WCI* (BLUE WIRE) +V
3	IP5	BLUE	AREA CUTOUT / ACI +V
6	IP6	WHITE	FORWARD SPEED +V
4	OP2	VIOLET	NOT USED
1	OP1	BROWN	EXT. AUDIBLE ALARM +V

For a TGSS Radar Sensor, power supply (24V max.), piggyback a connection from terminal 11.

*IP1 + IP2 at 0V signals ¼ width. IP1 + IP2 at +V signals full width.

The AMP connector wiring label is Pt No. S/DC/500-10-360



Issue 1	12/3/01	Original Issue
Issue 2	21/5/01	p.8, corrected TGSS Cal Factor
Issue 3 :	17/7/01	Correction to page 3, p.7
Issue 4 :	3/4/02	Correction to SSF p.8, p.9
Issue 5	18/7/02	AutoCal added, New AMP wiring regime
Issue 5b	29/7/02	ref. p.9,10 :- Press CAL + HOLD/RESET to start Autocal.