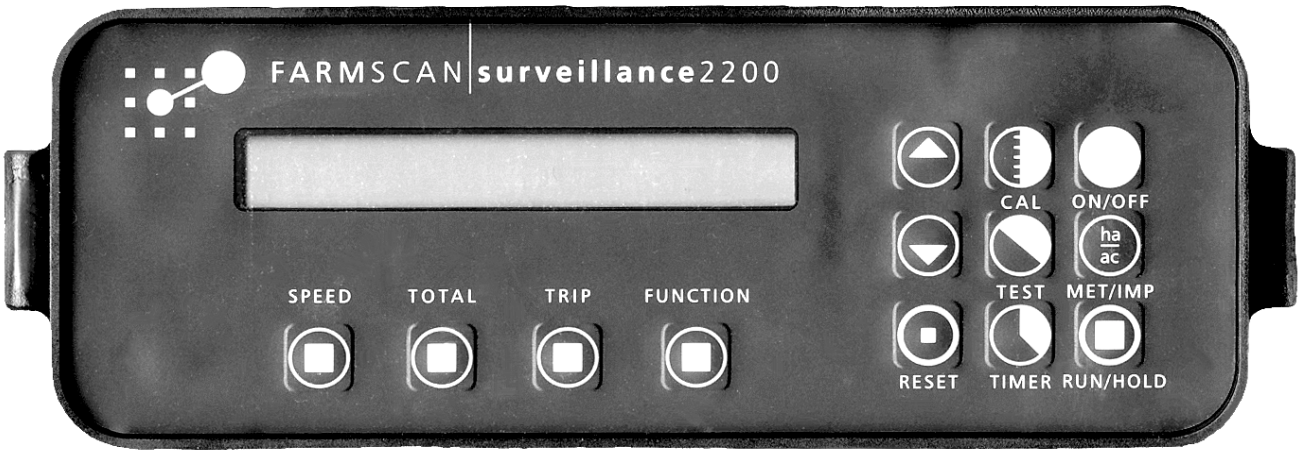
2200

2200 8 Shaft Monitor



INSTALLATION AND OPERATING INSTRUCTIONS

8 SHAFT MONITOR

FARMSCAN

Part No:

CONTENTS

PARTS LIST

REF	PART NO.	DESCRIPTION	QTY
1	A-2200/3	SURVEILLANCE MONITOR	1
2	AH-406	MEDIUM MOUNTING BRACKET	1
3	AH-861	SECURING KNOBS	2
4	P-006	12 WAY INPUT PLUG	1
5	AC-103	8m POWER CABLE	1
6	AH-400	PACKARD CABLE BRACKET	1
7	AH-408	UNIVERSAL HARDWARE PACK	1
8	HG-706	CABLE TIES	20
9	AM-2200	INSTRUCTION MANUAL	1
10	AM-200	FARMSCAN 2YR WARRANTY CARD	1

OPTIONS PARTS LIST

PART NO.	DESCRIPTION OF KIT	
2002	WHEEL SENSOR KIT	(1 - 50 KPH)
2004	RADAR SPEED SENSOR KIT	(1 - 49 KPH)
2004A	RADAR INTERFACE KIT	
2007	SPEEDO CABLE SENSOR KIT	(1 - 100 KPH)
2008	PROXIMITY SENSOR SHAFT	(1 - 9999 RPM)
2009	TAILSHAFT SENSOR KIT	(1 - 1500 RPM)
2076	SHAFT SENSOR KIT	(1 - 1500 RPM)
2077	SHAFT SENSOR KIT	(50 - 9999 RPM)
2201	10M EXTENDED W/PROOF JUNCTION KIT	
AC-205	2 WAY 5m	SENSOR CABLE EXTENSION
AC-210	2 WAY 10m	SENSOR CABLE EXTENSION
AC-305	3 WAY 5m	SENSOR CABLE EXTENSION
AC-310	3 WAY 10m	SENSOR CABLE EXTENTION
AP-105	12 WAY	BREAKAWAY PLUG
AP-106	12 WAY	BREAKAWAY SOCKET

1.0 INSTALLATION

1.1 MONITOR INSTALLATION

The 2200 monitor should be installed in the cab, clearly visible to the operator but not subject to intense heat or moisture.

A Weather Resistant model 2200s monitor is available for exposed situations.

Keep the unit away from radios or other electronic equipment to minimise any risk of interference. As a precaution all connection cables should take an alternative route to other cables in the cab; especially antennae cables or clutch, solenoid and engine kill switch cables.

Mount the unit firmly on the bracket using securing knobs supplied. Don't use substitute bolts into the unit.

1.2 POWER CONNECTION

Do not connect power until all other installation is complete.

The 8 metre **power cable** must be connected **direct** to 12 volt DC vehicle battery terminals.

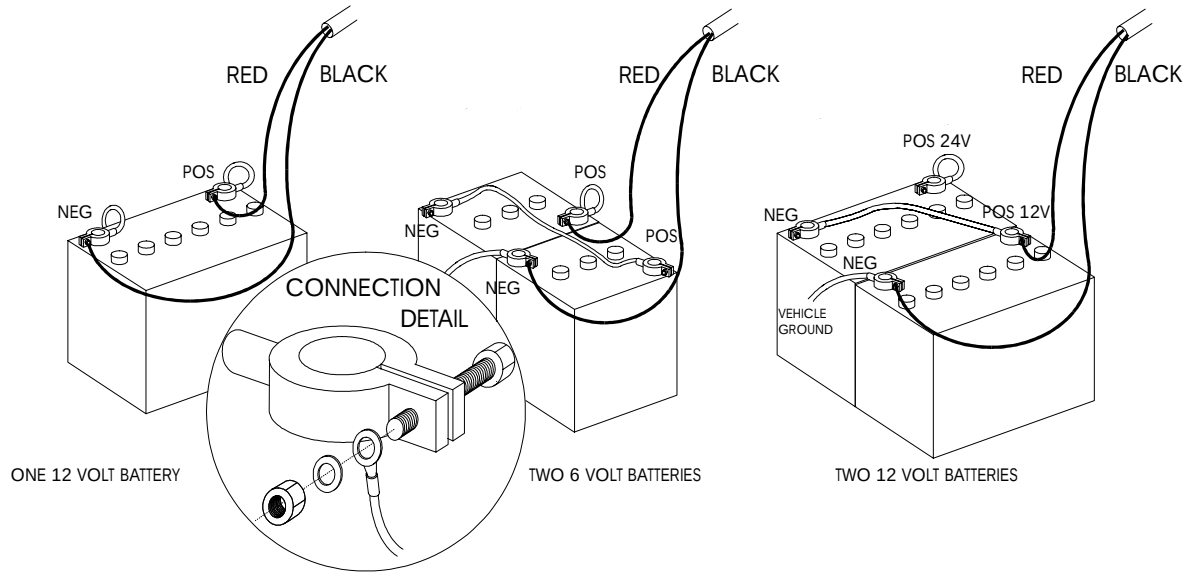
DO NOT join power cable with any other electrical equipment or the vehicle chassis, this may cause interference.

USE cable ties supplied to secure power cable away from risk of damage.

Connection to battery terminals must be clean and tight.

WARNING - Remove green connector plug at rear of monitor if arc welding on machinery.

TYPICAL BATTERY HOOK-UPS



NOTE:
Power from the battery connects to pins 10 & 11 of green connector plug at the rear of the monitor.

1.3 SENSOR CONNECTIONS AND WIRING

The 8 shaft sensors are connected to the supplied loom. The loom in turn connects the shaft sensors to the 2200 via the connector at the rear of the monitor.

The table below gives the pin out of the connector at the rear of the monitor.

Pin Number	Function
1	Port 1 - shaft 1
2	Port 2 - shaft 2
3	Port 3 - shaft 3
4	Port 4 - shaft 4
5	Port 5 - shaft 5
6	Port 6 - shaft 6
7	Port 7 - shaft 7
8	+12 Volts OUT
9	GND
10	-ve BATTERY (-12V)
11	+ve BATTERY (+12V)
12	Port 8 - shaft 8

Pins 1 to 7 are the input ports for shafts 1 to 7 and pin 12 is the input port for shaft 8. The ground wire of the shaft sensors are all connected to pin 9 at the rear of the 2200.

If a sensor with 3 wires is used, the signal wire will be connected to either of pins 1 to 7 or pin 12. The ground wire will be connected to pin 9 and the power wire will be connected to pin 8.

1.4 WHEEL SENSOR INSTALLATION

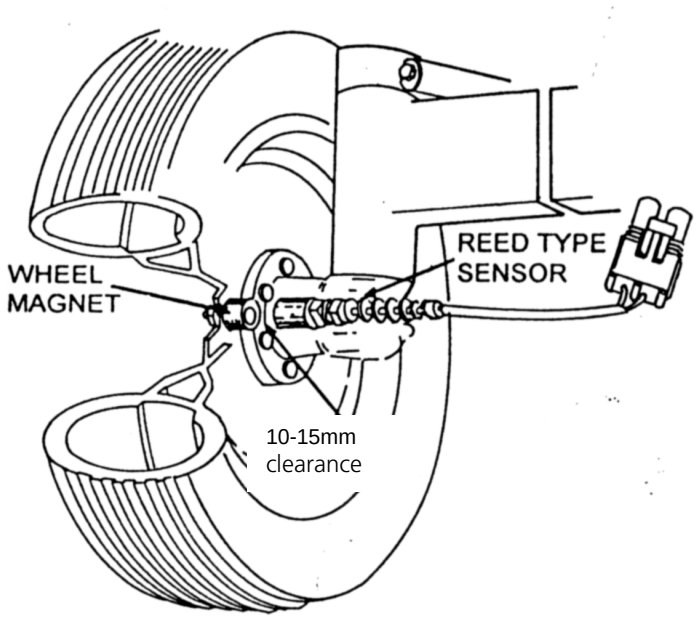
The standard **wheel sensor** supplied with the surveillance kit, consists of a sensor and magnet to be fitted onto any **undriven** ground wheel.

Install the wheel sensor on an **undriven** front tractor wheel or onto a trailed implement wheel using one of the optional 2 way extension cables or the 2201 extended junction kit.

Alternatively, if the wheel sensor is not practical you can choose from any of the optional speed sensing kits explained in section 3.3.

WHEEL SENSOR INSTALLATION PROCEDURE

Bolt the wheel magnet onto the wheel in a position that allows it to sweep directly past the wheel sensor within 10 - 15 mm once every rotation.



The magnet can be mounted anywhere in a radius from centre of the wheel. Near the hub will ensure the best ground clearance.

The sensor must be rigidly bolted to an existing structure, ideally in a protected position.

If mounting the sensor on a steered wheel, make sure the sensor moves with the steering mechanism to maintain equal clearance between the magnet and sensor when turning from lock to lock.

Connect sensor to cable supplied and use cable ties to secure cable away from potential damage. Allow enough slack for axle movement and steering.

Connect wheel sensor to tail running out of the rear of the monitor.

NOTES :
Four different magnet mounting ideas.

1) Drill through wheel rim and bolt magnet on.
2) Braze magnet nut onto rim and screw magnet into nut.
3) Cut thread off magnet and araldite magnet to rim.
4) Knock out a wheel stud and make up a piece of flat bar with suitable holes each end. Bolt the magnet to one end and secure the flat bar under the wheel stud adjusted to the required position.

2.0 OPERATION

2.1 GENERAL OUTLINE

The 2200 8 Shaft monitor is designed to provide shaft speed readouts for up to 8 shafts.

The monitor also provides speed, area and distance readouts with connection of a wheel sensor. The monitor has 10 trips to accumulate distance travelled and area covered for 10 separate fields.

2.2 MEMORY BACK-UP

An inbuilt memory backup system will hold all calibration and accumulated totals in memory for at least 1 month after disconnection from the 12 Volt DC power source.

2.3 POWER ON / OFF KEY

Whenever the monitor is switched **on** the display screen will firstly confirm which software program is installed.

e.g. `FARMSCAN 2200-8`

The version number immediately follows this:

e.g. `VERSION 1.0.1`

The version number relates to the functions and features programmed into your unit.

If ever an upgraded program is installed, a new version number e.g. “VERSION 1.0.2” will be displayed.

The readout will always display the "SHAFT 1" rpm readout after switching on.

e.g. `SHAFT 1 0`

If any alarm points are active when the monitor is switched **on**, press the “RUN / HOLD” key to silence the beeper.

2.4 IMPERIAL / METRIC KEY

This key has no function.

2.5 RUN / HOLD KEY

The "RUN / HOLD" key has dual functions, press it once to place the 'UNIT ON HOLD'.

e.g. `UNIT ON HOLD`

Press "RUN / HOLD" again to place the 'UNIT OFF HOLD'

e.g. `UNIT OFF HOLD`

When in 'HOLD' mode, all alarms and accumulating readouts such as "AREA" , "DISTANCE" and the "ELAPSED TIMER" are stopped.

The monitor will repeat the 'unit on hold' warning every 30 seconds to remind the operator that data accumulation is on hold.

2.6 SPEED KEY

Press the "SPEED" key once to display ground speed

e.g. `14.6K/h`

2.7 TOTAL KEY

AREA TOTAL

Press "TOTAL" key once to display total area worked.

e.g. `AREA 2750Ha`

The area total can be reset at the start of a season and left to accumulate daily to keep track of overall areas worked.

To reset AREA TOTAL press "RESET" key once to start reset process.

e.g. `RESET TOTALS?`

Press "RESET" again to complete reset process or to abort reset process, press any other key to escape.

After reset of "TOTAL" you will have the option to reset all trip memories at the same time

e.g. `ALL TRIPS?`

Press "RESET" again to reset all trips or to abort reset process, press any other key to escape.

DISTANCE TOTAL

Press "TOTAL" key again to display "TOTAL DISTANCE".

e.g. `DISTANCE 45.65Km`

To reset "DISTANCE" press "RESET" key once to start reset process.

e.g. `RESET TOTALS?`

Press "RESET" again to complete reset process or to abort reset process, press any other key to escape.

2.8 TRIP KEY

The "TRIP AREA" key allows the display of the sub total area for each separate plot of land worked. The "TRIP AREA" function has 10 resetable memories to keep record of areas worked in different plots.

To display the current trip memory press "TRIP" key.

e.g. `TRIP0 1 56.2Ha`

Press the "TRIP" key again to display the trip distance.

e.g. `TRIP 1 1.213Km`

Trip 1 may be reset to zero at any time or kept as a record by changing to Trip 2, as explained below.

To reset trip memory press "RESET" key to "START" reset process.

e.g. `RESET TRIP ? 1`

Press "RESET" key again to complete reset process.

e.g. `TRIP 1 0.00Ha`

To change current trip memory press 'UP' or 'DOWN' key to change current trip number on display.

e.g. `TRIP 2 0.00Ha`

NOTE : Trip records can be viewed or reactivated by using the 'UP' and 'DOWN' keys to change the current trip memory. Whichever trip number is displayed will be active when working.

2.9 TIMER KEY

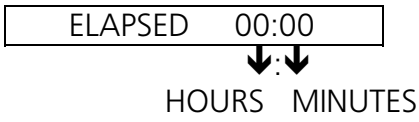
The "TIMER" key allows display of the "ELAPSED TIME" of machine operation.

The 'ELAPSED' timer can be **reset** to zero at any point.

If required the 'ELAPSED' timer may be programmed with an elapsed time alarm point which can serve as a warning of a due maintenance interval.

Press the "TIMER" key to display the elapsed timer.

eg



To reset elapsed timer press the "RESET" key.

TIMER ALARM

An elapsed time alarm may be set to activate after the "ELAPSED" display counts up to a set point.

To set timer alarm press "TIMER" key again to display "SET TIMER".

Use 'UP' and 'DOWN' key to set duration of time to elapse before alarm will activate.

eg

To start timer press "TIMER" key to display "ELAPSED TIME" then press "RESET" to start timer counting up from zero.

To cancel timer press "TIMER" key to display "SET TIMER" then press "RESET" to zero, timer alarm.

2.10 FUNCTION KEY

The "FUNCTION" key will display in sequence the rpm for each of the 8 shafts.

e.g. **SHAFT 1 750**

e.g. **SHAFT 2 260**

e.g. **SHAFT 3 480**

SHAFT MONITORING

Press the "FUNCTION" key to display the RPM of whichever shafts 1 - 8 are being used.

The working range is 1 - 9999 RPM, depending on sensor type and capability

SHAFT ALARMS

There are two possible alarm choices for each of the Shafts 1 - 8.

Refer to calibration details Section 3 to set your choice.

1. "SHAFT BELOW RPM" - Alarms at 5 second intervals immediately the RPM falls below the 'LO ALARM POINT' set for that shaft.

e.g. `SHAFT 1 L 700`

2. "SHAFT ABOVE RPM" - Alarms at 5 second intervals immediately the RPM rises above the RPM 'HI ALARM POINT'.

e.g. `SHAFT 1 H 800`

2.11 TEST KEY

The "TEST" key gives you the ability to test all 8 shaft sensors as well as the wheel sensor.

Press the "TEST" key to display the "WHEEL" and a count of the number of pulses being received from the wheel sensor.

e.g. `WHEEL 8`

The monitor will beep every time a pulses is received. If beeps are regular at a constant speed the wheel sensor is working correctly.

Pressing "TEST" again will display a count of the pulses received from the "SHAFT 1" or port 1 input. Pressing "TEST" repeatedly will cycle you through all of the enabled shaft inputs or ports.

e.g. `SHAFT 1 190`

e.g. `SHAFT 2 800`

NOTE:
If a port is disabled, when pressing the "TEST" key, "PORT 1 DISABLED" will be displayed if for example port 1 was disabled.

3.0 CALIBRATION

3.1 GENERAL INFORMATION

The calibration menu has two levels. In the first level machine factors such as implement width and the wheel factor are entered. The first level also allows high and low alarms for all 8 shaft inputs to be set.

The second level allows you to edit shaft input names and disable/enable shaft inputs. The second level is accessed by first pressing the "CAL" key to display "WHEEL" and then pressing and holding the "CAL" key for about 4 seconds.

To use the speed / distance / area metering functions of the monitor the "WIDTH" and "WHEEL" size must be entered and wheel sensor must be fitted.

The "CAL" (Calibration) key takes you through a series of entries. Each time you press "CAL"**,** the next entry will be displayed.

e.g. **WIDTH 12.20m**

Use the 'UP' or 'DOWN' arrow key to change the calibration factor and press "CAL" again to step onto the next option.

When you use the 'UP' / 'DOWN' keys, notice the numbers change slowly at first then faster if you continue to hold the key.

The **reset** key can be used to zero any calibration factors on display.

If you wish to step back to a previous "CAL" option, you can either press a function key, eg "SPEED", to escape and then press "CAL" again, or you can keep pressing "CAL" until the option is displayed again.

3.2 WIDTH CALIBRATION

The "WIDTH" calibration is the **effective** implement width in **metres**. It is needed if a wheel sensor is fitted.

Press "CAL" key to display "WIDTH" and use 'UP' and 'DOWN' keys to set correct width.

e.g. **WIDTH 12.20m**

3.3 WHEEL CALIBRATION

The wheel factor is a measurement of distance travelled between pulses from the wheel sensor.

There are various types of wheel input sensors available, to suit different applications. Choose an appropriate sensor to minimise potential slippage error caused by driven wheels or to get more pulses for slower working speeds.

1. **2002 WHEEL SENSOR KIT** (standard with monitor kit).
   Suits free rolling tractor or implement wheel with at least one metre rolling circumference or more.

2. **2004 RADAR SPEED SENSOR KIT** (optional)
   Provides high accuracy, totally independent ground speed monitoring, ideal for 4WD tractors and front assist tractors with linkage implements and slow working speeds.

3. **2004A RADAR INTERFACE KIT** (optional) allows connection to existing tractor ground speed radar sensor.

4. **2007 SPEEDO CABLE SENSOR KIT** (optional)
   Screws inline with existing speedo drive cable, suits most Japanese 4WD vehicles with M22 x 1.5 Thread.

5. **2008P PROXIMITY SENSOR KIT** (optional)
   Picks up metal objects rotating on shaft e.g. Bolt head or teeth of a sprocket, well suited to high rotation speed or to give multiple pulses on a slow moving shaft.

6. **2009 TAILSHAFT SENSOR KIT** (optional)
   Suits installation on FIXED tailshaft, utilises magnet on 100mm hoseclamp and switching type sensor. (magnet can be transferred to other size hoseclamps).

7. **2076 SHAFT SENSOR KIT** (optional)
   Suits installation on drive shaft related to ground wheel drive, provides 32mm hose clamp magnet and switching type sensor.

WHEEL CALCULATION PROCEDURE

1. If the wheel input sensor is subject to changing tyre load, then half fill tank / bin.

2. Measurement procedure must be performed in the field, not on a tarmac (recheck measurement when moving from hard to soft conditions).

3. Switch monitor **on** and press "TEST" key repeatedly to display "WHEEL" counter (after "SHAFT 8").

   e.g. `WHEEL 0`

4. Creep vehicle forward and watch the counter increment on every sensor pulse. Stop exactly on a pulse, then press **reset** key to bring **test wheel** counter back to zero.

5. Peg ground at bottom centre of any wheel as a starting reference point for measurement.

6. Drive forward for approximately 25 metres or more and stop exactly on a pulse update.

e.g. **WHEEL 14**

7. Now measure the exact distance travelled and divide the pulses counted into the distance covered. e.g. Distance 25.86 metres ÷ 14 pulses = 1.847 m / pulse

8. Now press "CAL" key to display "WHEEL" calibration and use 'UP' / 'DOWN' keys to enter the correct wheel factor.

e.g. **WHEEL 1.847m**

NOTE: At slow working speeds - under 8 kph additional magnets or another sensing means may be required for optimum response of monitor speed readouts.

Use this formula to check for suitability and if the answer is less than 3 you will require more pulses for a smooth response.

$$\frac{\text{Slowest Working Speed}}{\text{Wheel Factor}} \quad \text{eg} \quad \frac{4 \text{ kph}}{1.847\text{m}} = 2.16$$

With 2 magnets the result would be acceptable.

$$\text{eg} \quad \frac{4 \text{ kph}}{1.847 \times ½} = 4.33$$

3.4 SHAFT ALARMS

Use the 'UP' / 'DOWN' keys to set the required alarm points or leave the alarm point at zero for **no alarm**.

e.g. `SHAFT 1 L 100` (SHAFT 1 LOW ALARM)

To cancel an **alarm** press **reset** to zero the alarm point.

e.g. `SHAFT 1 L 0`

SHAFT 1 - 8 ALARM CALIBRATION

For each of the enabled Shafts 1 - 8, you may set a low or high alarm point.

Press the "CAL" key in succession to select each alarm setting. Use 'UP' / 'DOWN' key to set each alarm point then press "CAL" to step onto the next selection.

e.g. `SHAFT 3 L 150` **(SHAFT 1 low ALARM)**

e.g. `SHAFT 3 H 750` **(SHAFT 1 high ALARM)**

Set zero to disable any alarm point.

3.5 CHANGING SHAFT NAMES

You can change the name of all 8 shafts. You can use letters and numbers to name shafts.

SELECT SHAFT NAME TO CHANGE

1. Press "CAL" key to display "WHEEL…"
2. Press and hold "CAL" for approximately **4** seconds. The following screen will appear.

e.g. `PORT 1 SHAFT 1`

3. Press and hold "CAL" to display the next shaft name. Repeat until the name to be changed is displayed.

EDITING SHAFT NAME

1. The "S" in "SHAFT 1" will be flashing. Use the up and down arrow keys to change the letters or numbers.
2. To move to the next character press "CAL".
3. When finished editing press and hold the "CAL" key for approximately **4** seconds to display the next shaft name. If you want to exit the editing menu, press the "FUNCTION" key.

NOTE:
While editing shaft names use the "RESET" key to completely clear the current name.

3.6 DISABLING/ENABLING PORTS

Unused ports or shaft inputs can be disabled. Disabled shaft inputs will not be displayed when using the "FUNCTION" key. Disabled shaft inputs can later be enabled for use.

TO DISABLE PORTS

1. Press "CAL" key to display "WHEEL..."
2. Press and hold "CAL" for approximately **4** seconds. The following screen will appear.

e.g. `PORT 1 SHAFT 1`

3. Press and hold "CAL" to display the next shaft name. Repeat until the port to be disabled is displayed.
4. Press and hold the "RESET" key for approximately **4** seconds.
5. The port will then be disabled and the following screen will appear.

e.g. `PORT 1 DISABLED`

TO ENABLE PORTS

1. Press "CAL" key to display "WHEEL..."
2. Press and hold "CAL" for approximately **4** seconds. The following screen will appear.

e.g. `PORT 1 DISABLED`

3. Press and hold "CAL" to display the next shaft name. Repeat until the 'port' to be enabled is displayed.
4. Press the "RESET" key, then the following screen will be displayed indicating the port is now enabled and a name has to be assigned to it.

e.g. `PORT 1`

5. Give the enabled port a new name. The port is ready for use again.
6. Press the "FUNCTION" key to exit.

3.7 CALIBRATION WARNING

The 2200 monitor has a unique protection system that compares and checks all your calibration settings to warn if any calibration factor becomes corrupted (changes value without your knowledge).

This is not a regular occurrence, but could be caused in a 'noisy' electrical environment e.g. an old petrol truck with wire ignition leads or faulty alternator.

When a corruption is detected, the monitor will beep continuously and the readout will display "CHECK CAL" warning.

e.g. **CHECK CAL**

Press the "CAL" key and check all calibration factors.

See below for the total reset procedure to be performed if "CHECK CAL" is displayed.

4.0 TROUBLESHOOTING 2200 MONITOR

	PROBLEM		POSSIBLE CAUSE / REMEDY
1.	NO POWER TO MONITOR WHEN ON / OFF KEY PRESSED	a)	Remove power from rear of monitor for 60 seconds to reset internal fuse. Reconnect power and test.
		b)	Test voltage is 12 - 13.8V dc from battery.
		c)	Check that **red** wire is to +ve Pin 11 and **black** wire is to -ve Pin 10.
		d)	Check that no other electrical device is connected to the same power cable.
		e)	Unable to locate fault - contact nearest dealer or authorised service agent.
2.	LCD DISPLAY DROPS OUT OR GREY SQUARES APPEAR ON HALF THE READOUT.	a)	If display rectifies when engine running this indicates battery in poor condition.
		b)	If problem persists when engine running, then voltage supply is low or low current is problem due to poor connection at battery, corroded inline fuse holder in power cable, or other equipment connected to power cable.
		c)	Clean battery terminals and power cable connections.
		d)	Make sure power cable is direct to battery terminals.
3.	"CHECK CAL" ON DISPLAY - INDICATES CALIBRATION FACTORS LOST FROM MEMORY.	a)	See calibration warning instructions Section 3.7 in this manual.
		b)	If problem occurs regularly, then it is probably caused by outside interference. See "Interference Causes and Remedies".
		c)	Alternatively, "CHECK CAL" will be caused by failure of memory backup chip. In this case all calibrations will be lost from memory whenever the power switch is turned "OFF". See section 2.2 this manual.
4.	SPEED READOUT TOO FAST OR TOO SLOW	a)	Re check "WHEEL" calibration is measured correctly and measured in metres eg 2.445 metres.

TROUBLESHOOTING 2200 MONITOR

PROBLEM		POSSIBLE CAUSE / REMEDY
5. SPEED READOUT JUMPY	a)	Make sure magnet is facing sensor correctly as shown in section 1.4 "WHEEL SENSOR INSTALLATION". (Use of an alternative magnet may cause problems due to wrong orientation.)
	b)	Check that wheel magnet is 10 - 15 mm away from wheel sensor as they pass. Magnet too close can cause jumpy speed.
	c)	If readout is jumpy, it indicates that the impulses from the sensor are inconsistent. Check for poor or intermittent connection to sensors. If speedo sensor, check that drive cable is not binding. Is the wheel loose?
	d)	If fault can not be found, press "TEST" key on monitor until "WHEEL" is displayed. Drive slowly forward and listen to the beeps. The sound should be consistent and steady at a fixed speed. If the sound is jumpy, wiring is OK, then replace sensor.
	e)	If the beeps can be heard whilst stationary, then interference could be the cause. See "interference Causes and Remedies".
SPEED READOUT STAYS AT ZERO	a)	Check wheel calibration is set correctly - not zero.
	b)	Check clearance between wheel magnet and sensor is 10 - 15mm.
	c)	Press "TEST" key repeatedly to display "WHEEL" then disconnect sensor at furthest point from monitor
	d)	Use a short piece of wire or long nose pliers to make a short circuit across the black and white connector pins of the cable connected to sensor.
	e)	If the monitor beeps with short circuit then monitor and wiring okay- replace sensor.
	f)	If still no response, short circuit across the white and black pins of the wheel sensor connector running out of monitor. If beep ok, then cable or extension at fault.
	g)	If no response, return monitor to your nearest Farmscan dealer or authorised Farmscan service agent.

TROUBLESHOOTING 2200 MONITOR

	PROBLEM		POSSIBLE CAUSE / REMEDY
7.	WHEEL SENSOR TEST PROCEDURE		DO NOT TEST WHEEL SENSOR WITH A TEST LIGHT, USE A MULTIMETER ONLY.
		a)	Disconnect wheel sensor from cable.
		b)	Switch multimeter "ON" and select "OHMS" scale.
		c)	Touch test probes together and meter needle should swing to right of scale indicating "0" OHMS resistance. (If digital meter display - should read zero).
		d)	Move wheel sensor magnet away from sensor and connect test probes to wheel sensor pins. If meter goes to zero, then sensor is short circuit (faulty). If the meter stays to the left of scale, hold wheel magnet in front of sensor, meter should go straight to zero. If meter fails to change, then sensor is open circuit (faulty).
8.	TOTAL AND TRIP AREA INCORRECT	a)	Check "SPEED" readout is correct and steady - if not, this will affect the area totals. See Troubleshooting Section 4.
		b)	Recheck width calibration is set correctly in metres.
		c)	Is the machine overlapping or overcounting headlands.
9.	TOTAL AND TRIP AREA WON'T RECORD	a)	Check that "SPEED" readout is working. If not see Trouble shooting Section 4.
		b)	Press "RUN/HOLD" key to make certain monitor is "OFF HOLD".

TROUBLESHOOTING 2200 MONITOR

	PROBLEM		POSSIBLE CAUSE / REMEDY
10.	SHAFT READOUT STAYS AT ZERO	a)	Check that distance between shaft sensor and target is 10mm for a coil or Reed sensor and 1 to 2 mm for a proximity sensor.
		b)	Disconnect sensor and press "TEST" key until the shaft input that is zero is displayed.
		c)	Short circuit across signal (white) and ground (black) wires of the shaft sensor connector on loom. If beeps heard sensor is faulty replace it.
		d)	If no beeps heard, short circuit across the ground pin (9) and the shaft input pin at the rear of monitor. See section 1.3 for pin out of monitor rear connector. If beep heard then loom faulty. If no beep heard then monitor faulty, have monitor returned to your nearest Farmscan service agent.
11.	SHAFT SENSOR READOUT JUMPY	a)	Check that while the shaft rotates the distance between the sensor and the target is constant. If the distance is not constant this is the cause of the jumpy signal.

5.0 INTERFERENCE CAUSES AND REMEDIES

CAUSES	REMEDIES
Noisy wire ignition leads on petrol engine or pump motor.	Replace with carbon leads. Fit suppressors to coil and distributor.
Faulty Alternator	Exchange it
Other electrical equipment running off monitor power cable	Run separate power cable **direct** to 12V battery for monitor.
Calibrations get corrupted when solenoids / clutch switched off.	Make sure monitor has its own separate power cable direct to 12V battery. Fit diode across solenoid coil / clutch to clamp spike. Run power cable physically away from solenoid / clutch wiring.

NEED MORE HELP?

a) Contact nearest Farmscan Dealer.

b) Contact Computronics International P/L
6 Sarich Way, Technology Park
Bentley 6102, Western Australia
Phone: +61 8 9470 1177 (all hours)
Fax: +61 8 9470 2855
Email: service@farmscan.com
Web: www.farmscan.com