

FARMSCAN | jackalv3

one monitor,
many possibilities



MONITOR VERSION

- SPEED & AREA METER
- TACH (RPM) METER
- RATE (LIQUID OR DRY) MONITOR
- PRESSURE MONITOR
- TEMPERATURE MONITOR
- SURVEILLANCE MONITOR
- WHEEL SLIPPAGE MONITOR
- COUNTER FUNCTION



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GENERAL DESCRIPTION

The Jackal Monitor is capable of monitoring 9 functions simultaneously – e.g. Speed/Area plus Tachometer, bin level sensors & pressure. NB: Inputs consist of 1x Coil, 4x Pulse, 4x Varying Inputs

The inputs can have both high and low alarm thresholds set which can trigger a visual and audible alarm if necessary.

The unit employs a large daylight readable LCD to provide legible characters on the display and enable calibration data to be clear and descriptive.

Our onboard calibration wizard makes setup a breeze! It's simplified with the ability to enter either a factor (pulses per unit) or simply drive/run a set amount whilst the unit is counting the pulses and let the system calculate its own factor.

24 recordable trips allow the operator to track numerous jobs in a period of work.

Each input can be used to display information using imperial and metric units.

TECHNICAL SPECIFICATIONS

Specifications below are subject to change and are based on a fully unlocked Jackal.

Power Requirements	10 – 28 VDC @ 250mA
Display	128 x 64 Mono Graphic LCD
Operating Temperature	0 to 50°C
Storage Temperature	-5 to 65°C
Dimensions	135mm H x 100mm W x 30mm D
Sensor Inputs	9
Input 1 (Sine Wave)	Up to 1000 pulses per second (Freq. Coil)
Inputs 2 – 5 (Square Wave)	Up to 400 pulses per second (On/Off/Freq)
Inputs 6-9	Analog Voltage 0 – 5V
GPS	TX/RX
Ground	2
Output PWM (Coming Soon)	2
Output +12v	1
Output (Alarms Only)	4

DISCLAIMER

The warranty offered on this Farmscan Ag product is limited to the repair or replacement of the faulty goods. No liability will be accepted for loss of profit or productivity.

WARRANTY IS VOID if power and or sensors are not connected as described in this guide.

INSTALLATION

PARTS LIST

REF	PART NUMBER	DESCRIPTION	QTY
1	A-Jackal	Jackal Monitor	1
2	AH-407	Mounting Bracket	1
3	P-321 x1 P-322 x1	11 Way Input Plug Green & Grey	1 each colour
4	AC-105	5m Power Cable	1
5	HM-506	Screw Driver	1
Not Pictured	AM-200	Warranty Card	1
Not Pictured	AM-Jackal	Manual	1

PARTS PICTORIAL



MOUNTING & INSTALLATION

The Jackal Monitor is provided with a suction window mount.

Slide mount onto unit and push sideways to lock into place. Make sure you hear a click of the mount locking into place.

Place in a convenient position on the windscreen and using the toggle lever pictured above (Item 2), push all the way to the bottom until lever locks into position.

Note: Monitor should be mounted in a clearly visible position in the cab for the operator, but not in a position where it is subject to intense heat or moisture.

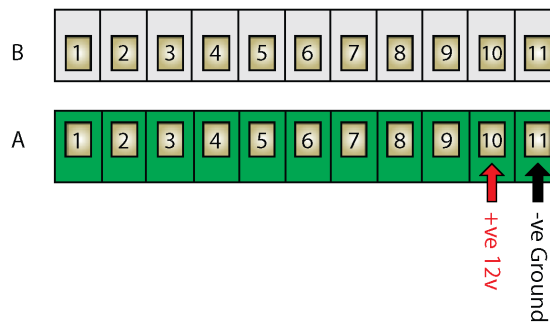
CONNECTIONS

The connector on the rear of the Jackal Monitor has the following connection points available for use

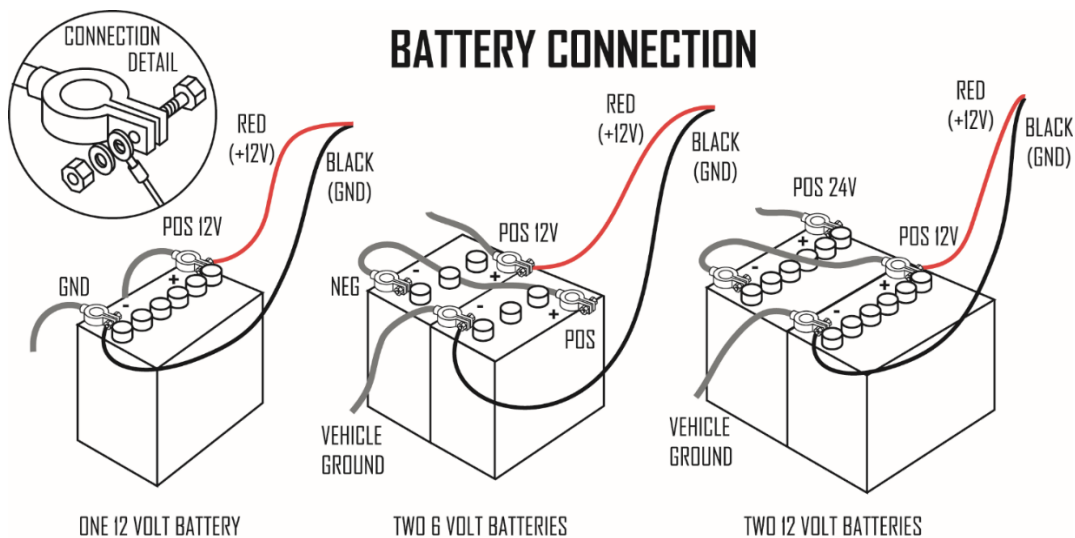
POWER CONNECTION

Power connection must come direct from the battery terminals. **WARRANTY IS VOID** if power is not connected as described in this section.

GND : Black or Red with Black Stripe
+ve 12v : Red



1. Connect power cable supplied **DIRECTLY TO BATTERY**
2. Ring terminals are used for battery connection and the bare end used to connect to the rear Jackal. (Refer above image for power connection)
3. Connect Ground to BATT -VE, **Terminal B11** using the **RED** with **BLACK** stripe wire
4. Connect **+12** Volts (+battery terminal) to BATT +VE, **Terminal B10** using the **red** wire
5. Ensure that the battery connection to the Jackal is **+12 Volts**



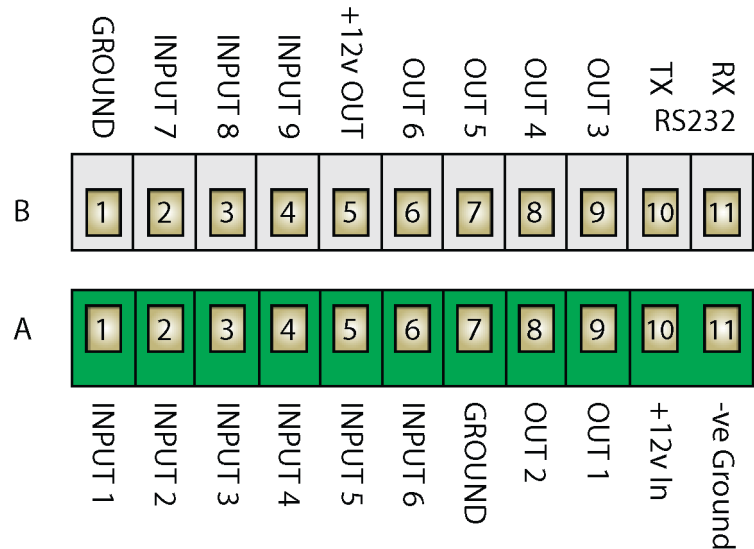
Connecting 24V to the Jackal will VOID WARRANTY



**Disconnect the terminal plugs
from the Jackal if **ARC
WELDING** on machinery**

REAR CONNECTIONS

The connector on the rear of the Jackal Monitor has the following points available for use.



A	BOTTOM ROW (GREEN PLUG)	B	TOP ROW (GREY PLUG)
A1	INPUT 1 1x Coil Input / Flow (Sine Wave)	B1	GROUND Earth / 0v
A2	INPUT 2[^] Prox / Reed / High-Low / On-Off / Alarm	B2	INPUT 7 Varying Voltage Sensor
A3	INPUT 3[^] Prox / Reed / High-Low / On-Off / Alarm	B3	INPUT 8 Varying Voltage Sensor
A4	INPUT 4[^] Prox / Reed / High-Low / On-Off / Alarm	B4	INPUT 9 Varying Voltage Sensor
A5	INPUT 5[^] Prox / Reed / High-Low / On-Off / Alarm	B5	+12v OUT Supply Out / Sensor Power
A6	INPUT 6 Varying Voltage Sensor	B6	OUT 6 GND/+12v/Run/Hold/Alarm Any
A7	GROUND Earth / 0v	B7	OUT 5 GND/+12v/Run/Hold/Alarm Any
A8	OUT 2 GND/+12v/Run/Hold/AlarmAny	B8	OUT 4 GND/+12v/Run/Hold/Alarm Any
A9	OUT 1 GND/+12v/Run/Hold/AlarmAny	B9	OUT 3 GND/+12v/Run/Hold/Alarm Any
A10	+12v In +12v Battery	B10	RS232 TX From GPS
A11	-Ve In Ground / GND Battery	B11	RS232 RX From GPS

Need an extra Square Wave Input?
Consider swapping your wheel sensor input for out T-135 GPS Speed sensor

- B5 supplies 12v out to sensors when the Jackal is turned on
- Any free INPUTS can be used as the remote/run hold function
- [^] Square Wave input Only

INSTALLING SENSORS

The following examples will help to determine appropriate sensor input connections into the Jackal.

TWO WIRE “COIL” – YELLOW END SENSOR OR 2 WIRE FLOW METER

KIT # 2034, 2077, AA-230S/RCS

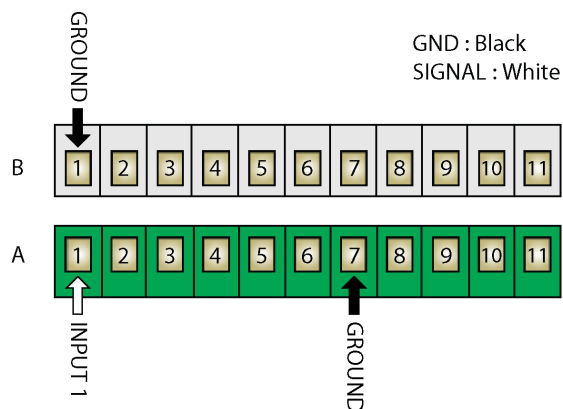
These kits will all include a “coil” type sensor. The coil type sensor is a 2 wire sensor (normally yellow end) and only uses a ground/earth wire and a signal wire.

This input is also used with 2 wire (sine wave) flow meters.

The diagram to the right shows which terminals to connect your sensors to.

Insert the black ground wire to either **(A7 or B1)** and the white/coloured signal wire into **(A1)**

Use the wizard to setup the port and calibrate a sensor once installed.



TWO WIRE “REED” – BLACK END SENSOR

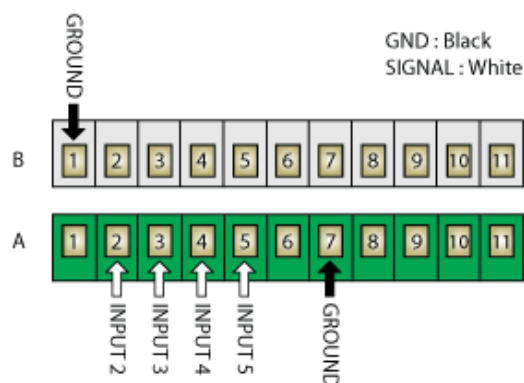
KIT # 1007P, 2009, 2076

These kits will all include a “reed” type sensor. The reed type sensor is a 2 wire sensor (normally black end) and only uses a ground/earth wire and a signal wire.

The diagram to the right shows which terminals to connect your sensors to.

Insert the black ground wire to either **(A7 or B1)** and the white/coloured signal wire into any **(A2-A5)**

Use the wizard to setup the port and calibrate a sensor once installed.



THREE WIRE – PROX SENSOR OR 3 WIRE FLOW METERS

KIT # AA-2010P, AA-123P, AA-125, AA-242, AA-230X, AA-232X, AA-231

These kits will all include a “reed” type sensor. The reed type sensor is a 3 wire sensor and uses a ground/earth wire, a signal wire and a 12v power wire.

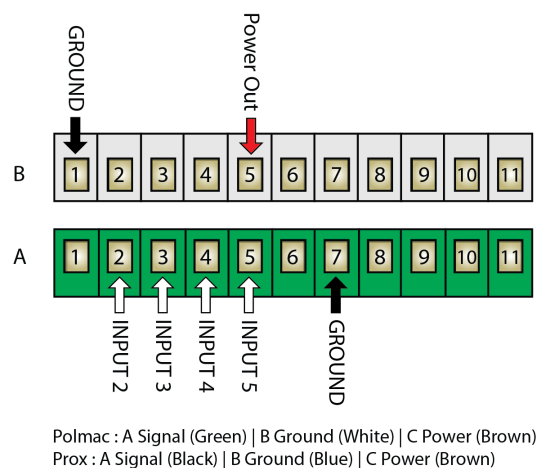
A Prox sensor can be used for wheel speed or RPM.

This input is also used with 3 wire (square wave) flow meters.

The diagram to the right shows which terminals to connect your sensors to.

Insert the ground wire to either **(A7 or B1)** and the sensor wire into any **(A2-A5)** and the power wire to **(B5)**

Use the wizard to setup the port and calibrate a sensor once installed.



THREE WIRE “ANALOGUE/VOLTAGE” – PRESSURE SENSOR OR DEPTH SENSOR

KIT # AA-114, AA-119-H, AA-119-L, AA-430

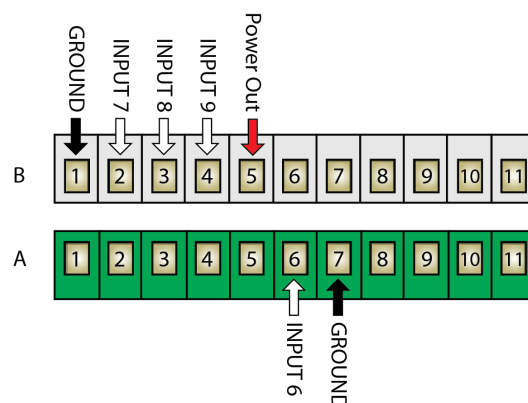
These kits will all include an “analogue” type of sensor. The analogue sensor is 3 wire and uses a ground/earth wire, a signal wire and a 12v power wire.

Typical sensors would include Pressure & Depth.

The diagram to the right shows which terminals to connect your sensors to.

Insert the ground wire to either **(A7 or B1)** and the sensor wire into any **(A6 or B2-B4)** and the power wire to **(B5)**

Use the generic wizard to setup the port and calibrate a sensor once installed.



THREE WIRE “BIN/TANK LEVEL”

KIT # 2060, A-2220P

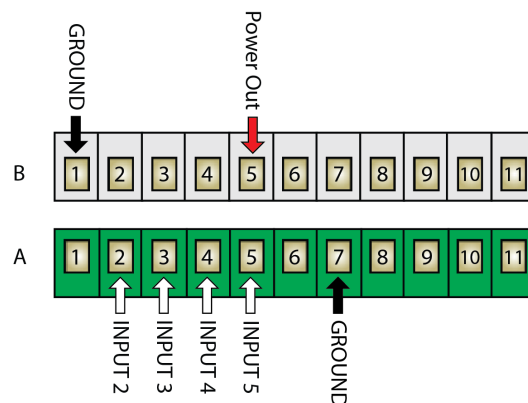
These kits will all include an “on/off, high/low, empty/full” type of sensor. The analogue sensor is 3 wire and uses a ground/earth wire, a signal wire and a 12v power wire.

A typical sensor would include a Bin/Tank Level Sensor.

The diagram to the right shows which terminals to connect your sensors to.

Insert the ground wire to either **(A7 or B1)** and the sensor wire into any **(A2-A5)** and the power wire to **(B5)**

Use the generic wizard to setup the port and calibrate a sensor once installed.



GPS

KIT #T-135

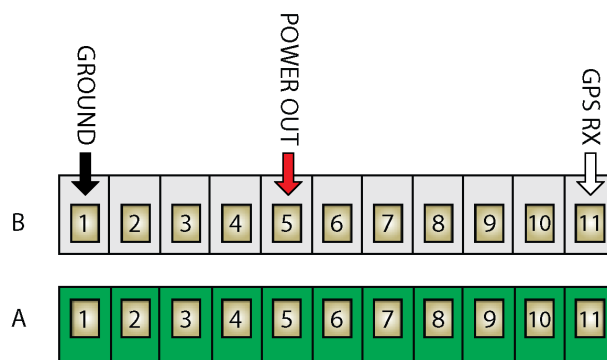
GPS units supplied from Farmscan Ag are pre-programmed and ready to use with the Jackal Monitor.

The diagram to the right shows which terminals to connect your GPS to.

Insert the black or green wire to **(B1)** and the white or yellow wire into **(B11)** and the red wire into **(B5)**

Use the wizard to setup the port and calibrate once installed.

NB: If you BYO GPS please ensure: GGA, VTG, RMC, 5Hz and a baud rate over 19200kbps.



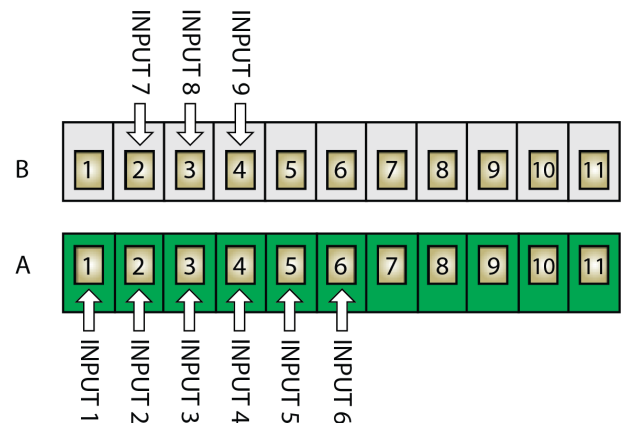
GND : Black
SIGNAL : White
POWER : Red

REMOTE RUN/HOLD (ACTIVATE BY INPUT)

The Jackal Monitor can connect an external Run/Hold trigger (e.g. Remote Switch) & wire into any unused INPUT port (**A1-A6 & B2-B4**)

This allows the Jackal to be remotely placed on hold or run mode from an external source or switch without having to press the Run/Hold button on the Jackal itself. When the external Run/Hold is active on any input the Run/Hold button on the Jackal is then disabled.

Insert the ground wire from your external switch to any of the unused ports as mentioned above.



NB: In some cases, you may have to use an automotive relay to provide the appropriate ground output.

NORMALLY ON

WHEN A CIRCUIT EXISTS BETWEEN THE SELECTED INPUT AND GROUND (GND), SELECTING NORMALLY ON WILL RESULT IN THE JACKAL GOING INTO HOLD MODE

NORMALLY OFF

SELECTING NORMALLY OFF WILL RESULT IN THE REVERSE I.E. THE JACKAL WILL BE IN RUN MODE UNTIL THE CIRCUIT IS BROKEN AFTER WHICH IT WILL GO INTO HOLD MODE.

Enable the remote run/hold via **OTHER SETTINGS** as further described on Page 33.

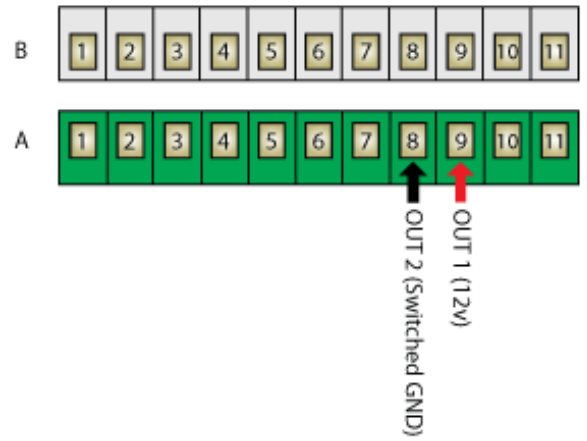
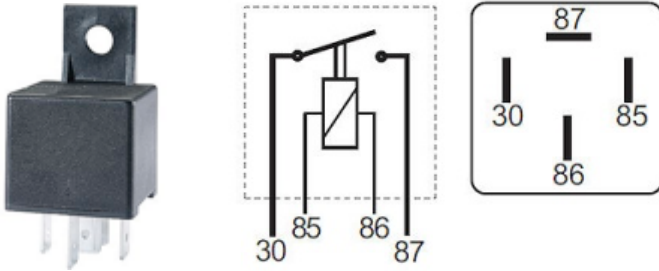
REMOTE RUN/HOLD (ACTIVATE BY OUTPUT)

The Jackal Monitor has the ability to Run/Hold an external device such as a remote clutch switch.

This allows you to press the Run/Hold on the Jackal to enable an external operation.

NB: This function is used in conjunction through an automotive relay.

Example: Hella Automotive Relay (12v / 30A) – 4RA003510-08



Pin 86 to B9 Out 1 (Jackal 12v Supply Out)

Pin 85 to B8 Out 2 (Switches Output)

Pin 30 to 12v in (Direct to Vehicle Battery)

Pin 87 to Positive Side of switch (*Ensure negative/ground on other side of switch returns to battery*)

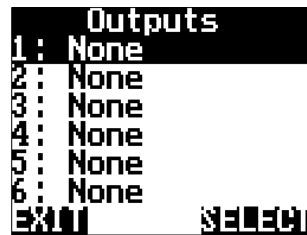
Enable the remote run/hold out by:



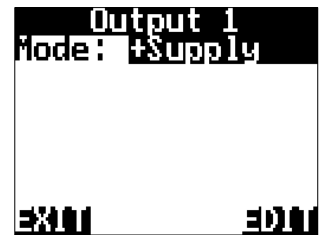
From the front screen press
SETUP



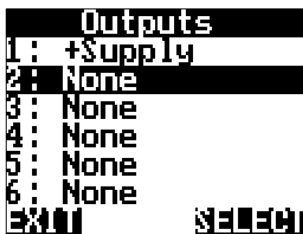
Highlight **OUTPUTS** and press
SELECT



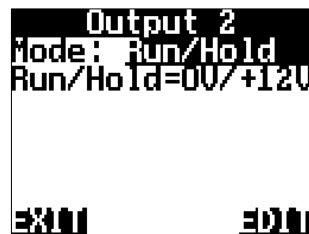
Highlight **1: NONE** and press
SELECT



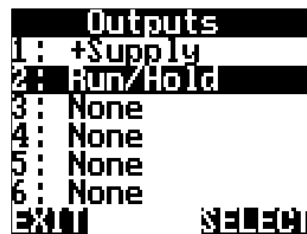
Press **EDIT** and change to
MODE: +Supply
Press **EXIT**



Highlight **2: None** and press
SELECT

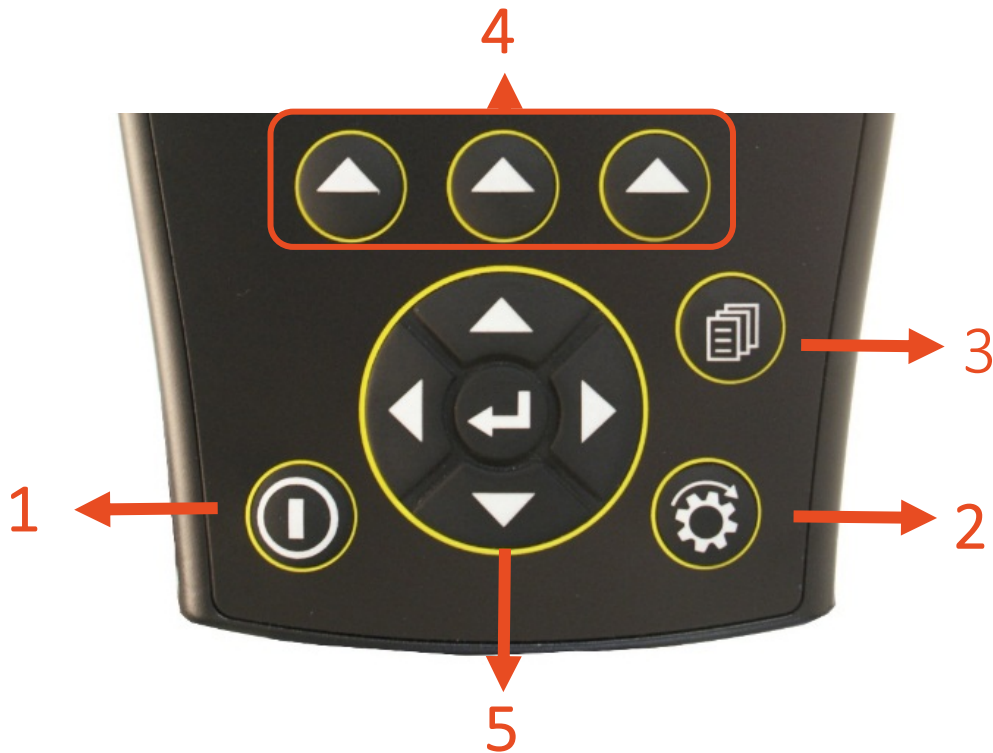


Press **EDIT** and change to
MODE: Run/Hold



Press **EXIT** when done.

Highlight **RUN/HOLD** and
EDIT to =0V/+12V



1. Power On/Off button

- Power is turned on by pressing the **ON/OFF** button for 1 second.
- Power is turned off by holding the **ON/OFF** button for 2 seconds.

2. Run/Hold button

- The **RUN/HOLD** button has a dual function.
 - Press **RUN/HOLD** once to place the 'MONITOR ON HOLD'.
 - Press **RUN/HOLD** again to resume operation.
- The **RUN/HOLD** state is indicated in the top left hand corner of the screen. When the monitor is in RUN mode, the unit displays RUN to signify that the monitor is active.
- When the monitor is in **HOLD** mode the unit displays the word "**HOLD**" & "**BEEPS**" every 2 seconds

3. Page button

- The **PAGE** button is used to scroll through multiple screens when more than 3 lines are displayed

4. Select button (3 off)

- The Jackal has 3 buttons placed directly under the LCD. These buttons will change function in different menus.
- The function of the button is indicated at the bottom of the screen directly above the button.

5. Navigation button (Up, Down, Left, Right, Enter)

- The Round navigation (**NAV**) buttons are used to navigate **UP/DOWN/LEFT/RIGHT** in calibration screens as well as scrolling through the display lines on the main screen.
- ENTER** is used to select the option highlighted onscreen.

SCREEN LAYOUT

The Jackal can display one, two or three lines of live information at any one time.

Using the middle **NAV/Enter** button allows you to toggle between the different display modes when multiple inputs are being used.



Example : 1 Line



Example : 2 Line



Example : 3 Line

The level of Jackal unlock will determine what options are viewable and available to be edited.



Use the NAV button down to reveal further menu information



- Wizard** Run a predefined wizard for setting up the Jackal Monitor as:

 - Area/Speed Wheel
 - Area/Speed GPS
 - Tachometer (Fast & Slow option available)
 - Flow Meter
 - Slippage Meter
 - Generic Wizard

- Inputs** Manually enable or edit ports in which sensors are connected to.

- Front Screen** Enable/define/order/edit/name the lines on the front screen.
Select the number of decimal places displayed and edit the alarms.

- Other Settings** Change speed input, implement & section widths, (control version only), external run/hold alarm notification settings (beep & on hold), language options, speed simulation for diagnostics (control version only)

- Outputs** This menu is used to control the Jackal outputs. Refer to this manual and edit the outputs described ONLY to prevent damage to external sensors connected to the Jackal.

- GPS/Serial** When an external GPS is connected view and ensure the GPS is setup correctly.
Setup baud rate and confirm GPS messages (NMEA messages RMC or GGA+VTG are required) Latitude, Longitude, heading, speed, date & time.

- About Jackal** Shows current version of Jackal software and unlock codes installed on the unit.

- Diagnostics** Shows current input voltage, temperature and input diagnostics.

- Factory Reset** Returns the Jackal to factory default.

AREA & SPEED METER SETUP (WIZARD)

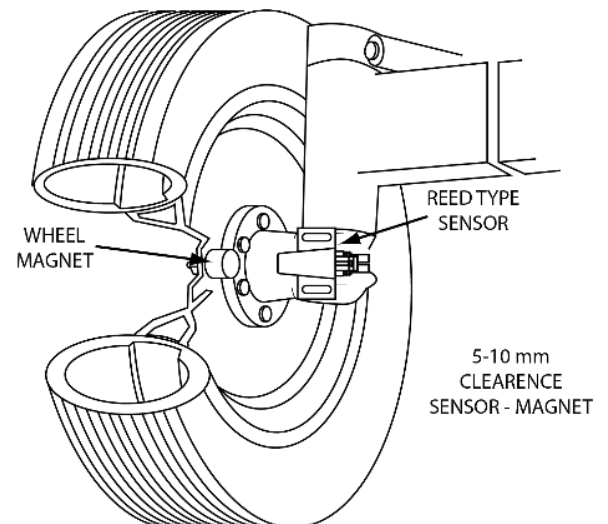
The Jackal can display Speed & Area in any combination of km/Ha or mph/acre.

A pickup can be mounted either on a wheel hub or shaft. (Example image right)

NB: THERE SHOULD BE A 5-10MM CLEARANCE BETWEEN SENSOR AND MAGNET

Sensors Required:

- Wheel sensor pickup 2 (Reed) or 3 wire (Proximity)
- Magnet (Used with 2 wire sensor)



Available Connections: Refer to Installing Sensors from [Page 5](#)

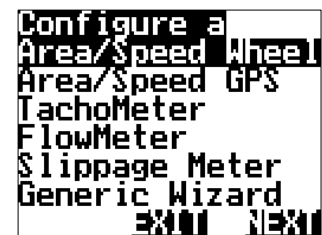
SETUP



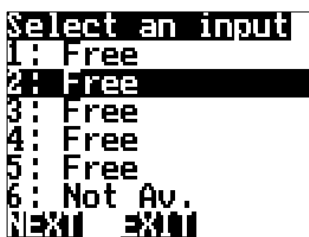
From the front screen press **SETUP**



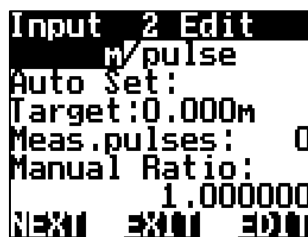
Highlight **WIZARD** and press **SELECT**



Highlight **Area/Speed Wheel** and Press **NEXT**



Highlight the **INPUT** number the speed is connected into the back of Jackal & press **NEXT**



Leave the unit of pulse calibration method as **M**

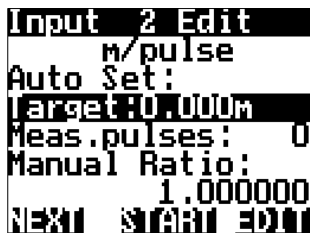
Choose your calibration method

Auto Set > PAGE 13

Manual Ratio > PAGE 14

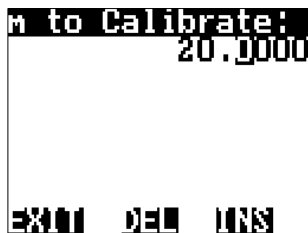
CALIBRATION (AUTO SET)

1. Ensure that the sensor and pickup are end-end before continuing
2. Mark bottom centre of tyre on which the sensor is fitted and peg ground in corresponding position
3. Measure out a known distance to calibrate i.e. 20m-100m
4. Peg the corresponding point i.e. at the 20/100m mark



Select TARGET

Select EDIT



Using the NAV buttons enter your measured distance. i.e.

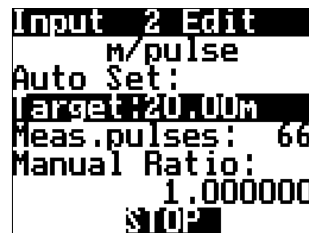
20.0000

Press EXIT when done.

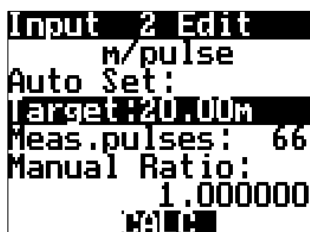


Press START and move forward slowly.

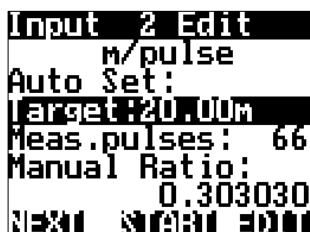
This will allow pulses to register.



When you arrive at the center mark point of tyre to peg press STOP

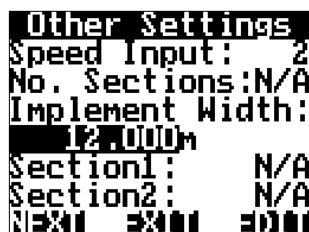


Press CALC. This will divide the distance travelled by the number of pulses registered.



MANUAL RATIO will now be updated to reflect the calibration factor.

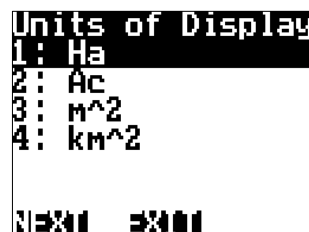
Press NEXT



Using the NAV buttons and pressing EDIT enter your implement width in (m). e.g.

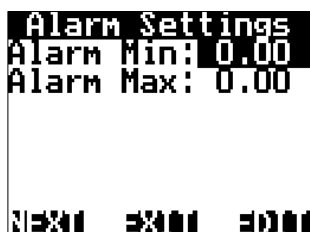
12m

Press NEXT

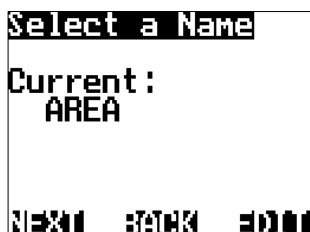


Using the NAV buttons select how you would like the area to be displayed on the front screen.

Press NEXT



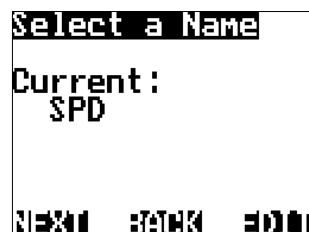
You have the option to set Alarm Min/Max points if required. Using the NAV buttons select and EDIT as required. Press NEXT



Change the input name if you desire, Press EDIT, Press NEXT



Select either YES or NO to display Speed on the front screen with the area covered.



Change the input name if you desire, Press EDIT Press NEXT



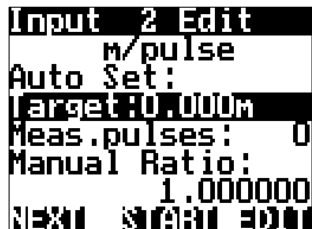
Press NEXT to finalise the Wizard and return to the front screen



THIS ENDS THE AUTO SET WIZARD SETUP FOR SPEED/AREA METER

CALIBRATION (MANUAL RATIO)

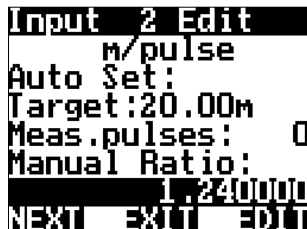
1. Ensure that the sensor and pickup are end-end before continuing
2. Mark bottom centre of tyre on which the sensor is fitted and mark ground in corresponding position
3. Drive ONE full rotation of the wheel, returning the mark point on tyre to bottom centre
4. Measure between the two points.
 - o This is your Manual Ratio (Example 1.24m)



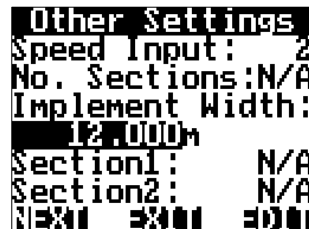
Select MANUAL RATIO
Select EDIT



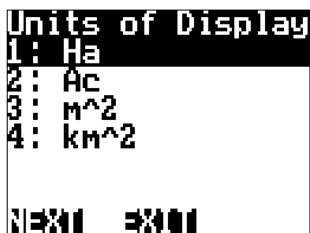
Using the NAV buttons enter your measured distance. i.e. 1.240000
Press EXIT when done.



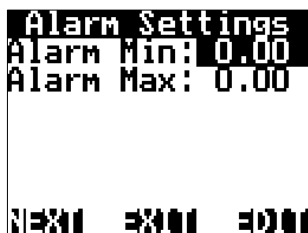
Press NEXT



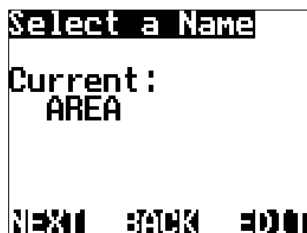
Using the NAV buttons and pressing EDIT enter your implement width in (m). e.g. 12m
Press NEXT



Using the NAV buttons select how you would like the area to be displayed on the front screen.
Press NEXT



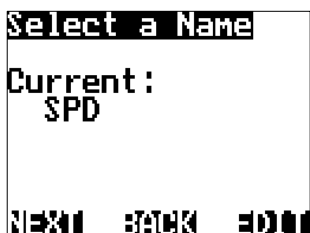
You have the option to set Alarm Min/Max points if required. Using the NAV buttons select and EDIT as required. Press NEXT



Change the input name if you desire, Press EDIT
Press NEXT



Select either YES or NO to display Speed on the front screen with the area covered.



Change the input name if you desire, Press EDIT,
Press NEXT



Press NEXT to finalise the Wizard and return to the front screen



THIS ENDS THE MANUAL RATIO SET WIZARD SETUP FOR SPEED/AREA METER

AREA & SPEED METER USING GPS SETUP (WIZARD)

The Jackal can display Speed & Area in any combination of km/Ha or mph/acre.

A wheel sensor is not required when using a GPS. GPS purchased from Farmscan Ag are pre-programmed. If you BYO please ensure the following:

- GPS programmed with RMC – GGA - VTG NMEA messages.
- Any Baud Rate of - 4800,9600,19200,38400,115200 @ 5hz minimum.

Available Connections: Refer to Installing Sensors from [Page 5](#)



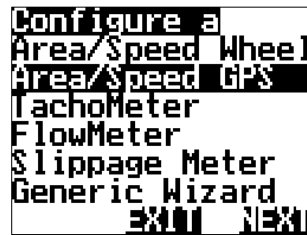
SETUP



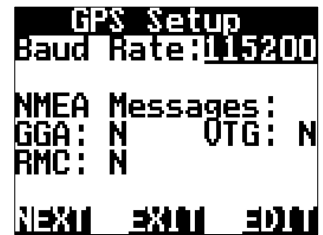
From the front screen press
SETUP



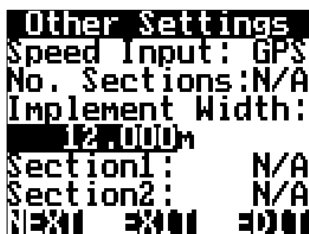
Highlight **WIZARD** and press
SELECT



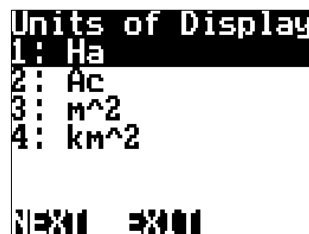
Highlight **AREA/SPEED GPS**
and press **NEXT**



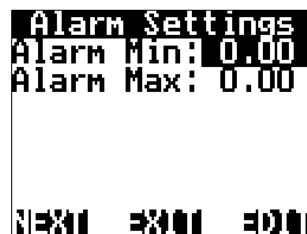
Press the **EDIT** button to
change the baud rate, when
the correct baud rate is
selected the corresponding
NMEA message will be
acknowledged with a Y.
Press **NEXT**



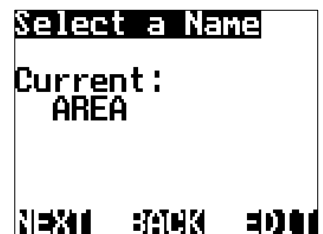
Using the **NAV** buttons and
pressing **EDIT** enter your
implement width in (m). e.g.
12m
Press **NEXT**



Using the **NAV** buttons select
how you would like the area
to be displayed on the front
screen.
Press **NEXT**



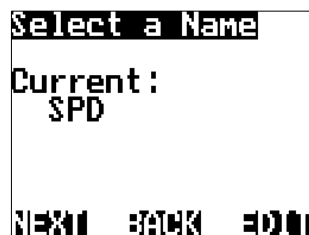
You have the option to set
Alarm Min/Max points if
required. Using the **NAV**
buttons select and **EDIT** as
required. Press **NEXT**



Name the input if you desire,
Press **EDIT**. e.g. **SPEED**
Press **NEXT**



Select either **YES** or **NO** to
display Speed on the front
screen with the area covered.



Change the input name if you
desire, Press **EDIT**,
Press **NEXT**



Press **NEXT** to finalise the
Wizard and return to the
front screen



**THIS ENDS THE
SETUP FOR SPEED/AREA
METER USING
GPS INPUT**

TACHOMETER - RPM METER SETUP (WIZARD)

The Jackal can display an rpm (Revolutions per minute) which is useful for monitoring fans or shafts. Available in slow & fast options.

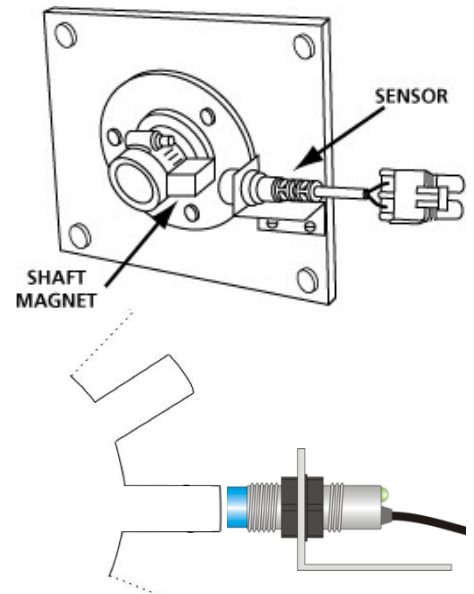
NB: THERE SHOULD BE A 5-10MM CLEARANCE BETWEEN SENSOR AND MAGNET OR 2-5MM BETWEEN PROX AND PICKUP AND PICKUP

Sensors Required

- Shaft Sensor pickup 2 (Reed or Coil) or 3 wire (Proximity)
- Magnet (Used with 2 wire sensor)

Available Connections: Refer to Installing Sensors from [Page 5](#)

The example uses Input 1 – Coil (Yellow end sensors)



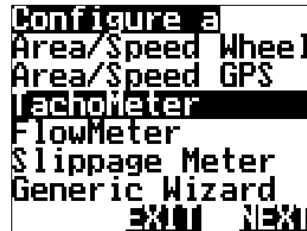
SETUP



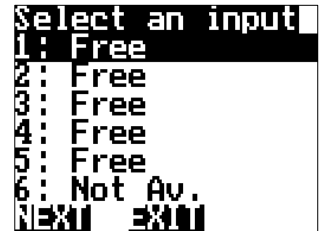
From the front screen press
SETUP



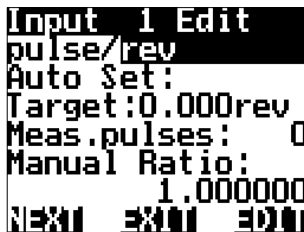
Highlight **WIZARD** and press
SELECT



Highlight **TACHOMETER** and
press **NEXT**



Highlight and select the
appropriate sensor **INPUT**
and press **NEXT**



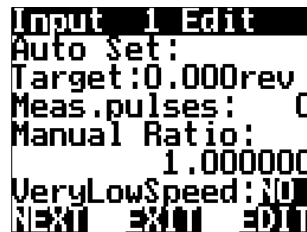
Leave the default value of
pulse/rev and press **NEXT**



Select **MANUAL RATIO**
Select **EDIT**

The manual ratio is the
number of magnets (reed or
coil sensor) or bolt
heads/teeth (for proximity).
In most cases the ratio will be
1.

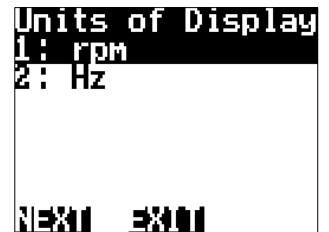
or Press **NEXT**



FOR LOW RPM
(1rpm-20rpm)

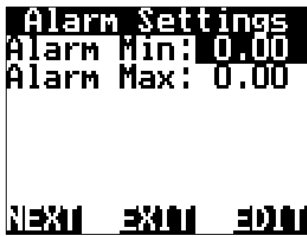
Press the **DOWN** button and
change **VeryLowSpeed** from
NO to **YES** by pressing **EDIT**

Press **NEXT** when done

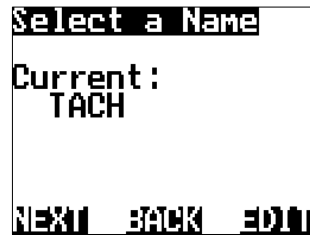


Leave the default value of
RPM.

Select **NEXT**



You have the option to set Alarm Min/Max points if required. Using the NAV buttons select and **EDIT** as required. Press **NEXT**



Change the input name if you desire, Press **EDIT**, Press **NEXT**



Press **NEXT** to finalise the Wizard and return to the front screen



THIS ENDS THE WIZARD SETUP FOR A TACHOMETER

FLOW METER SETUP (WIZARD)

The Jackal can be configured to monitor liquid products. If only one input is used the Jackal main screen will display the flow information of your choice. If the Jackal is also setup and installed with a Wheel Sensor input, the Jackal can be setup to display L/Ha for example.



NB: AT NO STAGE CAN THE JACKAL MONITOR TAKE INTO ACCOUNT MULTIPLE SPRAY SECTIONS TURNING ON/OFF. TALK TO USE ABOUT THE JACKAL CONTROL SERIES.

Sensors Required

- 2 Wire Flow Sensor (Sine Wave)
- 3 Wire Flow Sensor (Square Wave)

Available Connections: Refer to Installing Sensors from [Page 5](#)

The example uses Input 2 – Polmac Flow Sensor



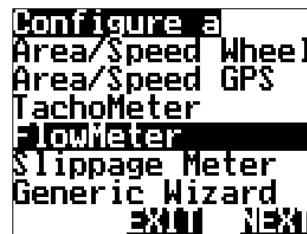
SETUP



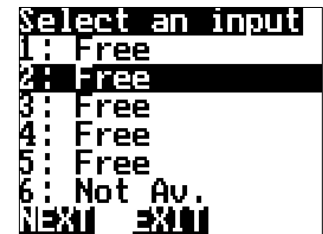
From the front screen press
SETUP



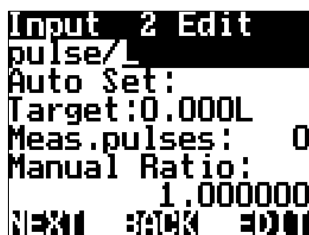
Highlight **WIZARD** and press
SELECT



Highlight **FLOWMETER** and
press **NEXT**



Highlight and select the
appropriate sensor **INPUT** as
described above and press
NEXT



Edit the unit of Pulse or
leave as is.

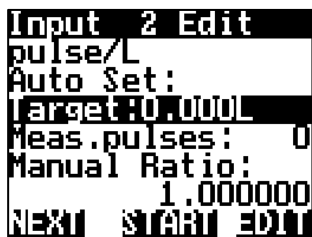
**Choose your
calibration method**

Auto Set > PAGE 19

Manual Ratio > PAGE 20

CALIBRATION (AUTO SET)

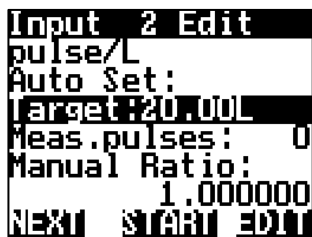
1. Ensure tank has water & pump is ready
2. Have a bucket ready to collect the water
3. Have a measuring device to measure the amount of liquid



Highlight **TARGET** & press **EDIT**



Using the **NAV** buttons enter the target amount (L) to be measured. i.e. 20.0000
Press **EXIT** when done.



Press **START**, & let water flow. This will allow pulses from the flow meter to register and the number of pulses will be displayed next to **Meas.pulses:**



When the desired test volume has been reached press **STOP**

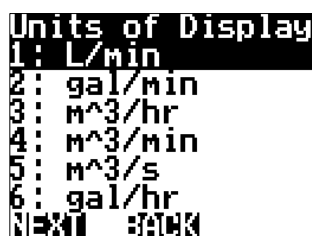


Press **CALC**. This will divide the measured amount by the number of pules registered.



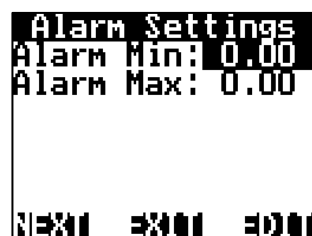
MANUAL RATIO will now be updated to reflect the calibration factor.

Press **NEXT**

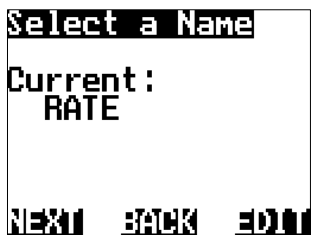


Using the **NAV** buttons select how you would like the **UOD** to be displayed on the front screen.

Press **NEXT**



You have the option to set **Alarm Min/Max** points if required. Using the **NAV** buttons select & **EDIT** as required. Press **NEXT**



Name the input if you desire, Press **EDIT** or Press **NEXT**



The Wizard is now complete. Press **NEXT**

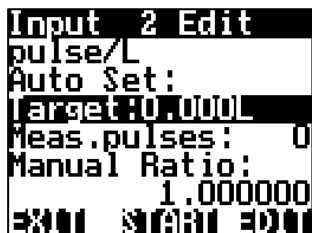


You will be returned to the Front Screen.

THIS ENDS THE AUTO SETUP WIZARD FOR FLOW METER
REFER TO PAGE 22 TO SETUP AS RATE MONITOR L/Ha

CALIBRATION (MANUAL SET)

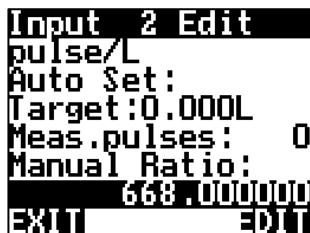
Manual set allows for the manual input of a known pulse per litre (PPL) factor. The pulse per litre factor can be obtained from the flow meter manufacture or from the plastic tag attached to the flowmeter.



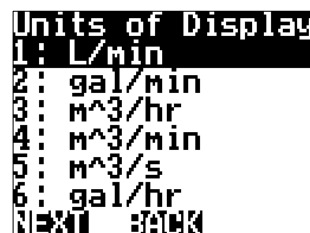
Highlight 1.000000 under MANUAL RATIO & press EDIT



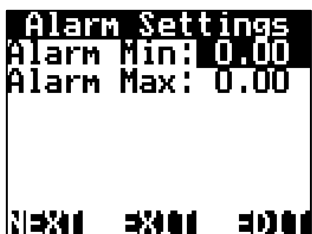
Using the NAV buttons enter the PPL factor as displayed on the flow meter tag. i.e. 91.2 Press EXIT when done.



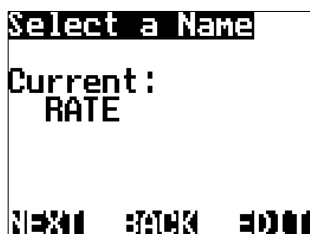
Press NEXT to accept the new manual ratio (PPL)



Using the NAV buttons select how you would like the UOD to be displayed on the front screen. Press NEXT



You have the option to set Alarm Min/Max points if required. Using the NAV buttons select & EDIT as required. Press NEXT



Name the input if you desire, Press EDIT or Press NEXT



The Wizard is now complete. Press NEXT



You will be returned to the Front Screen.

THIS ENDS THE MANUAL CALIBRATION WIZARD SETUP FOR FLOW METER

**** IT IS ADVISED TO CHECK YOUR MANUAL CALIBRATION BY MEASURING OUT A KNOWN QTY TO CONFIRM PPL****
THIS CAN BE DONE BY COMPLETING THE CALIBRATION AUTO SET ON THE PREVIOUS PAGE (19)

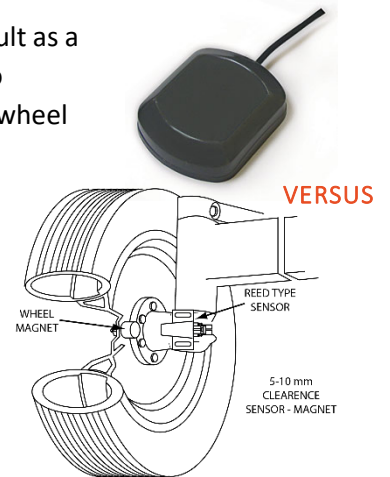
SLIPPAGE METER (WIZARD)

The Jackal Monitor can allow the operator to compare two inputs and provide the result as a percentage. This is applicable when speed over ground is not necessarily equivalent to rotational speed of the wheel/s. This will enable you to set up a comparison between wheel speed and actual speed (using GPS)

Sensors Required:

- Wheel sensor input (wheel or shaft pickup)
- GPS

Available Connections: Refer to Installing Sensors from [Page 5](#)



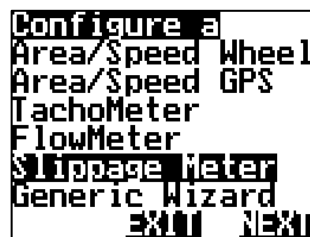
SETUP



From the front screen press **SETUP**



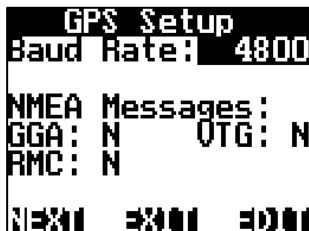
Highlight **WIZARD** & press **SELECT**



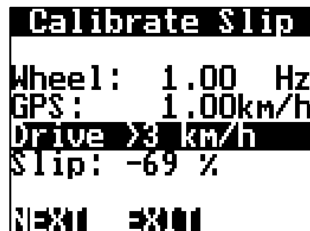
Highlight **SLIPPAGE METER** press **NEXT**



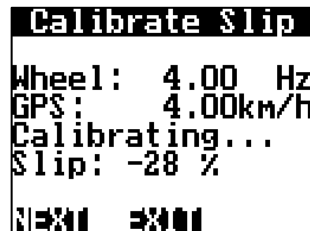
Highlight the **INPUT** number X: the **WHEEL** sensor wire is connected into on the rear of the Jackal & press **NEXT**



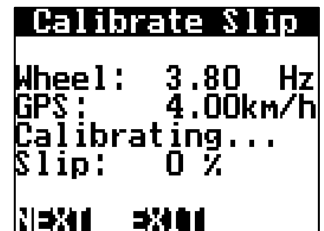
Press the **EDIT** button to change the baud rate, when the correct baud rate is selected the corresponding NMEA message will be acknowledged with a Y. Press **NEXT**



As indicated, drive above 3km/hr

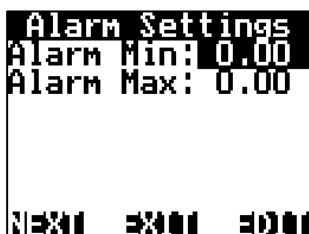


Wheel input will then increment up (displayed in Hz) & GPS speed will start to show.

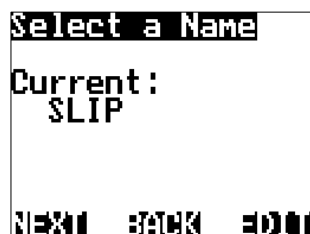


As the system self-calibrates the slip % will get closer to 0%.

When the slip has settled close to 0% press **NEXT**



You have the option to set Alarm Min/Max points if required. Using the NAV buttons select & **EDIT** as required. Press **NEXT**



There is no need to **EDIT** the name. It will default to GPS Press **NEXT**



Finally acknowledge that you wish to also display Speed (km/hr) on the front screen with the area covered. Press **YES**



The Wizard is now complete. Press **NEXT**.

THIS ENDS THE SETUP WIZARD FOR WHEEL SLIPPAGE

RATE MONITOR – LIQUID

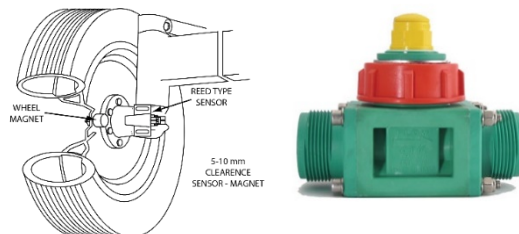
The Jackal can be setup to display an application rate when using both a speed & flow input.

Rates can be displayed in common formats such as L/Ha

Sensors Required:

- Wheel Sensor/GPS for Speed & Area calculation
- Flow meter (any style) to display Litres

Available Connections: Refer to Installing Sensors from [Page 5](#)



SETUP LIQUID (L/HA)

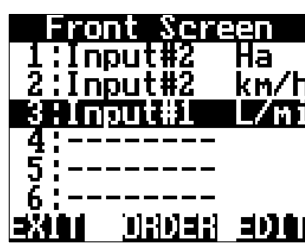
1. Follow the setup guide on page 12 for “Speed/Area Meter setup”
2. Follow the setup guide on page 18 for “Flow Meter Setup”
3. Follow the steps as described below



From the front screen press **SETUP**



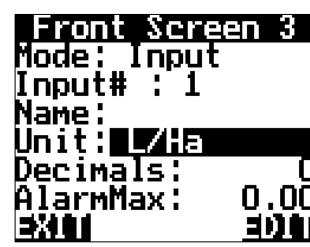
Highlight **FRONT SCREEN** & press **SELECT**



Highlight the line in which the Flow Meter is connected to.

e.g. 3: Input#3 L/min

Press **EDIT**



Highlight the **UNIT** & press **EDIT** to change the unit to **L/Ha**.



Press **EXIT** 3 times to return to the front screen.

Jackal will now display the flow rate as L/Ha with Area & Speed

At no stage can the Jackal take into account multiple sections turning on an off and adjusting the Ha to suit. This feature is available in our Jackal-Control series.

THIS ENDS THE SETUP FOR RATE METER SETUP AS L/Ha

RATE MONITOR – SOLID

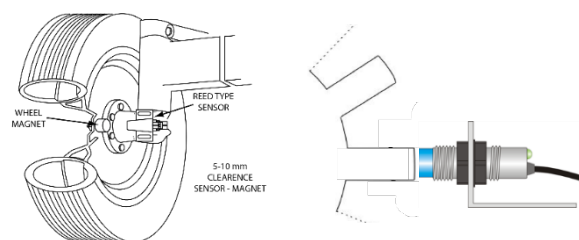
The Jackal can be setup to display an application rate when using both a speed & pulse input from a shaft or other pickup.

Rates can be displayed in common formats such as kg/Ha

Sensors Required

- Shaft sensor kit (2076) - 2 wire or
- Proximity sensor kit (2010P) (3 wire)

Available Connections: Refer to Installing Sensors from [Page 5](#)



SETUP

1. Follow the steps below to setup the Jackal to display a pulse/kg (**accumulation**)

Note:

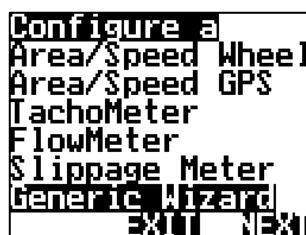
- a) Ensure there is product in the bin/tank to calibrate
- b) Have a bucket ready to catch the product
- c) Have a set of scales (e.g. Farmscan Ag Part # 2199) ready to weigh the product



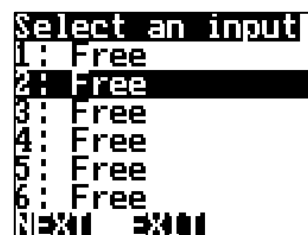
From the front screen press
SETUP



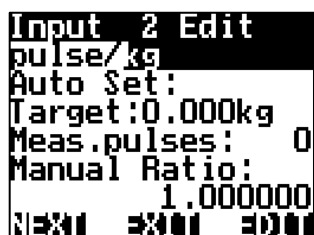
Highlight **WIZARD** & press
SELECT



Highlight **GENERIC WIZARD**
& press **NEXT**

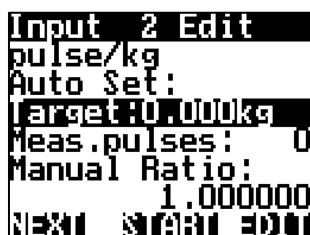


Highlight the **INPUT** number
where the sensor wire is
connected into on the rear of
the Jackal & press **NEXT**

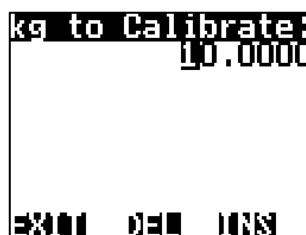


Choose your unit of pulse by
pressing the **EDIT**

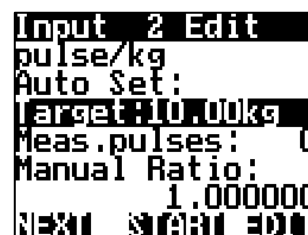
E.g. pulse/kg



Highlight **TARGET** & press
EDIT



Using the **NAV** buttons enter
the target amount (kg) to be
measured. i.e. 10.0000
Press **EXIT** when done.



Prime the Bin/Tank until
product flows & then stop it.
Press **START** on the Jackal,
Run Bin & let product flow.
This will allow pulses from
the sensor to register and
the number of pulses will be
displayed next to
Meas.pulses:



When the scales measure the desired test volume, i.e. 10kg, stop the Bin/Tank. Press **STOP**

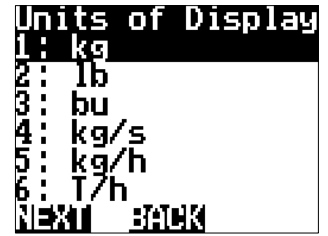


Press **CALC**. This will divide the measured amount by the number of pulses registered.

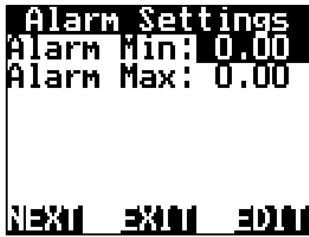


MANUAL RATIO will now be updated to reflect the calibration factor. Press **NEXT**

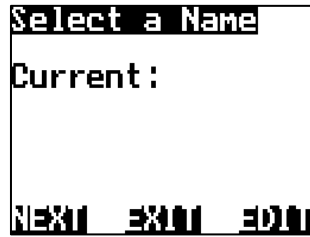
It's recommended to do this test 3 times to get an average pulse count per kg



Using the **NAV** buttons select how you would like the Unit Of Display to be displayed on the front screen. I.e. **kg**. Press **NEXT**



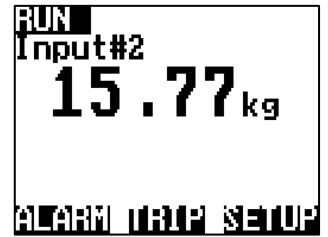
You have the option to set Alarm Min/Max points if required. Using the **NAV** buttons select & **EDIT** as required. Press **NEXT**



Name the input if you desire, Press **EDIT** or Press **NEXT**



The Wizard is now complete. Press **NEXT**



You will be returned to the Front Screen.

Kg will now accumulate

- Follow the setup guide on page 12 for "Speed/Area Meter setup"
- Follow the steps as described below

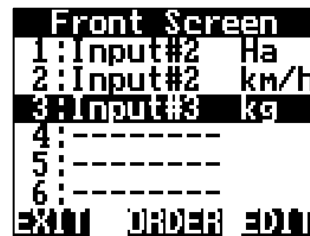
SETUP SOLID (KG/HA)



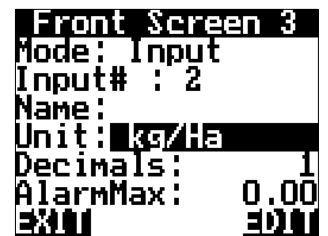
From the front screen press **SETUP**



Highlight **FRONT SCREEN** & press **SELECT**



Highlight the line in which the Metering sensor is connected to. e.g. 3: Input#3 kg. Press **EDIT**



Highlight **UNIT** & press **EDIT** to change the unit to **kg/Ha**.

Change the Decimals displayed if desired also



Press **EXIT** 3 times to return to the front screen.

Jackal will now display the flow rate as L/Ha with Area & Speed

THIS ENDS THE SETUP FOR RATE METER SETUP AS kg/Ha

BIN/TANK LEVEL SENSOR

The Jackal can be configured with a bin level sensor for detecting empty/full. All Farmscan Ag sensor will register as High/Low (H/L)

Sensors Required:

- Bin/Tank Level Sensor (A-2220P Sensor or 2060 Kit)

Available Connections: Refer to Installing Sensors from [Page 5](#)



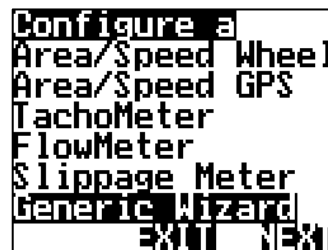
SETUP



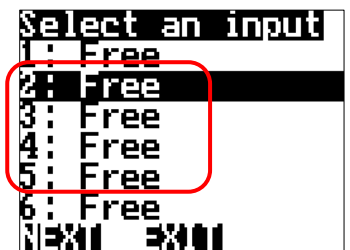
From the front screen press **SETUP**



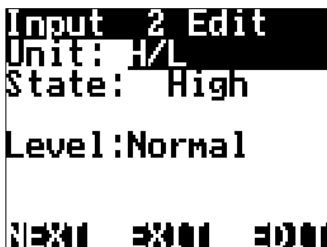
Highlight **WIZARD** & press **SELECT**



Highlight **GENERIC WIZARD** & press **SELECT**



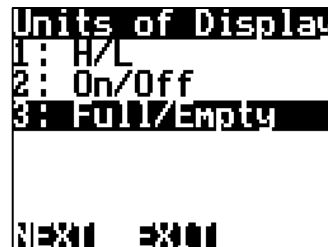
Highlight the **INPUT** number (2-5) to where the sensor wire is connected into on the rear of the Jackal & press **NEXT**



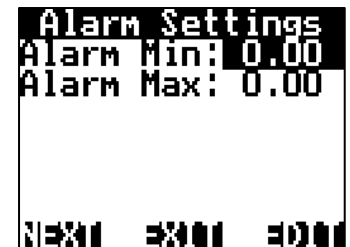
Press **EDIT** to change the unit to **H/L (high/low)** – Other options include On/Off, Full/Empty



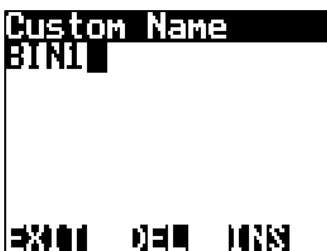
State will updated “Live” For example. Low = bin empty, High = bin full. Test by placing hand around sensor.



Press **NEXT**
Highlight the Unit of Display that you wish to be displayed on the front screen.
Press **NEXT**



You have the option to set Alarm Min/Max points if required. Using the NAV buttons select & **EDIT** as required.
Press **NEXT**



Name the input if you desire, i.e. BIN1.
Press **EDIT** & **EXIT**



Press **NEXT**.
Wizard is now complete.
Press **NEXT**



Press **EXIT** to return to the front screen
Example - Full



Example - Empty

THIS ENDS THE SETUP FOR A BIN LEVEL SENSOR

AIR/VOLT/DEPTH/%/TEMP PRESSURE SENSOR

The Jackal can be configured to read & display a pressure sensor, voltage, percentage, temperature and display as: kPa, psi, bar, Volt, %, °C. Farmscan Ag recommends sensors that can be powered by 12v but output from 0-5v in a linear style. Call us if you are unsure.

Sensors Required:

- AA-119H or AA-119L (Farmscan Ag Pressure Sensor)
- Any other style that outputs a voltage. I.e. Position sensor (AA-430) for displaying depth as a percentage (%)

Available Connections: Refer to Installing Sensors from [Page 5](#)



CALIBRATION (MANUAL)

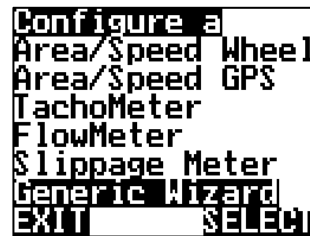
The example below details setting up a **LIQUID PRESSURE SENSOR**.



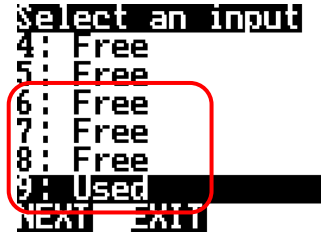
From the front screen press **SETUP**



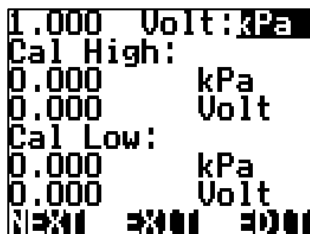
Highlight **WIZARD** & press **SELECT**



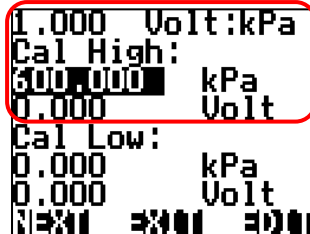
Highlight **GENERIC WIZARD** & press **SELECT**



Highlight the **INPUT** number (6-9) to where the sensor wire is connected into on the rear of the Jackal & press **NEXT**

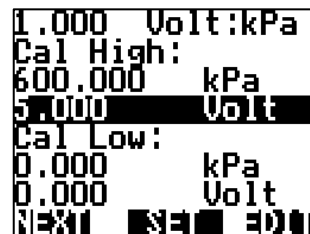


Press **EDIT** to change the unit. kPa,psi,bar,Volt,%, °C. i.e. kPa

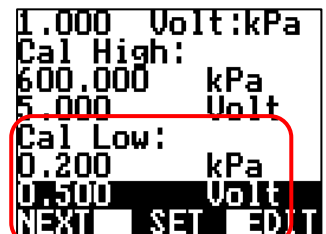


Highlight the 1st **CAL HIGH** value and **EDIT** the field to set the maximum the device will be able to display. I.e. 600kPa. Current input voltage of input is displayed in the top left corner.

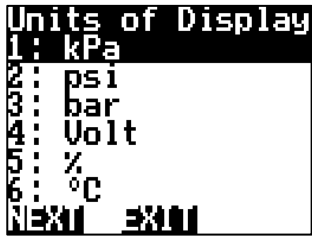
NB : If manufacture values are not available, please refer to PAGE 30 for LIVE calibration instructions



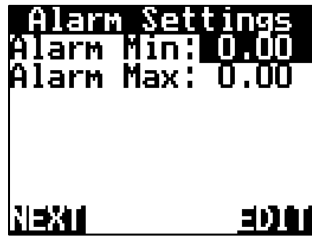
Using the manufactures guide set the maximum voltage of the sensor. e.g. 5.000v by pressing **EDIT**



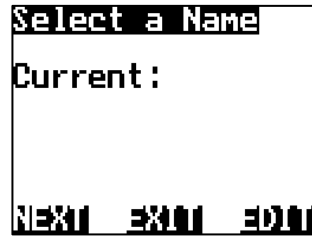
Repeat the previous 2 steps to set the minimum range of the sensor. Press **NEXT** when done



. Highlight or confirm the UOD (Unit of Display) eg kPa.
Press **NEXT** when done



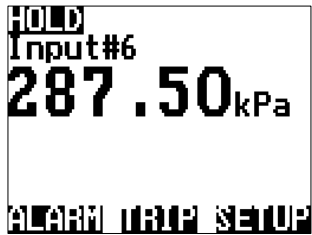
You have the option to set Alarm Min/Max points if required. Using the NAV buttons select & **EDIT** as required. Press **NEXT**



Name the input if you desire, Press **EDIT** or Press **NEXT**



The Wizard is now complete. Press **NEXT**



You will be returned to the front screen

THIS ENDS THE SETUP FOR A VARIABLE VOLTAGE INPUT SENSOR (LIQUID)

CALIBRATION (LIVE READOUT)

The Jackal also allows for a semi-automatic setup when the voltage values are unknown for a particular voltage input. A live voltage readout is displayed in the top left hand side when the sensor is active.

Follow the previous 5 steps, followed by:

```
1.000 Volt:kPa
Cal High:
0.000 kPa
0.000 Volt
Cal Low:
0.000 kPa
0.000 Volt
NEXT EXIT EDIT
```

Press **EDIT** to change the unit. kPa,psi,bar,Volt,%,°C.
i.e. kPa

```
1.750 Volt:kPa
Cal High:
600.000 kPa
5.000 Volt
Cal Low:
1.000 kPa
1.750 Volt
EXIT SET EDIT
```

Engage the implement and/or adjust the pressure manually to the low point the sensor will need to operate in.

```
1.750 Volt:kPa
Cal High:
600.000 kPa
5.000 Volt
Cal Low:
1.000 kPa
1.750 Volt
EXIT SET EDIT
```

The voltage will now be displayed. e.g. 1.75v.
In the above example we can set the minimum of 1kPa by **HIGHLIGHTING & EDITING** the values as required.

Press **SET**. This will copy the live voltage into the **CAL LOW** voltage point

```
4.860 Volt:kPa
Cal High:
600.000 kPa
4.860 Volt
Cal Low:
1.000 kPa
1.750 Volt
EXIT SET EDIT
```

Repeat the previous 2 steps for the **CAL HIGH** values

```
Units of Display
1: kPa
2: psi
3: bar
4: Volt
5: %
6: °C
NEXT EXIT
```

Highlight or confirm the UOD (Unit of Display)
e.g. kPa
Press **NEXT** when done

```
Alarm Settings
Alarm Min: 0.00
Alarm Max: 0.00
NEXT EDIT
```

You have the option to set Alarm Min/Max points if required. Using the NAV buttons select & **EDIT** as required. Press **NEXT**

```
Select a Name
Current:
NEXT EXIT EDIT
```

Name the input if you desire,
Press **EDIT**
or Press **NEXT**

```
Wizard
Configuration
Successful
NEXT
```

The Wizard is now complete.
Press **NEXT**

```
HOLD
Input#6
287.50 kPa
ALARM TRIP SETUP
```

You will be returned to the front screen

THIS ENDS THE SETUP FOR A VARIABLE VOLTAGE INPUT SENSOR (LIQUID)

TRIPS

The Trips page allows accumulating values to be saved and recalled at a later time.

Examples include Area, Distance, Weight, Volume etc. Instantaneous readings such as Speed, Flow & Rate etc. are not able to be recorded.

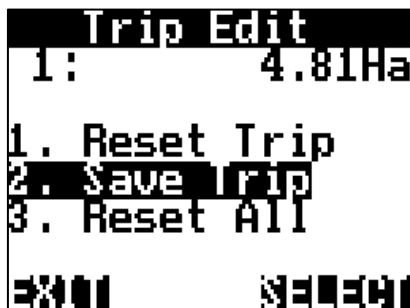
- From the front page press **TRIP**



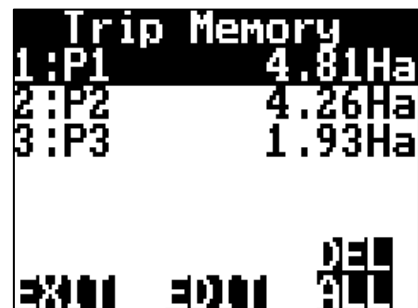
The screen above allows you to **SAVE/RESET** individual trips or view **SAVED TRIPS**



By pressing the **SAVE/RESET** you have the ability to **Reset Trip | Save Trip | Reset All**



By pressing **2. Save Trip** it will be stored in the **SAVED TRIPS** option



You can now view the **SAVED TRIPS**. You also have the ability to **EDIT** and name the Trip or **DEL ALL** (Delete All Trips)

When you return to the **TRIPS** page the Trip will continue to accumulate. (Like above)
You will need to **SAVE/RESET** the trip if you want to start from Zero (0) again

ALARMS

Alarms are set on a per-front-screen-display-line basis. High/Low Alarm points can be set for any input including: speed, hectares, RPM, Pressure, Bin/Tank Levels.

Alarms will be displayed visually (on screen flash) and made audible.

- To **EDIT** your alarms re-run the wizard by pressing **SETUP** from the front screen.
- OR – **RUN SCREEN > SETUP > FRONT SCREEN**

```

Alarm Settings
Alarm Min: 2000.
Alarm Max: 3300.

NEXT  EXIT  EDIT
    
```

Your existing settings will not be lost during the wizard re-run.

```

Alarm Settings
Alarm Min: 1000.
Alarm Max: 3000.

NEXT  EDIT
    
```

Wizard (Above) or Manual (Right) alarm points.
 Example of a Shaft Alarm set at Min of 1000rpm & Max of 3000rpm.
 Press **EDIT** to adjust these values

```

Enabled: Yes
Input#: 1
Name:
Unit: rpm
Decimals: 2
AlarmMax: 3000.0
AlarmMin: 1000.0

EXIT  EDIT
    
```

Manual/User setup Alarm points via the **MENU > FRONT SCREEN > EDIT Input #**

```

RUN 1:
Input#1
3300 rpm

ALARM TRIP SETUP
    
```

When the alarm point is reached e.g.: over 3000rpm the line will **FLASH** notifying you of the alarm point.

Press **ALARM** to enter the page showing all Alarms (active and inactive) to reset the alarm.

**REFER TO OUTPUTS ON PAGE 34
 IF YOU WANT TO CONNECT AN
 EXTERNAL ALARM**

```

Alarms
1^ 3300rpm

EXIT  =AUTO
    
```

In the example above Line 1 is ^ over the alarm set point. If it was below it would show 1v.
 You have 3 options :

=AUTO : As soon as the value moves back within the Min & Max range the monitor will automatically reset the alarm.

=ON : When the alarm is activated it will remain ON until you enter the ALARM menu and manually reset

=OFF : You can disable the alarm altogether

INPUTS

Each Input Is designated to display certain values as described below. Ensure you are plugged into the appropriate port for your sensor.

RUN SCREEN > SETUP > INPUTS

- **Input 1 (A1) – Coil Only (Sine Wave)**
 - m/ft/yd/in/km/mi/pulse
 - pulse/kg/lb/L/gal/bu/rev/bale/unit/each/T/m³
- **Input 2-5 (A2-A5) – Square Wave**
 - m/ft/yd/in/km/mi/pulse
 - pulse/kg/lb/L/gal/bu/rev/bale/unit/each/T/m³
 - Full/Empty – On/Off – H/L
- **Input 6-9 (A6, B2-B4) – Varying Voltage**
 - Volt: kPa/psi/bar/volt/%/°C/



Once your inputs are setup and calibrated you now need to display them on the front screen.

GENERIC WIZARD

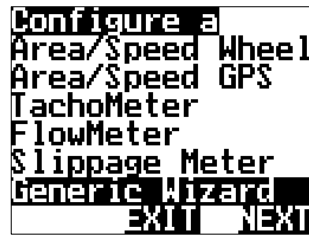
The generic wizard allows to manually setup your Jackal in a customised method. You can also setup the Jackal to your requirements without using the wizard and navigating each menu by enabling and calibrating each port as required. Refer to the previous wizard guides to assist with manual setup.



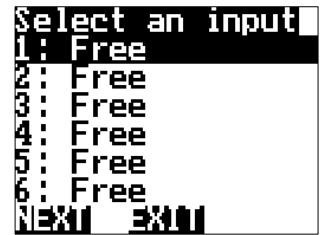
From the front screen press **SETUP**



Highlight **WIAZRD** & press **SELECT**



Highlight **GENERIC WIZARD** & press **SELECT**



Highlight the appropriate port the sensor is connect to and press **NEXT**

FRONT SCREEN

RUN SCREEN > SETUP > FRONT SCREEN

When your inputs have been enabled and calibrated you can now choose to display the values in our chosen formats on the front screen. You can have up to 3 line items per page and viewable at all times. If more lines are added you can use the NAV buttons to scroll through each screen.

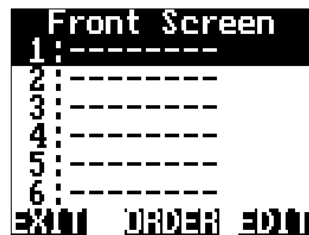
NB : Selectable units relate to the input type. E.g: **Input 1** setup as a **rev/pulse** could display **rpm** or **hz** as the unit



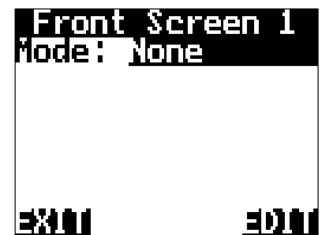
From the front screen press **SETUP**



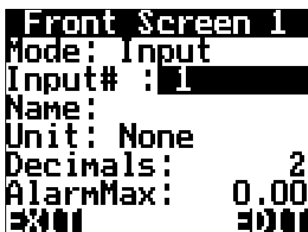
Highlight **FRONT SCREEN** & press **SELECT**



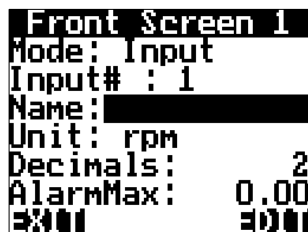
Highlight the line you want to display the first value & press **EDIT**



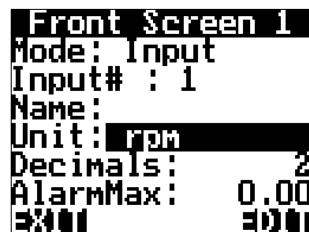
Press **EDIT** to enable the line mode



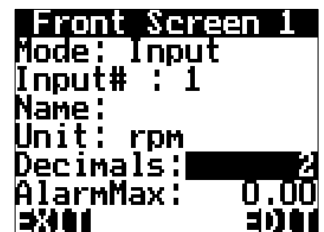
Highlight **INPUT #** and press **EDIT** to associate the calibrated **INPUT** to the line



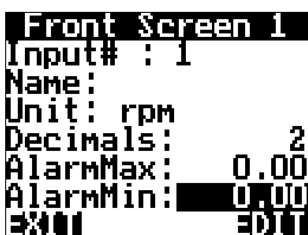
Highlight **NAME** and **EDIT** the input name for easy identification. Eg Shaft



Highlight **UNIT** and press **EDIT** to select the appropriate unit associated with the calibrated input



Highlight **DECIMALS** and press **EDIT** to change the number of decimals displayed on the front screen



Highlight and **EDIT** the Max & Min Alarm settings if required

FRONT SCREEN (ORDER)

The front screen menu allows you to order the front screen line items. Highlight the line you wish to move, press **ORDER** (a * will appear to the left) then press **PLACE** to accept when you have chosen the new order.

```

Front Screen
1:Input#1 rpm
2:Input#2 Ha
3:Input#2 km/h
4:-----
5:-----
6:-----
EXIT ORDER
    
```

```

Front Screen
1*Input#2 km/h
2:Input#1 rpm
3:Input#2 Ha
4:-----
5:-----
6:-----
PLACE
    
```

```

Front Screen
1:Input#2 km/h
2:Input#1 rpm
3:Input#2 Ha
4:-----
5:-----
6:-----
EXIT ORDER
    
```

OTHER SETTINGS

RUN SCREEN > SETUP > OTHER SETTINGS

Other settings is used to edit the following options.

```

Other Settings
Speed Input: 2
No. Sections:N/A
Implement Width:
12.000m
Section1: N/A
Section2: N/A
EXIT EDIT
    
```

Quickly **EDIT** the **Speed Input**

```

Other Settings
Speed Input: 2
No. Sections:N/A
Implement Width:
12.000m
Section1: N/A
Section2: N/A
EXIT EDIT
    
```

Quickly **EDIT** the **Implement width** without re-running the Wizard (Used for displaying Ha,Ac,)

```

Other Settings
12.000m
Section1: N/A
Section2: N/A
Section3: N/A
Extern.Run/Hold:
Disabled
EXIT EDIT
    
```

Enable/Disable External Run/Hold Function (As described on Page 7)

```

Other Settings
Section2: N/A
Section3: N/A
Extern.Run/Hold:
Disabled
AlarmBeep: 2s
EXIT EDIT
    
```

By changing the Alarm Beep (in seconds) you can define how long audible "Beeps" can be heard during the Alarm alert before acknowledgment is required.

Press **EDIT** to change these options.

```

Other Settings
Section3: N/A
Extern.Run/Hold:
Disabled
AlarmBeep: 2s
AlarmOnHold:No
EXIT EDIT
    
```

EDIT the **AlarmOnHold** from YES/NO. This option allows you to have alarms active while the Jackal is ON HOLD

```

Other Settings
Disabled
AlarmBeep: 2s
AlarmOnHold:No
Language:
English
EXIT EDIT
    
```

Change the Jackal to your local Language

```

Other Settings
AlarmBeep: 2s
AlarmOnHold:No
Language:
English
SimultSpeed:No
EXIT EDIT
    
```

SimultSpeed is not used in the Jackal Monitor (Control Use only)

OUTPUTS

The Outputs menu should be used with caution and only as described in this instruction guide.

Failure to do this can damage sensors connected to existing inputs.

This menu allows you to OUTPUT the following values on outputs 1-6.

RUN SCREEN > SETUP > OUTPUTS

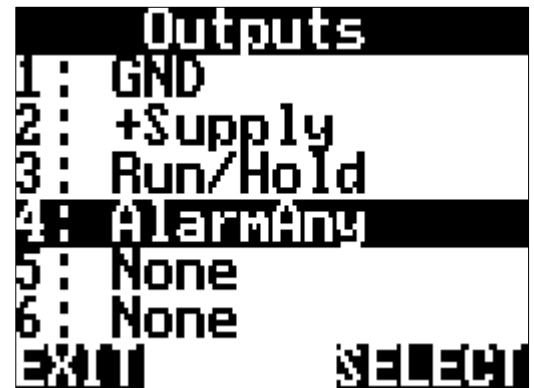
The following Outputs are available o

- GND
- + 12v Supply (2Amp Max)
- Run/Hold
- Alarm Any

The Jackal has the ability to activate an external “Alarm” if required.

When the Alarm is activated against any input set, the output will trigger 12v.

An example of an external alarm could be an external light or speaker and may be required to run through an automotive relay if more than 2Amp is needed.



GPS/SERIAL

The GPS/Serial menu allows you to confirm that the GPS connected to the Jackal is function correctly.

By pressing the **SETUP**, confirm the correct strings and Baud rate.

To **EDIT** GPS settings re-run the wizard by pressing **SETUP** from the front screen.

Your existing settings will not be lost during the wizard re-run.

```
GPS
Date : 00 ---
Time : 00:00:00
Speed: 1.0km/h
Heading: 0°
Long : 0.00000
Lat  : 0.00000
EXIT SETUP
```

```
GPS Setup
Baud Rate: 19200
NMEA Messages:
GGA: N OTG: N
RMC: N
EXIT EDIT
```

ABOUT JACKAL

Displays the Firmware version that's installed on the Jackal.

This screen also allows you to **UNLOCK** your Jackal to further functionality.

Please contact Farmscan Ag should you wish to purchase an unlock code.

```
Jackal Version
2017/05/22 A
Farmscan Ag P/L
farmscanag.com
EXIT UNLOCK
```

DIAGNOSTICS

This screen provides the following information:

- **Voltage** Displays a live input voltage to the Jackal
- **Temp** Displays the current Jackal Temperature
- **Input 1** Displays the wheel input pulse into the Jackal
- **Input 2** Displays the rpm input pulse into the Jackal

```
Diagnostics
Voltage: 12.00V
Temp : 30.0°C
Input 1: 5.0Hz
Input 2: 5.0Hz^
EXIT
```

FACTORY RESET

WARNING

This screen allows you to return the Jackal to factory defaults.

All values will be lost after pressing **RESET**.

Power cycle the Jackal to confirm all settings are reset.

```
Factory Reset
This will RESET
ALL settings
back to factory
defaults
EXIT RESET
```




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AM-JACKAL-M

FEBRUARY 130218