

FARMSCAN | jackalv2 one monitor, many possibilities

For firmware version 2015.07.24 or higher



area meter
batch meter
tacho meter
rate monitor
spray monitor
pressure monitor
surveillance monitor
wheel slippage monitor



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GENERAL DESCRIPTION

The Jackal is capable of monitoring multiple functions simultaneously – e.g. In a 4 bin / tank Airseeder application a single Jackal can monitor and display several shafts, bin levels, air pressure and more.

There are a total of 13 inputs and 1 output. Refer to [PAGE 4](#) for further details.

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.

Up to 14 values can be displayed or used as totals, with up to 24 recordable trips allowing the operator to track numerous jobs in a period of work. The Jackal can be put 'on hold' by the operator or by a suitable signal from the machinery, so that periods of machine operation that should not accumulate as a work total can be excluded from trip totals.

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.

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

TECHNICAL SPECIFICATIONS

Power Requirements	9 – 16 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	13
Input 1	Up to 1000 pulses per second.
Inputs 2 – 6	Up to 400 pulses per second.
Inputs 7 – 8	Analog Voltage 0 – 5V
Inputs 9 – 13	On/Off: 0V or 12V
Outputs	1
Output 1	Low side drive 3A maximum load.

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 & or sensors are not connected as described on [PAGES 4-10](#).

INSTALLATION

PARTS LIST

REF	PART NUMBER	DESCRIPTION	QTY
1	A-Jackal	Jackal Monitor	1
2	AH-407	Mounting Bracket	1
3	P-321	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 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.

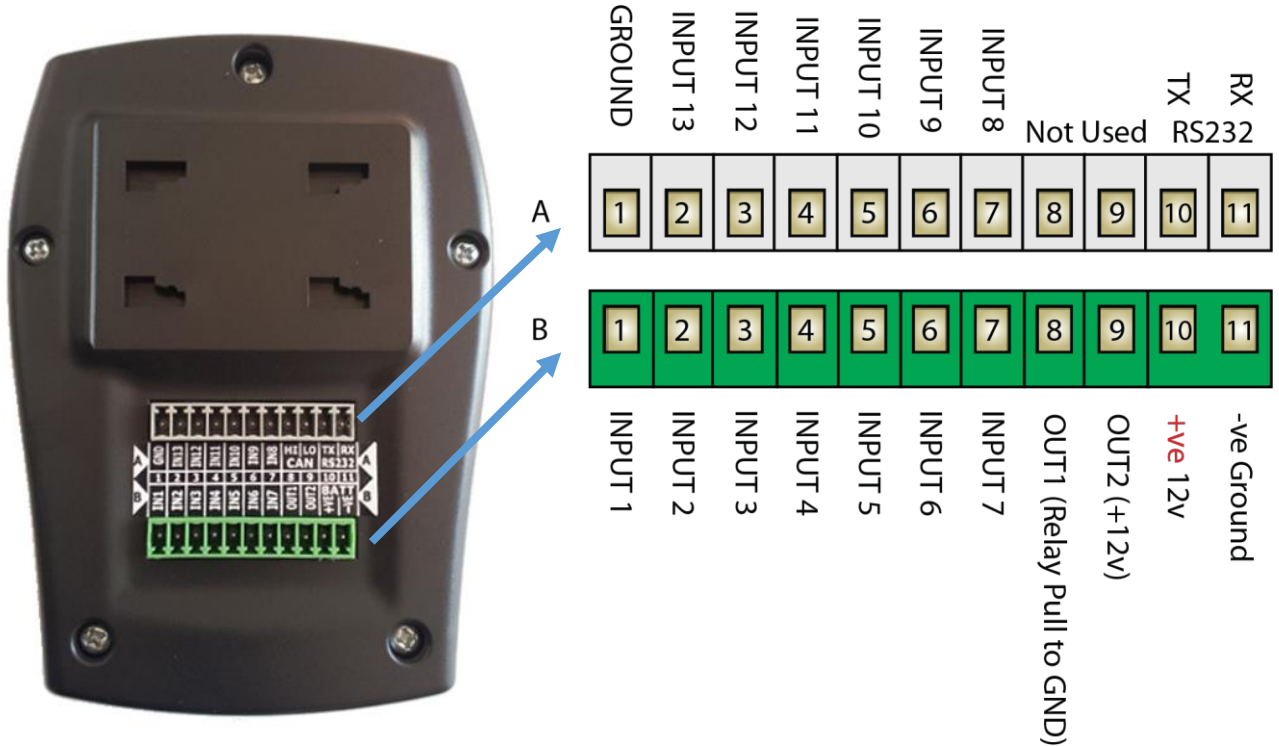
Place in a convenient position on the windscreen and using the toggle lever pictured above (Item 2), push all the way to the bottom until lever locks into position.

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 has the following connection points available for use.

AVAILABLE CONNECTIONS



A	TOP ROW (GREY PLUG)	B	BOTTOM ROW (GREEN PLUG)
A1	GND (Ground/Earth/0V)	B1	IN1 (1x Coil Input ONLY /Prox/Flow – Square Wave) – Hz
A2	IN13 High/Low On/Off Full/Empty – I/O	B2	IN2 (Prox/Reed/Switch/Alarm) – Hz
A3	IN12 High/Low On/Off Full/Empty – I/O	B3	IN3 (Prox/Reed/Switch/Alarm) – Hz
A4	IN11 High/Low On/Off Full/Empty – I/O	B4	IN4 (Prox/Reed/Switch/Alarm) – Hz
A5	IN10 High/Low On/Off Full/Empty – I/O	B5	IN5 (Prox/Reed/Switch/Alarm) – Hz
A6	IN9 High/Low On/Off Full/Empty – I/O	B6	IN6 (Prox/Reed/Switch/Alarm) – Hz
A7	IN8 (Varying volt sensor) – 0-5V	B7	IN7 (Varying volt sensor) – 0-5V
A8	Not Used	B8	Out1 (solenoid/shutoff/pulse/radar output) Pulls to GND ^
A9	Not Used	B9	Out2 (+12V Supply Out) – Sensor/GPS Power ^^
A10	RS232 Tx (Transmit)	B10	BATT +VE (+12V Battery Terminal)
A11	RS232 Rx (Receive) – GPS Input	B11	BATT -VE (0V/GND Battery Terminal, Vehicle Ground)

- ^ B8/OUT1 is Open Circuit when the output is NOT ACTIVE, and is connected to GND when the output is active
- ^^ B9/OUT2 will only power the sensors when the unit is turned on
- Any Inputs 1-13 can be used as remote/run hold

SENSOR INSTALLATION

Most Farmscan Ag sensor wires have a common colour code system:

WHITE/COLOUR	SIGNAL
BLACK	GROUND/EARTH (COMMON)
RED	+12V SUPPLY

Some sensors such as wheel sensors and shaft sensors only have two wires (signal & ground/earth). Other sensors that require +12 volts as well as signal and ground/earth will have 3 wires, such as flow sensors, bin level sensors and pressure sensors.

FARMSCAN AG SENSOR COMPATABILITY CHART

Farmscan Ag sensors that are compatible with the inputs are shown in the table below.

Sensor Options		1007P	2009	2034 (1 Per Jackal)	1501	2076	2077 (1 Per Jackal)	A-2220P (2060)	A-2080/AA-119-H/L/AA-114	AA-2010P	AA-430	AA-123P	AA-125	AA-242	AA-230/232 (All styles)	AA-230A/ALU & AA-23A/AL	AA-230S/RCS	
		Jackal Setup Input	Terminal on Jackal															
1	B1			•			•											•
2 – 6	B2 – B6	•	•			•				•		•	•	•	•	•		
7 – 8	B7 & A7								•		•							
9 – 13	A6 – A2							•										
Output																		
1	B8				•													

Please review the page overleaf for further explanation of Farmscan Ag sensors.

FARMSCAN AG SENSOR COMPATIBILITY KITS

There are a range of separate Farmscan Ag sensor kits available for the Jackal. Below is a list and brief description of these kits. The Jackal is compatible with many other sensors on the market. If you are unsure please call our service desk.

Part #	Description	Kit Parts	Possible additional parts	Compatible Inputs
1007P	Wheel sensor kit	AA-110P x 1 AA-133 x 1	AC-202 AC-205 AC-088 AC-210	Input 2-6 (B2-B6)
2009	Tail shaft sensor kit (Slow speed 1-1500 rpm)	AA-110P x 1 AA-423 x 1		Input 2-6 (B2-B6)
2034	Pulley Sensor kit (High speed 100-9999 rpm) 1 Per Jackal	AA-105 x 1 ^AA-112P x 1		Input 1 (B1)
1501	Solenoid Shutdown Kit	AH-488 x 1 AC-205 x 1 M/F Packard's		Output 1 (B8)
2076	Shaft sensor kit (Slow speed 1-1500 rpm)	AA-110P x 1 AA-117 x 1		Input 2-6 (B2-B6)
2077	Shaft sensor kit (High speed 100-9999 rpm) 1 Per Jackal	AA-112P x 1 AA-117 x 1		Input 1 (B1)
2202	Remote junction box kit (Allows for all connections to Jackal via one simplified cable)			
2060	Bin/Tank level sensor kit	A-2220P AC-300	AC-300 AC-305 AC-310	Input 9-13 (A2-A6)
AA-114/ AA-119H/L	Airflow pressure sensor (2-25kPa)	AA-XX AC-300		Input 7-8 (B7 & A7)
AA-2010P	Proximity sensor kit – Blue (3 Wire)			Input 2-6 (B2-B6)
AA-123P	2-90 L/min 1' Flow meter (3 Wire)			
AA-125	1-18 L/min Flow meter (3 Wire)			
AA-242	2.5-75 L/min Flow meter (IR) (3 Wire)			
AA-230 AA-232	Any Rapid check Flow meter (3 Wire)			
AA-231	75-750 L/min 2' Coil flow sensor (2 Wire)			Input 1 (B1)
AA-430	Depth Indicator		Input 7-8 (B7 & A7)	

INSTALLING SENSORS

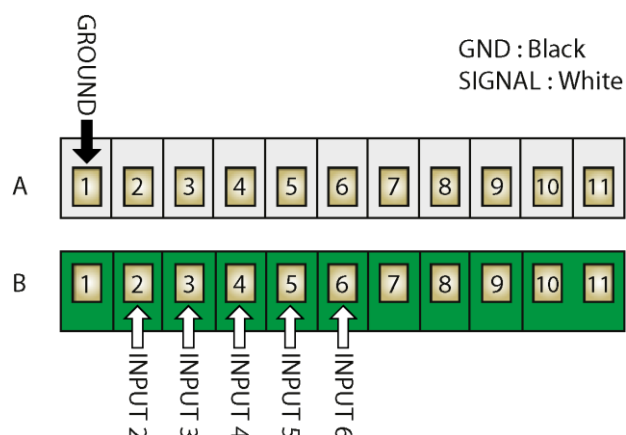
The following examples will help to determine appropriate sensor input connections into the Jackal.

TWO WIRE "REED" SENSOR KITS

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. If the ground/earth (**A1**) terminal already has a wire from another sensor applied to it then you will need to piggy back onto this wire. If the signal port (**B2-B6**) has wires from another sensor applied to it then move to one of the ports shown that is free.



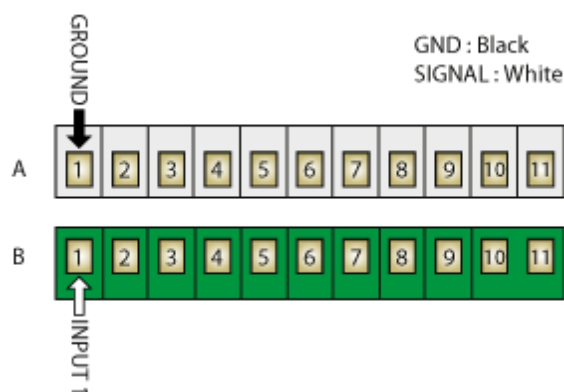
Use the wizard to setup the port and calibrate a sensor once installed.

TWO WIRE "COIL" OR FLOW SENSOR KITS

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. A 2 wire sine wave flow sensor input can also be used, found in the 2" AA-231 kit.

The diagram to the right shows which terminals to connect your sensors to. If the ground/earth (**A1**) terminal already has a wire from another sensor applied to it then you will need to piggy back onto this wire.



NB : There is only ONE (1) coil input on the Jackal

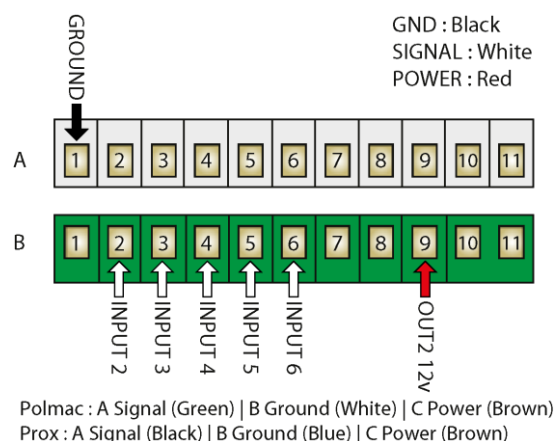
Use the wizard to setup the port and calibrate a sensor once installed.

TWO & THREE WIRE "REED/PROX/FLOW" SENSOR KITS

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

These kits will all include a "reed" type "proximity" sensor or "square wave" flow sensor input. The proximity or flow sensor (Rapid Check) is a 3 wire sensor and uses a ground/earth wire, a signal wire and a 12v power wire. All reed style are two wire.

The diagram to the right shows which terminals to connect your sensors to. If the ground/earth (**A1**) or regulated 12v power (**OUT2, B9**) terminal already has a wire from another sensor applied to it then you will need to piggy back onto this wire. If the signal ports (**B2-B6**) has wires from another sensor applied to it then move to one of the ports shown that is free.



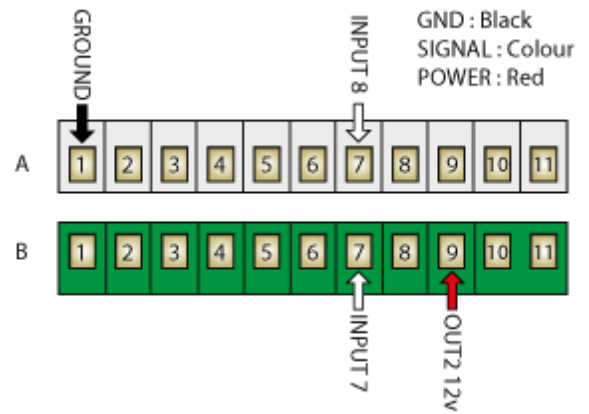
Use the wizard to setup the port and calibrate a sensor once installed.

THREE WIRE “ANALOG/VOLTAGE” SENSOR KITS (AA-114, AA-119-H, AA-119-L, AA-430)

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

The diagram to the right shows which terminals to connect your sensors to. If the ground/earth (**A1**) or regulated 12v power (**OUT2, B9**) terminal already has a wire from another sensor applied to it then you will need to piggy back onto this wire. If the signal port (**A7**) has wires from another sensor applied to it then move to one of the ports shown that is free. (**A8**)

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

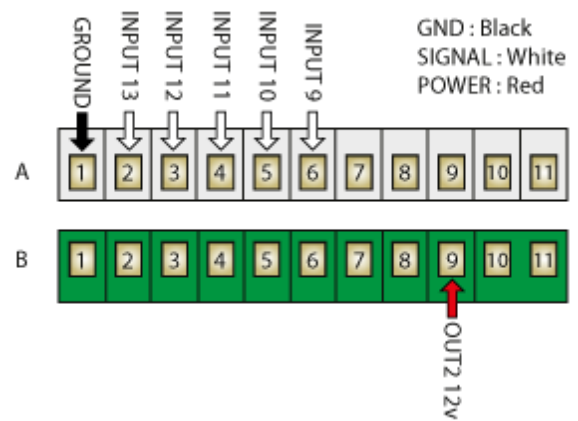


THREE WIRE “BIN/TANK LEVEL” SENSOR KITS (2060, A-2220P)

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

The diagram to the right shows which terminals to connect your sensors to. If the ground/earth (**A1**) or regulated 12v power (**OUT2, B9**) terminal already has a wire from another sensor applied to it then you will need to piggy back onto this wire. If the signal port (**A6**) has wires from another sensor applied to it then move to one of the ports shown that is free. (**A6-A2**)

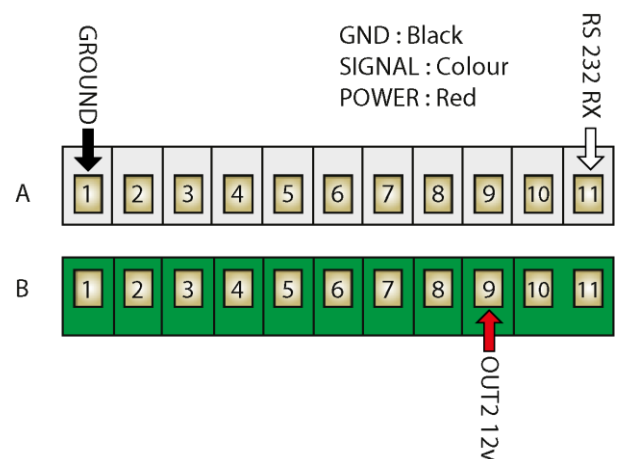
Use the **GENERIC** wizard to setup the port and calibrate a sensor once installed



GPS (T-135)

GPS supplied from Farmscan Ag are pre-programmed with GGA, VTG, RMC, 1Hz at a baud rate of 19200. Wiring consists of 12v Power (**B9**), Ground (**A1**), Transmit “TX” which is then inserted into the Receive “RX” (**A11**). If supplying your own GPS input to the Jackal, (**A11**) is required only.

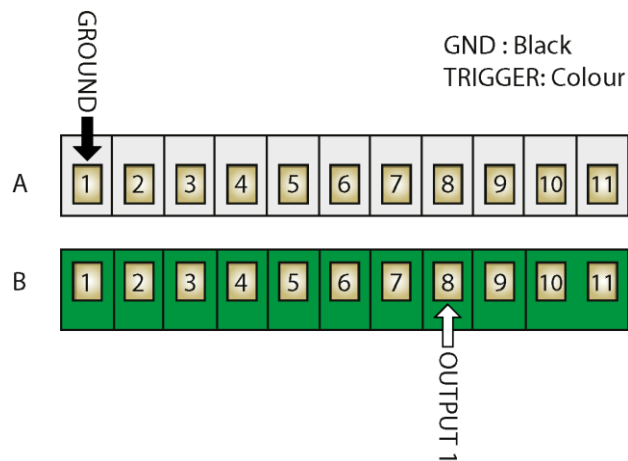
Use the wizard to setup the port and calibrate a sensor once installed.



BATCH (SOLENOID) (1501)

When using the Jackal as a batch meter with liquid ensure the appropriate flow meter is setup as per [PAGE 24](#).

Any 12v solenoid can be connected to the Jackal to control flow. Ensure you are using the ground/earth (**A1**) terminal. If the terminal already has a wire from another sensor applied to it then you will need to piggy back onto this wire. Insert the trigger wire into the Solenoid/Shutoff output (**OUT1/B8**)



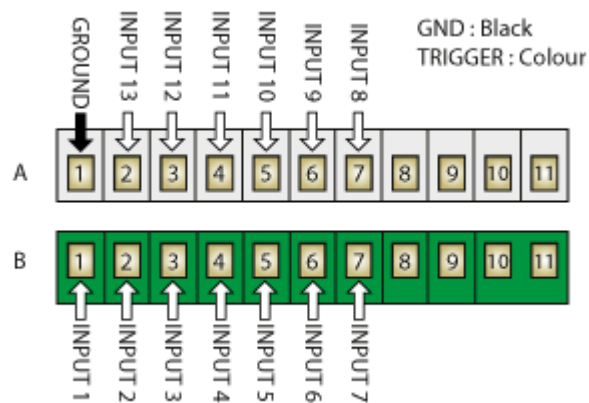
REMOTE RUN/HOLD

Jackal version 2 & above can connect an external run/hold trigger wire into any unused port. i.e. – Jackal can 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. *Please note that this is normally run through an automotive relay.*

Ensure you are using the ground/earth (**A1**) terminal. If the terminal already has a wire from another sensor applied to it then you will need to piggy back onto this wire. Insert the trigger wire into an available port.

Enable the remote run/hold via **Front Screen > Setup > Other Settings > Extern. Run/Hold**.

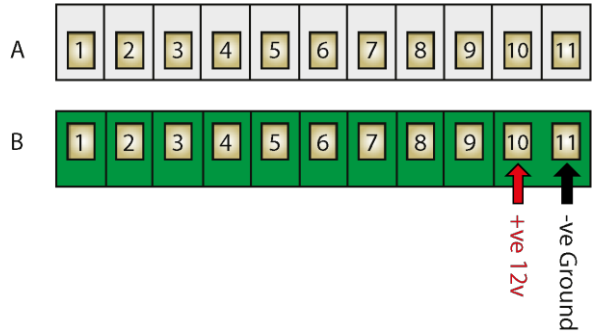
Refer to **OTHER SETTINGS** section in this manual for further explanation. ([PAGE 43](#))



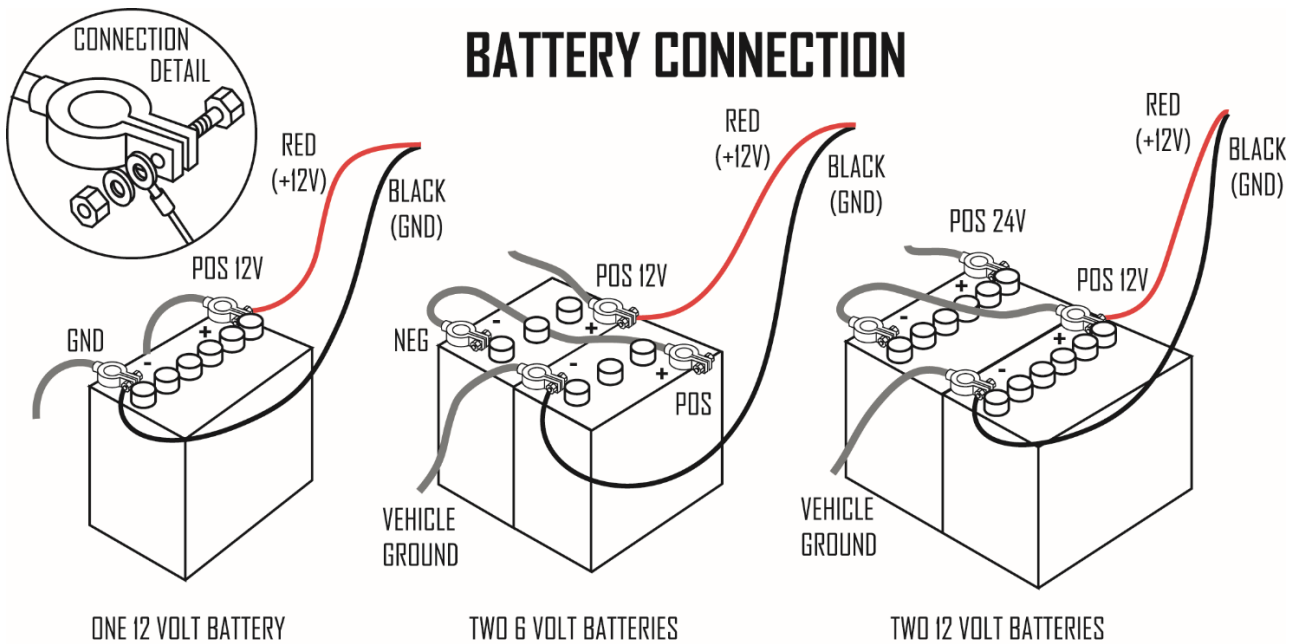
POWER CONNECTION

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

GND : Black (Red with Black Stripe)
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**



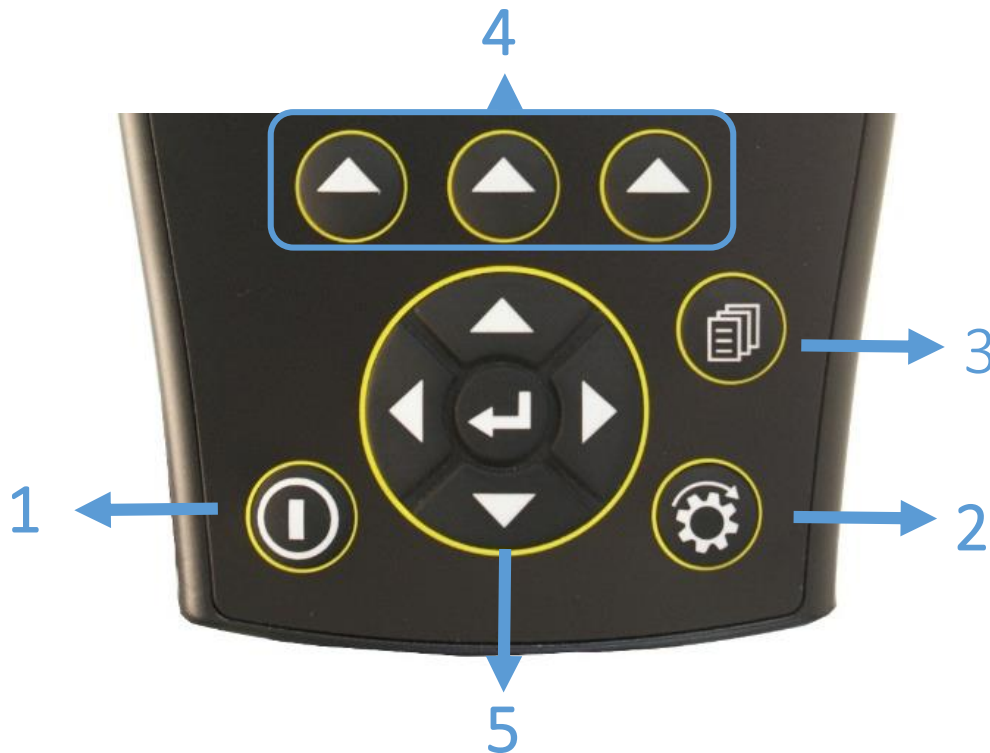
Connecting 24V to the Jackal will **VOID WARRANTY**



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

OVERVIEW

BUTTON FUNCTIONS



1. Power On/Off button

- a. Power is turned on by a short press of the **ON/OFF** Button (1 second).
- b. Power is turned off by two (2) short presses.

2. Run/Hold button

- a. The **RUN/HOLD** button has a dual function.
 - a. Press **RUN/HOLD** once to place the 'MONITOR ON HOLD'.
 - b. Press **RUN/HOLD** again to resume operation.
- b. 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.
- c. When the monitor is in **HOLD** mode the unit displays the word "**HOLD**"

3. Menu/Page button

- a. The **MENU/PAGE** button is used for setting up the ports as well as returning to the main screen from **TRIPS** or **TOTAL** displays

4. Select button (3 off)

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

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

- a. The Round navigation (**NAV**) buttons are used to navigate **UP/DOWN/LEFT/RIGHT** in calibration screens.
- b. **ENTER** is used to select the option highlighted onscreen.

SCREEN LAYOUT (UP TO 3 LINES)

The main operation screens show live information and alarms, measured using the sensors attached to the Jackal.

The Jackal can display one (1), two (2) or three (3) pieces of live information at a time.

If more than three pieces of information are available, the **MENU/PAGE** or **LEFT/RIGHT** can be used to cycle through the available information, as described below.



Example : 1 UP

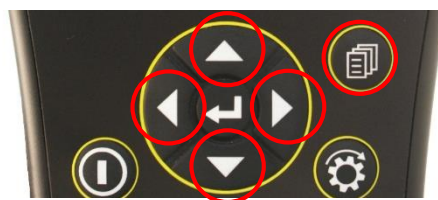


Example : 2 UP



Example : 3 UP

MORE INFORMATION ON SCREEN



If more than 3 lines of information are displayed you can use the **MENU/PAGE** or **UP/DOWN NAV** button to scroll through the next available lines.

By using the **LEFT/RIGHT** you can view the Input details of the ports being used to display the values.

MAIN MENU OVERVIEW (SETUP)

This manual will guide you through two (2) setup scenarios.

- a. Wizard Setup
- b. Manual Setup

```

Setup
Wizard
Inputs
Front Screen
Other Settings
Output
GPS / Serial
  
```

Use the NAV button to reveal further menu information (as below)

```

About Jackal
Factory Reset
EXIT          SELECT
  
```

- Wizard** Allows the user to run a predefined wizard for setting up common task Area/Speed Wheel, Area/Speed GPS, TachoMeter, FlowMeter, Slippage Meter & Generic Wizard for fast setup.
- Inputs** Allows the user to select the ports in which sensors are connected to. A choice of 13 inputs are available
- Front Screen** Allows the user to enable/define/move/edit up to 14 line items on the front screen You can also name the input port, select the number of decimal places displayed & edit the alarms
- Other Settings** Allows the user to set in implement width (m), External run/hold options & alarm notification settings as well as language control.
- Output** Allows the user to select output options from the Jackal. Output as a frequency / pulse (radar), external audible/visual alarm, batch/trip function, other external function if required.
- GPS/Serial** When an external GPS is connected the user can view & ensure the gps is setup correctly. Setup baud rate & 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 installed on the unit
- Factory Reset** Returns the Jackal to factory default. **All settings & options are cleared. Please turn power off and back on before attempting to setup again.**

USING THE WIZARD

The Jackal has an inbuilt wizard function for common tasks.

Current Wizards include easy setup for:

- | | |
|--|---|
| a. Area/Speed Wheel | Wheel pickup & sensor required |
| b. Area/Speed GPS | No Wheel Sensor required, GPS input only |
| c. Tachometer | rpm / Count (sensor required). |
| <i>There is an setting called VeryLowSpeed : for slow shaft/pulse speed when setting up shaft/pulse inputs. This is for shaft speeds of 1 rpm to 20 rpm. When this setting is turedn on for the input it extends the sample time and will steady the reading for slow rpm/pulses. If turned on for higher speed rpm/pulses the display will take longer to respond changes in speed.</i> | |
| d. FlowMeter | Direct readout or batch (flowmeter required) |
| e. Slippage Meter | GPS v Wheel Input (sensor required) |
| f. Generic Wizard | You can choose the input, screen position & calibration factors |

NB : During the wizard if you make a mistake press
EXIT to go back one page

Step 1

Press **SETUP** button



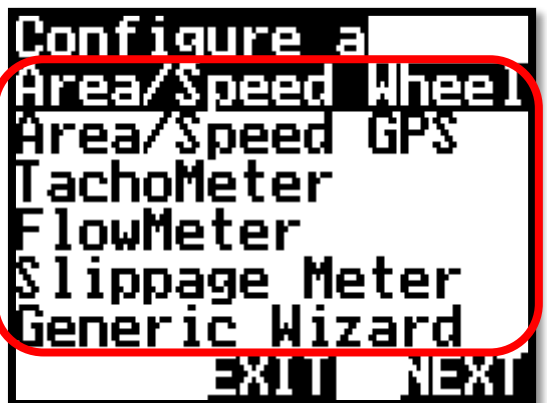
Step 2

Highlight **Wizard** with the UP/DOWN NAV buttons and press the **SELECT** button



Step 3

Select the appropriate **Wizard** with the UP/DOWN NAV buttons and press the **NEXT** button



AREA & SPEED METER SETUP (WIZARD)

The Jackal can display Speed & Area in any combination of km/mph or Ha/acre. A pickup can be mounted either on a wheel hub or shaft. (Example image right)

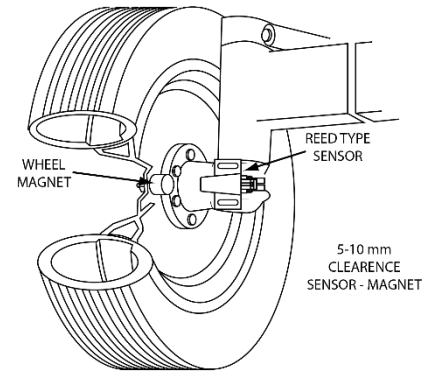
NB : There should be a 5-10mm Clearance between sensor & magnet

Sensors Required

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

Available Connections ([PAGE 4](#))

This setup section assumes that physical wiring for the required sensors have been completed. If not please refer to [PAGE 7](#) on wiring requirements



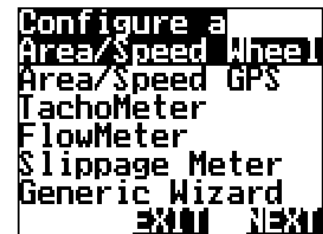
SETUP



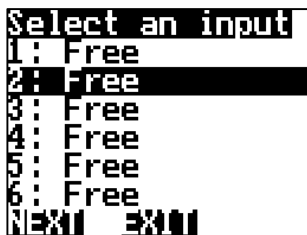
From the front screen press **SETUP**



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



Highlight **Area/Speed Wheel** & press **NEXT**



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



Enable the input by pressing **EDIT**



Choose your unit of pulse calibration method (*m,ft,yd,in,km,mi*) by pressing **EDIT**

Choose your calibration method :

Auto Set, [Next Page](#)

or

Manual Ratio ([Page 18](#))

CALIBRATION (AUTO SET)

1. Ensure that the sensor & 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
4. Peg the corresponding point i.e. at the 20m mark

```

Input 2 Edit
m/pulse
Auto Set:
Target:0.000m
Meas.pulses: 0
Manual Ratio:
1.000000
NEXT START EDIT
  
```

Highlight TARGET & press
EDIT

```

m to Calibrate:
20.0000
EXIT DEL INS
  
```

Using the NAV buttons enter
your measured distance. i.e.
20.0000
Press EXIT when done.

```

Input 2 Edit
m/pulse
Auto Set:
Target:20.000m
Meas.pulses: 0
Manual Ratio:
1.000000
NEXT START EDIT
  
```

Press START and move
forward slowly. This will allow
pulses to register.

```

Input 2 Edit
m/pulse
Auto Set:
Target:20.000m
Meas.pulses: 65
Manual Ratio:
0.000000
NEXT CALC EDIT
  
```

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

```

Input 2 Edit
m/pulse
Auto Set:
Target:20.000m
Meas.pulses: 65
Manual Ratio:
0.000000
NEXT CALC EDIT
  
```

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

```

Input 2 Edit
m/pulse
Auto Set:
Target:20.000m
Meas.pulses: 65
Manual Ratio:
0.307692
NEXT START EDIT
  
```

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

Press NEXT

```

Other Settings
Implement Width:
8.00m
Extern.Run/Hold:
Disabled
AlarmBeep: 2s
NEXT EXIT EDIT
  
```

For the Jackal to correctly
read hectares/acres an
implement width needs to be
entered. Press EDIT
(You can RIGHT NAV button
once & press EDIT to change
m to ft,yd,in)

```

Implement Width
18.0000
EXIT DEL INS
  
```

Using the NAV buttons enter
your implement width in
(m). e.g. 18m

Press EXIT when done

```

Other Settings
Implement Width:
18.00m
Extern.Run/Hold:
Disabled
AlarmBeep: 2s
NEXT EXIT EDIT
  
```

You can choose to enable the
remote run/hold input
(Further info [PAGE 43](#)) or edit
the AlarmBeep in seconds.
Press NEXT

```

Units of Display
1: Ha
2: Ac
3: m^2
4: km^2
NEXT EXIT
  
```

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

```

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

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

```

Display km/h
on front screen?

YES  EXIT  NO

```

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

Press **YES**

```

Wizard
Configuration
Successful

NEXT

```

The Wizard is now complete.

Press **NEXT**

```

Setup
Wizard
Inputs
Front Screen
Other Settings
Output
GPS / Serial
EXIT  SELECT

```

You will be returned to the

Setup Screen.

Press **EXIT**

```

RUN
WHEEL
0.03 Ha
Input#1
3.6 km/h
ALARM TRIP SETUP

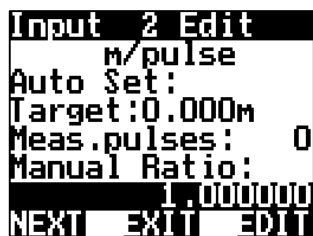
```

On the front screen there will be area (Ha) and speed (km/h) displayed.

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

CALIBRATION (MANUAL SET)

1. Ensure that the sensor & 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 mark point on tyre to bottom centre
4. Measure between the two points.
 - This is your Manual Ratio (Example 1.24m)



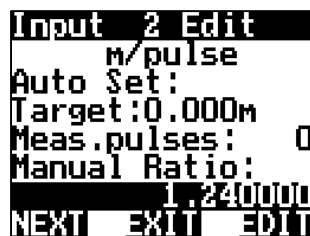
Highlight 1.000000
(Under Manual Ratio)

Press **EDIT**



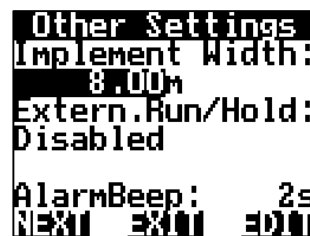
Using the NAV buttons enter
your measured distance. i.e.
1.240000

Press **EXIT** when done.



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

Press **NEXT**

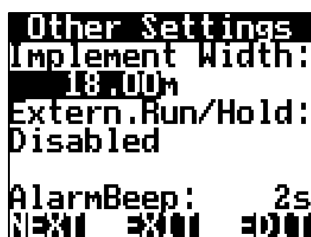


For the Jackal to correctly
read hectares/acres an
implement width needs to
be entered. Press **EDIT**
(You can **RIGHT NAV** button
once & select **EDIT** to
change M to FT,YD,IN)



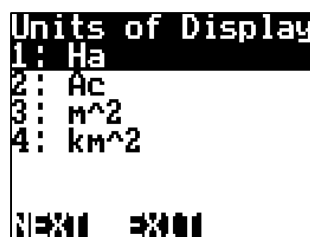
Using the NAV buttons enter
your implement width in (m).
e.g. 18m

Press **EXIT** when done



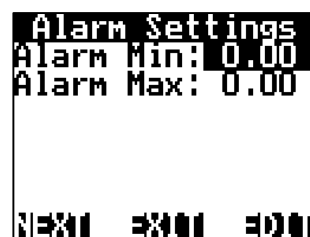
You can choose to enable the
remote run/hold input
(Further info [PAGE 43](#)) or
edit the AlarmBeep in
seconds.

Press **NEXT**

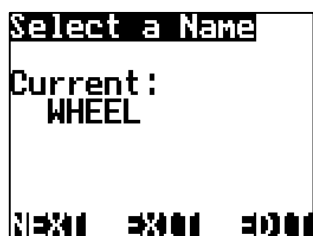


Using the NAV buttons select
how you would like the area
to be displayed on the front
screen.

Press **NEXT**



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



Name the input if you desire,
Press **EDIT**. e.g. WHEEL, press
EXIT
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**



You will be returned to the
Setup Screen.
Press **EXIT**

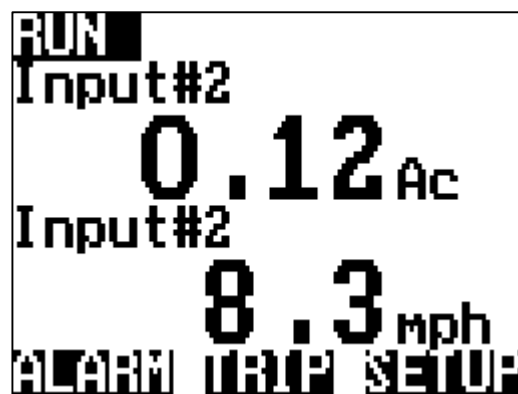
THIS ENDS THE MANUAL RATIO SET WIZARD SETUP FOR SPEED/AREA METER

Layout Examples are given below



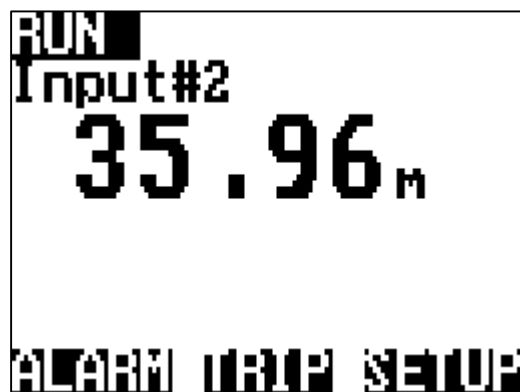
Example 2 UP

Line 1 : Area in Hectare, 2 decimal places
Line 2 : Speed km/hr, 1 decimal place



Example 2 UP

Line 1 : Area in Acre, 2 decimal places
Line 2 : Speed mi/hr, 1 decimal place



Example 1 UP

Setup to measure distance

Units of measure (UOM) display for the front screen can be changed via
SETUP > FRONT SCREEN & editing the appropriate input.

More details on [PAGE 41](#)

AREA & SPEED METER USING GPS SETUP (WIZARD)

The Jackal can display Speed & Area in any combination of km/mph or Ha/acre using an external GPS source. A secondary sensor is not required.

- GPS : Programmed with RMC or GGA+VTG NMEA messages.
- Baud Rate : 4800,9600,19200,38400,115200

Available Connections ([PAGE 4](#))

This setup section assumes that physical wiring for the GPS has been completed. If not please refer to [PAGE 7](#) on wiring requirements



SETUP

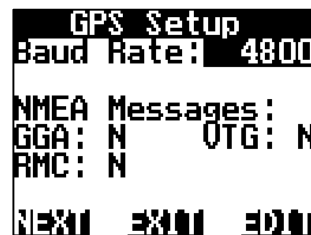
From the front screen press **SETUP**



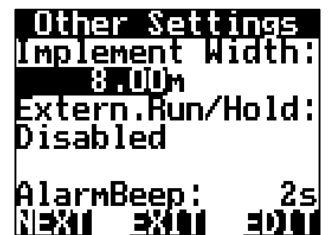
Highlight **WIZARD** & press **SELECT**



Highlight **Area/Speed GPS** & 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**

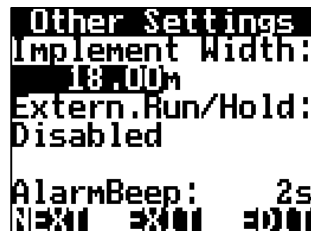


For the Jackal to correctly read hectares/acres an implement width needs to be entered. Press **EDIT** (You can **RIGHT NAV** button once & press **EDIT** to change M to FT,YD,IN)

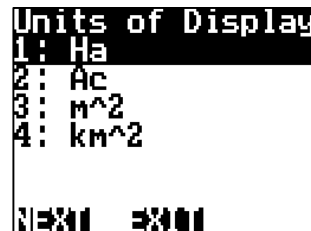


Using the NAV buttons enter your implement width in (m).

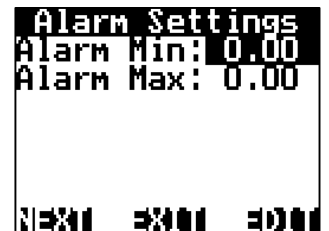
Press **EXIT** when done



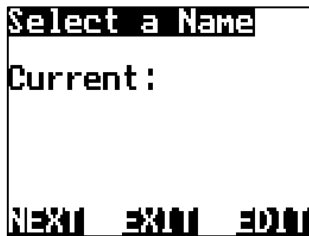
You can choose to enable the remote run/hold input (Further info [PAGE 43](#))
Press **NEXT**



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 & **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**



You will be returned to the Setup Screen.
Press **EXIT**

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

Layout Example below



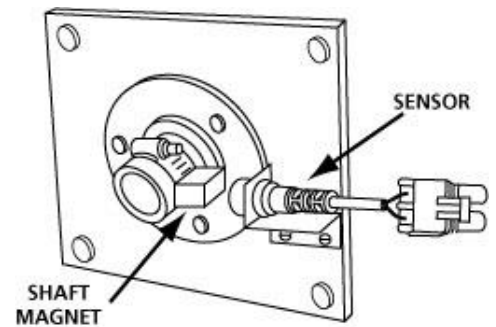
Example 2 UP

Line 1 : Area in Hectare, 2 decimal places

Line 2 : Speed km/hr, 1 decimal place

TACHO/RPM METER SETUP (WIZARD)

The Jackal can display a rpm (Revolutions per minute) Useful for monitoring fans or shafts.



Sensors Required

- Sensor pickup 2 or 3 wire
- Magnet for use with 2 wire or bolt head if using a proximity

Available Connections (PAGE 4)

This setup section assumes that physical wiring for the required sensors have been completed. If not please refer to [PAGE 7](#) on wiring requirements.

NB : For Speeds **under** 1500rpm (Black Sensor) – Use Ports **B2-B6**

For Speeds **over** 1500rpm (Yellow Coil Sensor) – Use Port **B1**

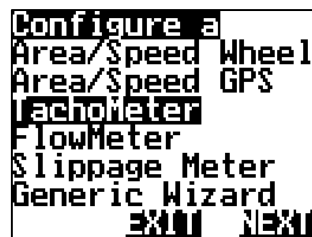
If using a proximity sensor – Any available Port **B1-B6**

SETUP

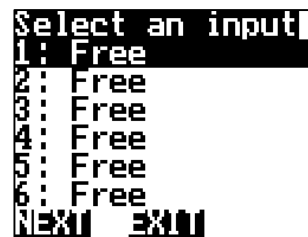
From the main screen press **SETUP**. (This is example is using Input 1/B1 – Fast Shaft over 1500RPM/Coil or Prox)



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



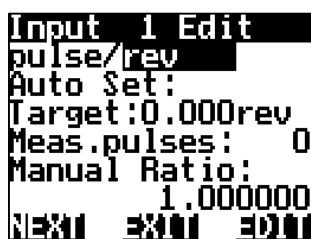
Highlight **TACHOMETER** & press **NEXT**



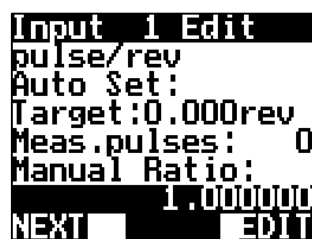
Highlight the **INPUT** number X: the sensor wire is connected into on the rear of the Jackal & press **NEXT**



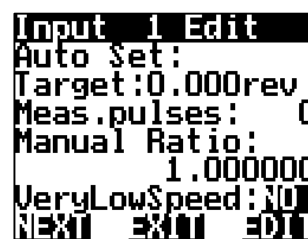
Enable the input by pressing **EDIT**



Leave the default value of **pulse/rev**



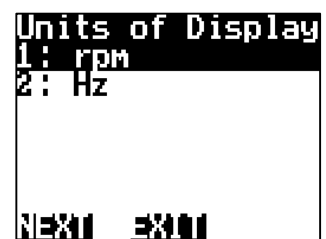
Using the NAV buttons Highlight the 1.000000. The manual ratio is the number of magnets (reed or coil sensor) or bolt heads (for proximity) on the shaft. In most cases the ratio will be 1.



FOR LOW RPM (1rpm-20rpm)

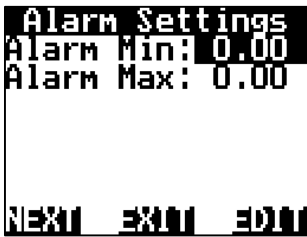
Press the **DOWN** NAV button and change **VeryLowSpeed** from **NO** to **YES** by pressing **EDIT**

Press **NEXT** when done



Confirm you wish to display **rpm**, press **NEXT**

This will allow for RPM readings down to 1rpm



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



Name the input if you desire, Press EDIT. e.g. SHAFT1,
Press EXIT
Press NEXT



The Wizard is now complete.
Press NEXT



You will be returned to the Setup Screen.
Press EXIT

THIS ENDS THE SETUP FOR TACHO METER USING 1 MAGNET



Example: 1 UP

Monitoring 1 shaft



Example: 2 UP

Monitoring 2 shafts?

Re-run the wizard again selecting the next port the sensor is connected to.

FLOW METER SETUP (WIZARD)

The Jackal can be configured to monitor liquid products. If only one input is used the main screen will display the flow information is L/min or gal/min, or, if using the speed & area function the Jackal can also display L/Ha or gal/Acre.



At no stage can the Jackal take into account multiple spray sections turning on and off and adjusting the Ha/Ac to suit.

Refer to [PAGE 31](#) for Rate Monitor setup to display L/Ha

Sensors Required

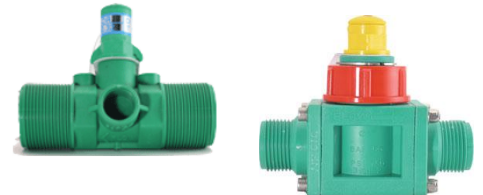
- Flow Sensor (2 or 3 wire)

Available Connections ([PAGE 4](#))

This setup section assumes that physical wiring for the required sensors have been completed.

If not please refer to [PAGE 7](#) on wiring requirements.

NB. 3 wire flow sensors need to be in **B2-B6**. If a 2 wire flow sensor is being used, please use **B1**.

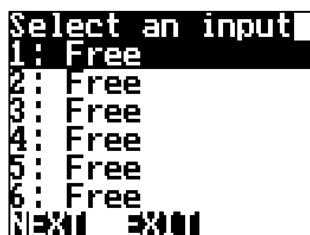


SETUP

This is example is using a 2 wire (Sine Wave/Coil) flow sensor into B1



From the front screen press **SETUP**



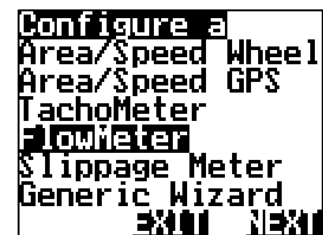
Highlight the **INPUT** number X: the sensor wire is connected into on the rear of the Jackal & press **NEXT**



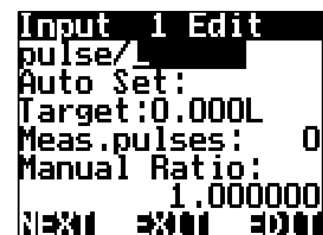
Highlight **WIZARD** & press **SELECT**



Enable the input by pressing **EDIT**



Highlight **FLOWMETER** & press **NEXT**



Choose your unit of pulse.
pulse/L or pulse/gal

Choose your calibration method :

Auto Set ([Next Page](#))

or

Manual Ratio ([PAGE 26](#))

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

```

Input 1 Edit
pulse/L
Auto Set:
Target:20.000L
Meas.pulses: 0
Manual Ratio:
1.000000
NEXT START EDIT
  
```

Highlight TARGET & press
EDIT

```

Amount to Calibrate:
20.0000
EXIT DEL INS
  
```

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

```

Input 1 Edit
pulse/L
Auto Set:
Target:20.000L
Meas.pulses: 0
Manual Ratio:
1.000000
NEXT START EDIT
  
```

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:

```

Input 1 Edit
pulse/L
Auto Set:
Target:20.000L
Meas.pulses:3838
Manual Ratio:
1.000000
NEXT CALC EDIT
  
```

When the desired test
volume has been reached
press STOP

```

Input 1 Edit
pulse/L
Auto Set:
Target:20.000L
Meas.pulses:3838
Manual Ratio:
1.000000
NEXT CALC EDIT
  
```

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

```

Input 1 Edit
pulse/L
Auto Set:
Target:20.000L
Meas.pulses:3838
Manual Ratio:
191.900000
NEXT START EDIT
  
```

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

Press NEXT

```

Units of Display
1: L/min
2: gal/min
NEXT EXIT
  
```

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

Press NEXT

```

Alarm Settings
Alarm Min: 0.00
Alarm Max: 0.00
NEXT EXIT 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

```

Setup
Wizard
Inputs
Front Screen
Other Settings
Output
GPS / Serial
EXIT SELECT
  
```

You will be returned to the
Setup Screen.
Press EXIT

```

RUN
Input#1
82.76 L/min
ALARM TRIP SETUP
  
```

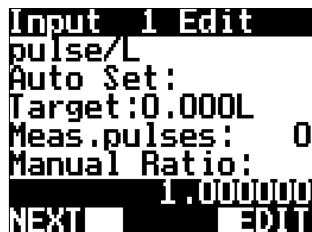
Example: 1UP monitoring
Flow Meter in L/Min

THIS ENDS THE AUTO SETUP WIZARD FOR FLOW METER

REFER TO [PAGE 31](#) TO SETUP AS RATE MONITOR L/Ha

CALIBRATION (MANUAL SET)

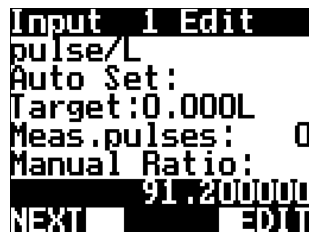
Manual set allows for the manual input of a known pulse per litre (PPL) factor. The pulse per litre factor can be obtained from the flow meter manufacture or from the plastic tag attached to the flowmeter.



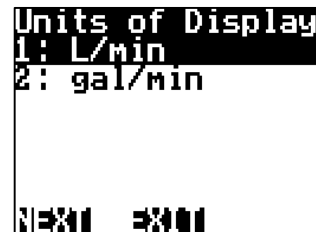
Highlight 1.000000 under MANUAL RATIO & press EDIT



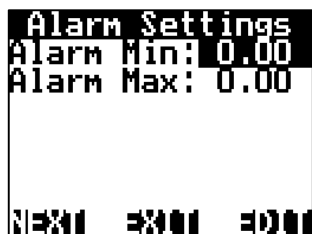
Using the NAV buttons enter the PPL factor as displayed on the flow meter tag.
i.e. 91.2
Press EXIT when done.



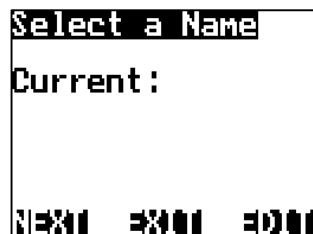
Press NEXT to accept the new manual ratio (PPL)



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 Setup Screen.
Press EXIT



Example: 1 UP monitoring
Flow Meter in L/Min

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 \(25\)](#)**

SLIPPAGE METER (WIZARD)

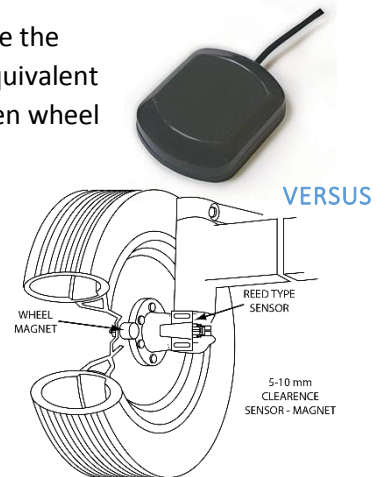
The Jackal can provide the operator with the ability to compare two inputs and provide the result as a percentage. This is applicable when speed over ground is not necessarily equivalent to rotational speed of the wheel/s. This will enable you to set up a comparison between wheel speed and actual speed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

Sensors Required:

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

Available Connections ([PAGE 4](#))

This setup section assumes that physical wiring for the required sensors have been completed. If not please refer to [PAGE 7 & 8](#) on wiring requirements



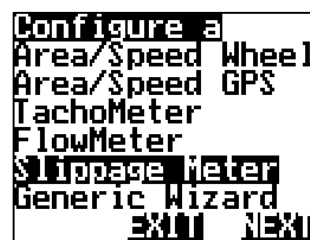
SETUP



From the front screen press **SETUP**



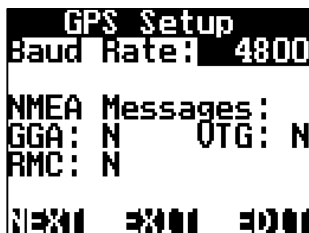
Highlight **WIZARD** & press **SELECT**



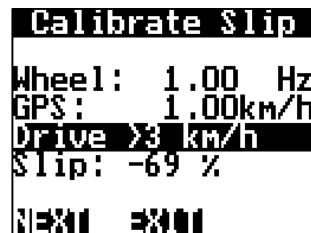
Highlight **SLIPPAGE METER** press **NEXT**



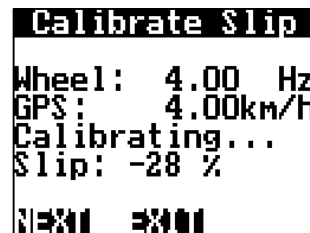
Highlight the **INPUT** number X: the **WHEEL** sensor wire is connected into on the rear of the Jackal & press **NEXT**



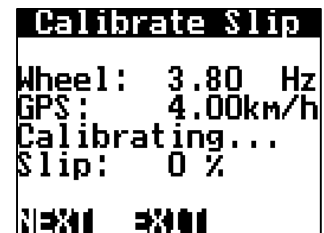
Press the **EDIT** button to change the baud rate, when the correct baud rate is selected the corresponding NMEA message will be acknowledged with a Y. Press **NEXT**



As indicated, drive above 3km/hr

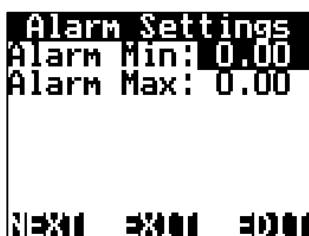


Wheel input will then increment up (displayed in Hz) & GPS speed will start to show.

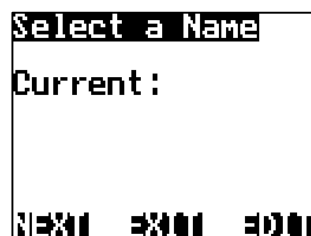


As the system self-calibrates the slip % will get closer to 0%.

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**.

Press **EXIT** to return to the front screen

THIS ENDS THE SETUP WIZARD FOR WHEEL SLIPPAGE

RATE METER SETUP | SOLIDS (GENERIC WIZARD)

The Jackal can be configured to monitor solid products. If only one input is used the main screen will display the flow information in kg, lb, kg/s, kg/hr, T/hr, lb/s. If using the speed & area function the Jackal can also display kg/Ha, bu/ac, T/Ha.

Refer to [\(PAGE 31\)](#) for Rate Monitor setup to display kg/Ha

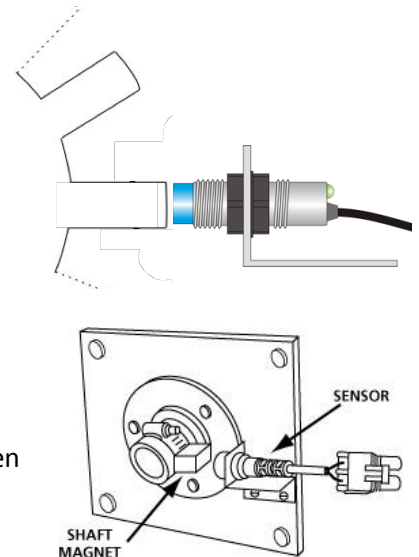
Sensors Required

- Shaft sensor kit (2076 Slow /2077 Fast) (2 wire) or
- Proximity sensor kit (2010P) (3 wire)

Available Connections [\(PAGE 4\)](#)

This setup section assumes that physical wiring for the required sensors have been completed.

If not please refer to [PAGE 7](#) on wiring requirements



SETUP

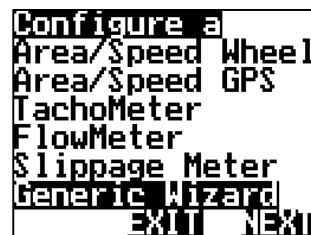
1. Ensure there is product in bin/tank
2. Have a bucket ready to catch the product
3. Have a set of scales (e.g. Farmscan Ag Part # 2199) ready to weigh the product



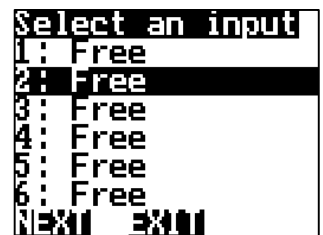
From the front screen press
SETUP



Highlight **WIZARD** & press
SELECT



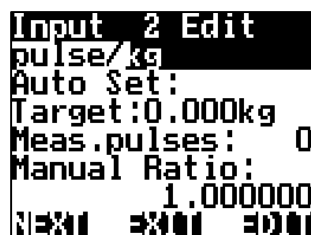
Highlight **GENERIC WIZARD**
& press **NEXT**



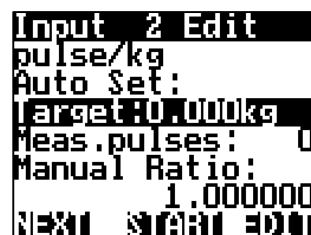
Highlight the **INPUT** number
X: the sensor wire is
connected into on the rear
of the Jackal & press **NEXT**



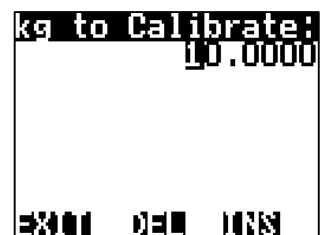
Enable the input by pressing
EDIT



Choose your unit of pulse.
pulse/kg or **pulse/lb**



Highlight **TARGET** & press
EDIT



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

```

Input 2 Edit
pulse/kg
Auto Set:
Target:10.00kg
Meas.pulses: 0
Manual Ratio:
1.000000
NEXT START EDIT
  
```

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:

```

Input 2 Edit
pulse/kg
Auto Set:
Target:10.00kg
Meas.pulses:2744
Manual Ratio:
1.000000
NEXT CALC EDIT
  
```

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

```

Input 2 Edit
pulse/kg
Auto Set:
Target:10.00kg
Meas.pulses:2744
Manual Ratio:
274.400000
NEXT START EDIT
  
```

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

```

Input 2 Edit
pulse/kg
Auto Set:
Target:10.00kg
Meas.pulses:2744
Manual Ratio:
274.400000
NEXT START EDIT
  
```

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.

```

Units of Display
1: kg
2: lb
3: kg/s
4: kg/h
5: T/h
6: lb/s
NEXT EXIT
  
```

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**

```

Alarm Settings
Alarm Min: 0.00
Alarm Max: 0.00
NEXT EXIT 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**

```

Setup
Wizard
Inputs
Front Screen
Other Settings
Output
GPS / Serial
EXIT SELECT
  
```

You will be returned to the Setup Screen. Press **EXIT**

```

RUN
Input#2
15.77 kg
ALARM TRIP SETUP
  
```

Example: 1UP
Accumulation of Kg

THIS ENDS THE AUTO SETUP FOR RATE METER SETUP

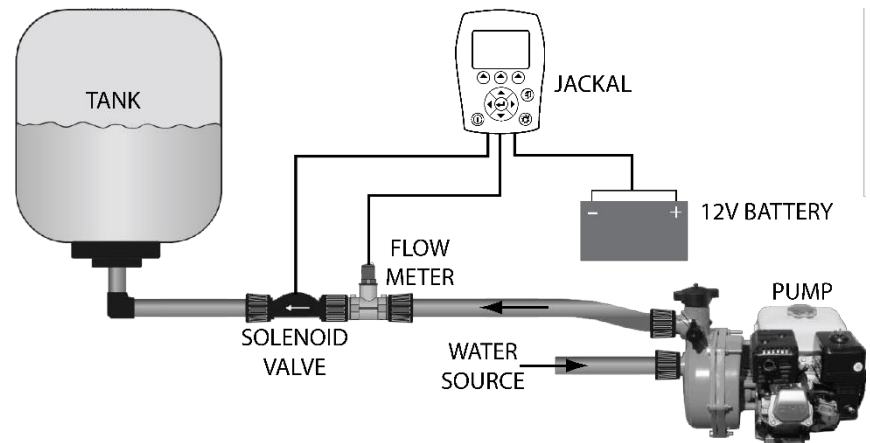
REFER TO [PAGE 32](#) TO SETUP AS RATE MONITOR kg/Ha

BATCH METER

The Jackal can be configured as a Batch Meter. The Jackal uses a flow sensor and solenoid valve to meter liquid volumes & cease flow. The output of the Jackal is suitable for direct connection to a 12V solenoid valve. (**Output 1 / B8**)

Sensors Required:

- Flow meter (any style)
- 1501 (Optional, from Farmscan Ag) or any 12V Solenoid Valve

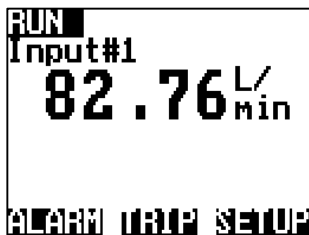


Available Connections ([PAGE 4](#))

This setup section assumes that physical wiring for the required sensors have been completed. If not please refer to [PAGE 7 & 9](#) on wiring requirements

SETUP

**** PLEASE ENSURE THE JACKAL IS CALIBRATED AS A FLOW METER ([PAGE 24](#)) BEFORE DOING THE FOLLOWING ****

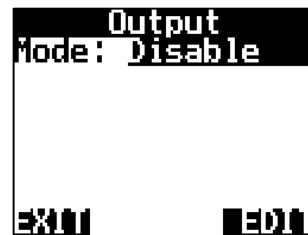


From the front screen press **SETUP**

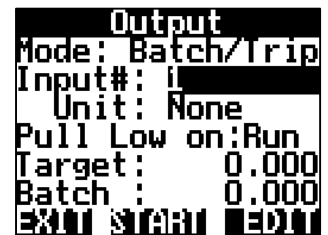
(The Jackal should already be setup as a Flowmeter – Refer to [PAGE 24](#))



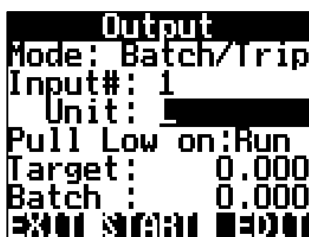
Highlight **OUTPUT** & press **SELECT**



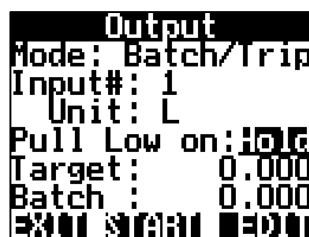
Press **EDIT** & change the mode to : **BATCH/TRIP**



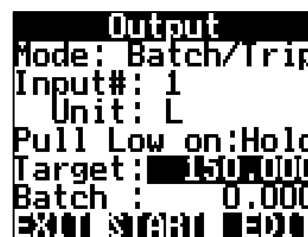
Highlight the **INPUT #** & press **EDIT** to select the number X where the FLOW sensor wire is connected into on the rear of the Jackal



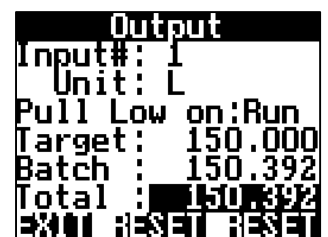
Highlight **UNIT** & press **EDIT** to change the Unit type to L (Litres)



Highlight **PULL LOW ON** : Options are **RUN** or **HOLD**. This defines the state of the solenoid when the Start button is pressed.



Highlight **TARGET** & press **EDIT** to input the target batch amount i.e. 150L



Press **START** to open the solenoid. Water will flow and **BATCH** will count. When completed Press **RESET**. You can now start the batch again by pressing **START**. NB : Total will accumulate after each batch. Use the **RESET** (to the Right) to clear the total

THIS ENDS THE SETUP FOR A LIQUID BATCH METER

RATE MONITOR

The Jackal can be setup to display a rate for use with either solid or Liquid. Rates can be displayed in common formats such as L/Ha or kg/Ha.

Sensors Required:

- Wheel Sensor/GPS (Speed & Area)
- Flow meter (any style) – L/Ha or
- Shaft sensor & associated pickup sensor – kg/Ha

Available Connections (PAGE 4)

This setup section assumes that physical wiring for the required sensors have been completed.

If not please refer to [PAGES 7-8](#) on wiring requirements for a wheel sensor, flow meter & shaft sensor.



SETUP (L/HA)

- Follow the setup guide on [PAGES 15-19](#) for “Speed/Area Meter setup”
 - Suggested setup on Input B2-B6
- Follow the setup guide on [PAGES 24-26](#) for “Flow Meter Setup”
 - Suggested setup on Input B2-B6
 - B1 can also be used depending on Flow meter signal (2 wire coil style)

```

RUN
3.95 Ha
19.6 km/h
13 L/min
ALARM TRIP SETUP
  
```

From the front screen press
SETUP

```

Setup
Wizard
Inputs
Front Screen
Other Settings
Output
GPS / Serial
EXIT SELECT
  
```

Highlight FRONT SCREEN &
press SELECT

```

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

Highlight the line in which
the Flow Meter is connected
to.
e.g. 3: Input#3 L/min
Press EDIT

```

Enabled: Yes
In1:3 In2:1
Name:
Unit: L/Ha
Decimals: 0
AlarmMax: 0.00
AlarmMin: 0.00
EXIT EDIT
  
```

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

```

Enabled: Yes
In1:3 In2:2
Name:
Unit: L/Ha
Decimals: 0
AlarmMax: 0.00
AlarmMin: 0.00
EXIT EDIT
  
```

Press the UP NAV button &
Highlight IN1 & press EDIT to
change the Input X to where
the FLOW Sensor is
connected.
i.e. 3 (Input 3)

```

Enabled: Yes
In1:3 In2:3
Name:
Unit: L/Ha
Decimals: 0
AlarmMax: 0.00
AlarmMin: 0.00
EXIT EDIT
  
```

Press the DOWN NAV button
& highlight IN2 & press EDIT
to change the Input X to
where the WHEEL sensor is
connected. i.e. (Input 2)

```

RUN
5.37 Ha
19.6 km/h
49 L/Ha
ALARM TRIP SETUP
  
```

Press EXIT twice (2) again 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/Ac to
suit*

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

SETUP (KG/HA)

- Follow the setup guide on [PAGES 15-19](#) for “Speed/Area Meter setup”
 - Suggested setup on Input B2-B6
- Follow the setup guide on [PAGES 28-29](#) for “Rate Meter Setup”
 - Suggested setup on Input B2-B6

```

RUN
7.65Ha
13.0km/h
1.09kg
ALARM TRIP SETUP
  
```

From the front screen press
SETUP

```

Setup
Wizard
Inputs
Front Screen
Other Settings
Output
GPS / Serial
EXIT SELECT
  
```

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

```

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

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

Press **EDIT**

```

Enabled: Yes
In1:3 In2:1
Name:
Unit: kg/Ha
Decimals: 2
AlarmMax: 0.00
AlarmMin: 0.00
EXIT EDIT
  
```

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

```

Enabled: Yes
In1:3 In2:1
Name:
Unit: kg/Ha
Decimals: 2
AlarmMax: 0.00
AlarmMin: 0.00
EXIT EDIT
  
```

Press the **UP NAV** button &
Highlight **IN1** & press **EDIT** to
change the Input X to where
the **METERING** Sensor is
connected.
i.e. 3 (Input 3)

```

Enabled: Yes
In1:3 In2:1
Name:
Unit: kg/Ha
Decimals: 2
AlarmMax: 0.00
AlarmMin: 0.00
EXIT EDIT
  
```

Press the **DOWN NAV** button
& highlight **IN2** & press **EDIT**
to change the Input X to
where the **WHEEL** sensor is
connected. i.e. (Input 2)

```

RUN
8.64Ha
13.0km/h
2.03kg/Ha
ALARM TRIP SETUP
  
```

Press **EXIT** twice (2) again to
return to the front screen.

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

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

BIN LEVEL SENSOR

The Jackal can be configured with a bin level sensor for detecting empty/full

Sensors Required:

- Bin Level Sensor (A-2220P/2060)
- Any other style (High/low) or (On/Off) or (Empty/Full)

Available Connections ([PAGE 4](#))

This setup section assumes that physical wiring for the required sensors have been completed. If not please refer to [PAGE 8](#) on wiring requirements



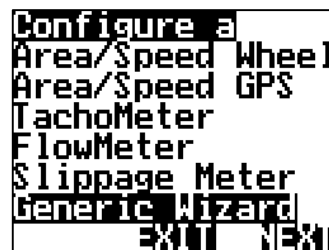
SETUP



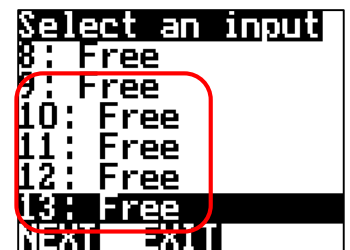
From the front screen press
SETUP



Highlight **WIZARD** & press
SELECT



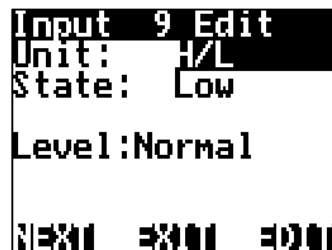
Highlight **GENERIC WIZARD** &
press **SELECT**



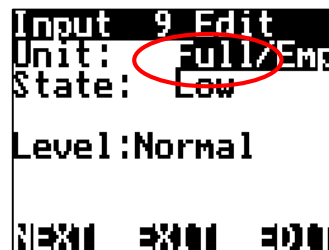
Highlight the **INPUT** number
(9-13) to where the sensor
wire is connected into on the
rear of the Jackal & press
NEXT



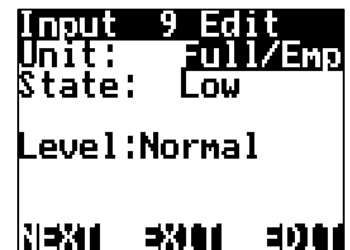
Enable the input by pressing
EDIT



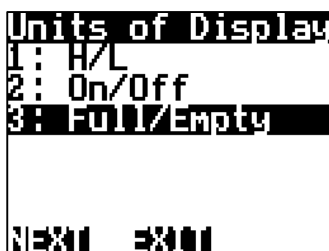
Press **EDIT** to change the
unit. Full/Empty, H/L
(high/low), On/Off



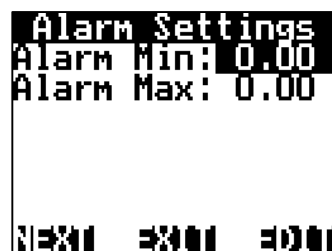
State will updated "Live" For
example. Low = bin empty,
High = bin full. Test by placing
hand around sensor.



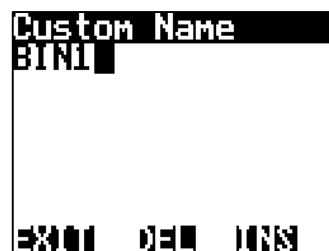
Highlight Level & select
LEVEL. This can be changed
from Normal to Invert. (Can
be used if Full/empty is
reversed) Press **NEXT**



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



Press **EXIT** to return to the
front screen

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:

kPa, psi, bar, Volt, %, °C

Sensors Required:

- AA-119H or AA-119L (pressure)
- Any other style that outputs a voltage. i.e. Position sensor (AA-430) for displaying depth as a percentage (%)



Available Connections ([PAGE 4](#))

This setup section assumes that physical wiring for the required sensors have been completed. If not please refer to [PAGE 8](#) on wiring requirements.

CALIBRATION (MANUAL)

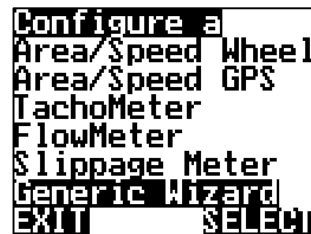
The example below details setting up a LIQUID PRESSURE SENSOR.



From the front screen press
SETUP



Highlight **WIZARD** & press
SELECT



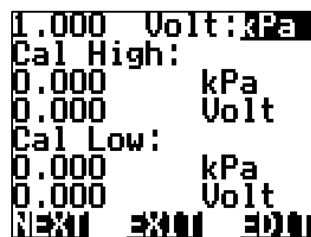
Highlight **GENERIC WIZARD** &
press **SELECT**



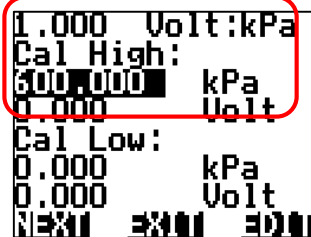
Highlight the **INPUT** number
(7-8) to where the sensor
wire is connected into on the
rear of the Jackal & press
NEXT



Enable the input by pressing
EDIT

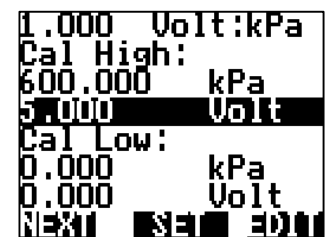


Press **EDIT** to change the
unit. kPa,psi,bar,Volt,%, °C.
i.e. kPa



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 36](#) for further
instructions**



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


```

1.000 Volt:kPa
Cal High:
600.000 kPa
5.000 Volt
Cal Low:
0.200 kPa
0.500 Volt
NEXT SET EDIT

```

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

```

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

```

Highlight or confirm the UOD (Unit of Display) eg 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**

```

Setup
Wizard
Inputs
Front Screen
Other Settings
Output
GPS / Serial
EXIT SELECT

```

You will be returned to the Setup Screen. Press **EXIT**

```

HOLD
Input#7
360.08 kPa
ALARM TRIP SETUP

```

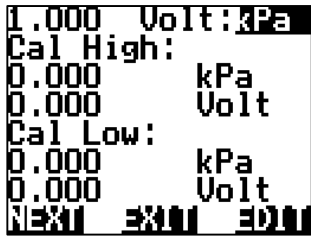
Example: 1UP Display of kPa

THIS ENDS THE SETUP FOR A VARIABLE VOLTAGE INPUT SENSOR

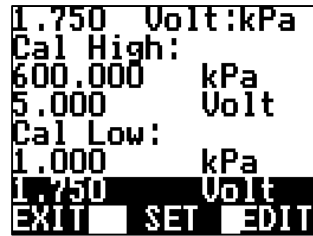
CALIBRATION (LIVE READOUT)

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.

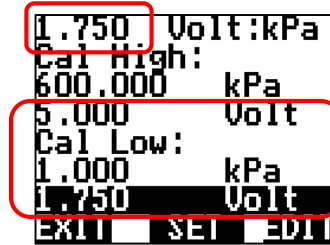
Follow the previous 5 steps followed by :



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

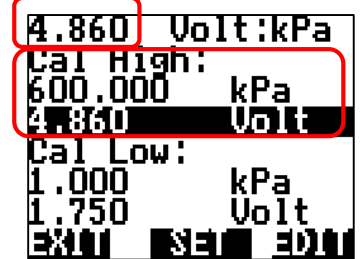


Engage the implement and/or adjust the pressure manually to the low point the sensor will need to operate in.

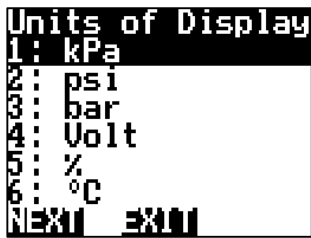


The voltage will now be displayed. e.g. 1.75v. In the above example we can set the minimum of 1kPa by **HIGHLIGHTING & EDITING** the values as required.

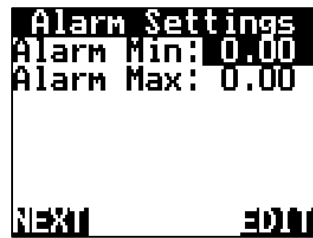
Press **SET**. This will copy the live voltage into the **CAL LOW** voltage point



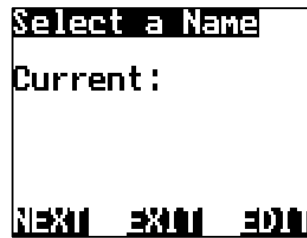
Repeat the previous 2 steps for the **CAL HIGH** values



Highlight or confirm the UOD (Unit of Display) e.g. 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**



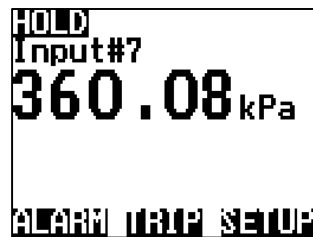
Name the input if you desire, Press **EDIT** or Press **NEXT**



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



You will be returned to the Setup Screen. Press **EXIT**



Example: 1UP Display of kPa

THIS ENDS THE SETUP FOR A VARIABLE VOLTAGE INPUT SENSOR

TRIPS (EXPLAINED)

The Trip Page lists all display values that are accumulating. Examples include Area (Ha, Acres), Distance (m, km, miles), Weight (kg, lb, T), Volume (L). Instantaneous readings such as Speed, Flow Rate etc. are not accumulating and won't show on the Trip Page

FRONT SCREEN > TRIP

From the front page press **TRIP**



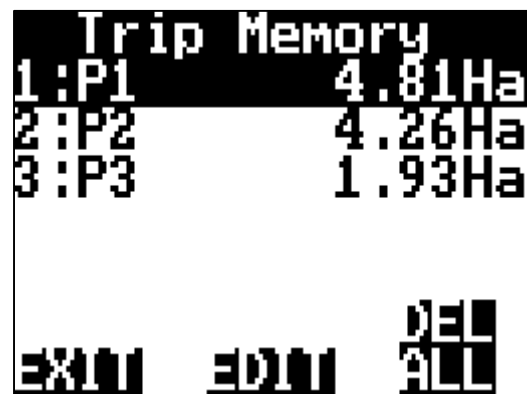
The screen above allows you to **SAVE/RESET** individual trips or view **SAVED TRIPS**



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** & name the Trip or **DEL ALL** (Delete All Trips)

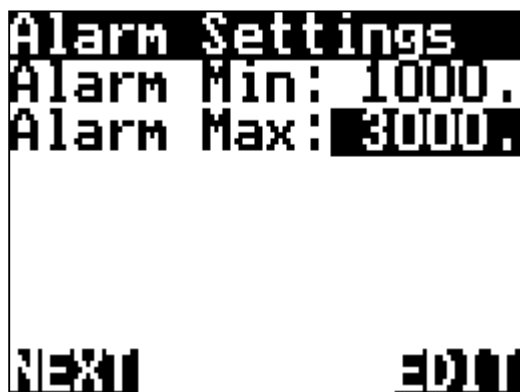
When you return to the **TRIPS** page the Trip will continue to accumulate. (Like above)
You will need to **SAVE/RESET** the trip if you want to start from Zero (0) again

ALARMS (EXPLAINED)

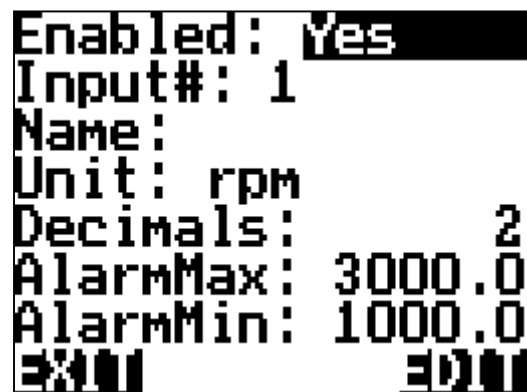
Alarms are set on a per Display Value basis. High/Low Alarm points can be set for any value and will be displayed visually & made audible.

During the wizard or manual setup you have the option to set an Alarm MIN & Alarm MAX.

Below is an example of a SHAFT alarm on input 1.



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



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



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.



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

USER DEFINED SETUP OVERVIEW (MANUAL)

At any stage you can manually setup the Jackal to your requirements without using the wizards. Manual setup of the Jackal requires setup in multiple areas follow the steps listed below.

FRONT SCREEN > SETUP

1. INPUTS

- a. Select & enable the Input that sensors are connected into the rear of the Jackal.

2. CALIBRATE

- a. Calibrate each input following the **TARGET or MANUAL RATIO** method.

3. FRONT SCREEN

- a. Define the order of lines, label, Unit of measure (UOM), decimal places & alarm points that you wish to be displayed on the front screen. NB: You can display multiple UOM on the front screen using only one input. e.g. View Ha & Ac at the same time.

4. OTHER SETTINGS

- a. Use this to define implement width for Ha/Ac accumulation, External Run/Hold port (if being used), alarm options & notifications, Language (English, French, German, Bulgarian)

5. OUTPUT

- a. Use this only to setup the Jackal to output a pulse (radar), Alarm, batch/trip & external hold.

The Jackal can be setup in many ways. You can choose 1 UP, 2 UP & 3 UP screens, 0-3 Decimal places for readouts, mix imperial & metric, label inputs, multiple pages of information, alarm points, trip functions & MORE. The Jackal is designed to be as flexible as possible in different agricultural environments.



Example : 2 UP Area & Shaft (rpm)



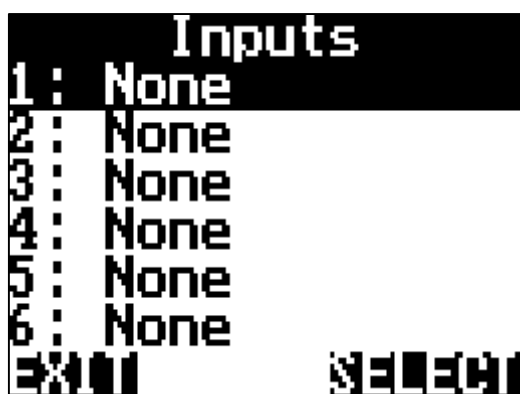
Example: 3 UP Monitoring 2x Shaft & Wheel input for HA

INPUTS (MANUAL SETUP)

The Jackal has 13 available & selectable inputs. Refer to the sensor overview tables from [PAGES 4-9](#)

FRONT SCREEN > SETUP > INPUTS

meter / pulse (m) B1-B6	feet / pulse (ft) B1-B6	yard / pulse (yd) B1-B6	Inch / pulse (in) B1-B6	kilometer / pulse (km) B1-B6
mile / pulse (mi) B1-B6	pulse / Kilogram (kg) B1-B6	pulse / US pound (lb) B1-B6	pulse / litre (l) B1-B6	pulse / US gallon (gal) B1-B6
pulse / Bushel (bu) B1-B6	pulse / rev (rpm) B1-B6	pulse / bale (bale) B1-B6	pulse / unit (unit) B1-B6	pulse / each (each) B1-B6
kPa / psi / bar / Volt / % / Temp °C B7 & A7	High/Low, On/Off, Full/Empty A2 & A6			

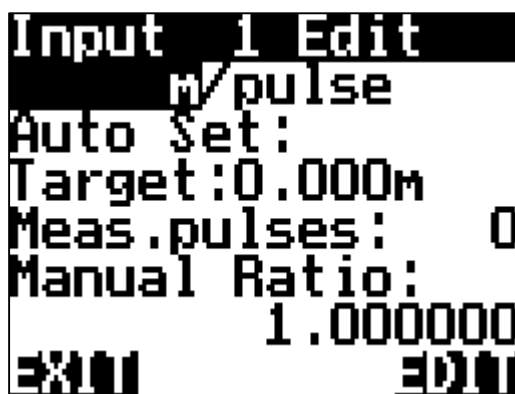


13 Inputs are available on the Jackal
Refer to [PAGE 4-6](#) for input usage



After selecting your input pressing the **EDIT** button allows you to enable/disable the port

CALIBRATION METHOD – TARGET & MANUAL RATIO



When the input has been enabled, using the NAV buttons navigates you through the calibration setup. Here you can also select your calibration method. *N.B. Different inputs have different calibration methods. Review the wizard setups for example calibration methods*

TARGET allows you to use the auto calibrate function and enter a known Unit Of Measure to calibrate pulses to. When the known UOM is entered the start button can be used to count the necessary pulses. Once the pulse have been counted press the **CALC** to auto update the **MANUAL RATIO** field.

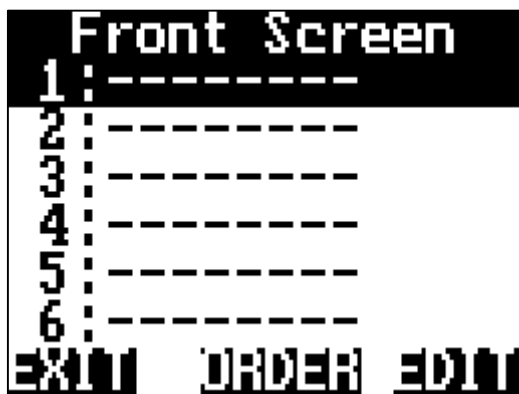
MANUAL RATIO allows you to enter a known calibration factor. This could be a pulse per litre factor for a flow meter, a known wheel circumference for speed & area (pulse/m), or number of magnets for rpm.

FRONT SCREEN (MANUAL SETUP)

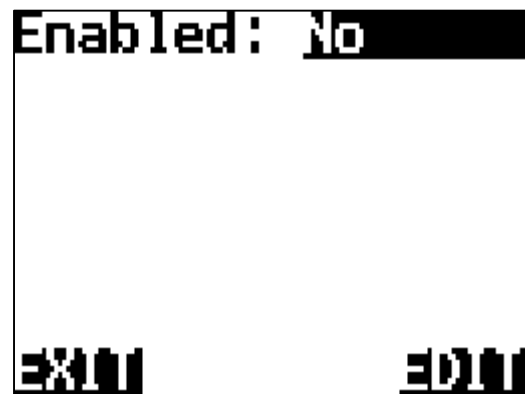
When your inputs have been enabled and calibrated you can now choose to display them in any format on the front screen. You can have up to 3 line items per page and viewable at all times. If more lines are added you can **PAGE** or use the NAV buttons to scroll through each screen

Each input has the ability to display different values. You need to ensure the previous page (Inputs) are setup & calibrated to continue with this method. It is recommended that the wizard be used to assist setup.

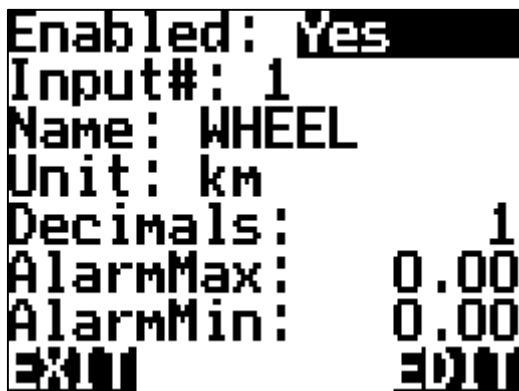
FRONT SCREEN > SETUP > FRONT SCREEN



Select the line you wish to display your information and press **EDIT**



Enable the LINE by pressing **EDIT**



Assign the input to be displayed :

Input# : 1
 Name : Wheel (Refer example to the Right)
 Unit : km
 Decimals : 1 (decimal place when speed is viewed)

It is also possible to set Min & Max alarm points for that input. (Refer to alarms)



By scrolling down to **NAME** and pressing **EDIT** you can name your port for easier identification on the front screen.

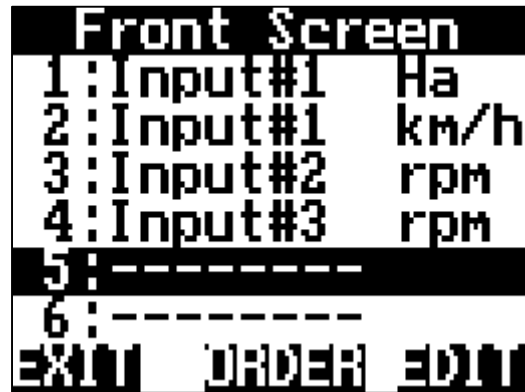
FRONT SCREEN ORDER (MANUAL SETUP)

At any stage you can re order the lines on the front screen. For example – you may want to have Shaft 1 on the top line, shaft 2 on the 2nd line & Area on the 3rd line, Speed on the 4th Line etc.

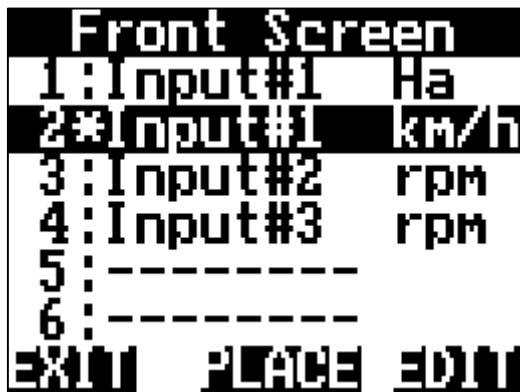
FRONT SCREEN > SETUP > FRONT SCREEN > ORDER



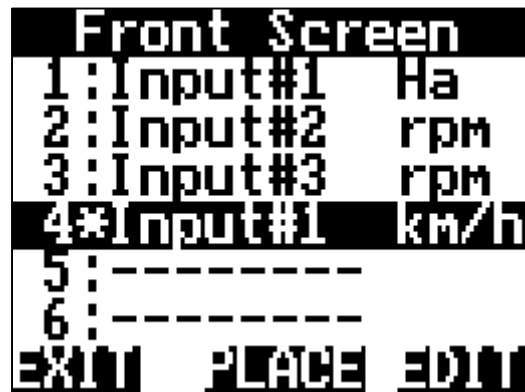
Example 3UP (3 Inputs)
Line 1 – HA, Line 2 – Speed, Line 3 – Shaft 1



To re order. Navigate to **SETUP > FRONT SCREEN**



Highlight the line you wish to move & press **ORDER**.
It will now place a "*" in front of the line.
(like above)



Using the NAV buttons, move the input to the desired line
& select **PLACE**.



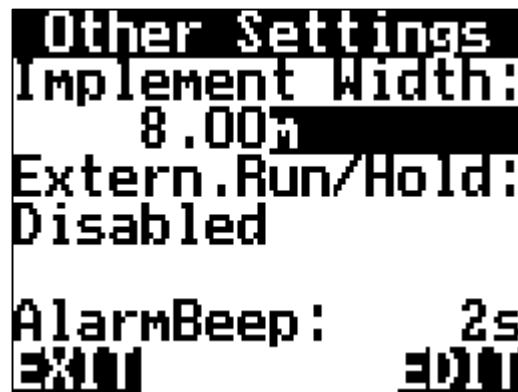
When you now **EXIT** back to the front screen the order of lines have been changed
Line 1 – HA, Line 2 – Shaft 1, Line 3 – Shaft 2

NB : Using the NAV buttons or PAGE button will allow you to view other activated ports and their information

OTHER SETTINGS (MANUAL SETUP)

Other settings is used to setup Implement width for displaying Ha,Ac, Enable/Disable remote run/hold function, audible alarm notifications & language control.

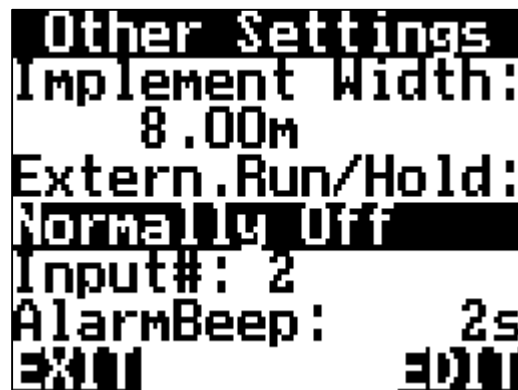
FRONT SCREEN > SETUP > OTHER SETTINGS



If you wish to display Ha/Ac on the front screen you need to have an implement width set.
By default the Jackal displays 8m.

You can adjust the implement with and choose your UOM (m, ft, yd, in, km, mi).

If the UOM & implement widths remain untouched the Jackal will not display the information unless specified in the **FRONT SCREEN** setup.



The **EXTERNAL RUN/HOLD** function can be used to enable/disable all accumulating values and alarms set in the Jackal without pressing the **RUN/HOLD** on the Jackal itself.

NOTE – When the **EXTERNAL RUN/HOLD** is active on ANY input the function of the **RUN /HOLD** button on the front screen is disabled.

The trigger wire can be applied to any of the 13 available inputs on the Jackal. To enable maximum flexibility for this function **NORMALLY ON** or **NORMALLY OFF** mode can be selected for this function.

When a circuit exists between the selected input and ground (GND), selecting **NORMALLY ON** will result in the Jackal going into **HOLD** mode

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.

After you select the desired hold method select the **INPUT#** port that is being used to detect Run/hold

DISABLED: External Run/Hold is not used. Use the Run/Hold button only.

```

Other Settings
  8.00m
Extern.Run/Hold:
Disabled

AlarmBeep:      2s
AlarmOnHold:No
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. The above option also allows the choice of having the audible alarm being used when the Jackal is on hold.

Press **EDIT** to change these options.

```

Other Settings
Disabled

AlarmBeep:      2s
AlarmOnHold:No
Language:
english
EXIT            EDIT

```

By default, the Jackal is configured in ENGLISH. Other languages can be selected by pressing **EDIT** (English, French, German, Bulgarian)

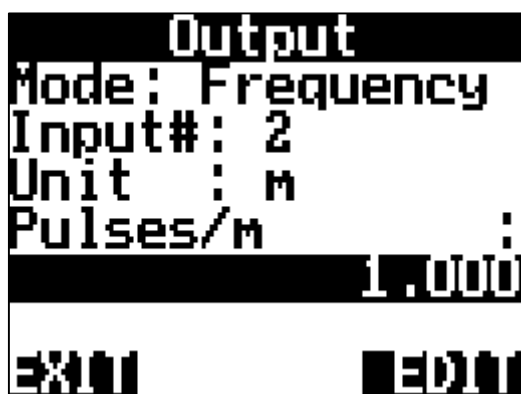
OUTPUT

The Jackal has provision for 4 output methods which include:

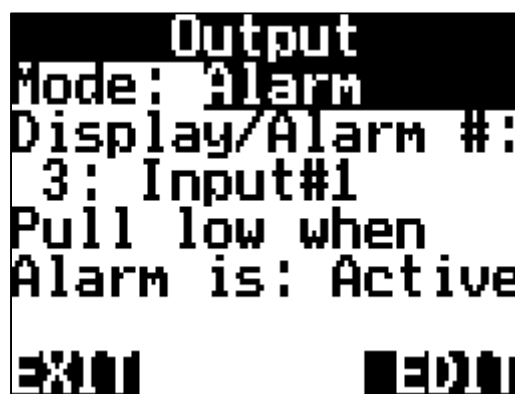
- Frequency : Radar Output (pulses/m/ft/in)
- Alarm (Connect an external alarm, e.g. light, buzzer)
- Batch/Trip for flow or distance
- External (high/low or On/off) e.g. remote pump shutdown on alarm

Please ensure that a valid input is setup where required. All outputs are on **B8**

FRONT SCREEN > SETUP > OUTPUT



Press **EDIT** to select **FREQUENCY**



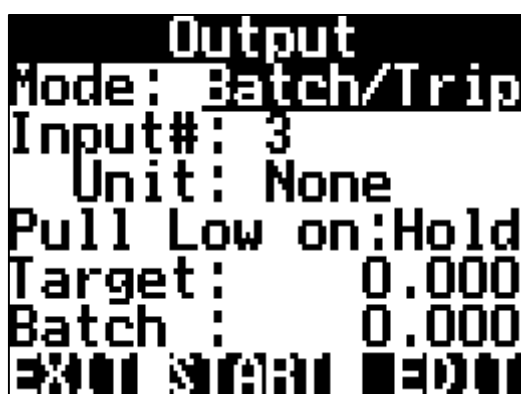
Press **EDIT** to select **Alarm**

Input# : X (Defines the input, for example a wheel sensor input is on Port 2.) When **FREQUENCY** is selected the Jackal will output a pulse frequency that can be adjusted in ratio to a selected input. In the above example the pulse output will be :

1 pulse/meter.

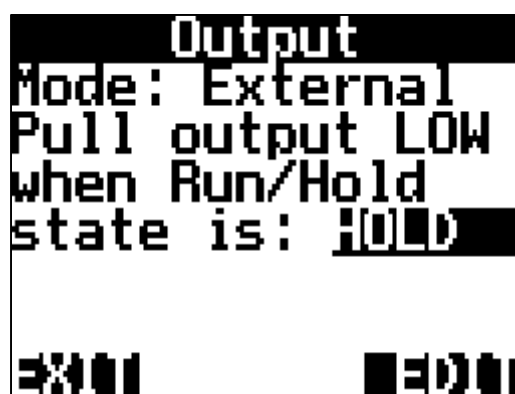
In the above example the Jackal can be selected to leave the output disconnected or pull low when an alarm on a selected input is active. This can be used to provide remote alarm functionality.

Example is High/Low alarm setup on Input #1 in Position 3 on the screen layout. (Shaft alarm)



Press **EDIT** to select **BATCH/TRIP**

Refer to [PAGE 30](#) for setup options



Press **EDIT** to select **EXTERNAL**

When activated, the port outputs high or low depending on the whether you're in Run/Hold mode. This could be used to power/de-power a pump or power something when in run mode (or vice versa)

GPS/SERIAL

The Jackal has the ability to take in a GPS input rather than a Wheel input to display speed & area.

Refer to [PAGE 8](#) for wiring instructions.

The external GPS needs to be setup for GGA, VTG & RMC. Either 1Hz or 5Hz and any baud rate is acceptable.

FRONT SCREEN > SETUP > GPS/SERIAL

```

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

When an external GPS is connected to Input A11 of the Jackal you can confirm & view valid messages are being received.

```

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

In the **SETUP** screen you can change the Baud Rate & confirm GGA+VTG or RMC.

When a valid string is being received the N will change to a Y



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