**Innovation In and
Out of Parlour**

**Remote Vacuum Sensor and
Variable Speed Vacuum Pump Control Manual**

Version - 1.2

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Part Number - 39-0038

Index

Manual Versions

About the Remote Vacuum Sensor

The Remote Vacuum Sensor from ATL is a simple and easy to use variable speed vacuum pump controller and digital vacuum gauge. It provides more consistent and efficient vacuum levels during milking and washing. The system is programmable and it's versatility provides an excellent variable speed vacuum pump control to any type of milking parlour.

Control Features

- Programmable settings to be optimised for every milking parlour;
- Large OLED display showing status;
- 3 easy buttons, Idle, Milk and Wash;
- Different vacuum levels for milking and washing;
- Controls up-to 3 variable speed vacuum pumps;
- Separate motor minimum and maximum speeds for each drive;
- Easily connected to external wash controls to turn in and out of wash and milk modes;
- Simple warnings when vacuum level is too low or too high.

Front Cover

Idle Key

Milk Key

Wash Key
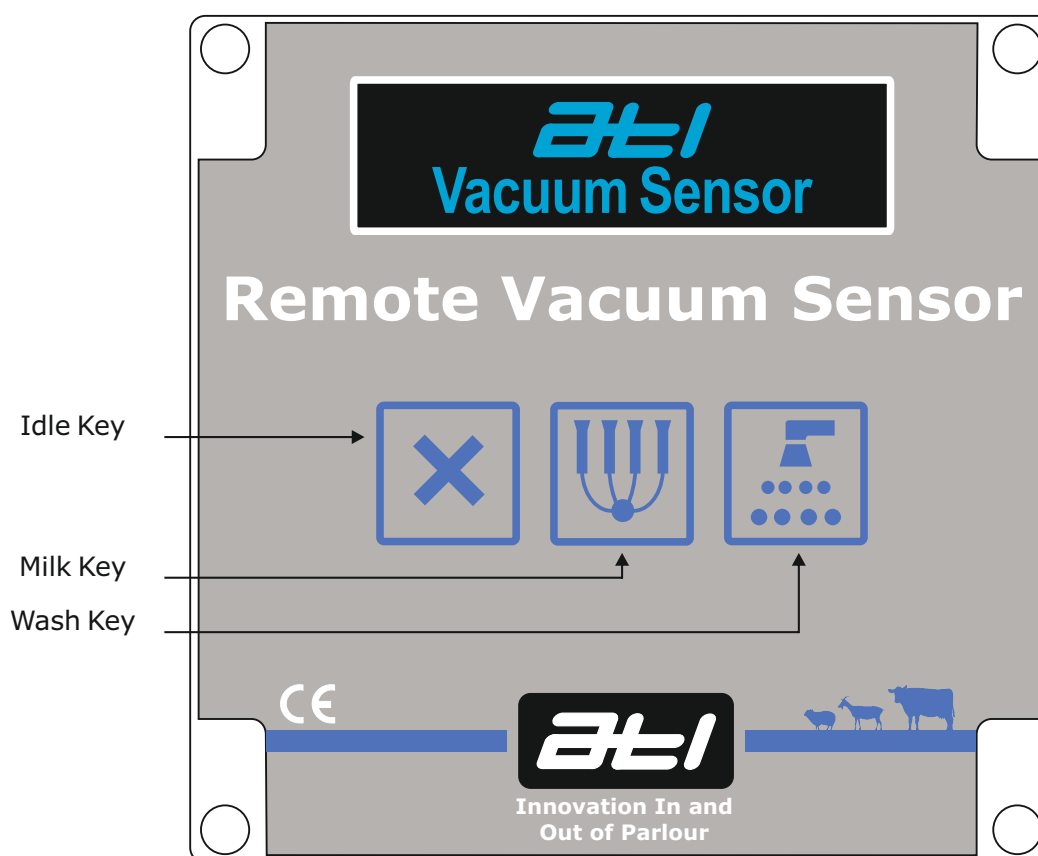
Installing the Remote Vacuum Sensor Control Unit and Variable Speed Vacuum Pump Control System

The ATL variable speed vacuum pump system consists of a remote vacuum sensor control unit, the variable speed vacuum pump inverter drive unit and the vacuum pump and motor unit.

All of the controls should be mounted on the wall.

Good Practice During the Installation

- A appropriate sized, fuse protected mains supply and earth running directly from the consumer meter is essential.

- Avoid routing the mains cable to the power supply close to other supplies especially those providing intermittent current motors that are starting and stopping continually or high power heaters with thermostatic control.

- Terminate the Remote Vacuum Sensor Control supply in a sealed, fused, double pole switched outlet fitted with a 3Amp (Type 1362) fuse or trip. A 3-pin ring main socket is not suitable in parlour conditions. All mains cabling must be contained in a firmly secured durable conduit.

Variable Speed Inverter Drive: Siting

- Fix the unit to a wall in a well ventilated area sufficiently high to avoid physical contact or damage, leaving a gap of at least 250mm (10") between the top of the box and the ceiling.

- Ensure that S-Y Flex is used between the drive output and motor.

- Ensure that the S-Y Flex is correctly terminated using the screen clamp within the unit.

- Position the inverter so that the output cables are as short as possible even if this means extending the mains supply.

ATL Remote Vacuum Sensor Power Supply: Output Voltages

- ATL remote vacuum sensor power supply outputs are factory set and should not be adjusted.

- Remote Vacuum Sensor Power Supply
  Input: 100 - 240vAC
  Output: Nominal 12vDC

- The Remote Vacuum Sensor 12vDC power supply has a thermal cutout and overload protection which removes power from the output in the event of an overload.

Control Cables and Conduit

- Cables must be kept as short as possible running directly from point to point. Cut out any excess cable rather than leaving it coiled.

- Wherever possible cables should be contained in a waterproof conduit using the correct csa cable specified in the diagrams.

- **Entries must be made into the bottom of control casings but never into the top. This will invalidate the warranty.**

- Strip existing cables back to bright copper before connection.

- Keep high voltage and heavy current carrying cables away from low voltage and data cables. Cross only at 90° where necessary and do not enclose in conduit with other cables.

Remote Vacuum Sensor Control Wiring Connections

The remote vacuum sensor control wiring connections are shown in the diagram and corresponding table below. The control comes with one 4 port gland and one 6mm vacuum connection. The 4 port gland can take a maximum cable OD of 6.5mm.
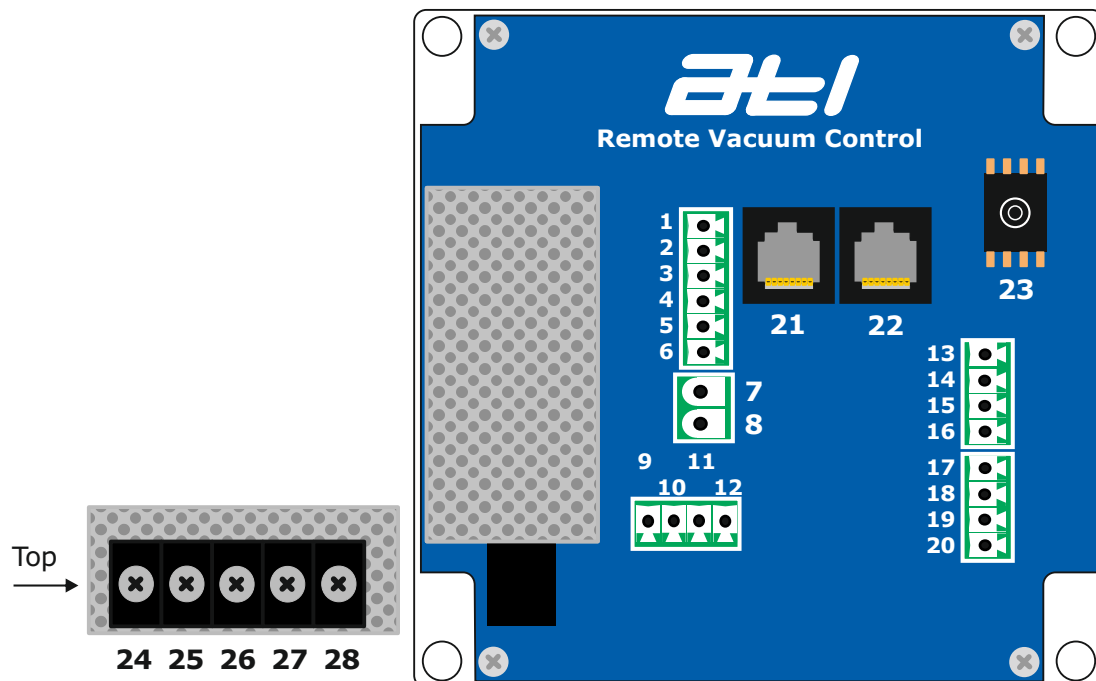
Number	Connects To	Cable Specification
1	Sys Power +Ve	Unused - Only Use if instructed by ATL
2	M2Bus Data A	Twisted Pair - Red
3	M2Bus Data B	Twisted Pair - Black
4	M2Bus EOL Link	Unused - Only Use if instructed by ATL
5	M2Bus Screen	Twisted Pair - Screen
6	Sys Power -Ve	Unused - Only Use if instructed by ATL
7	Power In +Ve from PSU	Factory Fitted
8	Power in -Ve from PSU	Factory Fitted
9	Wash Output 0vDC Switched	1mm CSA
10	Wash Output +12vDC Common	1mm CSA
11	Milk Output 0vDC Switched	1mm CSA
12	Milk Output+12vDC Common	1mm CSA
13	Inverter Data A	Twisted Pair - Red
14	Inverter Data B	Twisted Pair - Black
15	Inverter EOL Link	Unused - Only Use if instructed by ATL
16	Inverter Screen	Twisted Pair - Screen

IMPORTANT - DO NOT INSTALL TWO CABLES THROUGH 1 CABLE HOLE IN THE 4 PORT GLAND. THIS WILL INVALID THE WARRANTY.

Remote Vacuum Sensor Control Wiring Connections - Continued

Number	Connects To	Cable Specification
17	Milk Input +Ve	1mm CSA
18	Milk Input -Ve	1mm CSA
19	Wash Input +Ve	1mm CSA
20	Wash Input -Ve	1mm CSA
21	Cat 5e M2Bus Connection	Cat 5e Cables provided by ATL
22	Cat 5e M2Bus Connection	Cat 5e Cables provided by ATL
23	Vacuum Pipe Connection	Factory Fitted
24	Live Mains In	Use 1mm CSA Mains 3 Core
25	Neutral Mains In	Use 1mm CSA Mains 3 Core
26	Earth Mains In	Use 1mm CSA Mains 3 Core
27	-12vDC Power to Board	Factory Fitted
28	+12vDC Power to Board	Factory Fitted

Wiring up the Yaskawa V1000 and GA500 Inverter Drives

DANGER:

Electrical Shock Hazard: DO NOT CONNECT OR DISCONNECT WIRING WHILE THE POWER IS ON Failure to comply will result in death or serious injury.

WARNING:

Electrical Shock Hazard: Do not operate equipment with covers removed. Failure to comply could result in death or serious injury. The diagrams in this manual may show drives without covers or safety shields to show details. Be sure to reinstall covers or shields before operating the drives and run the drives according to the instructions described in this manual.

Always ground the motor-side grounding terminal: Improper equipment grounding could result in death or serious injury by contacting the motor case.

Do not perform work on the drive while wearing loose clothing, jewellery or without eye protection: Failure to comply could result in death or serious injury. Remove all metal objects such as watches and rings, secure loose clothing, and wear eye protection before beginning work on the drive.

Do not remove covers or touch circuit boards while the power is on: Failure to comply could result in death or serious injury.

Do not allow unqualified personnel to perform work on the drive: Failure to comply could result in death or serious injury. Installation, maintenance, inspection, and servicing must be performed only by authorized personnel familiar with installation, adjustment, and maintenance of AC drives.

Do not touch any terminals before the capacitors have fully discharged: Failure to comply could result in death or serious injury. Before wiring terminals, disconnect all power to the equipment. The internal capacitor remains charged even after the power supply is turned off. The charge indicator LED will extinguish when the DC bus voltage is below 50 Vdc. To prevent electric shock, wait at least five minutes after all indicators are off and measure the DC bus voltage level to confirm safe level.

FIRE HAZARD:

Tighten all terminal screws to the specified tightening torque: Loose electrical connections could result in death or serious injury by fire due to overheating of electrical connections.

Do not use improper combustible materials: Failure to comply could result in death or serious injury by fire. Attach the drive to metal or other noncombustible material.

Do not use an improper voltage source: Failure to comply could result in death or serious injury by fire. Verify that the rated voltage of the drive matches the voltage of the incoming power supply before applying power.

Always use a thermal overload relay or an over-temperature contact when using a braking resistor: Failure to comply could result in death or serious injury by fire. Power to the drive should be interrupted when the relay is triggered.

Wiring up the Yaskawa V1000 and GA500 Inverter Drives

■ NOTICE:

Observe proper electrostatic discharge procedures (ESD) when handling the drive and circuit boards: Failure to comply may result in ESD damage to the drive circuitry.

Never connect or disconnect the motor from the drive while the drive is outputting voltage: Improper equipment sequencing could result in damage to the drive.

Do not use unshielded cable for control wiring: Failure to comply may cause electrical interference resulting in poor system performance. Use shielded, twisted-pair wires and ground the shield to the ground terminal of the drive.

Check all the wiring to ensure that all connections are correct after installing the drive and connecting any other devices: Failure to comply could result in damage to the drive.

Do not modify the drive circuitry: Failure to comply could result in damage to the drive and will void warranty. ATL is not responsible for any modification of the product made by the user. This product must not be modified.

Inverter Drive Single Phase Box Wiring
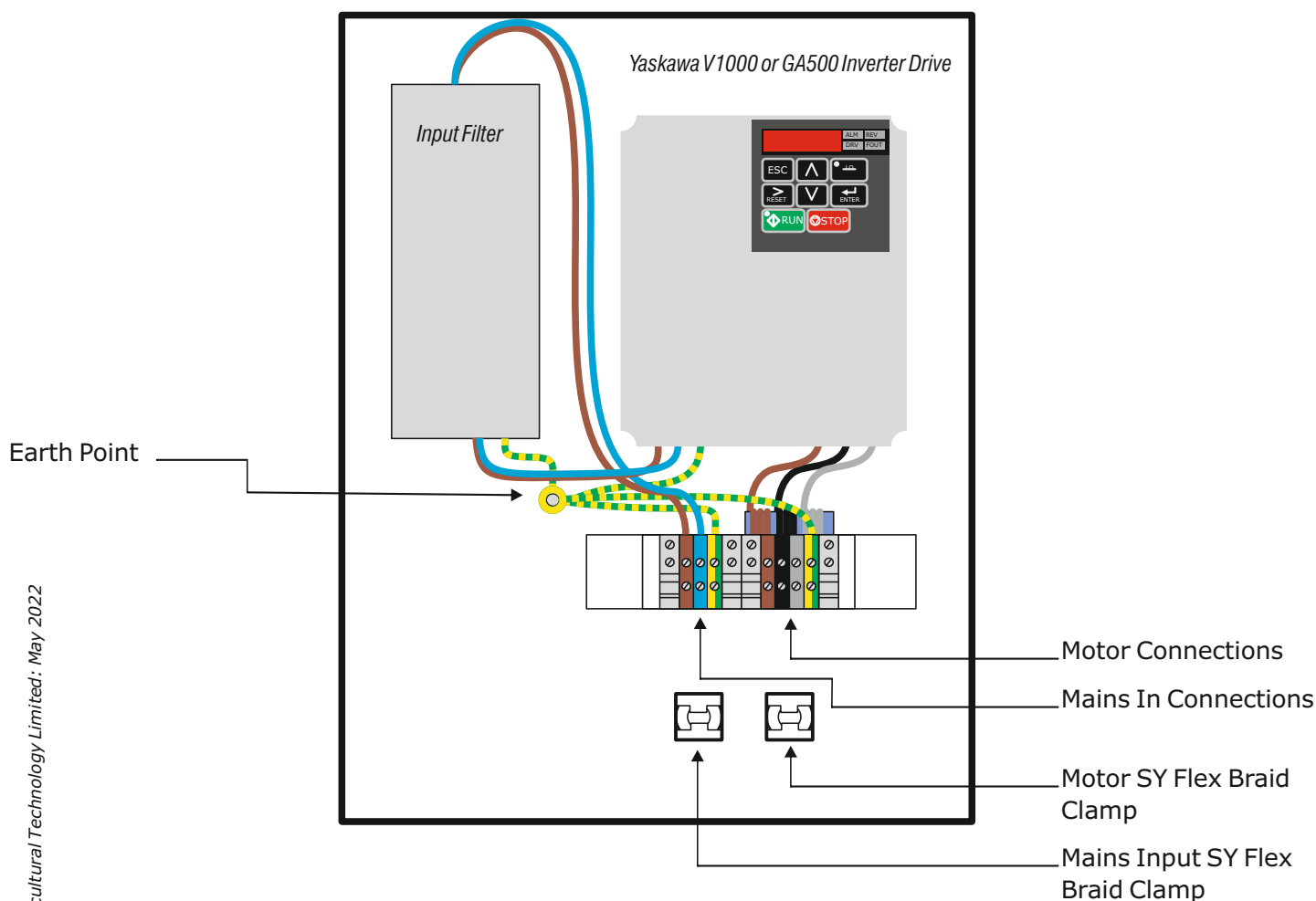
Inverter Drive 3 Phase Box Wiring

Input Filter

Yaskawa V1000 or GA500 Inverter Drive

ALM REV
DRV FOUT

ESC ∧ •
> ∨ ↵
RESET ENTER
●RUN ●STOP

Earth Point

Motor Connections

Mains In Connections

Motor SY Flex Braid Clamp

Mains Input SY Flex Braid Clamp
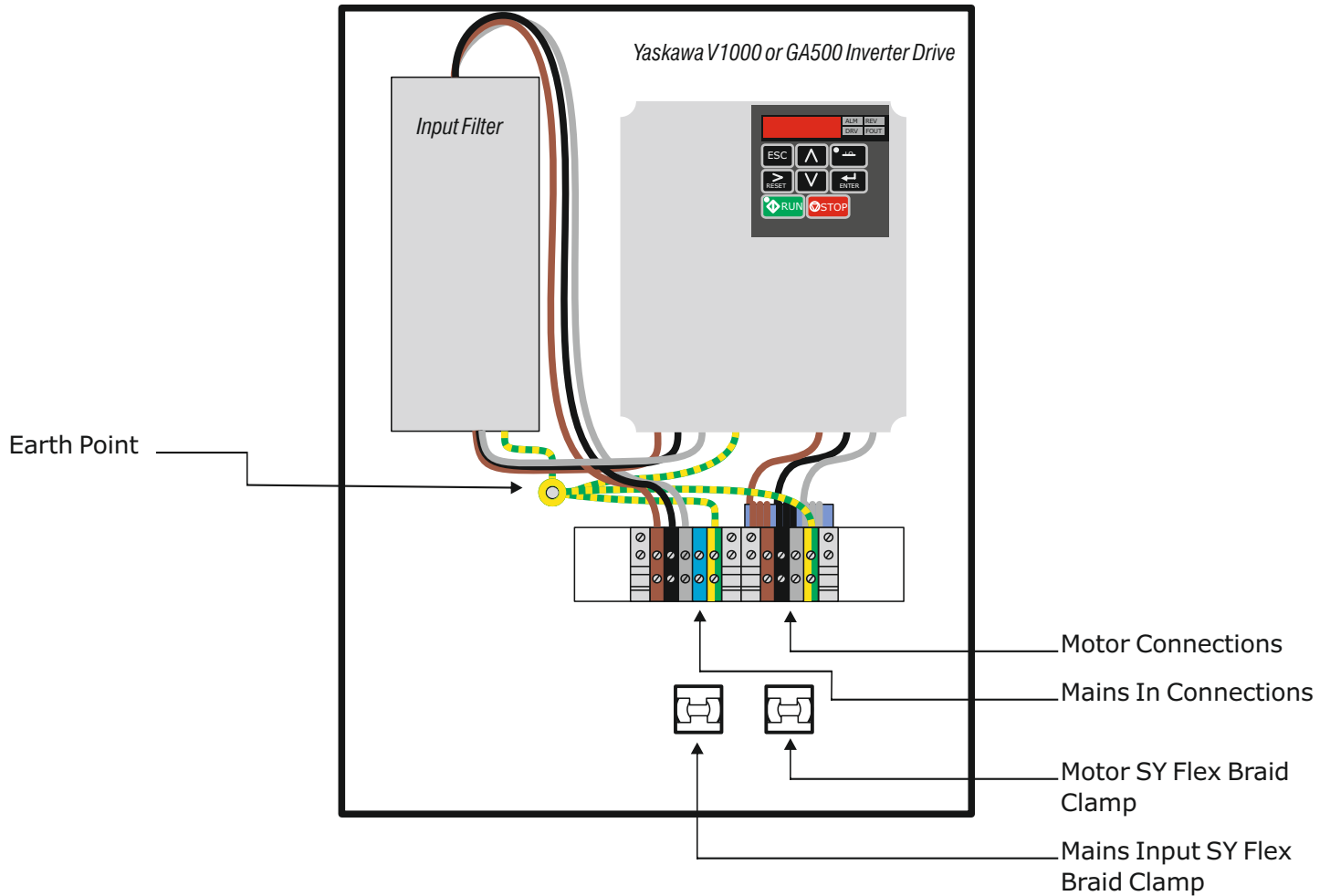
Properly terminating the SY Flex Input and Output Cables

1. Fold Braid back over the cable.

2. Tape the braid down, to ensure no stray wires.

3. Clamp the braid into the Braid Clamp
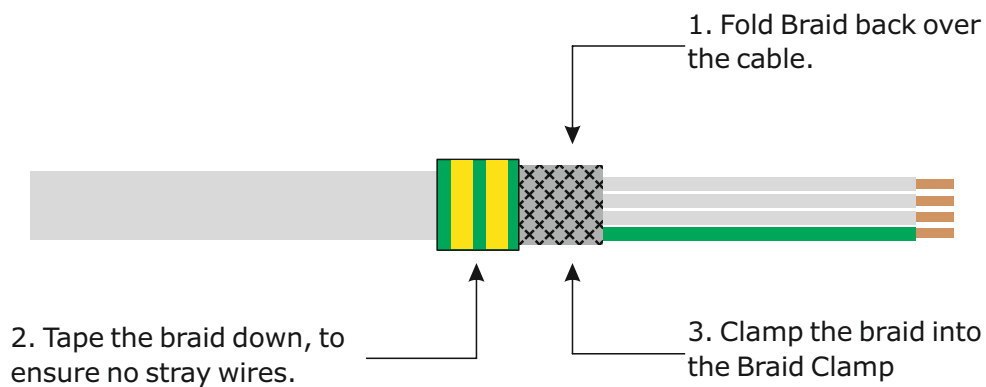
Connecting the Remote Vacuum Sensor to the Yaskawa V1000 Inverter Drive

Screen - Connect into connection number 16

Red (from Red / Black pair)- Connect into connection number 13 (Rx / A)

Black (from Red / Black pair) - Connect into connection number 14 (Tx / B)

Twisted Pair Wire connects to Remote Vacuum Sensor

Wire Red to R+ and S+, Black to R- and S-, Connect Screen to Ground Connection (Metal screw on inverter base).
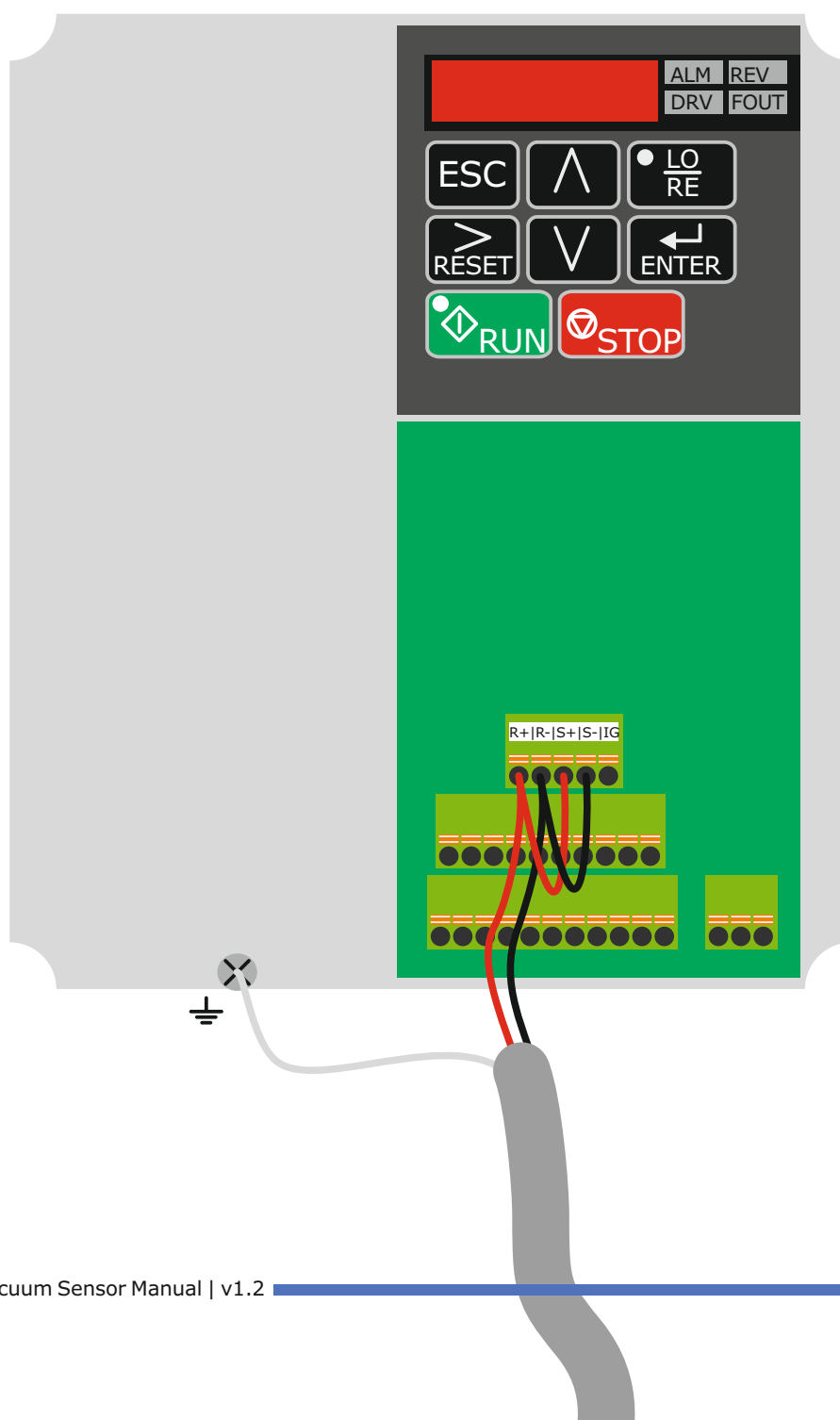
Connecting the Remote Vacuum Sensor to the Yaskawa GA500 Inverter Drive

Screen - Connect into connection number 16

Red (from Red / Black pair)- Connect into connection number 13 (Rx / A)

Black (from Red / Black pair) - Connect into connection number 14 (Tx / B)

Twisted Pair Wire connects to Remote Vacuum Sensor

Wire Red to D+ and Black to D-, Connect Screen to Ground Connection (Metal screw on inverter base).
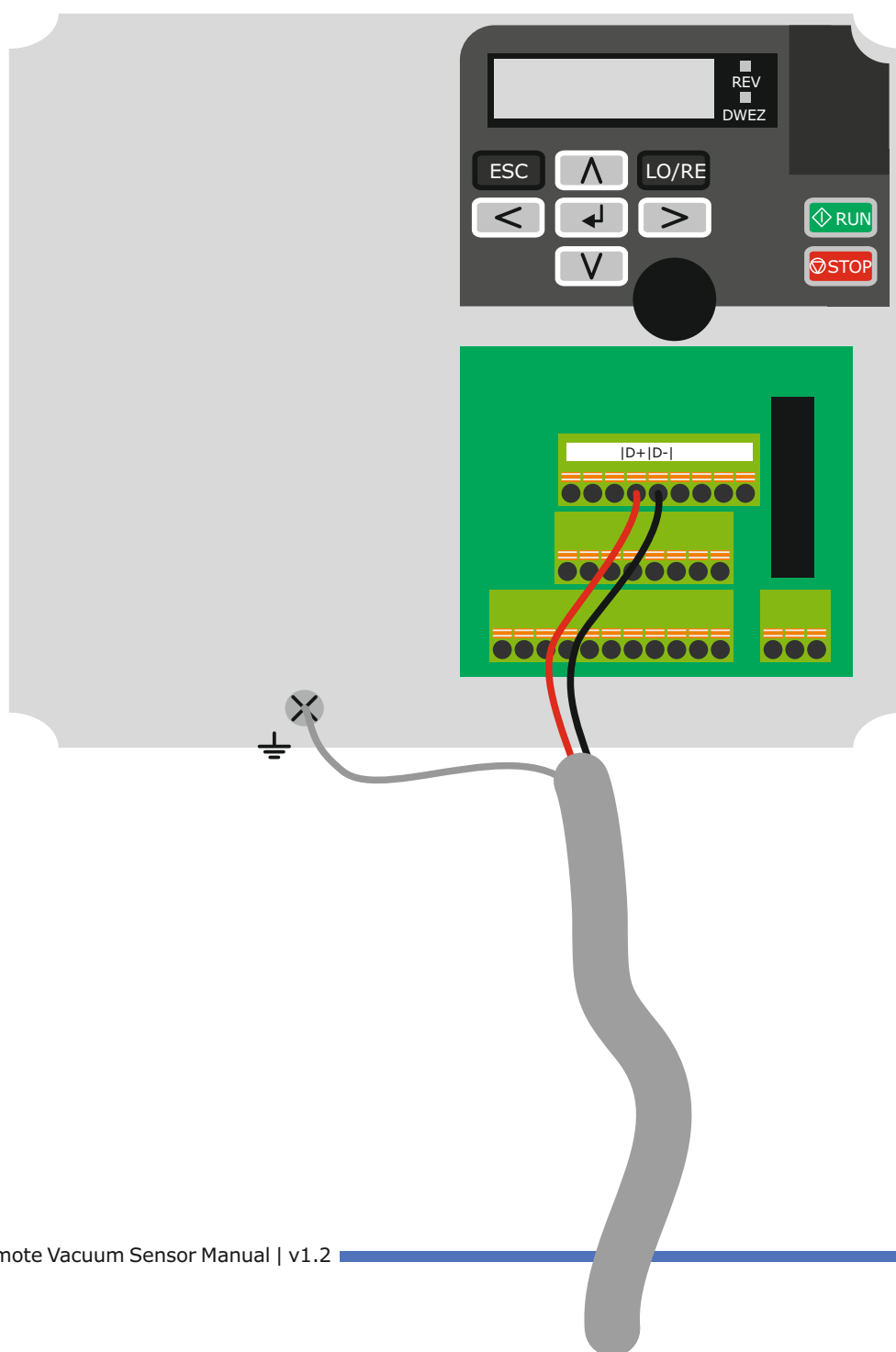
Factory Settings for the Yaskawa V1000 Inverter Drive

Parameters are accessed by pressing the down key until the display reads `par' then pressing the enter key.

Frequency Reference and Run Command

See section 5.2 in the Yaskawa V1000 Technical Manual

Parameter B1-01 (Frequency reference selection 1): Set to 2 (MEMOBUS/Modbus)

Parameter B1-02 (Run command selection 1): Set to 2 (MEMOBUS/Modbus)

Parameter B1-15 (Frequency reference selection 2): Set to 0 (Operator Keypad)

Parameter B1-16 (Run command selection 2): Set to 1 (Terminals)

Tuning Functions

See section 5.3 in the Yaskawa V1000 Technical Manual

Parameter C1-01 (Motor Acceleration Time 1): Set to 0002.5

Parameter C1-02 (Motor Deceleration Time 1): Set to 0002.5

Input Terminal Functions

See section 5.7 in the Yaskawa V1000 Technical Manual

Parameter H1-01 (Digital Input S1 Function): Set to 40 (Forward Run Command)

Parameter H1-02 (Digital Input S2 Function): Set to 41 (Stop Command)

Parameter H1-03 (Digital Input S3 Function): Set to 00 (Three Wire Sequence)

Parameter H1-04 (Digital Input S4 Function): Set to 02 (External Reference 1 / 2 Selection)

Parameter H1-05 (Digital Input S5 Function): Set to 0F (Unused)

Parameter H1-06 (Digital Input S6 Function): Set to 0F (Unused)

MEMOBUS/Modbus Communications Settings

See Appendix C in the Yaskawa V1000 Technical Manual

Parameter H5-01 (Drive Slave Address): Set to 01 for 1st drive, 02 for 2nd drive and 03 for 3rd drive

Parameter H5-02 (Communications Bus Speed): 03 (9600 baud)

Parameter H5-03 (Communications Bus Parity): 00 (No Parity)

Parameter H5-04 (Stopping Method After Communications Error): 01 (Coast to Stop)

Parameter H5-05 (Communications Fault Detection): 00 (Disabled)

Parameter H5-06 (Drive Transmit Wait Time): 05 (5ms Wait Time)

Parameter H5-07 (RTS Selection): 01 (Enabled)

Parameter H5-09 (CE Detection Time): 5.0 (5 Second Maximum Time)

Parameter H5-10 (Unit Selection for Register 0025H): 0 (0.1 Volt Units)

Parameter H5-11 (Communications Enter Function): 01 (Command not necessary)

Parameter H5-12 (Run / Stop Method Selection): 00 (Forward / Stop, Reverse / Stop)

Motor Frequency Reference Settings

See Appendix B, part B.2 in the Yaskawa V1000 Technical Manual

Parameter d1-01 (Frequency Reference 1): 5000 (50.00 Hz - Override Manual Frequency)

Parameter d1-02 (Frequency Reference 2): 5000 (50.00 Hz - Milking Maximum Frequency)

Parameter d1-03 (Frequency Reference 3): 3500 (35.00 Hz - Milking Minimum Frequency)

Factory Settings for the Yaskawa GA500 Inverter Drive

Parameters are accessed by pressing the down key until the display reads `par' then pressing the enter key.

Frequency Reference and Run Command

See section 11.5 in the Yaskawa GA500 Technical Manual

Parameter B1-01 (Frequency reference selection 1): Set to 02 (MEMOBUS/Modbus)

Parameter B1-02 (Run command selection 1): Set to 02 (MEMOBUS/Modbus)

Parameter B1-15 (Frequency reference selection 2): Set to 00 (Operator Keypad) (default)

Parameter B1-16 (Run command selection 2): Set to 01 (Terminals)

Tuning Functions

See section 11.6 in the Yaskawa GA500 Technical Manual

Parameter C1-01 (Motor Acceleration Time 1): Set to 0002.5

Parameter C1-02 (Motor Deceleration Time 1): Set to 0002.5

Input Terminal Functions

See section 11.10 in the Yaskawa GA500 Technical Manual

Parameter H1-01 (Digital Input S1 Function): Set to 040 (Forward Run Command) (default)

Parameter H1-02 (Digital Input S2 Function): Set to 041 (Stop Command) (default)

Parameter H1-03 (Digital Input S3 Function): Set to 000 (Three Wire Sequence)

Parameter H1-04 (Digital Input S4 Function): Set to 002 (External Reference 1 / 2 Selection)

Parameter H1-05 (Digital Input S5 Function): Set to 00F (Unused)

Parameter H1-06 (Digital Input S6 Function): Set to 00F (Unused)

MEMOBUS/Modbus Communications Settings

See section 11.10 in the Yaskawa GA500 Technical Manual

Parameter H5-01 (Drive Slave Address): Set to 01 for 1st drive, 02 for 2nd drive and 03 for 3rd drive

Parameter H5-02 (Communications Bus Speed): 03 (9600 baud) (default)

Parameter H5-03 (Communications Bus Parity): 00 (No Parity) (default)

Parameter H5-04 (Stopping Method After Communications Error): 03 (Continue)

Parameter H5-05 (Communications Fault Detection): 01

Parameter H5-06 (Drive Transmit Wait Time): 05 (5ms Wait Time)

Parameter H5-09 (CE Detection Time): 05.0 (5 Second Maximum Time)

Parameter H5-10 (Unit Selection for Register 0025H): 00 (0.1 Volt Units) (default)

Parameter H5-11 (Communications Enter Function): 01 (Command not necessary)

Parameter H5-12 (Run / Stop Method Selection): 00 (Forward / Stop, Reverse / Stop) (default)

Motor Frequency Reference Settings

See section 11.7 in the Yaskawa GA500 Technical Manual

Parameter D1-01 (Frequency Reference 1): 050.00 (50.00 Hz - Override Manual Frequency)

Parameter D1-02 (Frequency Reference 2): 050.00 (50.00 Hz - Milking Maximum Frequency)

Parameter D1-03 (Frequency Reference 3): 035.00 (35.00 Hz - Milking Minimum Frequency)

Setting up the Remote Vacuum Sensor

Before it can be used, the Remote Vacuum Sensor must be setup. This is outlined in the following pages.

The Keypad

There are 3 keys on the keypad, allowing the user to put the system into milk, wash and back to idle.

Idle Key ⟶   ⟵ Wash Key

Milk Key
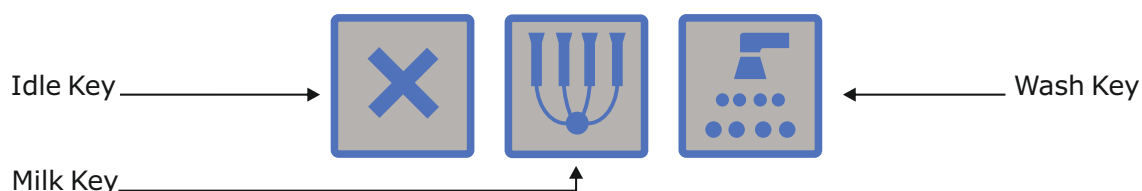
The keypad is constructed from a tough membrane overlaying individual key switches. This is a proven, reliable construction which will last for many years provided it is cleaned only with warm soapy water and not hosed down at high pressure.

The Display

The display is an OLED dot matrix type display, allowing for large and small characters to be displayed. During milking and washing, the vacuum level is displayed in kPa in a large font.

The Remote Vacuum Sensor Control is very energy efficient; power saving was an important element of the design criteria, the display will dim after 5 minutes to conserve energy.

Entering Setup

During the setup process, it is necessary to enter and modify data. Before this can be achieved, the Remote Vacuum Sensor Control has to be put into setup using this key sequence:

Press all 3 keys together ☒ **+** ⊍ **+** 🚿 to enter setup.

Once the 3 keys have been pressed, the settings menu will be shown;

RVS Settings
Vacuum Setup >

Navigating Through Menu Items

To navigate through menu items the Idle and Milk keys are used. To enter a menu item the wash key is used.

To navigate forwards through a list of menu items or increase a settings value, press the Milk key.

To navigate backwards through a list of menu items or decrease a settings value, press the Idle key.

To enter into a menu item or accept a settings value, press the Wash key.

The Settings Menu Structure

The settings menu is structured as shown below;

Entry point into settings menu.

RVS Settings
Vacuum Setup   >

Vacuum Setup: This settings menu controls the vacuum levels for the wash and milking modes, the number of vacuum pumps and the length of the wash time.

RVS Settings
< PID Settings   >

PID Settings: This settings menu controls the PID variables used to control vacuum level.

RVS Settings
< Vacuum Build Up   >

Vacuum Build Up: This menu item allows the user to set the system to delay putting other M2Bus items into wash or milk until vacuum has built up.

RVS Settings
< M2Bus Setup   >

M2Bus Setup: This settings menu controls the device information for connecting to the M2Bus.

RVS Settings
< M2Bus IDS   >

M2Bus IDS: This menu item allows the user to test connectivity to different devices on the M2Bus.

RVS Settings
< Device Info   >

Device Info: this menu item lists the software version and serial number of the device.

RVS Settings
< Exit Setup

Exit Setup: This menu item exits the setup menu.

The Vacuum Setup Menu Structure

The vacuum setup menu is structured as shown below;

Entry point into vacuum setup menu.

⬇

Vacuum Settings
Enable VP1: Yes

Enable VP1: Yes / No. This setting enables or disables vacuum pump 1. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

⬇

Vacuum Settings
Enable VP2: No

Enable VP2: Yes / No. This setting enables or disables vacuum pump 2. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

⬇

Vacuum Settings
Enable VP3: No

Enable VP3: Yes / No. This setting enables or disables vacuum pump 3. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

⬇

Milking Vacuum
Level: -46.0kPa

Milking Vacuum Level: This setting is the level of vacuum to be maintained during the milking. This level can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

⬇

Vacuum Warning
Enable: No

Milking Vacuum Warning: This setting enables or disabled the warning level indicators. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

⬇

Settings continued on next page.

The Vacuum Setup Menu Structure Continued

⬇

Milking Vacuum High: 52.0kPa

Milking Vacuum High: This setting is only shown if the warning levels are enabled. This is the level at which after 1 minute of operation the unit will warn the user if the vacuum increases beyond this level. This level can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

⬇

Milking Vacuum Low: 42.0kPa

Milking Vacuum Low: This setting is only shown if the warning levels are enabled. This is the level at which after 1 minute of operation the unit will warn the user if the vacuum drops below this level. This level can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

⬇

Wash Settings Mode: Timed

Wash Settings Mode: Timed or User Stop. This setting allows the user to select either a timed wash, or a wash until the user presses the Idle key. Press the Wash key to store the setting and move to the next setting.

⬇

Wash Settings Time: 60Min

Wash Settings Time: This setting is only shown if the previous setting is set to Timed. This setting allows the user to select how long the wash program will run for when the mode is set to timed. Press the Wash key to store the setting and move to the next setting.

⬇

Wash Vacuum Level: -46.0kPa

Wash Vacuum Level: This setting is the level of vacuum to be maintained during the wash. This level can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

⬇

Wash Vacuum High: -50.0kPa

Wash Vacuum High: This setting is only shown if the warning levels are enabled. This is the level at which after 1 minute of operation the unit will warn the user if the vacuum increases beyond this level. This level can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

⬇

Settings continued on next page.

The Vacuum Setup Menu Structure Continued

⬇

Wash Vacuum Low: 42.0kPa

Wash Vacuum Low: This is the level at which after 1 minute of operation the unit will warn the user if the vacuum drops below this level. This level can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and return to the main menu.

⬇

EXTRA Enable Input: Yes

For ATL use only.

⬇

EXTRA Key Delay: No

For ATL use only.

⬇

RVS Settings Vacuum Settings >

The Vacuum Settings main menu item.

The PID Controller Settings Menu Structure

The PID Settings menu is structured as shown below;

Entry point into PID settings menu.

**PID Settings
Mode: Single**

PID Settings Mode: This setting allows the user to select either a single PID controller for all motors, or an individual controller for each motor. Press the Wash key to store the setting and move to the next setting. Do NOT Change this setting to individual unless instructed to do so by ATL.

**PID Settings
PID Kp: 200**

PID Settings Proportional Variable: This is the proportional variable for the PID Controller. This setting can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

**PID Settings
PID Ki: 50**

PID Settings Integral Variable: This is the integral variable for the PID Controller. This setting can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

**PID Settings
PID Kd: 5**

PID Settings Derivative Variable: This is the derivative variable for the PID Controller. This setting can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

**RVS Settings
< PID Settings   >**

The PID Settings main menu item.

The Vacuum Build Up Settings Menu Structure

The Vacuum Build Up Settings menu is structured as shown below;

Entry point into Vacuum Build Up settings menu.

**Vacuum Build Up
Enabled: No**

⬇

**Vacuum Build Up
Level: -40Kpa**

⬇

**Vacuum Build Up
Max Delay: 60 Min**

⬇

**RVS Settings
< Vacuum Build Up   >**

Vacuum Build Up Mode: This setting allows the control to wait until a specific vacuum level is reached before communicating with M2Bus devices to change their mode.Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

Vacuum Build Up Level: This is the vacuum level to aim for during build up. This should be set to 5Kpa below the regulation level. This setting can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

Vacuum Build Up Maximum Delay: This is the maximum time the control will wait for build up in minutes.This setting can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

Vacuum Build Up Settings main menu item.

The M2Bus Settings Menu Structure

The M2Bus setup menu is structured as shown below;

Entry point into M2Bus setup menu.

M2Bus Settings Address: 1

M2Bus Settings Address: This setting allows the user to enter the address of the unit on the M2Bus. This number can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

M2Bus Settings Milking Pt Ctrl: No

M2Bus Settings Milking Point Control: Yes / No. This setting enables or disables communications with the Milking Point Controls. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

M2Bus Settings MPCs: 1

M2Bus Settings Milking Point Control Count: This setting is only shown if the Milking Point Control setting is set to Yes. This setting can be increased by pressing the Idle key, and decreased by pressing the Milk key. Press the Wash key to store the setting and move to the next setting.

M2Bus Settings Milk Pump: No

M2Bus Settings Milk Pump: Yes / No. This setting enables or disables communications with the Milk Pump control. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

M2Bus Settings AirBlast: No

M2Bus Settings AirBlast: Yes / No. This setting enables or disables communications with the AirBlast control. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

M2Bus Settings Pulse8: No

M2Bus Settings Pulse8: Yes / No. This setting enables or disables communications with the Pulse8 Pulsation control. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and move to the next setting.

The M2Bus Settings Menu Structure Continued

⬇

**M2Bus Settings
PowerFlush: No**

⬇

**RVS Settings
< M2Bus Setup   >**

M2Bus Settings PowerFlush System: Yes / No. This setting enables or disables communications with the PowerFlush System. Press Idle to set to No, Milk to set to Yes. Press the Wash key to store the setting and return to the main setup menu.

The M2Bus setup main menu item.

The M2Bus IDS Menu Structure

The M2Bus IDS menu allows the user to check connectivity on the M2Bus between this device and other devices. It will show whether the device responds and if so, its software version. The M2Bus IDS menu is structured as shown below;

Entry point into M2Bus IDS menu.

⬇

M2Bus IDS
Milking Pt Ctl >

This routine will test communications to a Milking Point Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine.

⬇

M2Bus IDS
< **MM Hub** >

This routine will test communications to a MM Hub, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< **Milk Pump** >

This routine will test communications to a Milk Pump Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< **AirBlast** >

This routine will test communications to an AirBlast Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< **Auto Wash** >

This routine will test communications to an Auto Wash (either 365 or Pro) Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

Settings continued on next page.

The M2Bus IDS Menu Structure Continued

⬇

M2Bus IDS
< PowerFlush >

This routine will test communications to a PowerFlush Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< PF Node >

This routine will test communications to an individual PowerFlush Node, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< Pulse8 >

This routine will test communications to a Pulse8 Pulsation Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< Rmte Vac Sen >

This routine will test communications to another Remote Vacuum Sensor Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< Micro M5 >

This routine will test communications to a Micro M5 Parlour Control, Press the Wash key to enter the routine. Press the Milk key to step to the next IDS routine. Press the Idle key to step to the previous IDS routine.

⬇

M2Bus IDS
< Exit

This menu item will exit the M2Bus IDS menu and return to the settings main menu.

The Device Info Menu Structure

The Device Info menu allows the user to check the software version and serial number of the device. The menu is structured as shown below;

Entry point into Device Info menu.

Software Version   >
V2.00 Jun 13 2016

This menu item will display the software version in the remote vacuum sensor. Press the Milk key to step to the next IDS routine.

< Serial No: >
000000000000

This menu item will display the serial number of the device. Press the Milk key to step to the next IDS routine, Press the Idle key to step to the previous menu item.

< Calibration   >

FOR ATL USE ONLY.

Press the Milk key to step to the next IDS routine, Press the Idle key to step to the previous menu item.

< PCB ISSUE   >
ISSUE: D

FOR ATL USE ONLY.

Press the Milk key to step to the next IDS routine, Press the Idle key to step to the previous menu item.

< RCON   >
0003

FOR ATL USE ONLY.

Press the Milk key to step to the next IDS routine, Press the Idle key to step to the previous menu item.

↓

< Main Menu

This menu item will return to the main settings menu. Press the Idle key to step to the previous menu item. Press the Wash key to return to the main settings menu.

Milking Mode

Press the Milk key [icon] to put the system into Milk mode before milking.

Mode ⟶ **Milk -46.0kPa** ⟵ Vacuum Level

The display will show 'Milk' and the vacuum level.

If the Remote Vacuum Sensor is connected to other ATL equipment (ie. AirBlast, Milk Pump Control, Pulse-8 Pulsation Control or Milk Meter System), these can be linked together so that when the milk key is pressed, they all go into milking mode.

Press the Milk key [icon] to access information on the Milking program. See separate section.

Press the Idle key [icon] to finish milking and return to Idle mode.

Washing Mode

Press the Wash key [icon] to put the system into Wash mode to allow washing.

Mode ⟶ **Wash -46.0kPa** ⟵ Vacuum Level

The display will show 'Wash' and the vacuum level.

If the Remote Vacuum Sensor is connected to other ATL equipment (ie. AirBlast, Milk Pump Control, Pulse-8 Pulsation Control or Milk Meter System), these can be linked together so that when the wash key is pressed, they all go into washing mode.

Press the Wash key [icon] to access information on the washing program. See separate section.

Press the Idle key [icon] to finish washing and return to Idle mode.

Info Function

The info function provides information on milking and washing times and vacuum levels. The information is available all of the time (i.e. both when milking and washing programs are running or when the control is in idle). To access the information, the user must press the key the which corresponds to the current mode, for example if the system is milking, press the milking key again.

Press the Idle key [X] to access the info function when the system is Idle.

Press the Milk key [milk icon] to access the info function when the system is Milking.

Press the Wash key [wash icon] to access the info function when the system is Washing.

The display will now show the Washing Vacuum lowest level during the washing cycle.

Washing Vacuum Low: 43.2kPa

Washing Vacuum Low: This is the lowest level after 1 minute of operation that the unit measured during the wash.

⬇

Washing Vacuum High: 48.5kPa

Washing Vacuum High: This is the highest level after 1 minute of operation that the unit measured during the wash.

⬇

Last Washing Time: 000:00:00

Last Washing Time: This is the length of the wash, if the unit is still washing, this will display the current washing time.

⬇

The Info Function Menu Structure Continued

⬇

Milking Vacuum Low: 45.2kPa

Milking Vacuum Low: This is the lowest level after 1 minute of operation that the unit measured during milking.

⬇

Milking Vacuum High: 49.1kPa

Milking Vacuum High: This is the highest level after 1 minute of operation that the unit measured during milking.

⬇

Last Milking Length: 000:00:00

Last Milking Length: This is the length of the milking, if the unit is still milking, this will display the current milking length.

⬇

The unit will then return to the current mode display.

Monthly / Six Monthly / Yearly Routine Maintenance

■ Visually inspect the Remote Vacuum Sensor box for damage. Any damage will admit water causing the premature failure of the electronics and should be fixed as soon as possible.

Parlour Wash Down

■ The Remote Vacuum Sensor control enclosure is IP65 rated. However, no indirect or direct pressure washing should be used to wash the Remote Vacuum Sensor Control, as this will cause the seals to fail and water to ingress and damage the electronic components. Please note that water damage is not covered under warranty.

Troubleshooting

■ The Remote Vacuum Sensor reports errors to the user. If an error occurs the control show the error on the screen, pressing the Idle key will clear the error.

The list is a list of the errors which may occur on the Remote Vacuum Sensor.

Error	Fault Information
Warning: Low Vacuum Level	The vacuum level measured was lower than the low warning level for this milking or washing.
Warning High Vacuum Level	The vacuum level measured was higher than the high warning level for this milking or washing.
Error: Vac Pump X Is in manual mode	The system attempted to start the vacuum pump, however it was switched into manual mode. Where X is the number of the vacuum pump.
Error: Vac Pump X Comms Error	The system could not communicate with the vacuum pump. Where X is the number of the vacuum pump.
Error: Vac Pump X Over-current	The vacuum pump reported that it has entered an over-current state. Where X is the number of the vacuum pump.
Error: Vac Pump X Over-voltage	The vacuum pump reported that it has entered an over-voltage state. Where X is the number of the vacuum pump.
Error: Vac Pump X Overheat	The vacuum pump reported that it has entered an overheat state. Where X is the number of the vacuum pump.
Error: Vac Pump X Dyn Break fault	The vacuum pump reported that a dynamic breaking fault has occurred. Where X is the number of the vacuum pump.
Error: Vac Pump X PID Feedback	The vacuum pump reported that a PID feedback fault has occurred. Where X is the number of the vacuum pump.
Error: Vac Pump X External Fault	The vacuum pump reported that an external fault has occurred. Where X is the number of the vacuum pump.
Error: Vac Pump X Hardware Fault	The vacuum pump reported that a hardware fault has occurred. Where X is the number of the vacuum pump.
Error: Vac Pump X Motor Overload	The vacuum pump reported that a motor overload fault has occurred. Where X is the number of the vacuum pump.

Troubleshooting Continued

Error	Fault Information
Error: Vac Pump X Overspeed Fault	The vacuum pump reported that it has encountered an overspeed fault. Where X is the number of the vacuum pump.
Error: Vac Pump X Under-voltage	The vacuum pump reported that it has entered an under-voltage state. Where X is the number of the vacuum pump.
Error: Vac Pump X Input Phase Loss	The vacuum pump reported that it has detected an input phase loss. Where X is the number of the vacuum pump.
Error: Vac Pump X	The vacuum pump reported that a operate CON fault has occurred. Where X is the number of the vacuum pump.

Innovation In and Out of Parlour

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