

Ethos Two Controller

Traction Lift E300 Drive – Initial Installation Guide

TVL No.377 / Issue No. 3 / Date: March 2026



“Let's Not Run Before We Can Walk!”

This guide is to aid you in getting the lift running on Pendant/Inspection Control. Please refer to our Ethos Two manual TVL 351 for a more comprehensive guide. Throughout this guide, you'll find references to specific sections in TVL 351. Please refer to our **General EMC Guidelines** found in TVL 351, it is important that these guidelines are adhered to.



Safety Warnings / Precautions



Be aware that the lift panel will contain equipment that is supplied with potentially lethal voltages. Please make sure the panel is isolated before carrying out any installation work or modifications.



Observe normal precautions for handling electronic devices; avoid static electricity, dampness and extreme temperatures. Please consult main drawings for contract specific wiring and setup.



Installation and servicing of this control equipment must be carried out by suitably qualified and trained personnel. A thorough risk assessment must be performed before carrying out any work on this equipment.

Contacts If you have a question concerning safety, please do not hesitate to contact TVC:

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MMI Introduction

The Ethos Two is fitted with a 7" touch screen as standard; this offers the user a comprehensive and easy to use menu system and allows extensive built in help screens so problems can be diagnosed swiftly and accurately.

The figure overleaf gives an overview of the main MMI features; feel free to press the buttons on the touch screen to explore each feature in more depth.

MMI Key

-  Fixed button that can be pressed for additional features / menus.
-  Programmable button, tap to access function, touch and hold to assign a different function.
-  Main navigation Buttons.
-  No touch function, Information or Inactive button.
-  Active Feature.

Additional help and hardware connection diagrams are available in the toolbox menu. Some screens will require you to login – the password is set to [222222] for technician level access.

Screen Calibration

If the touch screen is behaving inaccurately, please carry out a screen calibration.



Press: Toolbox → Calibrate Screen.

Follow the on-screen prompts to re-calibrate the screen.

If the touch screen isn't working at all, turn on DIP 2 on SW4 on the MMI and reboot the MMI by pressing the reset button directly under SW4. The processor will now reboot into screen calibration mode. Follow the on-screen prompts to re-calibrate the screen, turn DIP 2 off after use and reset.

Ethos Two MMI Quick Start

Screen Navigation and Info Header

The top edge of the screen will show the following:-
 Current screen navigated to.
 In or Out of service status.
 Login notification.
 Current numerical floor level +/- = above/below level.
 (Note- this is not floor name or legend)
 Current lift direction.
 Time and Date.

Status Button

This bar will be green when the lift is in service with no faults active. The button will be red if a breakdown event is active or orange if in a fault condition or different operating mode to normal (eg. fire service). Current / active events will scroll on the button. Press the button to see / hide the status message.

Car Button

This button will show door status, travel direction and committed direction. The doors also show when the safety edge is activated, once the lock beak symbol appears the doors are closed and locked. Press the button to go to the car info screen and common door settings. The ride sensor display button is behind this button.

Indicator & Speech Button

This button will show floor position using the floor legends. (Note- this is floor name or legend, not numerical floor level)
 Press the button to go to position indicator and speech settings.

Speed Profile Button

This button will show current speed profile of the lift car. The curve is derived from the shaft encoder device, so will be a representation of the cars current speed. The curve will be green in the up direction and red in the down direction.
 Press the button to go to the velocity recording feature, profile adjust, speed and slowing settings. Shaft encoder settings can be found here.

Help Button & Instruction / Help Footer

Press the help button for help index and main cpu connector descriptions.
 The footer will show useful instructions and help information concerning the current screen shown.

Information Button

This button shows the TVC contract ID, site name and lift name or number.
 Press the button for journey counters, door counters and trip counters. Rated speed and software versions can be found here.

Ethos Two – Main Screen

This guide gives an overview of the main MMI features, feel free to press the buttons on the touch screen to explore each feature in more depth.

Key:-
 Fixed button that can be pressed for additional features / menus.
 Programmable button, tap to access function, touch and hold to assign a different function.
 Main navigation Buttons.
 No touch function, information or Inactive button.
 Active Feature.
 The event logger and settings backups are kept on the SD1/USD card. Do not remove the SD card whilst the unit is powered up unless it is de-mounted via the toolbox menu. **Ignoring this may corrupt the card.** The unit will function without the card present but certain features in the logger will be limited.
 To update the software or to download event logs, plug in a micro USB lead (into J16) and then use the SD1 connect button in the toolbox to put the unit in mass storage mode. This will allow the use of a PC and file explorer to drag and drop files to and from the card.
 Follow the programming procedure overview to upgrade the firmware.
 The SD2 card slot on the MMI card is normally only used for firmware upgrades. If a card is present in the slot it will automatically be placed in mass storage mode if a USB lead is plugged in.
 Additional help and hardware connection diagrams are available in the toolbox menu.
 Some screens will require you to login – the password is set to [222222] for technician level access.

The screenshot shows the main MMI interface. At the top, it displays 'Out of Service' and 'Shaft Encoder Floor Map Problem' with a timestamp of 'Thu 14/08/15 15:46:37'. Below this is a 'Car' button with a green arrow pointing up. To the right is a 'G' button for 'Indicators & Speech'. The bottom section features a 'Profile' button, a 'Speed 3.50m/s' indicator, and a 'Recent' button. A 'Help' button is at the bottom right. A 'Touch any button to see the full status message' instruction is overlaid on the screen.

Event Logger Button

The event logger button will show events as they happen.
 Press for the event logger screens, events can be filtered on breakdown / fault / service and information types. Options to search the logger by event or date are found here.
 Each event will show data on the lift such as position speed etc, when the event was logged, also state of the main CPU and Car module I/O when the event occurred.

Toolbox Button

The toolbox button gives access to debug screens, comms, status screens, time date setting, screen calibration, volume and brightness control.
 The built in SD card can be connected to the USB port for browsing via a PC using the Connect SD1 button.

DDS / PTT and Call Buttons

These buttons will place the lift in prepare to test mode to limit landing calls, Doors can be disabled and calls for the top and bottom floors can be quickly placed.
 Enter Calls will take you to the call entry screen where car or landing calls can be entered on the system.

Signal Button – Trace Menu

User defined I/O for the home screen and I/O trace. Press to activate I/O trace or alter the items in the list. Logical Inputs or Outputs can be selected to be displayed on this list. Logical I/O can be mapped to any terminal on any expansion module or the main motherboard via the View I/O – configure option. Signals in black are active low / active off.

Terminal Button – View I/O

This displays a physical bank of I/O, this can be changed to any of the motherboard or expansion module physical banks.
 Pressing this button will take you to the View I/O screens where you can select any expansion module or the motherboard and look at the I/O mapping and I/O status in real time. The screens also give you the status of a particular expansion module, I/O can be reassigned from here also.

Solutions Status

Select this button to take you to a list of current events / problems that are keeping the lift out of service. The face icon will be sad if there are items to be resolved.
 If the face icon is smiling the lift will be ready for service.

Settings Button

Select this button to take you to the settings options. Search settings list / tree contains all settings available. When changing some settings the lift has to be safe e.g. machine room stop push, pressed.
 Backing up and restoring saved settings is accessed via this button. A comparison of factory and current settings can be viewed here also.

Check List

The Check List gives a series of procedures to check whilst commissioning the controller / lift. Select for jog motor with direction checks, shaft learn, floor trims, ETSD testing and service activation. The panel can be put into 'Host Mode' from here, if the car / expansion network has not been installed.

Recent and Favorites Buttons

The recent button will list recent settings that have been changed. The favourites button will take you to a list of buttons that can be assigned to commonly used settings.
 The additional "Aurorum" button to the right accesses the "Aurorum" settings and feature activation.



"Let's Get This Controller Running!"

Please refer to the following steps to get the lift moving on Inspection / Pendant Control.

Follow the panel drawing sheet that lists the necessary circuits that need to be made up for Inspection / Pendant control **(only)**.

Appendix A2: Devices Needed for Initial Site Installation Lift controller using the Limax3CP.

Fit and wire the following external devices to the controller terminals to allow the system to operate under "Inspection Control" for initial site installation. Additionally set "Hoist Mode" in the MMI checklist so door limits and car network events are ignored. **If in doubt, please contact TVC helpdesk on 01352 793222.** Refer to the site-specific drawings for further details. TVC Contract No: <CONTNO>

External Device	Connected between controller terminals
Top & Bottom Final Limits	MSA - FL
Limax3CP (OC contact)	FL - OTL
Safety Gear Switch	OTL - SGS
Overspeed Governor	SGS - OS
Buffer Switch	OS - BS
Pit Inspection Control Stop Switch	BS - APS
Auxiliary Pit Stop Switch	APS - PCS
Pit Stop Switch	PCS - PSP
OSG Pit Pulley Weight Switch	PSP - PWS
Limax3CP Tape Presence Switch	PWS - TPS
Machine Room Stop Switch	TPS - MSP
Cartop Stop Switch	STP1 - STP
Cartop Inspection Control Stop Switch	STP - CTS
Cartop Inspection Control Switch	CTS - TTRX
Cartop Inspection Control Run Command (Make this switch to run Up or Down)	PR - CTP
Cartop Inspection Control Run Command UP (Make this switch to run Up)	CTP - CTU
Cartop Inspection Control Run Command DN (Make this switch to run Down)	CTP - CTD
Pit Inspection Control Switch	TTRX - TTX
Inspection UP Limit	TU - TUP
Inspection Down Limit	TD - TDN
Car Gate Contact	G1 - CG
Landing Gate Contacts	CG - GL
Overspeed Governor Anti-Creep Switch	BC1 - BC2
Overspeed Governor Anti-Creep Switch	BC3 - BC4
Motor Encoder	Refer to drawings
Limax3CP (SGC output)	B24V - SGC
Fire alarm contact (To prevent the Fire alarm warning buzzer operating)	MS - FAM
Alternate floor fire alarm contact (To prevent the Fire alarm warning buzzer operating)	MSA - ALTF
Fire service switch (To prevent the Fire alarm warning buzzer operating)	MS - FSR
Fit the following panel link if the Shaft Door Access Reset switch, Pit and Car roof Door Access Switches are not fitted. Ensure the link is removed once the switches are fitted!	GL to NRM

Important Notice: Temporary Lift Operation Without Safety Devices
If none of the standard safety devices are currently installed, the following connections can be made as a minimum to enable the lift to operate temporarily with a Pendant control whilst on **Hoist Mode**:

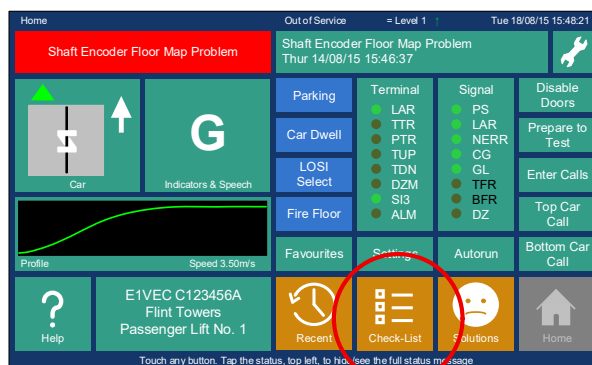
MSA to STP	TTRX to TTX	G1 to CG	CG to GL	GL to NRM	BC1 to BC2	BC3 to BC4
Pendant control connections <i>Refer to schematics for further details</i>	CTS to STP Stop switch	CTS to TTRX Inspection switch	CTP to CTU UP run command	CTP to CTD Down run command	PR to CTP UP or DN run command	

WARNING: Operating the lift in this state means **NO SAFETY FEATURES** are present or functioning. The only active external Stop switch will be on the Pendant control. This creates a **high-risk environment** with **potential for serious injury or equipment damage**. TVC strongly advises that **all safety devices** be installed and verified before any attempt is made to move the lift. Do not proceed unless absolutely necessary and only under strict supervision by qualified personnel.

Place the Ethos Two Processor in **Hoist Mode**. This allows the motor to run if the panel is on Inspection Control (TTR) or Emergency Electrical Operation (PTR). This mode will ignore all the auxiliary components on the Car Network, as you may not have them fitted at this stage.



Press: Checklist → Hoist Mode



“Drive Settings and Saving”

E300 Encoder Connections

The motor encoder (if one is being used) must be connected to the 15-way D-type connector **Figure 1**, located at the bottom of the Drive shown in **Figures 2 & 3**.

If you happen to have a motor encoder that comes with a pre-made off plug, in most cases it will need to be cut off and connected to the 15-way D-type connector shown in **Figure 1**. Refer to the panel drawing sheet 6 and 11 for the encoder connections.

Note: You may need to consult the machine manufacturer's documentation for the connections to the Drive if you need to cut off the plug.

Figure 1

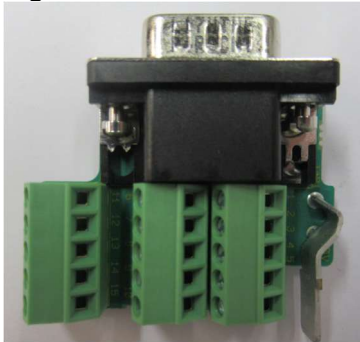


Figure 2

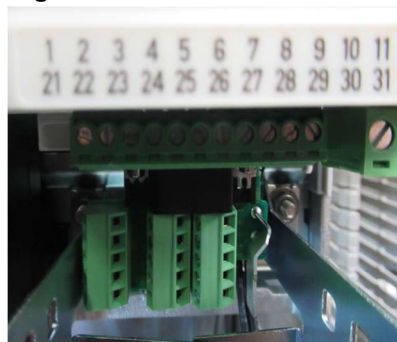
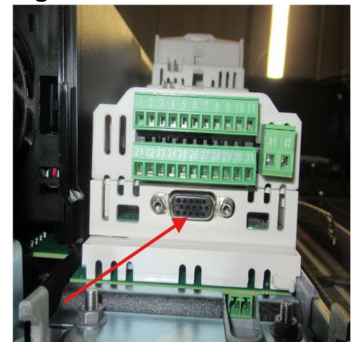
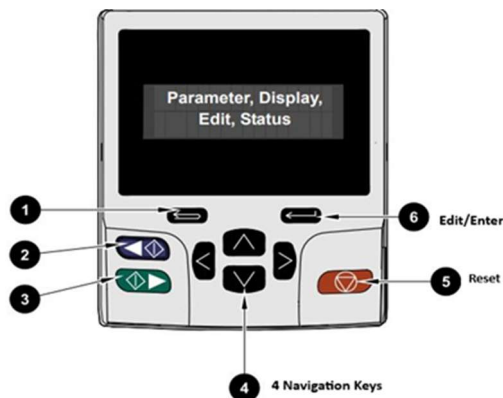


Figure 3



E300 Drive MMI



1. **Escape button** - Used to exit from parameter edit or view mode. In parameter edit mode, if parameter values are edited and the exit button pressed, the parameter value will be restored to the value it had on entry to edit mode.
2. **Start reverse Auxiliary) button** – Not used.
3. **Start forward button** – Not used.
4. **Navigation keys (x4)** – Used to navigate through the menu and parameter structure and edit parameter values.
5. **Reset button** – Used to reset the drive.
6. **Enter / Mode button** – Used to toggle between parameter edit and view mode.



SAVING SETTINGS (E300 Drive) – The settings for any changed parameters will be lost when the drive is powered off. Ensure the SAVE procedure is carried out after completing a **Successful Autotune** or amending any parameters. It's good practice to cycle the power on the Drive after completing the save procedure; the Drive should then fully shut down. Then, check that your last amended parameter to confirm that the parameters have been saved.

Procedure to Save Parameters

Select “**Save Parameters**” at the beginning of any menu, for example A00. Follow these steps to save the parameters:-

1. Navigate to the beginning of your chosen menu (#00) using the **Navigation Keys** (4) and then press **Edit/Enter button** (6).
2. Press the **UP Navigation Key** (4) until it displays **Save Parameters** in large text.
3. Press the **Edit/Enter button** (6), and the displayed **Save Parameter** text will reduce in size.
4. Then press the **Reset button** (5). **No Action** is displayed.

Note: when changing a parameter in User Menu A, the new value is saved automatically after the **Enter/Edit button** is pressed.

If a parameter is changed in the advanced menus, then the change will not be saved automatically. The save procedure must be followed.

User Menu A in the Nidec E300 drive is designed for essential setup, configuration, and monitoring of the motor.

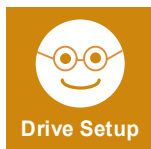
It provides users with access to all the necessary parameters for these tasks in a single, convenient menu.

The table below details the parameter settings for **User Menu A** parameters. In the Ethos 2 manual (TVL 351) only the *Source/Destination* parameters are listed.

Note: Certain parameters are not accessible in every **Drive Control Mode**.

Menu A Parameter	Description	Source/Destination Parameter	Function
A00	Parameter mm00	-	General
A01	User Security Status All Menus	H02	
A02	Drive Control Mode	B01	Configuration
A03	Motor Rated Current	B02	
A04	Motor Rated Voltage	B03	
A05	Motor Rated Power Factor	B04	
A06	Number Of Motor Poles	B05	
A07	Motor Rated Frequency	B06	
A08	Motor Rated Speed	B07	
A09	Drive Encoder Type	C01	
A10	Drive Encoder Rotary Pulses Per Revolution	C03	
A11	Drive Encoder Voltage Select	C04	
A12	Nominal Elevator Speed	E01	
A13	Sheave Diameter	E02	
A14	Roping	E03	
A15	Gearbox Ratio Numerator	E04	
A16	Gearbox Ratio Denominator	E05	
A20	Reset Trip Log	L39	Autotune
A21	T41 T42 Relay Output Source	F27	
A22	Motor Autotune	B11	
A23	Transient Inductance Ld	B33	
A24	Stator Resistance	B34	
A25	Position Feedback Phase Angle	C13	
A30	Total Output Current	J22	Monitoring
A31	Speed Feedback	J51	
A32	Profile Speed	J39	
A33	Actual speed	J40	

A34	Output Frequency	J60		
A35	Output Voltage	J61		
A40	Motor Torque Ramp Time	D02	Tuning	
A41	Brake Control Output	D03		
A42	Brake Control Release Delay	D04		
A43	Brake Control Apply Delay	D05		
A44	Motor Torque Ramp Down Time	D32		
A45	Start Speed Loop P Gain	I01		
A46	Start Speed Loop I Gain	I02		
A47	Start Current Loop P Gain	I03		
A48	Start Current Loop I Gain	I04		
A49	Start Current Loop Filter	I05		
A50	Run Speed Loop P Gain	I06		
A51	Run Speed Loop I Gain	I07		
A52	Run Current Loop P Gain	I08		
A53	Run Current Loop I Gain	I09		
A54	Run Current Loop Filter	I10		
A55	Stop Speed Loop P Gain	I11		
A56	Stop Speed Loop I Gain	I12		
A57	Stop Current Loop P Gain	I13		
A58	Stop Current Loop I Gain	I14		
A59	Stop Current Loop Filter	I15		
A60	Start Lock P Gain	I20		
A61	Start Lock Enable	I22		
A62	Sensorless Mode Filter	C17		
A65	T5 T6 Analog Input 1 Scaling	F39		Testing
A68	Firmware Version	J04		Information
A69	Maximum Heavy-Duty Rating	J06		
A70	T41 T42 Relay Output State	F09	Diagnostics	
A71	T31 STO Input 01 State	F10		
A72	T5 T6 Analog Input 1	F35		
A73	T8 Analog Input 3 Thermistor Feedback	F62		
A74	Trip 0	L29		
A75	Trip 0 Date	L41		
A76	Trip 0 Time	L42		
A77	Trip 1	L30		
A78	Trip 1 Date	L43		
A79	Trip 1 Time	L44		
A80	Blocked Elevator Release Enable Input	H38	Feature	



“On to the Drive Autotune / Setup”

Kindly refer to Section 12 of the Ethos Two manual (TVL 351); it is important that this section is read in its entirety.

An Autotune must be performed (preferably using the rotational method) on the motor before attempting to run the lift. The motor data plate should be checked against the parameters preconfigured in the Drive. Depending on the type of motor, either Gearless Permanent Magnet (RFC-S) or Geared Induction (RFC-A or Open Loop), our easy-to-follow flowchart, found later in this guide, can be used.

An Autotune on an E300 Drive has completed when the display reverts to displaying 'NONE'

Note: Some **Gearless Permanent Magnet (RFC-S) Motors** have low saliency. In this instance, a Stationary autotune may fail to calculate the encoder phase offset value correctly. TVC advises that a rotational autotune is the preferred method for this type of motor. This is the only guarantee that the motor and encoder phasing is checked and learnt.

If you elect to perform a Stationary autotune on a Gearless Permanent Magnet Motor (RFC-S), it should be carried out three times to ensure consistent values are measured, most importantly, Drive parameter **#C13** Position Feedback Phase Angle.

The following parameters should be noted on each tune and compared for consistency:

All modes: RFC-A / RFC-S / Open Loop (RFC-A Sensor less) – Stationary and Rotating Autotune

#B33 Transient Inductance

#B34 Stator Resistance

Mode: RFC-S - Rotating Autotune only

#C13 Position Feedback Phase Angle (**Note** this parameter may vary by a couple of degrees if a stationary autotune is performed).

To confirm that a successful Autotune has been completed, it's advisable to reset the Drive Trip Log before starting the Autotune process. After the Autotune is finished, check the Trip Log to ensure that no errors were logged. You can reset the log by turning parameter #L39 (Reset Trip Log) to On, which will automatically turn off after the reset. To verify that the reset was performed correctly, check parameter #L29 (first trip in logger); it should show "None."

Ensure that the Drive does not trip whilst the AUTOTUNE is in progress. If the Drive does trip, please consult the troubleshooting guide located further down in this guide.

Following a successful autotune, you may want to reverse the direction of the motor.

Rotation Check

Motor direction can usually be changed by swapping motor phases. Exception: - For RFC-S Permanent Magnet Type, the direction of rotation cannot be reversed by swapping motor phases. The reversal of direction is achieved by changing a parameter in Ethos Two.



Press: Checklist → Jog Up/Down → Drive Forward = Up.

AUTOTUNE

ROTATING AUTOTUNE

Read precautions

Carry out Rotation Check

Change Parameter #A21{F27} to L25 And SAVE parameters

Check / set motor parameters (see overleaf)

Set Parameter #A22{B11} (Autotune) to 2 (Rotating)

Enter and hold Test direction

AUTOTUNE	
Gearless	Motor turns a fraction of a revolution
G geared	Motor turns at 2/3 speed for 40 seconds

Successful? Drive displays "NONE"

Yes [Parameter #A22{B11}= 0]

Change Parameter #A21{F27} to D03

Save parameters

END

PRECAUTIONS ROTATING AUTOTUNE

1. These instructions should be read in their entirety before proceeding.
2. It is the responsibility of the competent person to take all precautions as required when conducting the following.
3. It is important that the lift car is prevented from moving whilst an auto tune is being conducted and that the motor shaft can revolve freely. This normally implies that the motor be disconnected from the gearbox where fitted or that the lift is adequately secured in the well so as to prevent movement and the ropes lifted from the drive sheave, and additionally that the brake is lifted.
4. Ensure that if the motor is disconnected from the gearbox, then the motor shaft key is secured or removed, as the motor rotates during autotuning.
5. Ensure that no fault condition is present.

PRECAUTIONS STATIONARY AUTOTUNE

- **If you elect to perform a Stationary autotune on a Gearless Permanent Magnet Motor (RFC-S), it should be carried out three times to ensure consistent values are measured, most importantly, Drive parameter #C13 Position Feedback Phase Angle.**
1. These instructions should be read in their entirety before proceeding.
 2. It is the responsibility of the competent person to take all precautions as required when conducting the following.
 3. It is important that the lift car is prevented from moving whilst an auto tune is being conducted. This normally implies that the brake supply be disconnected.
 4. Ensure that no fault condition is present.

STATIONARY AUTOTUNE **

Read precautions

Disconnect brake

Change Parameter #A21{F27} to L25 And SAVE parameters

Check / set motor parameters (see overleaf)

Set Parameter #A22{B11} (Autotune) to 1 (Stationary)

Enter and hold Test direction

AUTOTUNE	
	Motor noise heard for up to 20 seconds

Successful? Drive displays "NONE"

Yes [Parameter #A22{B11}= 0]

Change Parameter #A21{F27} to D03

Save parameters

Reconnect brake

END

AUTOTUNE RESULTS	
Stator Resistance #A24{B34}	
Transient Inductance #A23{B33}	
Encoder Phase Angle Gearless only #A25{C13}	



“Troubleshooting Tips”

If you have correctly wired all the necessary circuits and the motor will not turn when instructed to by the means of operating your Pendant/Inspection Control. Check in “Solutions 😊 (Ethos Two Home Screen)” which will have a list of events, one of which may need a manual reset.

MRL Installation

Remote Drive Keypad (Parameter Unit) is not operating correctly. Check that you have connected the RJ45 Cable which runs between the Drive KI-485 Adaptor and the Remote Drive Keypad (Parameter Unit) in the correct Port. The Red arrow in **Figure 1** denotes the connection for the Remote Keypad.

The Green arrow in **Figure 1** is the connection point for the Comms cable that runs between the Ethos Two COM 3 port and the Drive 485 port.

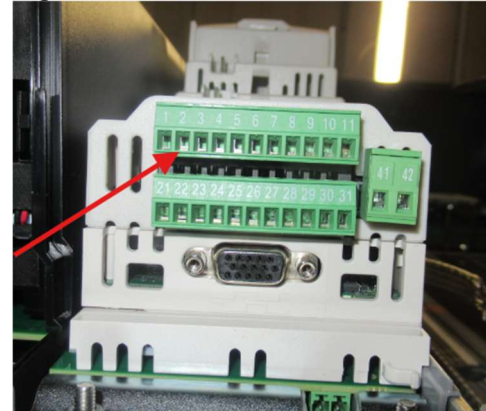
Figure 1



Ethos Two Processor reporting Code 064 Thermal Over/Under Temperature.

Check that the Motor and DBR (Dynamic Braking Resistor) thermistors are wired correctly. Also, verify that the Drive connector, as shown in Figure 2 by the red arrow, has not been dislodged. This can sometimes happen when removing the 15-way D-type motor encoder connector.

Figure 2



Drive reporting Encoder 1 (Drive position feedback interface power supply overload)

Verify that the motor encoder is correctly wired and that the drive is configured correctly for the encoder it is connected to.

Drive reporting Encoder 2 (Drive encoder feedback wire break detection)

Make sure the motor encoder is wired correctly and it's plugged into the Drive.

Drive reporting Encoder 7 (Initialization failed) Check that the encoder is configured and wired correctly.

Drive reporting Autotune 1 (Position feedback did not change or required speed could not be reached) Check Encoder wiring and Encoder mechanical setup, ensure the Drive is correctly configured for the encoder being used (Parameters A9, A10, A11).

Drive reporting Autotune 2 (Position feedback direction incorrect)

Very much the same checks as Autotune 1, as well as checking the Encoder and Motor Phasing. Note: Gearless Permanent Magnet Motor (RFC-S) Encoder and Motor connections should be the same at both ends, refer to the manufacturer's documentation.

Drive reporting: *Autotune Stopped* (Autotune test stopped before completion). If performing a stationary autotune, ensure the link (41/42) mentioned in this guide is fitted. Otherwise, check the STO Safe Torque Off/Drive Enable circuit (terminal 31) and Fast Disable circuit if fitted.