Invertek Drives ODL-3-240095-3F42-S AC Variable Speed Drive Installation Guide

AC Variable Speed Drive for Geared and Gearless Elevators
Elevator Core
Installation & Operating Instructions

ELEVATOR CORE USER GUIDE V0.02 – SHORTFORM.DOCX
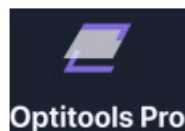
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Typical Connection Diagram
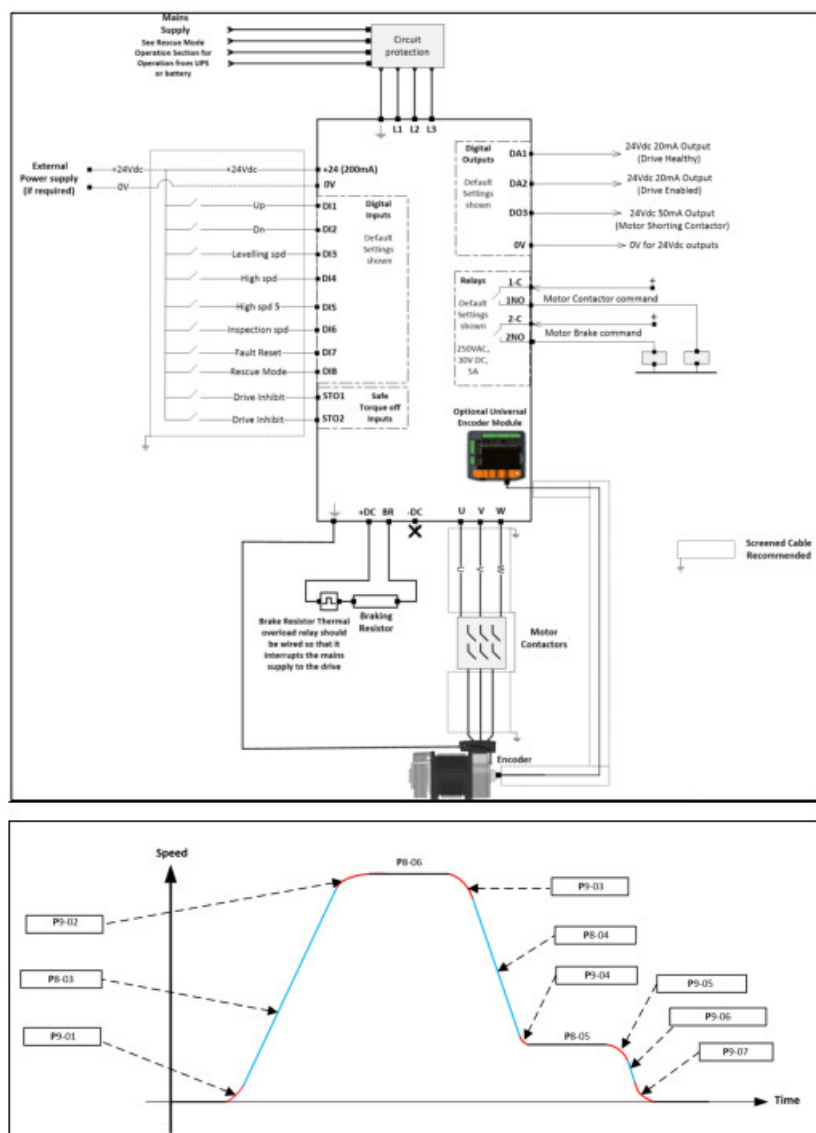
Product Familiarisation

ODL-3-240095-3F42-S-##

Frame Size ◆

Supply Voltage ◆
2 = 200...240 V AC
4 = 380...480VAC

Output Current Rating ◆
For example, 0095 means 9.5 A.

Number of Input Phases ◆
1 = Single Phase input
3 = 3 Phase input

F = Built-in EMC Filter ◆

4 = Internal Brake Transistor ◆

2 = IP20 Enclosure ◆

S = LED Display ◆

Rescue Mode Supply Type ◆
B = UPS or Battery
U = UPS Only

Encoder Module ◆
E= Encoder Module fitted at manufacturing
0 =Encoder Module not fitted

3.1. Product Layout

1	Power Supply Input Terminals
2	USB-C Port
3	Optional Universal Encoder Module
4	Motor Connection Terminals Brake Resistor Connection Terminals
5	RJ45 Port (NOT FOR ETHERNET!) Digital Inputs/Outputs
6	Safe Torque-Off Inputs
7	Drive Serial Number and Rating
8	Digital, Analogue Inputs/Outputs
9	Motor Brake Control Output
10	Motor Contactor Control Output

Checking Suitability of the drive

4.1. Matching the drive to the Intended Power Supply

Check the drive rating label to ensure it matches the intended power supply, the label shows the rated supply voltage and if the drive is suitable for single or 3-phase supply.

For three phase supply models, a maximum of 3% imbalance is allowed between phases.

If using an IT Supply network, or any power supply type where the phase to earth voltage may exceed the phase-to-phase voltage (such as ungrounded supplies), the internal EMC filter and surge protection must be disconnected before connecting the supply.

A fixed installation is required according to IEC61800-5-1 with a suitable disconnecting device installed between the drive and the main Power Source. The disconnecting device must conform to the local safety code / regulations (e.g. within Europe, EN60204-1, Safety of machinery).

Electrical Installation

⚡ This manual is intended as a guide for proper installation. Inverter Drives Ltd cannot assume responsibility for the compliance or the non-compliance to any code, national, local or otherwise, for the proper installation of this drive or associated equipment. A hazard of personal injury and/or equipment damage exists if codes are ignored during installation.
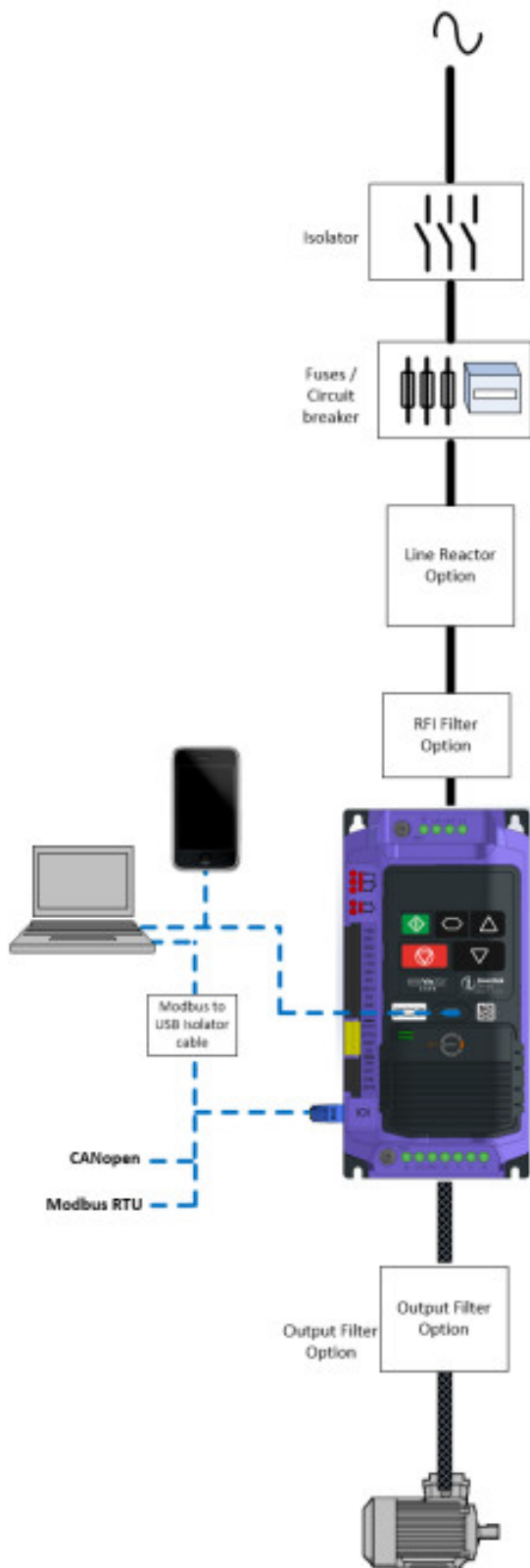
⚡ This drive contains high voltage capacitors that take time to discharge after removal of the main supply. Before working on the drive, ensure isolation of the main supply from line inputs. Wait ten (10) minutes for the capacitors to discharge to safe voltage
levels. Failure to observe this precaution could result in severe bodily injury or loss of life.

⚡ Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

5.1. Electrical Installation quick reference diagram

	• Check Supply Voltage does not exceed drive Voltage rating. • Check the number of supply phases is compatible with the drive. • If the power supply has a low supply impedance /high short circuit current a Line reactor/Isolation transformer maybe required. • For generator Bourne power supplies please contact your IDL Authorized Distributor for further guidance.
	• Ensure there is at least 30 seconds between each power-on.

Isolator

Fuses / Circuit breaker

Line Reactor Option

RFI Filter Option

Modbus to USB Isolator cable

CANopen

Modbus RTU

Output Filter Option

Output Filter Option

• Install suitably rated fuses/Circuit breakers
• If an earth leakage detection device is used (e. g. ELCB/RCD), a type B trip characteristic which is suitable for protecting equipment with a DC component should be used, 1 device for multiple drives should be avoided.

Install Line reactor as close to the drive as possible and under the following conditions:
• If phase-phase imbalance is >3% (3Ø drives).
• To reduce Inrush current.
• If power supply has a low supply impedance/high short circuit current.
• If power supply is prone to dips or brown-outs.
• If power supply is via a bus-bar and sliding contacts system.
• Reduction in mains Harmonic emission.

• Install External EMC filter if the motor cable length exceeds the Electromagnetic interference reduction capability of the internal filter
• Do Not Use EMC filters on IT (Ungrounded) or a corner grounded TN power supply systems.

Functionality of control terminals is pre-configured according to parameter **P**1-02, default functionality is shown below :

DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8
Open Disabled/ Close Forward	Open Disabled/ Close Reverse	Open Disabled/ Levelling Speed (**P**8-5)	Open Disabled/ High Speed (**P**8-06)	Open Disabled/ High Speed 5 (**P**8-12)	Open Disabled/ Inspection Speed (**P**8-08)	Fault Reset	Rescue Mode Enable

The drive will only start if all the below conditions are met:
• Safe Torque off inputs are enabled.
• A direction Command (DI1 or DI2) has been given.
• At least 1 speed has been selected.
Note : If more than 1 speed selection input is high the highest speed will be used.

Install Output Choke under the following conditions:
• If cable between the drive and motor exceeds 100m (screened cable), or 150m (unscreened cable).
• If motor is not "inverter rated".

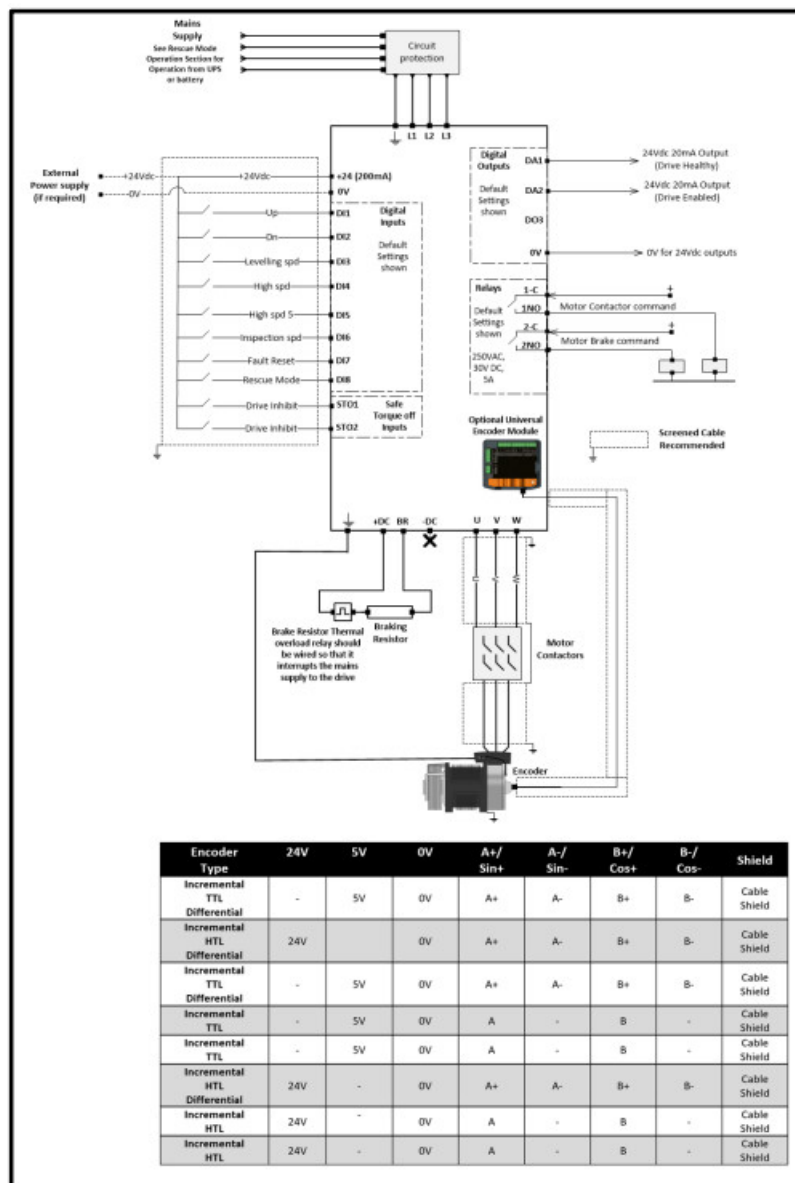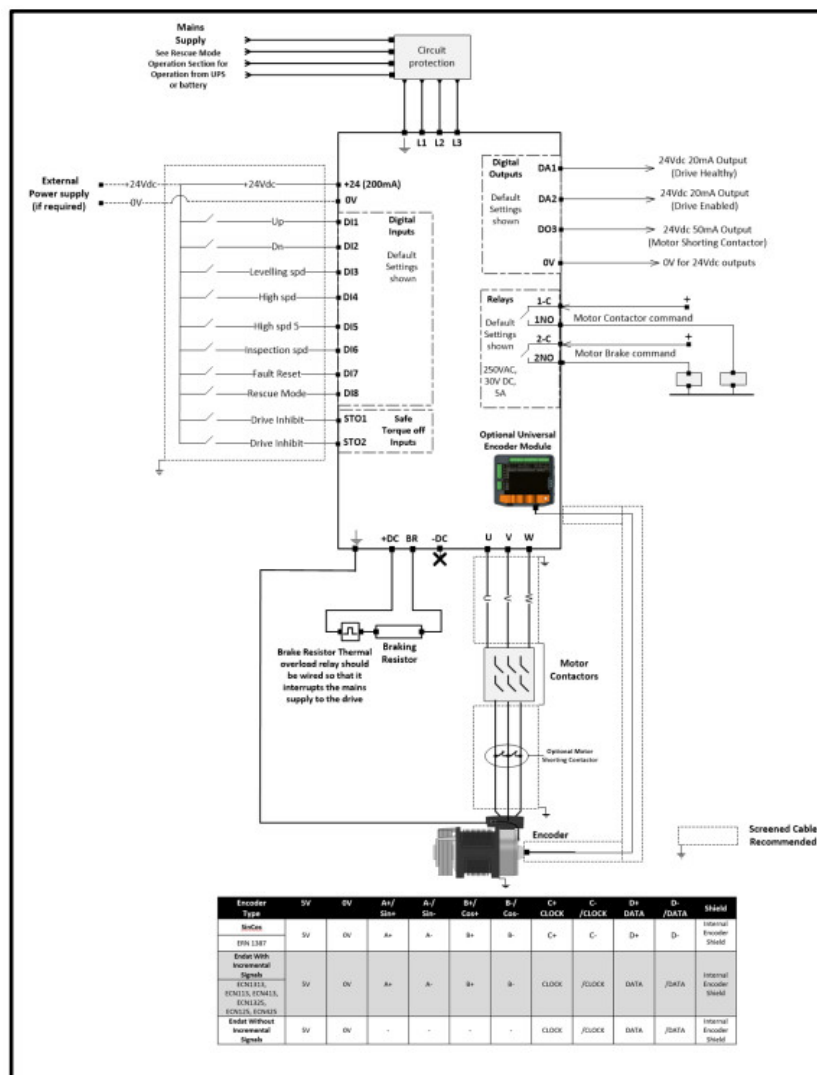|	Whenever possible use a motor that is designed for operation from an inverter. Install Output Choke under the following conditions: • If cable between the drive and motor exceeds 100m (screened cable), or 150m (unscreened cable).

5.2. Electrical wiring example for geared system.

Encoder Type	24V	5V	0V	A+/ Sin+	A-/ Sin-	B+/ Cos+	B-/ Cos-	Shield
Incremental TTL Differential	-	5V	0V	A+	A-	B+	B-	Cable Shield
Incremental HTL Differential	24V		0V	A+	A-	B+	B-	Cable Shield
Incremental TTL Differential	-	5V	0V	A+	A-	B+	B-	Cable Shield
Incremental TTL	-	5V	0V	A	-	B	-	Cable Shield
Incremental TTL	-	5V	0V	A	-	B	-	Cable Shield
Incremental HTL Differential	24V	-	0V	A+	A-	B+	B-	Cable Shield
Incremental HTL	24V	-	0V	A	-	B	-	Cable Shield
Incremental HTL	24V	-	0V	A	-	B	-	Cable Shield

5.3. Electrical wiring example for gearless system.

Encoder Type	5V	0V	A+/ Sin+	A-/ Sin-	B+/ Cos+	B-/ Cos-	C+ CLOCK	C- /CLOCK	D+ DATA	D- /DATA	Shield
SinCos	5V	0V	A+	A-	B+	B-	C+	C-	D+	D-	Internal Encoder Shield
ERN 1387											
Endat With Incremental Signals	5V	0V	A+	A-	B+	B-	CLOCK	/CLOCK	DATA	/DATA	Internal Encoder Shield
ECN1313, ECN113, ECN413, ECN1325, ECN125, ECN425											
Endat Without Incremental Signals	5V	0V	-	-	-	-	CLOCK	/CLOCK	DATA	/DATA	Internal Encoder Shield

5.3.1. Brake resistor Connections

The drive has an internal brake transistor fitted as standard and is enabled automatically when the regenerative energy from the load raises the drives internal DC bus to 390Vdc for the single and three phase 230V drives and 780Vdc for the 3 phase 400V drive.

The brake resistor must be connected between the +DC and BR Terminals of the drive as shown in the images below, failure to do so can result in damage to the drive/Brake resistor.

Dynamic Brake Resistor with Thermal Overload Protection
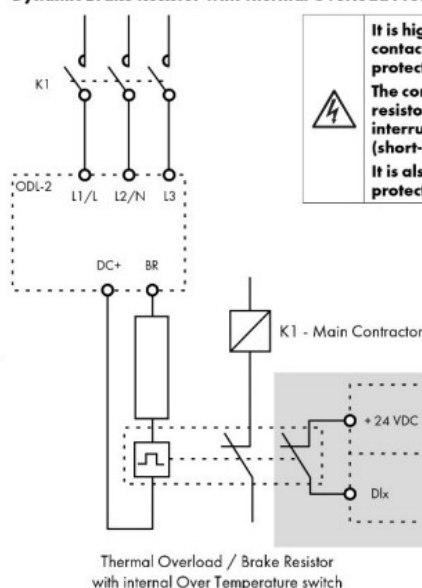
It is highly recommended to equip the drive with a main contactor in order to provide an additional thermal overload protection for the braking resistor.

The contactor should be wired so that it will open when the resistor overheats, otherwise the drive will not be able to interrupt the main supply if the brake chopper remains closed (short-circuited) in a fault situation.

It is also recommended to wire the thermal overload protection to a digital input of the drive as an External Trip.

K1 - Main Contractor

The voltage level at these terminals may exceed 800V DC.

Stored charge may be present after disconnecting the mains power.

Allow a minimum of 5 minutes discharge after power off before attempting any connection to these terminals.

Thermal Overload / Brake Resistor with internal Over Temperature switch

First Start-up of Geared (Induction) Motors without an Encoder

The below procedure illustrates a method for commissioning the drive in a typical elevator application, it is assumed the drive has already been mechanically installed.
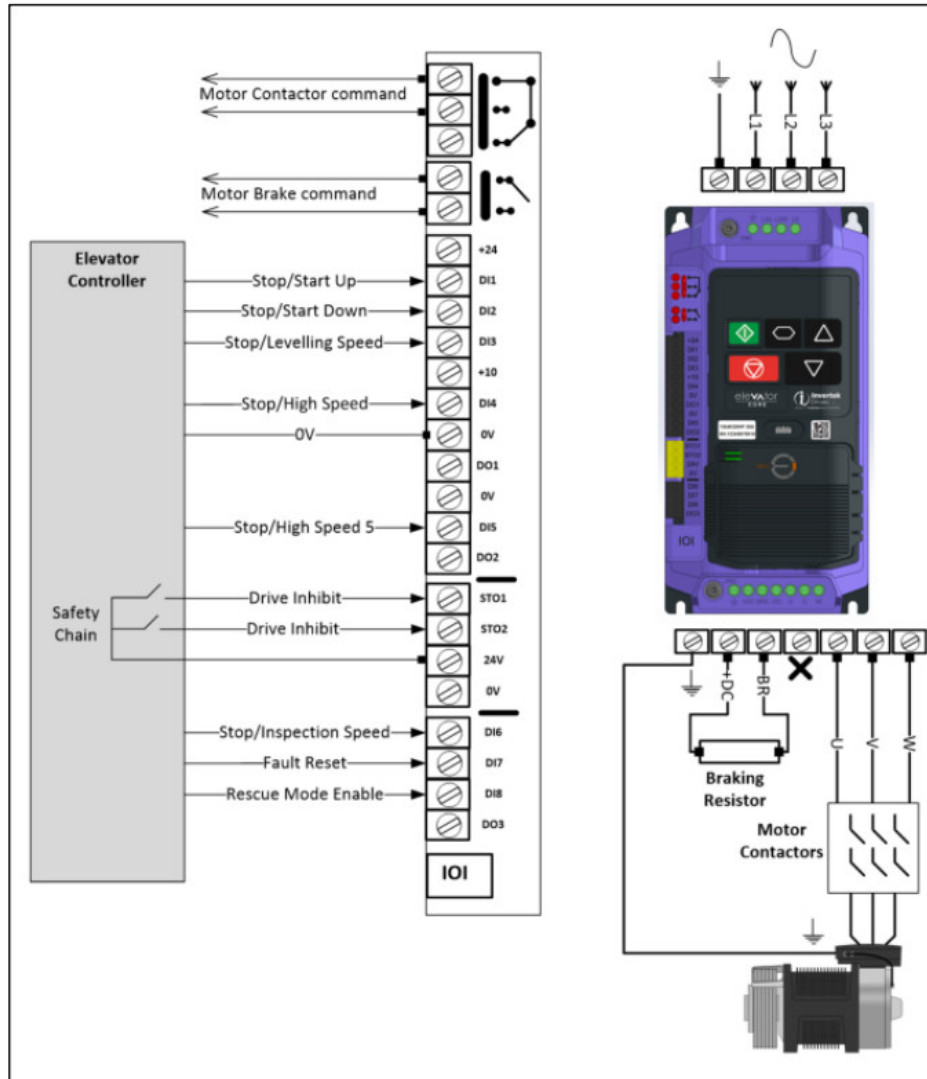
6.1. Step 1- Wiring Connections.

The below diagram provides guidance for the wiring connections.

⚠ Before making any wiring connections ensure that all voltage/power sources are isolated.

6.1.1. Step 1- Drive Wiring Connection diagram.

Out of Box/Default functions shown for control Inputs and Outputs, functions can be changed if required

6.2. Step 2- Pre-Power Checks.

Action/Checks	Additional Information
⚠️ **WARNING** **Do Not Apply Electrical Power Yet!**	Check that all safety circuits/safety chains are in the correct state, failure to do so could result in damage to the equipment and possible injury or death. Check that the intended voltage source matches that of the drive voltage rating. Check that any unexpected movement in the motor will not result in damage to equipment / safety risk to persons. Check that the elevator controller will not give a start signal to the drive when Electrical power is applied. Ideally the Lift car should be balanced (i.e. with brakes off the lift car should not naturally move) and with enough shaft headroom in order to prevent reaching end stops during initial test travels.
Check all necessary electrical connections.	Check Electrical Supply cables are connected to the Input power terminals of the drive. Check Motor Cables are connected to the drive U, V, W terminals (If cables have identification markers connect correct phase sequence). Check Brake resistor is connected to the "DC+" and "BR" terminals of the drive. Check correct control connections are made between the Elevator control panel and the drive Check correct encoder module (optional) has been installed and the correct connections are made between the drive and the Encoder.

6.3. Step 3- Apply Power.

⚠️ **WARNING** **Apply Electrical Power to the drive**	Apply rated voltage to the drive. Check that the drive displays ***StoP*** or ***Inhibit***.	If ***StoP*** or ***Inhibit*** is not shown refer to the troubleshooting section at the back of the user manual.

6.4. Step 4- Motor nameplate data entry.

| Action		Additional Information
Select Geared (Induction) motor control	Set **P**4-01 to 0 or 1	0 – Geared motors which have the Motor Power Factor available from motor Nameplate. 1 – Geared motors which do not have the Motor Power Factor available.
Enter motor rated voltage (P4-02)	Enter value into **P**4-02	Enter Voltage value as shown on the motor nameplate (Volts).
Enter Motor Rated Current (P4-03)	Enter value into **P**4-03	Enter Current value as shown on the motor nameplate (Amps).
Enter Motor Rated Frequency (P4-04)	Enter value into **P**4-04	Enter Frequency value as shown on the motor nameplate (Hz).
Enter Motor Rated Speed (P4-06)	Enter value into **P**4-06	Enter motor rated speed value as shown on the motor nameplate (rpm). The drive display will now show motor speed in estimated rpm. All speed related parameters, such as Minimum and Maximum Speed, run Speeds etc. will also be displayed in Rpm.
Enter Motor power factor Cos ∅ (P4-07)	Enter value into **P**4-07*	Obtained from Motor nameplate *If Motor power factor is unknown use Vector IM speed control instead (**P**4-01 to a 1).

6.5. Step 5- Motor Auto-tune.

A Motor Auto-tune must be carried out in order to measure the motor electrical characteristics, brakes will be applied by the drive (unless controlled by other means) during this test.

Action		Additional Information
If the motor contactor(s) are controlled by the elevator controller then they should be activated to close so that the motor is electrically connected to the drive, otherwise the "Auto-tune" cannot be carried out. If the motor contactor(s) are controlled by the drive (connected to relay 1) the motor contactor will automatically be energized when the "Auto-tune" is enabled. **Note** : For the motor contactor to close the safety chain will need to be closed,		
¨ Check Safe Torque off input connections have been made.		Drive should now show **StoP**
Enable Motor Auto-tune	Set **P**4-08 to a <u>1</u> and press the ⬛ button.	1. The motor contactors will close (if controlled by the drive " Relay 1"). 2. The motor brakes will remain applied. 3. The display will show **AUto-t**. (Test procedure may take several minutes to complete). Once the Auto-tune is completed **P**4-08 will return to 0 and the display will show **StoP** (**P**4-24 thru to **P**4-28 will be populated). **Note:** Motor Auto-tune will need to be repeated if the motor, motor cables, motor parameters or drive control mode is changed in **P**4-01.

6.6. Step 7 – Running the Elevator
6.6.1. Travel Curve for Geared (Induction) Motors without an Encoder.
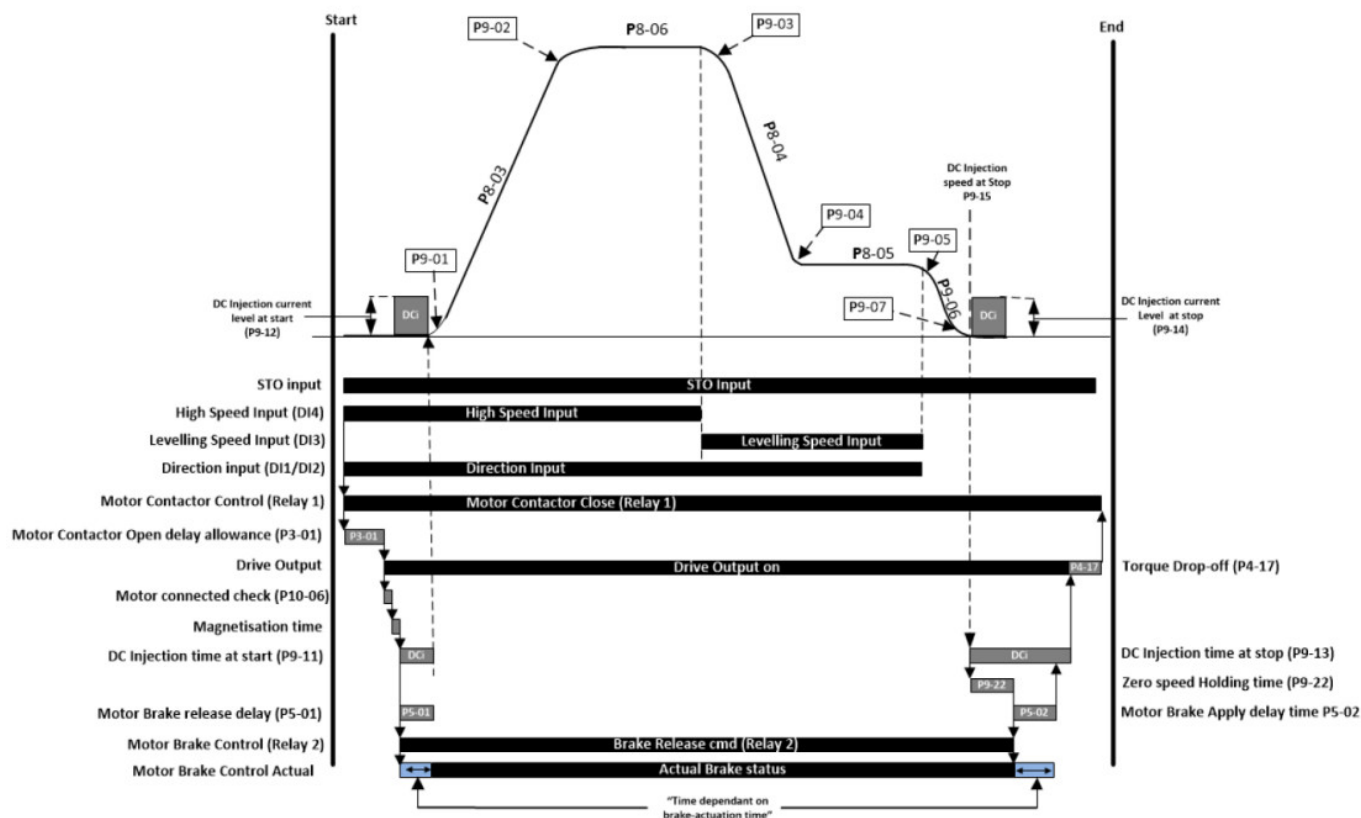
6.6.2. Geared (Induction) Motors without an Encoder – Speed Loop Gains.
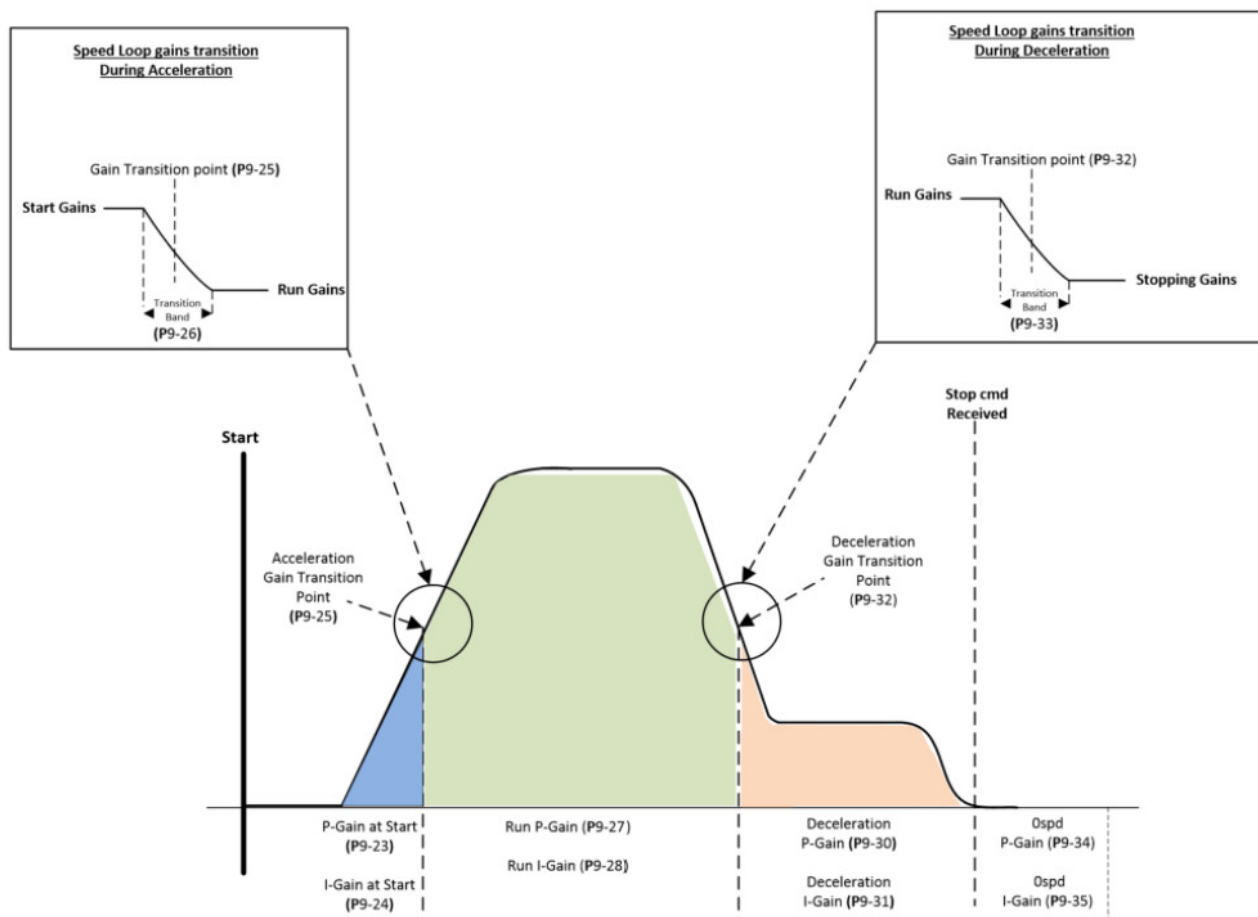
First Start-up of Geared (Induction) Motors with an Encoder.

The below procedure illustrates a method for commissioning the drive in a typical elevator application, it is assumed the drive has already been mechanically installed.
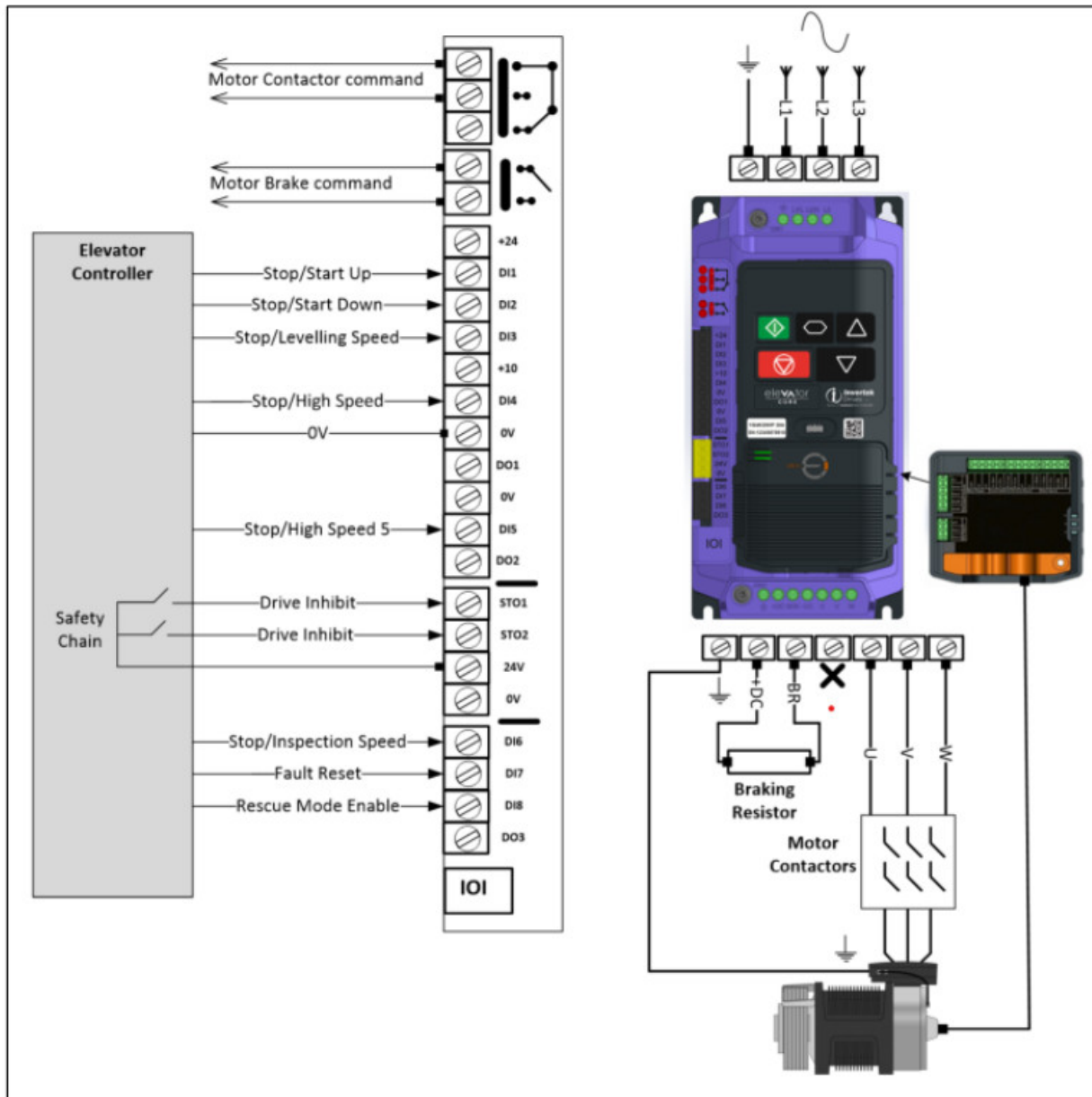
7.1. Step 1- Wiring Connections.

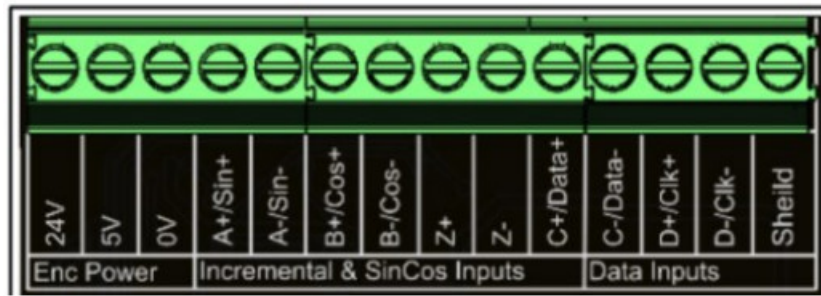The below diagram provides guidance for the wiring connections.

⚠ Before making any wiring connections ensure that all voltage/power sources are isolated.

7.1.1. Step 1a- Drive Wiring Connection diagram.

Out of Box/Default functions shown for control Inputs and Outputs, functions can be changed if required.

7.1.2. Step 1b- Encoder Wiring Connection diagram.

Encoder Type	P6-04	24V	5V	0V	A+/Sin+	A-/Sin-	B+/Cos+	B-/Cos-	Z+	Z-	C+ CLOCK	C- / CLOCK	D+ DATA	D- / DATA	Shield
Incremental TTL Differential	0	–	5V	0V	A+	A-	B+	B-	–	–	–	–	–	–	Cable Shield
Incremental HTL Differential	1	24V		0V	A+	A-	B+	B-	–	–	–	–	–	–	Cable Shield
Incremental TTL Differential	4	–	5V	0V	A+	A-	B+	B-	Z+	Z-	–	–	–	–	Cable Shield
Incremental TTL	5	–	5V	0V	A	–	B	–	–	–	–	–	–	–	Cable Shield
Incremental TTL	6	–	5V	0V	A	–	B	–	Z	–	–	–	–	–	Cable Shield
Incremental HTL Differential	7	24V	–	0V	A+	A-	B+	B-	Z+	Z-	–	–	–	–	Cable Shield
Incremental HTL	8	24V	–	0V	A	–	B	–	–	–	–	–	–	–	Cable Shield
Incremental HTL	9	24V	–	0V	A	–	B	–	Z	–	–	–	–	–	Cable Shield

7.2. Step 2- Pre-Power Checks.

Action/Checks	Additional Information
Do Not Apply Electrical Power Yet!	Check that all safety circuits/safety chains are in the correct state, failure to do so could result in damage to the equipment and possible injury or death. Check that the intended voltage source matches that of the drive voltage rating. Check that any unexpected movement in the motor will not result in damage to equipment / safety risk to persons. Check that the elevator controller will not give a start signal to the drive when Electrical power is applied. Ideally the Lift car should be balanced (i.e. with brakes off the lift car should not naturally move) and with enough shaft headroom in order to prevent reaching end stops during initial test travels.
Check all necessary electrical connections.	Check Electrical Supply cables are connected to the Input power terminals of the drive. Check Motor Cables are connected to the drive U, V, W terminals (If cables have identification markers connect correct phase sequence). Check Brake resistor is connected to the "DC+" and "BR" terminals of the drive. Check correct control connections are made between the Elevator control panel and the drive. Check correct encoder module (optional) has been installed and the correct connections are made between the drive and the Encoder.

7.3. Step 3- Apply Power.

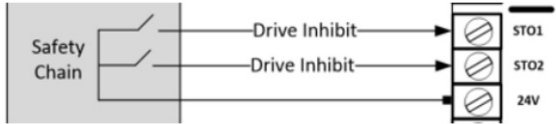|		
Apply Electrical Power to the drive	Apply rated voltage to the drive. Check that the drive displays 𝚂𝚝𝚘𝙿 or 𝙸𝚗𝚑𝚒𝚋𝚒𝚝.	If 𝚂𝚝𝚘𝙿 or 𝙸𝚗𝚑𝚒𝚋𝚒𝚝 is not shown refer to the troubleshooting section at the back of the user manual.

7.4. Step 4- Motor nameplate data entry.

Action		Additional Information
Select Geared (Induction) motor control	Set **P**4-01 to 0 or 1	0 – Geared motors which have the Motor Power Factor available from motor Nameplate. 1 – Geared motors which do not have the Motor Power Factor available.
Enter motor rated voltage (P4-02)	Enter value into **P**4-02	Enter Voltage value as shown on the motor nameplate (Volts).
Enter Motor Rated Current (P4-03)	Enter value into **P**4-03	Enter Current value as shown on the motor nameplate (Amps).
Enter Motor Rated Frequency (P4-04)	Enter value into **P**4-04	Enter Frequency value as shown on the motor nameplate (Hz).
Enter Motor Rated Speed (P4-06)	Enter value into **P**4-06	Enter motor rated speed value as shown on the motor nameplate (rpm). The drive display will now show motor speed in estimated rpm. All speed related parameters, such as Minimum and Maximum Speed, run Speeds etc. will also be displayed in Rpm.
Enter Motor power factor Cos ∅ (P4-07)	Enter value into **P**4-07*	Obtained from Motor nameplate *If Motor power factor is unknown use Vector IM speed control instead (**P**4-01 to a 1).

7.5. Step 5- Motor Auto-tune.

A Motor Auto-tune must be carried out in order to measure the motor electrical characteristics, brakes will be applied by the drive (unless controlled by other means) during this test.

| Action		Additional Information
If the motor contactor(s) are controlled by the elevator controller then they should be activated to close so that the motor is electrically connected to the drive, otherwise the "Auto-tune" cannot be carried out. If the motor contactor(s) are controlled by the drive (connected to relay 1) the motor contactor will automatically be energized when the "Auto-tune" is enabled. **Note** : For the motor contactor to close the safety chain will need to be closed,		
¨ Check Safe Torque off input connections have been made.		Drive should now show **StoP**
Enable Motor Auto-tune	Set **P**4-08 to a <u>1</u> and press the ▬ button.	1. The motor contactors will close (if controlled by the drive " Relay 1"). 2. The motor brakes will remain applied. 3. The display will show **AUto-t**. (Test procedure may take several minutes to complete). Once the Auto-tune is completed **P**4-08 will return to 0 and the display will show **StoP** (**P**4-24 thru to **P**4-28 will be populated). **Note:** Motor Auto-tune will need to be repeated if the motor, motor cables, motor parameters or drive control mode is changed in **P**4-01.

7.6. Step 6 – Encoder Setup

Action		Additional Information	
Enter Encoder Resolution	¨ Enter encoder pulses per revolution into **P**6-03	Refer to Encoder datasheet or nameplate.	
Select Encoder Type	Select the Encoder type in parameter **P**6-04	**P6-04 setting**	**Encoder Type**
		0 (Default)	**Incremental TTL- Differential (A,/A,B,/B) (RS422)**
		1	Incremental HTL-Differential (A,/A,B,/B) (24V)
		4	Incremental TTL- Differential (A, /A,B,/B, Z,/Z) (RS422)
		5	Incremental TTL (A,B)
		6	Incremental TTL (A,B, Z)
		7	Incremental HTL- Differential (A, /A,B,/B, Z/Z) (24V)
		8	Incremental HTL (A,B) (24V)
		9	Incremental HTL (A,B,Z) (24V)
Check motor direction and encoder direction is correct.	During this check you will need to Navigate between parameters **P**0-18 (Estimated motor speed) and **P**0-19 (Encoder speed). Provide a run-direction command to terminal 2 and run at low speed for a short travel e.g. levelling/10% of motor rated speed, you can Use **P**8-01 (Maximum speed limit) to limit the motor speed and return back to normal value afterwards. Check that the value shown in **P**0-18 is positive in the Up direction and Negative in the down direction, if it is not then set **P**11-10 to 1. Check that the value in **P**0-15 and **P**0-19 match in sign.	If the drive shows $Inhibit$ when a run-direction command is given ensure that the Safe Torque off inputs are made.	
¨ **Enable Encoder**	Set **P**6-05 to 1	Enables Encoder Feedback	

7.7. Step 7 – Running the Elevator
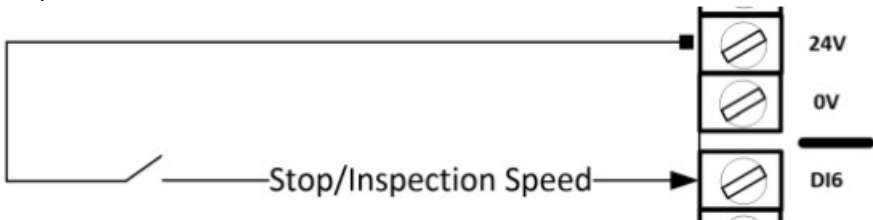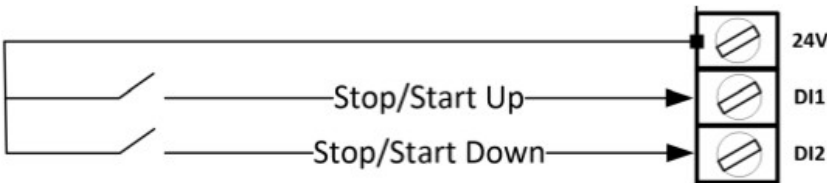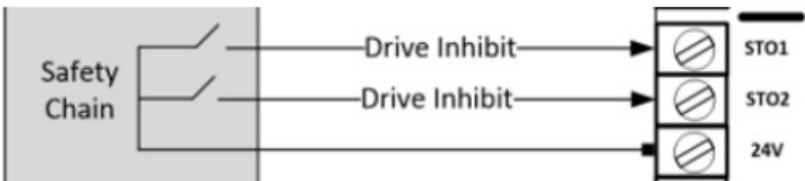### 7.7.1. Travel Curve for Geared (Induction) Motors with an Encoder.
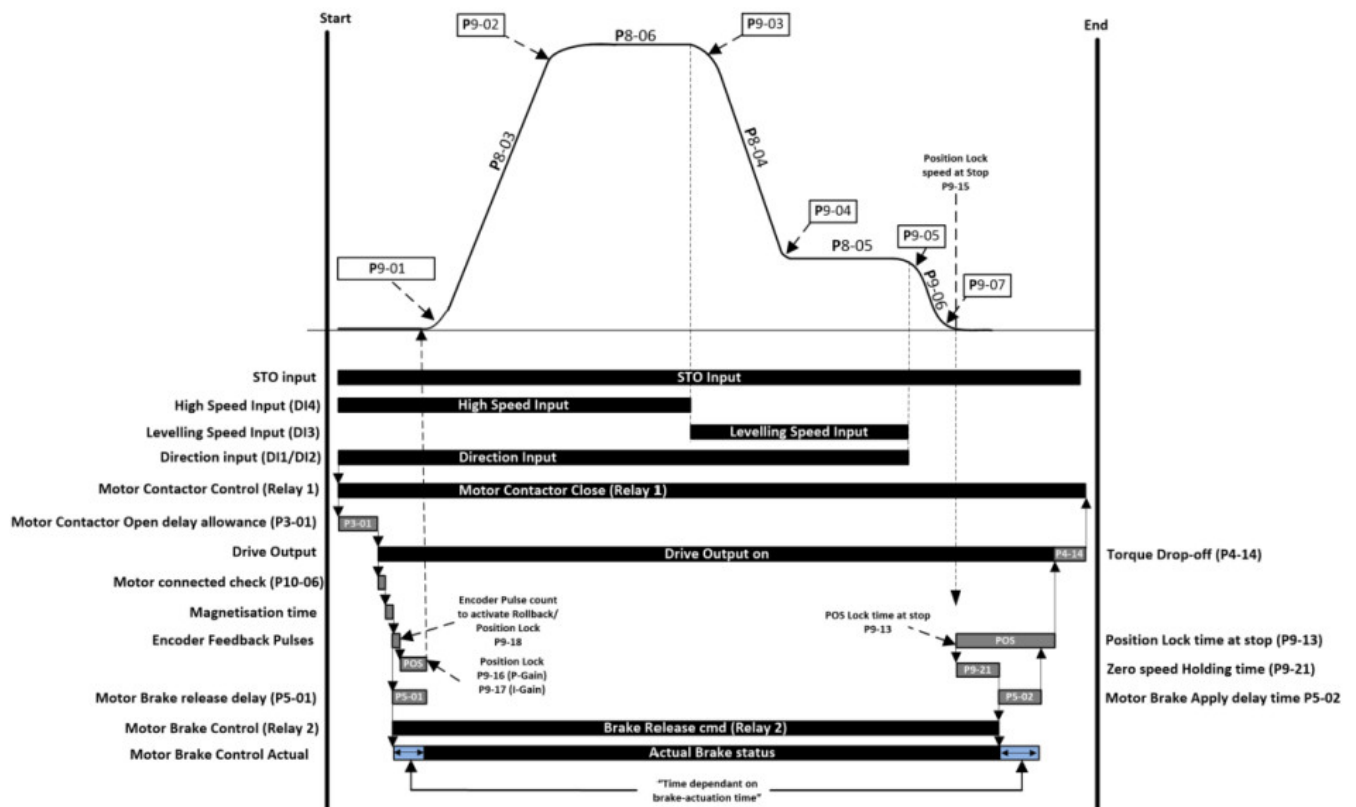
7.7.2. Geared (Induction) Motors with an Encoder – Speed Loop Gains.
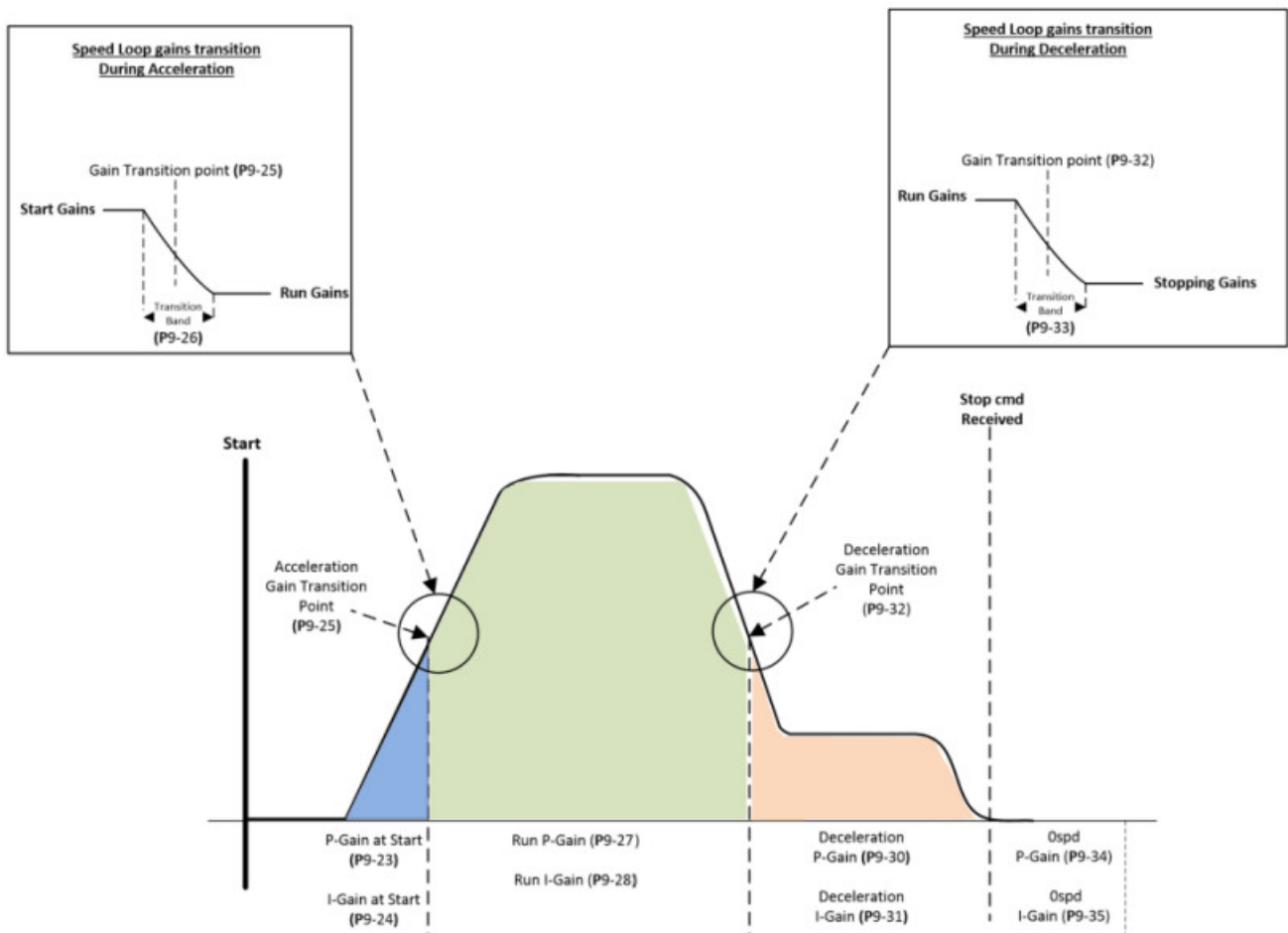
First Start-up of Geared (Induction) Motors with an **Encoder.www.InvertekDrives.com**
7.7.3. Commissioning process for Geared (Induction) Motors with an Encoder.

Action	Guidance
Check for Suitable travel headroom	Ideally the Lift car should be balanced (i.e. with brakes off, the lift car should not naturally move) and with enough shaft headroom in order to prevent reaching end stops during initial test travels.
Run the elevator at reduced speed.	□ Provide a speed reference to the drive. Normally inspection speed is used. If **P**1-02 is at default value (**P**1-02=1) then inspection speed is defined in parameter **P**8-08, in this case inspection speed is selected when DI6 is high. Alternatively use the maximum speed parameter **P**8-01 to clamp the speed to a lower value.
	□ Provide a run-direction command to the drive.
	If the drive shows $I\,nh\,ib\,iE$ when a run-direction command is given, ensure that the Safe Torque off inputs are closed.

Start-up of Gearless (Permanent Magnet) Motor.

The below procedure illustrates a method for commissioning the drive in a typical elevator application, it is assumed the drive has already been mechanically installed.
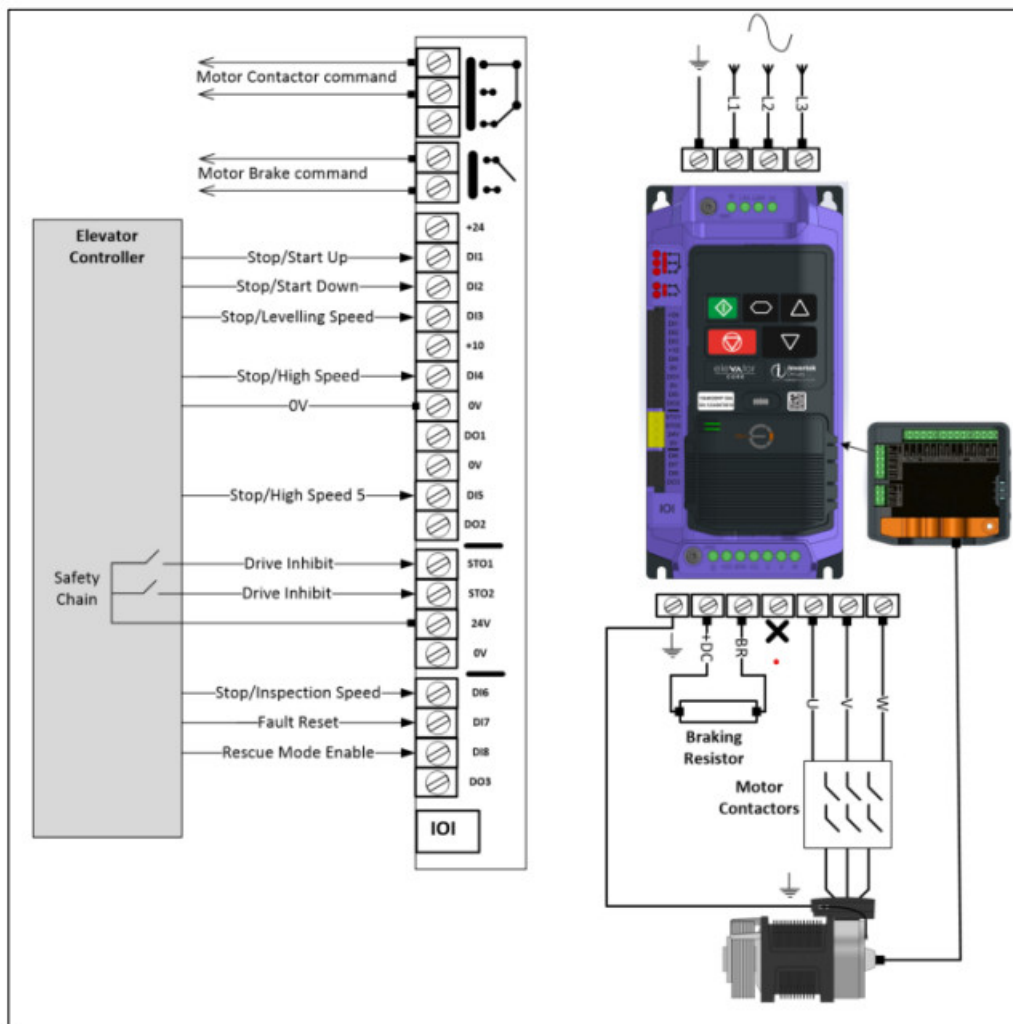
8.1. Step 1- Wiring Connections.
The below diagram provides guidance for the wiring connections.

⚠ Before making any wiring connections ensure that all voltage/power sources are isolated.
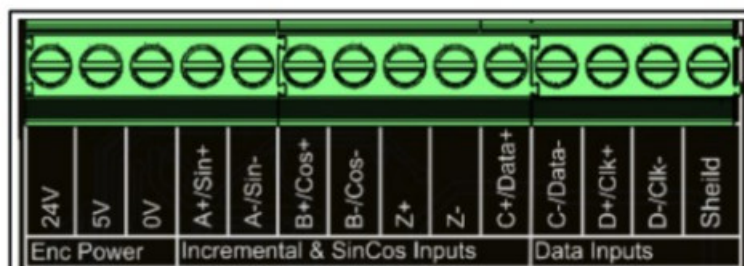
8.1.1. Step 1a- Drive Wiring Connection diagram.
Out of Box/Default functions shown for control Inputs and Outputs, functions can be changed if required.

8.1.2. Step 1b- Encoder Wiring Connection diagram.
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Encoder Type	P6-04	24V	5V	0V	A+/Sin+	A-/Sin-	B+/Cos+	B-/Cos-	Z+	Z-	C+ CLOCK	C-/CLOCK	D+ DATA	D-/DATA	Shield
SinCos ERN 1387	2	–	5V	0V	A+	A-	B+	B-	–	–	C+	C-	D+	D-	Internal Encoder Shield
Enda With Incremental Signals ECN1313, ECN113, ECN413, ECN1325, ECN125, ECN425	3	–	5V	0V	A+	A-	B+	B-	–	–	CLOCK	/CLOCK	DATA	/DATA	Internal Encoder Shield
Endat Without Incremental Signals	10	–	5V	0V	–	–	–	–	–	–	CLOCK	/CLOCK	DATA	/DATA	Internal Encoder Shield

8.2. Step 2- Pre-Power Checks.

Action/Checks	Additional Information
 Do Not Apply Electrical Power Yet!	Check that all safety circuits/safety chains are in the correct state, failure to do so could result in damage to the equipment and possible injury or death. Check that the intended voltage source matches that of the drive voltage rating. Check that any unexpected movement in the motor will not result in damage to equipment / safety risk to persons. Check that the elevator controller will not give a start signal to the drive when Electrical power is applied. Ideally the Lift car should be balanced (i.e. with brakes off the lift car should not naturally move) and with enough shaft headroom in order to prevent reaching end stops during initial test travels.
Check all necessary electrical connections.	Check Electrical Supply cables are connected to the Input power terminals of the drive. Check Motor Cables are connected to the drive U, V, W terminals (If cables have identification markers connect correct phase sequence). Check Brake resistor is connected to the "+DC" and "BR" terminals of the drive. Check correct control connections are made between the Elevator control panel and the drive. (as detailed in Section Check encoder module has been installed and the correct connections are made between the drive and the Encoder.

8.3. Step 3- Apply Power.

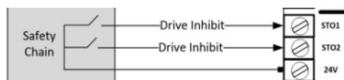|	Apply rated voltage to the drive. Check that the drive displays $StoP$ or $Inhibit$. Check that the Encoder module (Optional) left hand LED light is illuminated Green.	If $StoP$ or $Inhibit$ is not shown refer to the troubleshooting section at the back of the user manual. ➢ If there is no green light shown on the encoder module : o Check encoder module is pushed fully home. o Check the encoder wiring is correct.
⚠ WARNING **Apply Electrical Power to the drive**		

8.4. Step 4- Motor nameplate data entry.

Action		Additional Information
Select Gearless (Permanent Magnet) motor control mode. (P4-01	Set **P**4-01 to 3	Both IPM and SPM type motors are supported.
Enter Motor Rated Current (P4-03)	Enter motor rated current into **P**4-03	Obtained from Motor nameplate (Amps).
Enter Motor Rated Frequency (P4-04)	Enter motor rated frequency into **P**4-04	Obtained from Motor nameplate (Hz).
Enter Motor Pole Pairs (P4-05)	Enter number of motor pole pairs into **P**4-05	Obtained from Motor nameplate.
Enter Motor Rated Speed (P4-06)	Enter motor rated speed into **P**4-06	Obtained from Motor nameplate. If not available it can be calculated: Motor rated frequency*120/motor poles.

| Action		Additional Information
Select absolute encoder type (Enda or Sin Cos) (P6-04)	Select setting 2 for Sin Cos Encoder. ERN 1387	
	Select setting 3 for Enda Encoder. ECN1313, ECN113, ECN413, ECN1325, ECN125, ECN425.	It is assumed Encoder incremental signals (A, A/ B, B/) are connected, if not then you can set P6-04 to 10 Instead.
Enable the Encoder (P6-05)	Set **P**6-05 to 1	Enables Encoder Feedback and puts the drive into closed loop operation.

8.6. Step 6- Motor Auto-tune.
A Motor Auto-tune must be carried out in order to measure the motor electrical characteristics, during the Auto-tune test the motor brakes will be applied by the drive (assuming they are controlled by Relay 2 on the drive).

Action	Additional Information
If the motor contactor(s) are controlled by the elevator controller then they should be activated to close so that the motor is electrically connected to the drive, otherwise the "Auto-tune" cannot be carried out. If the motor contactor(s) are controlled by the drive (connected to relay 1) the motor contactor will automatically be energized when the "Auto-tune" is enabled. **Note:** For the motor contactor to close the safety chain will need to be closed.	
¨ **Check Safe Torque off inputs have been made.**	Drive should now show **StoP**
Enable Motor Auto- tune (Includes Encoder offset measurement)	Set **P**4-08 to a <u>3</u> and press the button.	1. The motor contactors will close (if controlled by the drive "Relay 1"). 2. The motor brakes will remain applied. 3. The display will show **AUto-t**. (Test procedure may take several minutes to complete). Once the Auto-tune is completed **P**4-08 will return to 0 and the display will show **StoP** (**P**4-24 thru to **P**4-28 will be populated). If the drive trips on it means that the motor has surface mount magnets, in this case set **P**4-08 to a 4 for the drive to perform an alternative Encoder offset measurement. **Note:** Motor Auto-tune will need to be repeated if the Encoder, motor, motor cables, motor parameters or drive control mode is changed in **P**4-01.

8.7. Step 7 – Running the Elevator
8.7.1. Travel Curve for Gearless (Permanent Magnet) Motors.
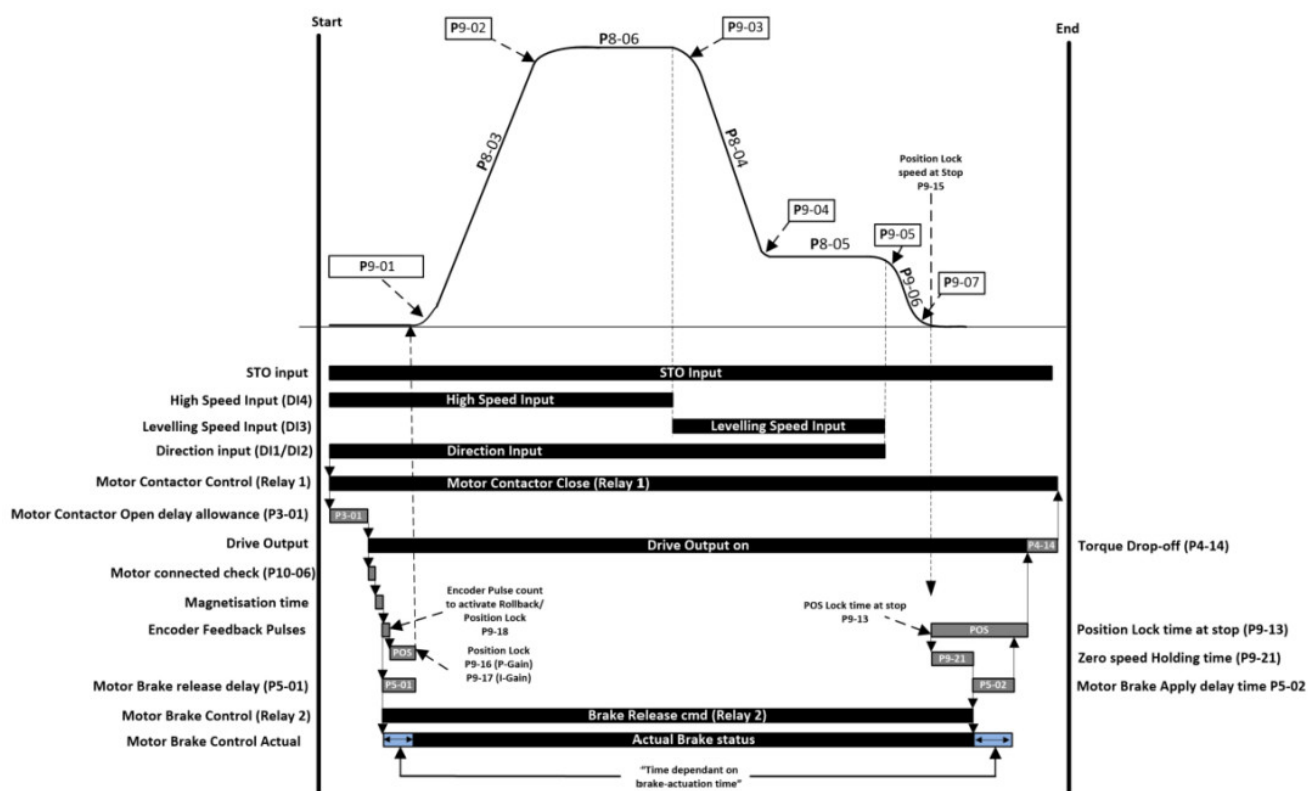
Support Tools

9.1. Support Hub
For further help and support scan the barcode on the drive.

Scan Here
for Help &
Support

9.2. My Drive and Application Details

Building Name :	
Equipment No/Name:	
Drive Serial Number :	
Motor Details:	
Date of Installation	
Notes	
Parameter Changes *Hint :* Setting Parameter to 0 will show all parameters that are different from factory defaults	

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Documents / Resources

	Invertek Drives ODL-3-240095-3F42-S AC Variable Speed Drive [pdf] Installation Guide ODL-3-240095-3F42-S, ODL-3-240095-3F42-S AC Variable Speed Drive, AC Variable Speed Drive, Variable Speed Drive, Drive

References

- **User Manual**