Nidec

All for dreams

User Guide

SI-CiA417 Solution

Part Number: 0478-0618-03
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Compliance Information

Manufacturer: Nidec Control Techniques Limited ("we", "our")
Registered office: The Gro, Newtown, Powys, SY16 3BE United Kingdom
Registered in: England and Wales, company registration number 01236886
Manufacturer's EU Authorised Representative: Nidec Netherlands B.V., Kubus 155, 3364 DG Sliedrecht, the Netherlands, registered at the Dutch Trade Register under number 33213151; Tel. +31 (0)184 420 555, info.nl@mail.nidec.com

Original instructions

With reference to the UK Supply of Machinery (Safety) Regulations 2008 and the EU Machinery Directive 2006/42/EC, the English version of this Manual constitutes the original instructions. Manuals published in other languages are translations of the original instructions and the English language version of this Manual prevails over any other language version in the event of inconsistency.

Documentation and user software tools

Manuals, datasheets and software that we make available to users of our products can be downloaded from: **http://www.drive-setup.com**

Warranty and liability

The contents of this Manual are presented for information purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs, specifications or performance of our products at any time without notice. For full details of the warranty terms applicable to the product, contact the supplier of the product.

In no event and under no circumstances shall we be liable for damages and failures due to misuse, abuse, improper installation, or abnormal conditions of temperature, dust, or corrosion, or failures due to operation outside the published ratings for the product, nor shall we be liable for consequential and incidental damages of any kind.

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We operate an Environmental Management System which complies with the requirements of ISO 14001:2015. Further information on our Environmental Statement can be found at: **http://www.drive-setup.com/environment**.

Restriction and control of hazardous substances

The products covered by this Manual comply with the following legislation and regulations on the restriction and control of hazardous substances:

UK Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
UK REACH etc. (Amendment etc.) (EU Exit) Regulations 2020, European Union REACH Regulation EC 1907/2006
EU restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) - Directive 2011/65/EU
EC Regulation 1907/2006 on the Registration, Evaluation, authorisation, and restriction of Chemicals (REACH)
Chinese Administrative Measures for Restriction of Hazardous Substances in Electrical and Electronic Products 2016/07/01
U.S. Environmental Protection Agency ("EPA") regulations under the Toxic Substances Control Act ("TSCA")
MEPC 68/21 / Add.1, Annex 17, Resolution MEPC.269(68) 2015 Guidelines for the development of the inventory of hazardous materials

The products covered by this Manual do not contain asbestos.

Further information on REACH and RoHS can be found at: **http://www.drive-setup.com/environment**.

Conflict minerals

With reference to the Conflict Minerals (Compliance) (Northern Ireland) (EU Exit) Regulations 2020, the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act and Regulation (EU) 2017/821 of the European Parliament and of the European Council:

We have implemented due diligence measures for responsible sourcing, we conduct conflict minerals surveys of relevant suppliers, we continually review due diligence information received from suppliers against company expectations and our review process includes corrective action management. We are not required to file an annual conflict minerals disclosure. Nidec Control Techniques Limited is not an issuer as defined by the U.S. SEC.

Disposal and recycling (WEEE)

The products covered by this Manual fall within the scope of the UK Waste Electrical and Electronic Equipment Regulations 2013, EU Directive 2012/19/EU amended by EU Directive 2018/849 (EU) on Waste Electrical and Electronic Equipment (WEEE).

When electronic products reach the end of their useful life, they must not be disposed of along with domestic waste but should be recycled by a specialist recycler of electronic equipment. Our products are designed to be easily dismantled into their major component parts for efficient recycling. Most materials used in our products are suitable for recycling.

Our product packaging is of good quality and can be re-used. Smaller products are packaged in strong cardboard cartons which have a high recycled fibre content. Cartons can be re-used and recycled. Polythene, used in protective film and bags for the ground screws, can be recycled. When preparing to recycle or dispose of any product or packaging, please observe local legislation and best practice.

Contents

1 Safety Information

1.1 Warnings, Cautions and Notes

A Warning contains information which is essential for avoiding a safety hazard.

A Caution contains information which is necessary for avoiding a risk of damage to the product or other equipment.

NOTE

A Note contains information which helps to ensure correct operation of the product.

1.2 Important safety information. Hazards. Competence of designers and installers

This guide applies to products which control electric motors either directly (drives) or indirectly (controllers, option modules and other auxiliary equipment and accessories). In all cases the hazards associated with powerful electrical drives are present, and all safety information relating to drives and associated equipment must be observed.

Specific warnings are given at the relevant places in this guide.

Drives and controllers are intended as components for professional incorporation into complete systems. If installed incorrectly they may present a safety hazard. The drive uses high voltages and currents, carries a high level of stored electrical energy, and is used to control equipment which can cause injury. Close attention is required to the electrical installation and the system design to avoid hazards either in normal operation or in the event of equipment malfunction. System design, installation, commissioning/start-up and maintenance must be carried out by personnel who have the necessary training and competence. They must read this safety information and this guide carefully.

1.3 Responsibility

It is the responsibility of the installer to ensure that the equipment is installed correctly with regard to all instructions given in this guide. They must give due consideration to the safety of the complete system, so as to avoid the risk of injury both in normal operation and in the event of a fault or of reasonably foreseeable misuse.

The manufacturer accepts no liability for any consequences resulting from inappropriate, negligent or incorrect installation of the equipment.

1.4 Compliance with regulations

The installer is responsible for complying with all relevant regulations, such as national wiring regulations, accident prevention regulations and electromagnetic compatibility (EMC) regulations. Particular attention must be given to the cross-sectional areas of conductors, the selection of fuses or other protection, and protective ground (earth) connections.

This guide contains instructions for achieving compliance with specific EMC standards.

All machinery to be supplied within the European Union in which this product is used must comply with the following directives:

2006/42/EC Safety of machinery.

2014/30/EU: Electromagnetic Compatibility.

1.5 Electrical hazards

The voltages used in the drive can cause severe electrical shock and/or burns, and could be lethal. Extreme care is necessary at all times when working with or adjacent to the drive. Hazardous voltage may be present in any of the following locations:

- AC and DC supply cables and connections
- Output cables and connections
- Many internal parts of the drive, and external option units

Unless otherwise indicated, control terminals are single insulated and must not be touched.

The supply must be disconnected by an approved electrical isolation device before gaining access to the electrical connections.

The STOP and Safe Torque Off functions of the drive do not isolate dangerous voltages from the output of the drive or from any external option unit.

The drive must be installed in accordance with the instructions given in this guide. Failure to observe the instructions could result in a fire hazard.

1.6 Stored electrical charge

The drive contains capacitors that remain charged to a potentially lethal voltage after the AC supply has been disconnected. If the drive has been energized, the AC supply must be isolated at least ten minutes before work may continue.

1.7 Mechanical hazards

Careful consideration must be given to the functions of the drive or controller which might result in a hazard, either through their intended behaviour or through incorrect operation due to a fault. In any application where a malfunction of the drive or its control system could lead to or allow damage, loss or injury, a risk analysis must be carried out, and where necessary, further measures taken to reduce the risk - for example, an over-speed protection device in case of failure of the speed control, or a fail-safe mechanical brake in case of loss of motor braking.

With the sole exception of the Safe Torque Off function, none of the drive functions must be used to ensure safety of personnel, i.e. they must not be used for safety-related functions.

The Safe Torque Off function may be used in a safety-related application. The system designer is responsible for ensuring that the complete system is safe and designed correctly according to the relevant safety standards.

The design of safety-related control systems must only be done by personnel with the required training and experience. The Safe Torque Off function will only ensure the safety of a machine if it is correctly incorporated into a complete safety system. The system must be subject to a risk assessment to confirm that the residual risk of an unsafe event is at an acceptable level for the application.

1.8 Access to equipment

Access must be restricted to authorized personnel only. Safety regulations which apply at the place of use must be complied with.

1.9 Environmental limits

Instructions in this guide regarding transport, storage, installation and use of the equipment must be complied with, including the specified environmental limits. This includes temperature, humidity, contamination, shock and vibration. Drives must not be subjected to excessive physical force.

1.10 Hazardous environments

The equipment must not be installed in a hazardous environment (i.e. a potentially explosive environment).

1.11 Motor

The safety of the motor under variable speed conditions must be ensured.

To avoid the risk of physical injury, do not exceed the maximum specified speed of the motor.

Low speeds may cause the motor to overheat because the cooling fan becomes less effective, causing a fire hazard. The motor should be installed with a protection thermistor. If necessary, an electric forced vent fan should be used.

The values of the motor parameters set in the drive affect the protection of the motor. The default values in the drive must not be relied upon. It is essential that the correct value is entered in the Motor Rated Current parameter.

1.12 Mechanical brake control

Any brake control functions are provided to allow well co-ordinated operation of an external brake with the drive. While both hardware and software are designed to high standards of quality and robustness, they are not intended for use as safety functions, i.e. where a fault or failure would result in a risk of injury. In any application where the incorrect operation of the brake release mechanism could result in injury, independent protection devices of proven integrity must also be incorporated.

1.13 Adjusting parameters

Some parameters have a profound effect on the operation of the drive. They must not be altered without careful consideration of the impact on the controlled system. Measures must be taken to prevent unwanted changes due to error or tampering.

1.14 Electromagnetic compatibility (EMC)

Installation instructions for a range of EMC environments are provided in the relevant Power Installation Guide. If the installation is poorly designed or other equipment does not comply with suitable standards for EMC, the product might cause or suffer from disturbance due to electromagnetic interaction with other equipment. It is the responsibility of the installer to ensure that the equipment or system into which the product is incorporated complies with the relevant EMC legislation in the place of use.

2 Intended users

The *SI-CiA417 Solution User Guide* (this document) is intended to be used by experienced and suitably competent engineering personnel for the purposes of integrating *CANopen application profile for lift control*- E300 drive based lift systems, in conjunction with an appropriate third-party lift controller.

References to user in the *SI-CiA417 Solution User Guide* should be considered to describe the suitably competent engineering personnel, (as described above).

As the SI-CiA417 Solution adheres strictly to the *CiA417 CANopen application profile for lift control systems*, (also known as CANopen Lift specification) it is expected that the designer or integrator of the lift system is fully aware of how the profile is used. This User Guide is not intended to function as a support document for maintenance personnel or end-users.

The *SI-CiA417 Solution User Guide* must be read in conjunction with the Control Techniques' *Elevator Drive Installation and System Design Guide*, the relevant Control Techniques' elevator setup guide (*E300 Open Loop Mode Setup Guide, E300 RFC-A Mode Setup Guide or E300 RFC-S Mode Setup Guide*), and the chosen lift controller manufacturer's documentation.

It is possible that the integrator of the SI-CiA417 Solution may need to refer to the *CiA417 CANopen application profile for lift control systems* specification (available from the CAN in Automation international users' and manufacturers' group).

3 Introduction

3.1 What is SI-CiA417?

SI-CiA417 is an option module that may be installed in the E300 elevator drive and supports the CiA417 CANopen application profile for lift control systems.

To realize a solution and provide a CAN level network, the SI-CANopen V2 module is required in addition to the SI-CiA417 module.

NOTE

The terms "lift" and "elevator" as used in this document and the associated documents referenced in section 2, are interchangeable and have the same meaning.

NOTE

Currently the SI-Applications Compact module pre-loaded with a Control Techniques developed CiA417 user application is offered in place of a specific SI-CiA417 option module.

References to the SI-CiA417 option module in this manual can be inferred to indicate an SI-Applications Compact module with the relevant Control Technique's user application installed.

The CTNet, RS485 and IO port connections intrinsically provided as part of the SI-Applications Compact module are not available to the user when the module is purposed for use as the CiA417 solution.

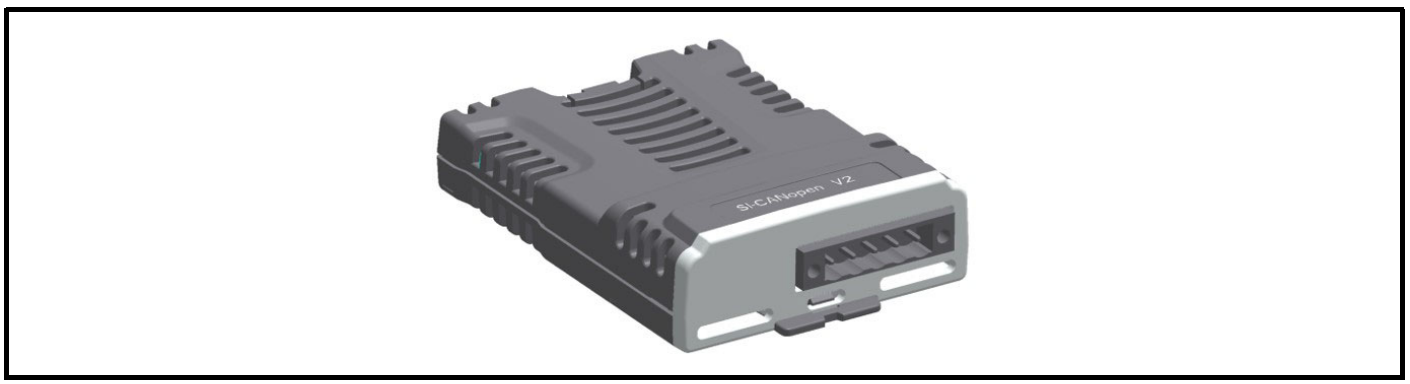
The CANopen application profile for lift control systems, also known as CANopen Lift specification, defines the communication interfaces for different virtual devices. This includes call, car drive, and car door controllers as well as input panel, output panel, car drive, car position, load measuring, car door, light barrier, remote data transmission, and power-measuring units.

Figure 3-1 SI-CiA417 for E300

3.2 What is SI-CANopen V2?

SI-CANopen V2 is a fieldbus option module that can be installed to the expansion slot(s) in Unidrive M and E300 to provide CANopen connectivity and also has the ability to support CAN profiles that are hosted on a second intelligent option module, such as the SI-CiA417.

Figure 3-2 SI-CANopen V2 for Unidrive M and E300



NOTE

It is a requirement that an SI-CANopen V2 module is used in conjunction with the SI-CiA417 option, the SI-CANopen (V1) hardware is not supported.

3.3 Option module identification

The SI-CANopen V2 and the CiA417 modules are identified by:

1. The label located on the underside of the option module.
2. The color coding across the front of the SI-CANopen V2 (light grey) and SI-CiA417 (black).

Figure 3-3 SI-CANopen V2

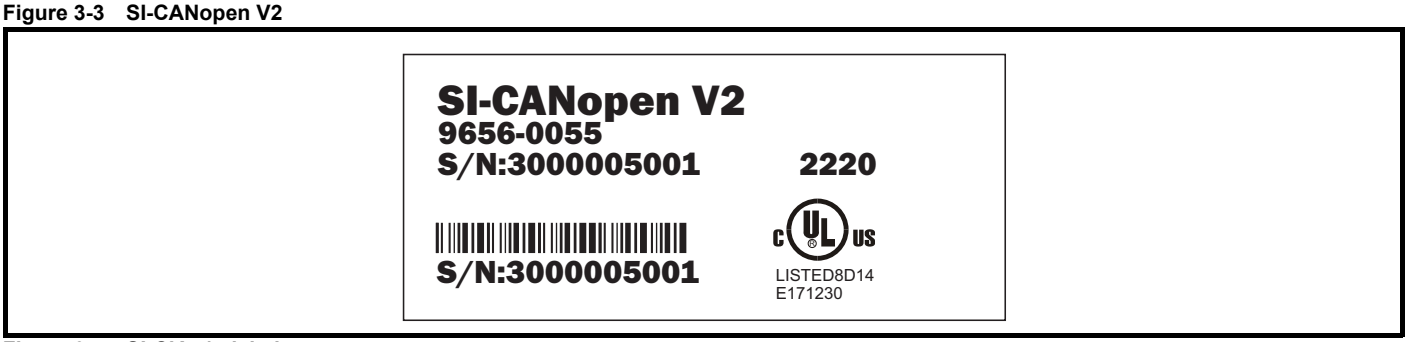


Figure 3-4 SI-CiA417 label

3.3.1 Date code format

The date code consists of four numbers. The first two numbers indicate the year and the remaining numbers indicate the week of the year in which the option module was built.

Example:

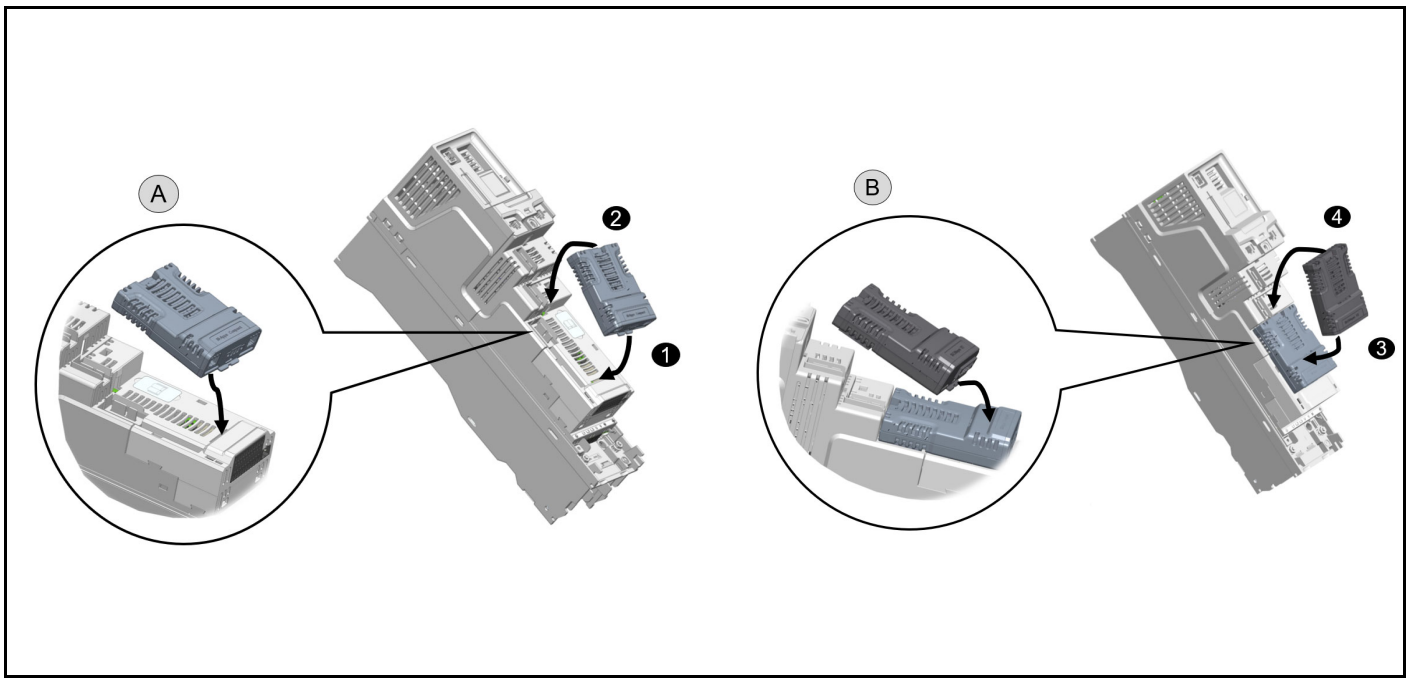
A date code of 1710 would correspond to week 10 of year 2017.

4 Mechanical installation

WARNING

Before installing or removing an option module from any drive, ensure the AC supply has been disconnected for at least 10 minutes and refer to section 1 *Safety Information* on page 5. If using a DC bus supply ensure this is fully discharged before working on any drive or option module.

Figure 4-1 Installation of option modules on E300 drive



NOTE

Firstly the SI-CiA417 module must be installed in slot 3, this is highlighted in the detailed view (A) and the SI-CANopen V2 module must then be installed in slot 2, this is highlighted in the detailed view (B).

- Move the option module in the direction shown (1/2, 3/4).
- Align and insert the option module tab into the slot provided. This is highlighted in the detailed view (A) and (B).
- Press down on the option module until it clicks into place.

5 Electrical

5.1 SI-CANopen V2 terminal descriptions

SI-CANopen V2 has a standard 5-way screw terminal block connector for the CANopen network connection as shown in Figure 5-1.

Figure 5-1 SI-CANopen V2 - connector view

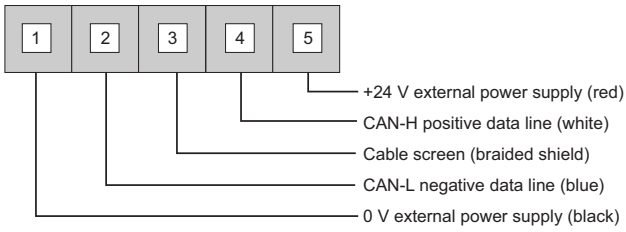


Table 5-1 SI-CANopen V2 terminal descriptions

5-way terminal	Function	Description
1	0 V	0 V MEV SI-CANopen V2 external supply
2	CAN-L	Negative data line
3	Shield	Cable braided shield connection
4	CAN-H	Positive data line
5	+24 V	+24 V SI-CANopen V2 external supply

Any external supply must be suitably installed to prevent noise on the network. This 24V input does not allow SI-CANopen V2 to continue communicating in the event of mains power loss.

NOTE

The external supply terminals provide power for the SI-CANopen V2 transceiver circuitry, but do NOT provide power to keep the SI-CANopen V2 operating in the event of the mains power supply loss to the drive. An external supply will keep the SI-CANopen V2 transceivers powered up and the network load characteristics constant in the event of loss of power to the drive.

WARNING

Any external supply must be suitably installed to prevent noise on the network. Connecting pins 6 and 9 to an external supply allows the line driver circuitry to remain powered when the drive and the SI-CANopen V2 module are turned off.
This 24 V input does not allow SI-CANopen V2 to continue communicating.

5.2 CANopen cable

CANopen cable has 2 twisted pairs plus an overall shielding. SI-CANopen V2 has a specified color code, and it is important that this code is maintained. The data wires are white and blue, and the network power supply wires are red and black.

Table 5-2 SI-CANopen V2 cable color codes

Terminal	Cable	Data signal	Description
1	Black	0 V	0 V external power supply
2	Blue	CAN-L	Negative data line
3	Braided Shield	Shield	Cable shield
4	White	CAN-H	Positive data line
5	Red	+24 V	+24 V external power supply

CANopen networks run at high data rates and require cable specifically designed to carry high frequency signals. Low quality cable will attenuate the signals and may render the signal unreadable for the other nodes on the network. Cable specifications and a list of approved manufacturers of cable for use on SI-CANopen V2 networks is available on the CAN in Automation (CiA) web site at *www.can-cia.org*.

NOTE

Control Techniques can only guarantee correct and reliable operation of SI-CANopen V2 if all other equipment installed on the CANopen network (including the network cable) has been approved by the CiA.

5.3 CANopen network termination

It is vital when dealing with high-speed communications networks, to ensure that the network communications cable is installed with the specified termination resistor network at each end of the cable segment. This prevents signals from being reflected back down the cable and causing interference.

During installation of a CANopen network, 120 Ω 0.25 W termination resistors should be installed across the CAN-H and CAN-L lines at both ends of the network segment.

NOTE

Failure to terminate a network correctly can seriously affect the operation of the network. If the correct termination resistors are not installed, the noise immunity of the network is greatly reduced.

If too many termination resistors are installed on a CANopen network, the network will be over-loaded, resulting in reduced signal levels. This may cause nodes to miss some bits of information, resulting in potential transmission errors.

5.4 SI-CANopen V2 cable shield connections

The SI-CANopen V2 should be wired with the cable shields isolated from ground at each drive. The cable shields should be linked together at the point where they emerge from the cable, and formed into a short pigtail to be connected to the shell on the SI-CANopen V2 connector.

NOTE

The CANopen cable can be tie-wrapped to the grounding bar or local convenient mounting that is not live to provide strain relief, but the CANopen cable shield must be kept isolated from ground at each node. The only exception to this is the CANopen ground point as described in section 3.5 below.

5.5 SI-CANopen V2 ground point

The CANopen cable shield must be grounded AT ONE POINT only, usually near the centre point of the cable run. This is to prevent the cable shield from becoming live in the event of catastrophic failure of another device on the CANopen network.

5.6 Maximum network length

The maximum number of nodes that can be connected to a single CANopen network segment is 32. The maximum length of network cable for a CANopen network is specified by the *(CAN in Automation (CiA)* and depends on the data rate to be used.

Table 5-3 CANopen maximum segment lengths

Data rate (bits/sec)	Maximum network length (m)
1 M	30
800 k	50
500 k	100
250 k	250
125 k	500
50 k	1000

5.7 Spurs

Control Techniques do not recommend the use of spurs on a CANopen network.

For more detailed information please consult the CiA at *www.can-cia.org*.

5.8 Minimum node to node cable length

The CANopen specification does not specify a minimum node to node distance, however, Control Techniques advises a minimum distance of 1 m (3.3 ft) between nodes to prevent excessive mechanical stress and to reduce network reflections.

6 Getting Started

NOTE

It is recommended that the latest firmware and SI-CiA417 applications software are used where possible to ensure all features are supported. The SI-CiA417 module has both module firmware and a pre-installed application program. The SI-CANopen V2 module has only module firmware.

NOTE

Due to the large number of different lift controllers/masters that support the CiA417 profile, details cannot be provided for any specific master lift controller. Generic support is available through your supplier or local drive centre. Before contacting your supplier or local drive centre for support ensure you have read section 10 *SI-CiA417 Diagnostics* on page 72 of this manual and we draw your attention to the Intended User section 2.

Minimum versions of firmware for each module and drive are detailed in section 10.1.

Initially connect the E300 drive to the lift controller via the CAN terminal on the SI-CANopen V2 module situated in Slot 2. Then if safe to do so, apply power to both the drive and the lift controller, upon power up the SI-CiA417 module will configure the SI-CANopen V2 module with the correct settings, allowing the drive and the lift controller to communicate.

The user does not have to explicitly set or save any SI-CiA417 or SI-CANopen V2 parameters.

The E300 drive should then be configured correctly as described in the relevant User Guide (see section 2), either via the PC tool Connect or the drive’s keypad. The SI-CiA417 adds two further methods of configuring the drive: the virtual keypad and PDOs. The virtual keypad allows the lift controller to emulate the drive's keypad and for the user to set E300 parameters up in this way. PDOs allow the lift controller to send parameter values to the drive using the permitted PDOs outlined in this guide. Refer to the relevant lift controller manufacturer's documentation.

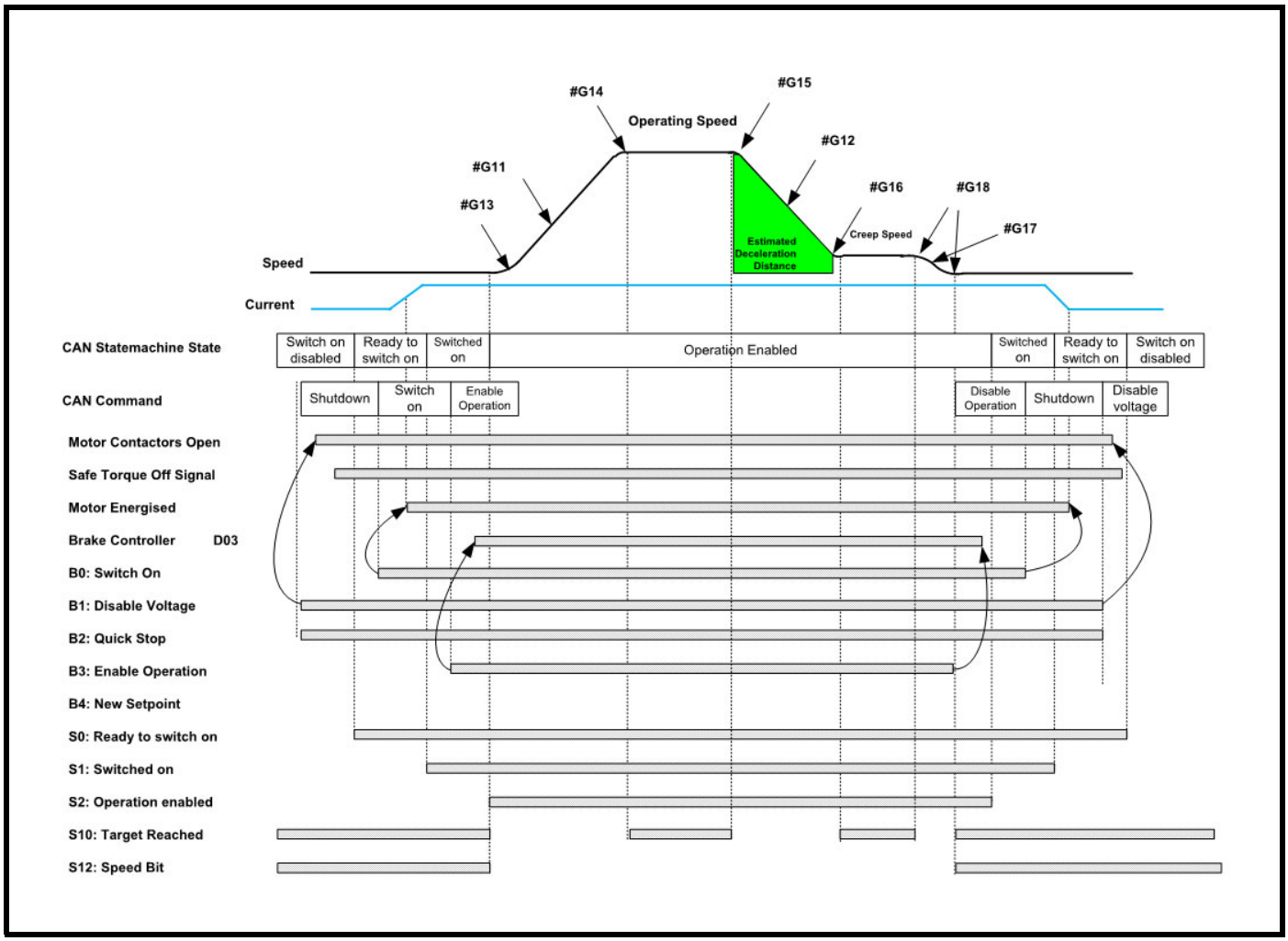
Once the drive and lift controller are connected and the drive’s parameters have been configured system setup can continue as usual.

The lift controller orchestrates the drive via the profile, and as such unlike many other Control Technique's option modules the user does not in most cases need to explicitly set up parameters within the option module.

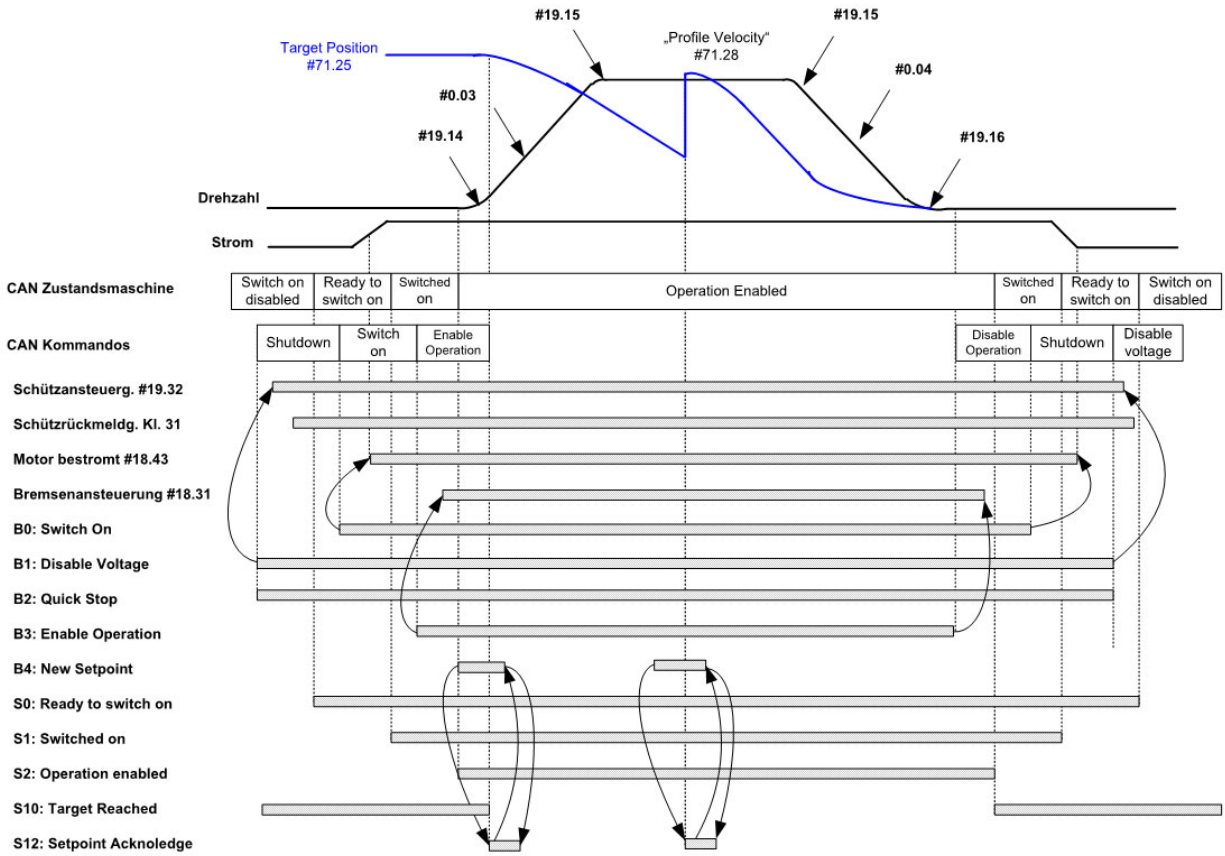
7 Profile Modes

Different modes of operation are supported by the SI-CiA417 module. The supported modes are Profile Velocity Mode and Profile Position Mode, each according to the CiA417 specification. The diagrams below (Section 7.1 and Section 7.2) demonstrates how Profile Velocity Mode and Profile Position Mode are intended to be used by the E300 drive and a compliant master lift controller. For further information on Profile Velocity Mode please refer to the CiA417 specification.

7.1 Profile velocity Mode



7.2 Profile position Mode



8 Supported CiA417 objects

The following tables describe the *CANopen application profile for lift control systems - CiA417* objects. These objects are written and read by the lift controller. The user may view associated parameters that represent these objects, see section 9 for further details

8.1 0x1000 Device Type Object

0x1000	**Device type Object**				
Sub-Index: 0	Sub-Index Name:		n/a	Range:	n/a
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	This object will always return the value: 0x090001a1 where 9 = drive unit and 1a1 = 417			

8.2 0x2101 Readable Node ID

0x2101	**Readable Node ID**				
Sub-Index: 0	Sub-Index Name:		Readable Node ID	Range:	n/a
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	Returns the device node ID			

8.3 0x2862 NMT Reset

0x2862	**NMT Reset**				
Sub-Index: 0	Sub-Index Name:		NMT Reset	Range:	Unsigned 32
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	This object is controlled by the SI-CANopen module and increments by one on each NMT reset detected on the CANopen network			

8.4 0x6000 Supported Virtual Device Types

0x6000	**Supported Virtual Device Types**				
Sub-Index: 0	Sub-Index Name:		Highest Supported Index	Value:	02h
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	Indicates the supported virtual device types			
Sub-Index: 1	Sub-Index Name:		Drive Unit Device Type	Range:	Unsigned 32
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	Value of 0x09 provided			
Sub-Index: 2	Sub-Index Name:		Position Unit Device Type	Range:	Unsigned 32
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	Value of 0x06 provided			

8.5 0x6001 Lift Number

0x6001	**Lift Number**				
Sub-Index: 0	Sub-Index Name:		Lift Number	Value:	n/a
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	Indicates the lift number as specified in Pr **3.70.000**			

8.6 0x600A Virtual Terminal Interface

0x600A	**Virtual Terminal Interface**			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide or indicate character-based input or output sequences of the virtual terminal interface. The character sequences are limited to 4 characters. The character sequences are specified in /CiA417-1. The sequences are produced or consumed by Virtual Devices supporting virtual terminal interface using MPDO communication services.		
Sub-Index: 1	Sub-Index Name:	Input	Range:	
	E300 Parameter Affected:	71.10	PDO Map:	**Yes**
	Description:	The sub-index 01h provides character sequences received from a keyboard or indicates character sequences transmitted to the keyboard e.g. input to the keyboard.		
Sub-Index: 2	Sub-Index Name:	Output	Range:	
	E300 Parameter Affected:	71.11	PDO Map:	**Yes**
	Description:	The sub-index 02h indicates character sequences to be submitted to a display or provides character sequences received from the display e.g. display output.		

8.7 0x6021 Error Info and Emergency Text

0x6021	Error Info and Emergency Text			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall indicate in the *display error info* sub-parameter (sub-index 01h), which textual error information shall be given in the emergency text string (sub-index 02h).		
Sub-Index: 1	Sub-Index Name:	Display Error Info	Range:	Unsigned 32
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	Bits 0 to 15 (UNSIGNED16) give Textual Error Code (TEC) Bits 16 to 23 (UNSIGNED8) give Lower byte of the language code compliant to /ISO639/. (LC low) Bits 24 to 31 (UNSIGNED8) give Upper byte of the language code compliant to /ISO639/. (LC high) The *LC high* and *LC low* fields shall be compliant to the 2-character set as defined in /ISO639/. The *TEC* field shall indicate the requested textual error information originally received by an EMCY message. The value of XXXX FFFFh (X = don't care) shall indicate that no error text in the emergency text field shall be provided.		
Sub-Index: 2	Sub-Index Name:	Emergency Text String	Range:	VISIBLE STRING
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	The *emergency text string* sub-parameter shall provide the requested textual error information as indicated in the *display error info* sub-parameter.		

8.8 0x6030 Power Management Capability

0x6030	Power Management Capability			
Sub-Index: 0	Sub-Index Name:	Power Management Capability	Value:	3 (Unsigned 8)
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide the supported power management capability of the device similar to the object 1180h in /CiA302-9/. Bit 0: 1 = Power saving S1 supported; 0 = Power saving S1 unsupported Bit 1: 1 = Power saving S2 supported; 0 = Power saving S2 unsupported Bit 3: 1 = Power saving S4 supported; 0 = Power saving S4 unsupported Note: Only power saving modes S1, S2 and S4 are supported.		

8.9 0x6031 Set Power Saving Mode

0x6031	Set Power Saving Mode			
Sub-Index: 0	Sub-Index Name:	Set Power Saving Mode	Range:	Unsigned8
	E300 Parameter Affected:	H35 / H36	PDO Map:	No
	Description:	This object shall contain the requested power saving mode similar to the object 1181h in / CiA302-9/. 0x00 = Set Power saving mode S1 0x01 = Set Power saving mode S2 0x02 = Set Power saving mode S3 (Not supported) 0x04 = Set Power saving mode S4 0xFF = Take No Action		

8.10 0x6032 Set Power Saving Confirmation

0x6032	Set power saving mode confirmation			
Sub-Index: 0	Sub-Index Name:	Set Power Saving Mode Confirmation	Range:	Unsigned8
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide information about a power saving mode in which the device is about to switch. 0x01 = Set Power saving mode S1 0x02 = Set Power saving mode S2 0x04 = Operating in Power saving mode S4		

8.11 0x6040 Measured Voltage

0x6040	Measured Voltage			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	03h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide the actual measured voltage for up to three phases. The values shall be given in multiples of 1 V. The measurements of the phases shall be performed at the very same moment, and are transmitted by means of MPDOs. The next measurement shall be not performed before the previous values have been transmitted.		
Sub-Index: 1	Sub-Index Name:	Voltage 1	Range:	Unsigned32
	E300 Parameter Affected:	J61	PDO Map:	No
	Description:	Phase U to Neutral. Note: all three phases are calculated as the same		
Sub-Index: 2	Sub-Index Name:	Voltage 2	Range:	Unsigned32
	E300 Parameter Affected:	J61	PDO Map:	No
	Description:	Phase V to Neutral. Note: all three phases are calculated as the same		
Sub-Index: 3	Sub-Index Name:	Voltage 3	Range:	Unsigned32
	E300 Parameter Affected:	J61	PDO Map:	No
	Description:	Phase W to Neutral. Note: all three phases are calculated as the same		

8.12 0x6041 Measured Current

0x6041	Measured Current			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	03h
	SP Parameter Affected:	n/a	Unit:	n/a
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide the actual measured current for up to three phases. The values shall be given in multiples of 1 A. Positive values shall indicate the consumed current; negative values shall indicate the supplied current. The next measurement shall be not performed before the previous values have been transmitted.		
Sub-Index: 1	Sub-Index Name:	Current 1	Range:	
	SP Parameter Affected:	4.01	Unit:	Integer32
	E300 Parameter Affected:	J22	PDO Map:	No
	Description:	Phase U. Note: we currently provide equal values for each phase		
Sub-Index: 2	Sub-Index Name:	Current 2	Range:	
	SP Parameter Affected:	4.01	Unit:	Integer32
	E300 Parameter Affected:	J22	PDO Map:	No
	Description:	Phase V. Note: we currently provide equal values for each phase		
Sub-Index: 3	Sub-Index Name:	Current 3	Range:	
	SP Parameter Affected:	4.01	Unit:	Integer32
	E300 Parameter Affected:	J22	PDO Map:	No
	Description:	Phase W. Note: we currently provide equal values for each phase		

8.13 0x6042 Measured Power

0x6042	Measured Power			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	03h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide the active measured power for up to three phases. The values shall be given in multiples of 1 W. Positive values shall indicate the consumed power; negative values shall indicate the supplied power. The next measurement shall be not performed before the previous values have been transmitted.		
Sub-Index: 1	Sub-Index Name:	Power 1	Range:	Integer32
	E300 Parameter Affected:	J59 / 3	PDO Map:	No
	Description:	Phase U. Note: we currently provide equal values for each phase		
Sub-Index: 2	Sub-Index Name:	Power 2	Range:	Integer32
	E300 Parameter Affected:	J59 / 3	PDO Map:	No
	Description:	Phase V. Note: we currently provide equal values for each phase		
Sub-Index: 3	Sub-Index Name:	Power 3	Range:	Integer32
	E300 Parameter Affected:	J59 / 3	PDO Map:	No
	Description:	Phase W. Note: we currently provide equal values for each phase		

8.14 0x6043 Measured Power Sum

0x6043	Measured Power Sum			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	01h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object, based on the object 6050 04h in /CiA458/, shall provide the total active measured power. The values shall be given in multiples of 1 mW. Positive values shall indicate the consumed power; negative values shall indicate the supplied power.		
Sub-Index: 1	Sub-Index Name:	Power Sum	Range:	Integer32
	E300 Parameter Affected:	J59	PDO Map:	No
	Description:	This object shall provide the active power for phase(s) as well as the total active power. Positive values shall indicate the consumed power; negative values shall indicate the supplied power. The next measurement shall not be performed before the previous values have been transmitted.		

8.15 0x6046 Measured Consumed Real Energy Sum

0x6046	Measured Consumed Real Energy Sum			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	01h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide total values of consumed (NOTE). The total energy meters shall not support a reset of total energy counters by means of CANopen communication services.		
Sub-Index: 1	Sub-Index Name:	Energy Consumed	Range:	Unsigned32
	E300 Parameter Affected:	J84 & J85	PDO Map:	No
	Description:	Total Consumed Energy		

8.16 0x6047 Measured Supplied Real Energy Sum

0x6047	Measured Supplied Real Energy Sum			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	01h
	SP Parameter Affected:	5.03	Unit:	n/a
	E300 Parameter Affected:		PDO Map:	No
	Description:	This object shall provide total values of supplied active energy, (NOTE). The total energy meters shall not support a reset of total energy counters by means of CANopen communication services.		
Sub-Index: 1	Sub-Index Name:	Energy Supplied	Range:	Unsigned32
	E300 Parameter Affected:		PDO Map:	No
	Description:	Total Supplied Energy Currently supplies the same value as object 0x6046		

8.17 0x6050 Parameter Setting Capability

0x6050	Parameter Setting Capability			
Sub-Index: 0	Sub-Index Name:	Parameter Setting Capability	Range:	Unsigned8
	E300 Parameter Affected:	No Parameter value always = 3	PDO Map:	No
	Description:	This object shall provide the supported parameter setting capability of the device. The value of 1b shall indicate the support of this parameter setting, the value of 0b that this parameter setting is not supported. CT supports: Bit 0 (P1) which indicates Standard Parameters are supported and Bit 1 (P2) which indicates Parameter setting for Evacuation are supported. Hence Value always = 3		

8.18 0x6051 Parameter Setting Request

0x6051	Parameter Setting Request			
Sub-Index: 0	Sub-Index Name:	Parameter Setting Request	Range:	Unsigned8
	E300 Parameter Affected:	71.18	PDO Map:	No
	Description:	This object shall contain the requested parameter setting.		

8.19 0x6052 Parameter Setting Display

0x6052	Parameter Setting Display			
Sub-Index: 0	Sub-Index Name:	Parameter Setting Display	Range:	Unsigned8
	E300 Parameter Affected:	71.19	PDO Map:	No
	Description:	This object shall contain the actual parameter setting.		

8.20 0x6380 Operating Parameters

0x6380	Operating Parameters			
Sub-Index: 0	Sub-Index Name:	Operating Parameters	Range:	Unsigned16
	E300 Parameter Affected:	C12	PDO Map:	No
	Description:	This object shall indicate the configuration of the operating parameters of an encode. Where the bits indicate: 0 = Code Sequence: Rotation CW or Rotation CCW (Supported) 1 to 15 = Not Supported		

8.21 0x6383 Position Value

0x6383	Position Value				
Sub-Index: 0	Sub-Index Name:		Highest Supported Index	Value:	03h
	E300 Parameter Affected:		n/a	PDO Map:	No
	Description:	This object contains the position values measured by the car position units. Sub-index 01h to 04h shall be equivalent to object 6004h in /CiA406/. (This object shall provide the output position value for rotary or linear encoders with normal resolution.)			
Sub-Index: 1	Sub-Index Name:		Car Position	Range:	Unsigned 32
	E300 Parameter Affected:		70.08 (mm) 70.09 (raw counts)	PDO Map:	**Yes**
	Description:	Position of the Car			
Sub-Index: 2	Sub-Index Name:		Not Used	Range:	n/a
	E300 Parameter Affected:		n/a	PDO Map:	n/a
	Description:	n/a			
Sub-Index: 3	Sub-Index Name:		Motor Position	Range:	Unsigned32
	E300 Parameter Affected:		70.10	PDO Map:	No
	Description:	Position of the Motor			

8.22 0x6400 Control Word

0x6400	Control Word			
Sub-Index: 0	Sub-Index Name:	Control Word	Range:	Unsigned16
	E300 Parameter Affected:	70.01	PDO Map:	**Yes**
	Description:	This object shall indicate the received command controlling the PDS FSA. It shall be structured as defined in Figure 6. The bits 7, 3, 2, 1, and 0 shall be supported. The bits 0 to 9 shall be supported according to the mode of operation. If the related functionality is not available, an appropriate emergency message shall be generated. The manufacturer-specific (ms) bits may be supported. The bits are defined as: 0 = Switch On 1 = Enable Voltage 2 = Quickstop 3 = Enable Operation 4 to 6 = Operation Mode Specific 7 = Fault Reset 8 = Fault 9 (Profile Position Mode) = New Set Point 9 (Profile Velocity Mode) = Reserved 10 = Reserved 11 to 13 = Manufacture Reserved 14 = Emergency Recall Operation Active 15 = Car Top Inspection Mode Active		

8.23 0x6401 Status Word

0x6401	Status Word			
Sub-Index: 0	Sub-Index Name:	Status Word	Range:	Unsigned16
	E300 Parameter Affected:	70.02	PDO Map:	**Yes**
	Description:	This object shall provide the status of the PDS FSA. The bits 10, 9, and 6 to 0 shall be supported. The oms bits shall be supported if the mode of operation is supported. If the related functionality of the oms bits is not available, the corresponding bit shall be 0b. The manufacturer-specific (ms) bits may be supported. Where: 0 = Ready to Switch On 1 = Switched On 2 = Operation Enabled 3 = Fault 4 = Voltage Enabled 5 = Quick Stop 6 = Switch On Disabled 7 = Warning 8 = Manufacter Specific 9 = Remote 10 = Target Reached 11 = Internal Limit Active 12 (Profile Position Mode) = Setpoint Acknowledge 12 (Profile Velocity Mode) = Zero Speed 13 (Profile Position Mode) = Following Error 13 (Profile Velocity Mode) = Max Slippage 14 & 15 = Manufacter Specific		

8.24 0x6402 Control Option Codes

0x6402	Control Option Codes			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	05h
	SP Parameter Affected:	71.40	Unit:	n/a
	E300 Parameter Affected:	n/a	PDO Map:	n/a
	Description:	This object contains several objects in /IEC61800-7-201/. Sub-index 01h shall be equivalent to object 605Bh in /IEC61800-7-201/. Sub-index 02h shall be equivalent to object 605Ch in /IEC61800-7-201/. Sub-index 03h shall be equivalent to object 605Ah in /IEC61800-7-201/. Sub-index 04h shall be equivalent to object 605Dh in /IEC61800-7-201/. Sub-index 05h shall be equivalent to object 605Eh in /IEC61800-7-201/. The values in red below are the selected control options		
Sub-Index: 1	Sub-Index Name:	Shut Down	Range:	Integer16
	SP Parameter Affected:	71.40	Unit:	n/a
	E300 Parameter Affected:	Always = 0	PDO Map:	No
	Description:	This object shall indicate what action is performed if there is a transition from operation enabled state to switched on state. The slow down ramp is the deceleration value of the used mode of operations. Where: -32768 to -1 = Manufacturer-Specific 0 = Disable Drive Function (switch-off the drive power stage) 1 = Slow down with slow down ramp; disable of the drive function 2 to 32767 = Reserved [Red text indicates unsupported value; the write will be ignored]		
Sub-Index: 2	Sub-Index Name:	Disable Operation	Range:	Integer16
	SP Parameter Affected:	71.40	Unit:	n/a
	E300 Parameter Affected:	Always = 1	PDO Map:	No
	Description:	This object shall indicate what action is performed if there is a transition from operation enabled state to ready to switch on state. The slow down ramp is the deceleration value of the used mode of operations. Where: -32768 to -1 = Manufacturer-Specific 0 = Disable Drive Function (switch-off the drive power stage) 1 = Slow down with slow down ramp; disable of the drive function 2 to 32767 = Reserved		

Sub-Index: 3	Sub-Index Name:	Quick Stop	Range:	Integer16
	SP Parameter Affected:	71.40	Unit:	n/a
	E300 Parameter Affected:	Always = 0	PDO Map:	No
	Description:	This object shall indicate what action is performed when the quick stop function is executed. The slow down ramp is the deceleration value of the used mode of operations. Where: -32768 to -1 = Manufacturer-Specific 0 = Disable Drive Function 1 = Slow down on slow down ramp and transit into switch on disabled 2 = Slow down on quick stop ramp and transit into switch on disabled 3 = Slow down on current limit and transit into switch on disabled 4 = Slow down on voltage limit and transit into switch on disabled 5 = Slow down on slow down ramp and stay in quick stop active 6 = Slow down on quick stop ramp and stay in quick stop active 7 = Slow down on current limit and stay in quick stop active 8 = Slow down on voltage limit and stay in quick stop active 9 to 32767 = Reserved		
Sub-Index: 4	Sub-Index Name:	Halt	Range:	Integer16
	SP Parameter Affected:	71.40	Unit:	n/a
	E300 Parameter Affected:	Always = 1	PDO Map:	No
	Description:	This object shall indicate what action is performed when the halt function is executed. The slow down ramp is the deceleration value of the used mode of operations. Where: -32768 to -1 = Manufacturer-Specific 0 = Reserved 1 = Slow down on slow down ramp and stay in operation enabled 2 = Slow down on quick stop ramp and stay in operation enabled 3 = Slow down on current limit and stay in operation enabled 4 = Slow down on voltage limit and stay in operation enabled 5 to 32767 = Reserved		
Sub-Index: 5	Sub-Index Name:	Fault Reaction	Range:	Integer16
	SP Parameter Affected:	71.40	Unit:	n/a
	E300 Parameter Affected:	Always = 0	PDO Map:	No
	Description:	This object shall indicate what action is performed when fault is detected in the PDS. The slow down ramp is the deceleration value of the used mode of operations. Where: -32768 to -1 = Manufacturer-Specific 0 = Disable drive function, motor is free to rotate 1 = Slow down on slow down ramp 2 = Slow down on quick stop ramp 3 = Slow down on current limit 4 = Slow down on voltage limit 5 to 32767 = Reserved		

8.25 0x6403 Modes of Operation

0x6403	Modes of Operation			
Sub-Index: 0	Sub-Index Name:	Modes of Operation	Range:	Integer8
	E300 Parameter Affected:	70.04	PDO Map:	**Yes**
	Description:	This object shall indicate the requested operation mode. Where: -128 to -1 = Manufacturer-specific operation modes 0 = No mode change/no mode assigned (Supported) 1 = Profile position mode (Supported) 2 = Velocity mode (Not Supported) 3 = Profile velocity mode (Supported) 4 to 127 = Not Supported		

8.26 0x6404 Modes of Operation Display

0x6404	Modes of Operation Display			
Sub-Index: 0	Sub-Index Name:	Modes of Operation Display	Range:	Integer8
	E300 Parameter Affected:	70.05	PDO Map:	**Yes**
	Description:	This object shall provide the actual operation mode.		

8.27 0x6405 Motion Profile Type

0x6405	Motion Profile Type			
Sub-Index: 0	Sub-Index Name:	Motion Profile Type	Range:	Integer16
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall indicate the configured type of motion profile used to perform a profiled motion. Where: -32 768 to -1 = Manufacturer-specific 0 = Linear ramp 1 = Sin2 ramp 2 = Jerk-free ramp 3 = Jerk-limited ramp (This is a read only object and the returned value will always be 3) 4 to 32 767 = Reserved		

8.28 0x6406 Control Effort

0x6406	Control Effort			
Sub-Index: 0	Sub-Index Name:	Control Effort	Range:	Integer32
	E300 Parameter Affected:	60.06 (mm) 70.07 (raw counts (post application of 0x641F))	PDO Map:	**Yes**
	Description:	This object shall contain the breaking point or breaking distance depending of the target position given as absolute value respectively as relative value. The value shall be given in user defined position units. In Profile Position this object displays target position – braking distance. In Profile Velocity this object displays the braking distance from the current speed to zero speed.		

8.29 0x6408 Max Velocity and Speed

0x6408	Max Velocity and Speed			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall be a collection of limitations of the car drive unit. Sub-index 01h shall be equivalent to object 607Fh in /IEC61800-7-201/. Sub-index 02h shall be equivalent to object 6080h in /IEC61800-7-201/.		
Sub-Index: 1	Sub-Index Name:	Max Profile Velocity	Range:	Unsigned32
	E300 Parameter Affected:	E01	PDO Map:	No
	Description:	This object shall indicate the configured maximal allowed velocity in either direction during a profiled motion. The value shall be given in the very same physical unit as the profile velocity object (6081h).		
Sub-Index: 2	Sub-Index Name:	Max Motor Speed	Range:	Unsigned32
	E300 Parameter Affected:	E07	PDO Map:	No
	Description:	This object shall indicate the configured maximal allowed speed for the motor in either direction. It is used to protect the motor and is taken from the motor data sheet. The value shall be given in rotations per minute (r/min) or user-defined velocity units.		

8.30 0x640A Quick Stop Deceleration

0x640A	Quick Stop Deceleration			
Sub-Index: 0	Sub-Index Name:	Quick Stop Deceleration	Range:	Unsigned32
	E300 Parameter Affected:	G29	PDO Map:	No
	Description:	This object shall indicate the configured deceleration used to stop the motor when the quick stop function is activated and the quick stop code object (BS61800 605Ah) is set to 2 or 6. The quick stop deceleration is also used if the fault reaction code object (BS61800 605Eh) is 2 and the halt option code object (BS61800 605Dh) is 2. The value shall be given in the same physical unit as profile acceleration object (BS61800 6083h).		

8.31 0x640B Profile Acceleration and Deceleration

0x640B	Profile Acceleration and Deceleration			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall be a collection of parameters of the car drive unit. The values shall be given in multiples of 1 mm/s^2. Sub-index 01h shall be equivalent to object 6083h in /IEC61800-7-201/. Sub-index 02h shall be equivalent to object 6084h in /IEC61800-7-201/.		
Sub-Index: 1	Sub-Index Name:	Acceleration	Range:	Unsigned32
	E300 Parameter Affected:	G11	PDO Map:	No
	Description:	This object shall indicate the configured acceleration.		
Sub-Index: 2	Sub-Index Name:	Deceleration	Range:	Unsigned32
	E300 Parameter Affected:	G12	PDO Map:	No
	Description:	This object shall indicate the configured deceleration.		

8.32 0x640D Profile Jerk

0x640D	Profile Jerk			
Sub-Index: 0	Sub-Index Name:	Highest Supported index	Value:	06h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object, based on the object 0x60A4 (see /IEC61800-7-201/), shall indicate the configured set of jerk parameters. The jerk values shall be given in multiples of 1 mm/s^3.		
Sub-Index: 1	Sub-Index Name:	Jerk 1	Range:	Unsigned32
	E300 Parameter Affected:	G13	PDO Map:	No
	Description:	Quadrant 1 Jerk		
Sub-Index: 2	Sub-Index Name:	Jerk 2	Range:	Unsigned32
	E300 Parameter Affected:	G14	PDO Map:	No
	Description:	Quadrant 2 Jerk		
Sub-Index: 3	Sub-Index Name:	Jerk 3	Range:	Unsigned32
	E300 Parameter Affected:	G15	PDO Map:	No
	Description:	Quadrant 3 Jerk		
Sub-Index: 4	Sub-Index Name:	Jerk 4	Range:	Unsigned32
	E300 Parameter Affected:	G16	PDO Map:	No
	Description:	Quadrant 4 Jerk		
Sub-Index: 5	Sub-Index Name:	Jerk 5	Range:	Unsigned32
	E300 Parameter Affected:	G18	PDO Map:	No
	Description:	Creep Stop Jerk		
Sub-Index: 6	Sub-Index Name:	Jerk 6	Range:	Unsigned32
	E300 Parameter Affected:	G47	PDO Map:	No
	Description:	Start Optimiser Jerk		

8.33 0x6415 Velocity Encoder Resolution

0x6415	Velocity Encoder Resolution			
Sub-Index: 0	Sub-Index Name:	Velocity Encoder Resolution	Range:	Unsigned32
	E300 Parameter Affected:	C03	PDO Map:	No
	Description:	This object shall indicate the configured encoder increments per second and the motor revolutions per second. The velocity encoder resolution shall be calculated by the following formula: $VelocityEncoderResolution = \frac{\frac{Encoder\ Increments}{Seconds}}{\frac{Motor\ Revolutuions}{Seconds}}$		

8.34 0x6416 Gear Ratio

0x6416	Gear Ratio			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall indicate the configured number of motor shaft revolutions and the number of driving shaft revolutions. The gear ratio shall be calculated by the following formula: $GearRatio = \frac{Motor\ Shaft\ Revolutions}{Driving\ Shaft\ Revolutions}$		
Sub-Index: 1	Sub-Index Name:	Motor Revolutions	Range:	Unsigned32
	E300 Parameter Affected:	E04	PDO Map:	No
	Description:	Numerator used in gear ratio calculation		
Sub-Index: 2	Sub-Index Name:	Shaft Revolutions	Range:	Unsigned32
	E300 Parameter Affected:	E05	PDO Map:	No
	Description:	Denominatior used in gear ratio calculation		

8.35 0x6417 Feed Constant

0x6417	Feed Constant		
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	
	E300 Parameter Affected:	n/a	
	Description:	This object shall indicate the configured feed constant, which is the measurement distance per one revolution of the output shaft of the gearbox. The feed constant shall be calculated by the following formula: $FeedConstant = \frac{Feed}{Drive\ Shaft\ Revolutions}$	
Sub-Index: 1	Sub-Index Name:	Numerator	
	E300 Parameter Affected:	E02	
	Description:	Feed for Feed Constant Numerator	
Sub-Index: 2	Sub-Index Name:	Denominator	
	E300 Parameter Affected:	E03	
	Description:	Drive Shaft Revolutions for Feed Constant Denominator	

8.36 0x641E Polarity

0x641E	Polarity			
Sub-Index: 0	Sub-Index Name:	Polarity	Range:	Unsigned8
	E300 Parameter Affected:	H12	PDO Map:	No
	Description:	This object shall indicate if the position demand value shall be multiplied by 1 or by –1. The polarity flag shall have no influence on the homing mode. The position polarity bit shall be used only for profile position (pp) mode and cyclic sync position mode (csp). The velocity polarity bit shall be used only for profile velocity (pv) mode and cyclic sync velocity mode (csv). Bit 7 = 0: Position Polarity * 1 Bit 7 = 1: Position Polarity * -1 Bit 6 = 0: Velocity Polarity * 1 (Not Supported) Bit 6 = 1: Velocity Polarity * -1 (Not Supported)		

8.37 0x641F Position Convertion

0x641F	Position Convertion			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall contain the conversion coefficients to convert the target position (from drive controller) and the position value (from the position device) into millimeter (mm). Sub-index 01h shall contain the number of position units. Sub-index 02h shall contain the equivalent length value in multiple of mm of the total number of position units as given in sub-index 01h.		
Sub-Index: 1	Sub-Index Name:	No. of Position Units	Range:	Unsigned32
	E300 Parameter Affected:	71.01	PDO Map:	No
	Description:	Number of position units from the drive		
Sub-Index: 2	Sub-Index Name:	Total Length in mm	Range:	Unsigned32
	E300 Parameter Affected:	71.02	PDO Map:	No
	Description:	Length travelled in mm for the number of position units given above		

8.38 0x6420 Target Position

0x6420	Target Position			
Sub-Index: 0	Sub-Index Name:	Target Position	Range:	Integer32
	E300 Parameter Affected:	70.11	PDO Map:	**Yes**
	Description:	This object shall indicate the commanded position that the drive should move to in position profile mode using the current settings of motion control parameters such as velocity, acceleration, deceleration, motion profile type etc. The value of this object shall be interpreted as absolute or relative depending on the abs/rel flag in the controlword. It shall be given in user-defined position units and shall be converted to position increments.		

8.39 0x6421 Position Range Limit

0x6421	Position Range Limit			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall indicate the configured maximal and minimal position range limits. It shall limit the numerical range of the input value. On reaching or exceeding these limits, the input value shall wrap automatically to the other end of the range. Wrap-around of the input value may be prevented by setting software position limits as defined in software position limit object. To disable the position range limits the min position range limit (sub-index 01h) and max position range limit (sub-index 02h) shall be set to 0. The values shall be given in user-defined position units.		
Sub-Index: 1	Sub-Index Name:	Minimum	Range:	Integer32
	E300 Parameter Affected:	70.19	PDO Map:	No
	Description:	Minimum value that can be entered into the target position (Same parameter as 0x6422_1)		
Sub-Index: 2	Sub-Index Name:	Maximum	Range:	Integer32
	E300 Parameter Affected:	70.20	PDO Map:	No
	Description:	Maximum value that can be entered into the target position (Same parameter as 0x6422_2)		

8.40 0x6422 Software Position Limit

0x6422	Software Position Limit			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall indicate the configured maximal and minimal software position limits. These parameters shall define the absolute position limits for the position demand value and the position actual value. Every new target position shall be checked against these limits.		
Sub-Index: 1	Sub-Index Name:	Minimum	Range:	Integer32
	E300 Parameter Affected:	70.19	PDO Map:	No
	Description:	Minimum value that can be entered into the target position		
Sub-Index: 2	Sub-Index Name:	Maximum	Range:	Integer32
	E300 Parameter Affected:	70.20	PDO Map:	No
	Description:	Maximum value that can be entered into the target position		

8.41 0x6423 Profiles Velocity

0x6423	Profiles Velocity			
Sub-Index: 0	Sub-Index Name:	Profiles Velocity	Range:	Unsigned32
	E300 Parameter Affected:	70.12	PDO Map:	**Yes**
	Description:	This object shall indicate the configured velocity normally attained at the end of the acceleration ramp during a profiled motion and shall be valid for both directions of motion. The value shall be given in multiples of 1 mm/s. Used for Profile Position Mode		

8.42 0x6430 Target Velocity

0x6430	Target Velocity			
Sub-Index: 0	Sub-Index Name:	Target Velocity	Range:	Integer32
	E300 Parameter Affected:	70.13	PDO Map:	**Yes**
	Description:	This object shall indicate the configured target velocity and shall be used as input for the trajectory generator. The value shall be given in multiples of 1 mm/s. Used for Profile Velocity Mode		

8.43 0x6432 Velocity Demand Value

0x6432	Velocity Demand Value			
Sub-Index: 0	Sub-Index Name:	Velocity Demand Value	Range:	Integer32
	E300 Parameter Affected:	J39	PDO Map:	No
	Description:	This object shall provide the output value of the trajectory generator.		

8.44 0x6433 Velocity Actual Value

0x6433	Velocity Actual Value			
Sub-Index: 0	Sub-Index Name:	Velocity Actual Value	Range:	Integer32
	E300 Parameter Affected:	J40	PDO Map:	**Yes**
	Description:	This object shall provide the actual velocity value derived either from the velocity sensor or the position sensor. The value shall be given in multiples of 1 mm/s.		

8.45 0x6435 Velocity Window

0x6435	Velocity Window			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object contains configuration parameters of the car drive unit and serves diagnostics purposes. The structure and value definition of sub-index 01h shall be as defined in object 606Dh in /IEC61800-7-201/. The structure and value definition of sub-index 02h shall be as defined in object 606Eh in /IEC61800-7-201/. The values shall be given in multiples of 1 mm/s.		
Sub-Index: 1	Sub-Index Name:	Velocity Window	Range:	Integer32
	E300 Parameter Affected:	70.17	PDO Map:	No
	Description:	This object shall indicate the configured velocity window.		
Sub-Index: 2	Sub-Index Name:	Velocity Window Time	Range:	Integer32
	E300 Parameter Affected:	70.18	PDO Map:	No
	Description:	This object shall indicate the configured velocity window time. The value shall be given in milliseconds.		

8.46 0x6436 Velocity Threshold

0x6436	Velocity Threshold			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	02h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object contains configuration parameters of the car drive unit. The structure and value definition of sub-index 01h shall be as defined in object 606Fh in /IEC61800-7-201/. The structure and value definition of sub-index 02h shall be as defined in object 6070h in /IEC61800-7-201/. The values shall be given in multiples of 1 mm/s.		
Sub-Index: 1	Sub-Index Name:	Velocity Threshold	Range:	Integer32
	E300 Parameter Affected:	AC08	PDO Map:	No
	Description:	This object shall indicate the configured velocity threshold.		
Sub-Index: 2	Sub-Index Name:	Velocity Threshold Time	Range:	Integer32
	E300 Parameter Affected:	AC09	PDO Map:	No
	Description:	This object shall indicate the configured velocity threshold time.		

8.47 0x6440 Motor Type

0x6440	Motor Type			
Sub-Index: 0	Sub-Index Name:	n/a	Range:	Unsigned16
	E300 Parameter Affected:	B1	PDO Map:	No
	Description:	This object shall indicate the type of motor attached to and driven by the drive device. The supported types are: 0003h PM synchronous motor 0004h FC synchronous motor 0006h Wound rotor induction motor 0007h Squirrel cage induction motor		

8.48 0x6441 Motor Rated Speed

0x6441	Motor Rated Speed			
Sub-Index: 0	Sub-Index Name:	Motor Rated Speed	Range:	Unsigned16
	E300 Parameter Affected:	B07	PDO Map:	No
	Description:	This object shall contain the nominal speed of the motor at rated voltage and frequency with rated load applied. The value shall be taken from the motor's name-plate and shall be given in multiples of rotations per minute (1/min).		

8.49 0x6442 Motor Rated Frequency

0x6442	Motor Rated Frequency			
Sub-Index: 0	Sub-Index Name:	Motor Rated Frequency	Range:	Unsigned16
	E300 Parameter Affected:	B06	PDO Map:	No
	Description:	This object shall contain the nominal frequency of the motor. The value shall be taken from the motor's nameplate and shall be given in multiples of 0,1 Hz		

8.50 0x6443 Motor Pole Pairs

0x6443	Motor Pole Pairs			
Sub-Index: 0	Sub-Index Name:	Motor Pole Pairs	Range:	Unsigned16
	E300 Parameter Affected:	B05	PDO Map:	No
	Description:	This object shall contain the number of the motor's pole pairs. The dimensionless value shall be taken from the motor's name-plate or calculated using formula: No. of motor pole pairs = INT (60 x motor rated frequency/motor rated speed)		

8.51 0x6444 Motor Rated Current

0x6444	Motor Rated Current			
Sub-Index: 0	Sub-Index Name:	Motor Rated Current	Range:	Unsigned32
	E300 Parameter Affected:	B02	PDO Map:	No
	Description:	This object shall indicate the configured motor rated current. It is taken from the motor's name-plate. Depending on the motor and drive technology, this current is DC, peak or r.m.s. (root-mean-square) current. All relative current data refers to this value. The value shall be given in mA.		

8.52 0x6445 Motor Rated Voltage

0x6445	Motor Rated Voltage			
Sub-Index: 0	Sub-Index Name:	Motor Rated Voltage	Range:	Unsigned16
	E300 Parameter Affected:	B03	PDO Map:	No
	Description:	This object shall contain the nominal voltage of the motor. The value shall be taken from the motor's name-plate and shall be given in multiples of 1 V. Depending on the motor this value is either DC, peak or rms voltage.		

8.53 0x6446 Motor Rated Power

0x6446	Motor Rated Power			
Sub-Index: 0	Sub-Index Name:	Motor Rated Power	Range:	Unsigned16
	E300 Parameter Affected:	3.71.024	PDO Map:	No
	Description:	This object shall contain the nominal power of the motor. The value shall be taken from the motor's name-plate and shall be given in multiples of 1 W. The drive does not work in Watts for motor power it works in Volts and Amps, therefore this value can be written and read back but will not be used in motor control		

8.54 0x6447 Motor Connection Mode

0x6447	Motor Connection Mode			
Sub-Index: 0	Sub-Index Name:	Motor Connection Mode	Range:	Unsigned16
	E300 Parameter Affected:	3.71.025	PDO Map:	No
	Description:	This object shall contain the connection mode of the motor. 00 = Not Valid 01 = Star Connection 10 = Delta Connection 11 = Not Used The drive cannot change the configuration of the motor so this object can be written and read back but the value is not used by the drive and will not be used in motor control		

8.55 0x6448 Motor Cos Phi

0x6448	Motor Cos Phi			
Sub-Index: 0	Sub-Index Name:	Motor Cos Phi	Range:	Unsigned16
	E300 Parameter Affected:	B04	PDO Map:	No
	Description:	This object shall contain the nominal power factor of the motor. The dimensionless value shall be given in multiples of 0,001.		

8.56 0x6450 Motor Encoder Type

0x6450	Motor Encoder Type			
Sub-Index: 0	Sub-Index Name:	n/a	Range:	Unsigned16
	E300 Parameter Affected:	C1	PDO Map:	No
	Description:	This object shall contain information about the installed encoder used locally by the motor. Supported Encoders are: 0000h = No Encoder Used 0001h = Quadrature incremental encoder with or without marker pulse (TTL) 0002h = Incremental encoder with frequency and direction with or without marker pulse 0003h = Incremental encoder with forward and reverse outputs with or without marker pulse 0004h = Quadrature incremental encoder with communication output with or without marker pulse 0005h = Incremental encoder with frequency direction and commutation output with or without marker pulse 0006h = Incremental encoder with forward reverse and commutation output with or without marker pulse 0007h = SinCos: Encoder with no serial communication link 0008h = Absolute SinCos encoder using Stegmann 485 communication protocol (HiperFace) 0009h = Absolute EnDat only encoder 000Ah = Absolute SinCos encoder using EnDat communication protocol 000Bh = Absolute SSI only encoder 000Ch = SinCos encoder using SSI communication protocol 000Fh = Quadrature incremental encoder with or without marker pulse (HTL)		

8.57 0x6451 Motor Encoder Resolution

0x6451	Motor Encoder Resolution			
Sub-Index: 0	Sub-Index Name:	Motor Encoder Resolution	Range:	Unsigned32
	E300 Parameter Affected:	C3	PDO Map:	No
	Description:	This object shall contain the single-turn resolution of the motor encoder. The value shall be dimensionless and shall be given in multiples of 1.		

8.58 0x6452 Motor Encoder Alignment Angle

0x6452	Motor Encoder Alignment Angle			
Sub-Index: 0	Sub-Index Name:	Motor Encoder Alignment Angle	Range:	Unsigned16
	E300 Parameter Affected:	C13	PDO Map:	No
	Description:	This object shall contain the phase angle of the encoder to the PM synchronous motor alignment. The motor alignment is defined by the position of the rotor of the not loaded PM synchronous motor when supplied with the rated DC current und phase U and negative half-rated current in phase V and W using a battery with plus pole connected to U and minus pole to V and W. 360 electrical degrees are defined as 1 pole pair, so a 4-pole motor has 720 electrical degrees. The value shall be given in electrical degrees as multiples of 1 electrical degree.		

8.59 0x6460 Lift Installation Speed

0x6460	Lift Installation Speed			
Sub-Index: 0	Sub-Index Name:	Lift Installation Speed	Range:	Unsigned16
	E300 Parameter Affected:	E01	PDO Map:	No
	Description:	This object shall contain the nominal speed of the lift used during installation. The value shall be given in multiples of 1 mm/s.		

8.60 0x6461 Motor RPM at Lift Installation Speed

0x6461	Motor RPM at Lift Installation Speed			
Sub-Index: 0	Sub-Index Name:	Motor RPM at Lift Installation Speed	Range:	Unsigned16
	E300 Parameter Affected:	E07	PDO Map:	No
	Description:	This object shall contain the nominal motor speed used during installation. The value shall be given in multiples of 1 min^{-1}.		

8.61 0x6462 Sheave Diameter

0x6462	Sheave Diameter			
Sub-Index: 0	Sub-Index Name:	Sheave Diameter	Range:	Unsigned16
	E300 Parameter Affected:	E02	PDO Map:	No
	Description:	This object shall contain the sheave diameter. The value shall be given in multiples of 1 mm.		

8.62 0x6463 Suspension (Roping)

0x6463	Suspension (Roping)			
Sub-Index: 0	Sub-Index Name:	Roping	Range:	0h to 03h
	E300 Parameter Affected:	E03	PDO Map:	No
	Description:	This object shall contain the suspension of the lift car, where: 00h = 1:1 01h = 2:1 02h = 3:1 03h = 4:1		

8.63 0x6465 Nominal Lift Load

0x6465	Nominal Lift Load			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	01h
	E300 Parameter Affected:	n/a	PDO Map:	No
	Description:	This object shall provide the rated car load, car weight and the counter weight. This object does not provide rope weight. The values shall be given in multiples of 1 kg. Note CT only supports Sub 1		
Sub-Index: 1	Sub-Index Name:	Rated Car Load	Range:	Unsigned16
	E300 Parameter Affected:	71.08	PDO Map:	No
	Description:	Rated Car Load		

8.64 0x6466 Delay Times

0x6466	Delay Times			
Sub-Index: 0	Sub-Index Name:	Highest Supported Index	Value:	03h
	E300 Parameter Affected:		PDO Map:	No
	Description:	This object shall contain the delay times for motor contactor and brake. The values shall be given in multiples of 1 ms.		
Sub-Index: 1	Sub-Index Name:	Contactor Debounce Time	Range:	Unsigned16
	E300 Parameter Affected:	(always returns 100)	PDO Map:	No
	Description:	Contactor Debounce Time Not supported		
Sub-Index: 2	Sub-Index Name:	Brake Release Time	Range:	Unsigned16
	E300 Parameter Affected:	D04	PDO Map:	No
	Description:	Brake Release Time		
Sub-Index: 3	Sub-Index Name:	Brake Apply Time	Range:	Unsigned16
	E300 Parameter Affected:	D05	PDO Map:	No
	Description:	Brake Apply Time		

NOTE

It is important to note that if you read a parameter at an incorrect size, an incorrect value may be returned, without an error being thrown.

Limitations

1. Object 0x6047 is not supported
2. Open Loop Mode is not developed or supported
3. Object 0x6465 only stores a value passed to it, then returns it when requested. Value is only saved upon drive save.
4. Voltage, Current, and Power objects display the same value for each phase

9 SI-CiA417 Parameters

This section details the SI-CiA417 module parameters, the following table shows the parameter type coding used for each parameter in this and the following sections.

RW	Read / Write	RO	Read Only	Bit	Bit parameter	Txt	Text String	Date	Date parameter	Time	Time parameter
Bin	Binary parameter	IP	IP address	Mac	MAC address	Ver	Version number	SMP	Slot, Menu, Parameter	Num	Number parameter
DE	Destination parameter	ND	No default value	RA	Rating dependent	NC	Non-copyable	PT	Protected	FI	Filtered
US	User save	PS	Power-down save	LZ	Lead zero pad	PR	Pseudo read only	NR	Read disabled		

NOTE

In general the user does not need to configure the option module's parameters, and they are provided in most cases to be read for diagnostic purposes when integrating the system.

Menu U parameters can be changed by the user however this is not recommended. If the lift controller writes to the related object, they will be overwritten. Menu U parameters are not saved.

Menu 70 and Menu 71 parameters are normally configured by the lift controller on power up. Notwithstanding this, the user may change the parameters and save them, but depending on how the lift controller is configured they may overwritten. In most situations it is not necessary nor recommended that the user adjusts these parameters. However, they are provided as read/write parameters for scenarios where a particular lift controller does not configure the associated object and the user wishes to set their values locally.

To save the parameters on demand:

• Set Pr **81.019** to 1 (Save Request)

Pr **81.019** will reset to zero automatically and the module and drive will be reset.

NOTE

If the user selects 'Save parameters' in parameter zero of any menu and the drive is not reset, the SI-CiA417 module will automatically perform a drive save followed by an option save before clearing parameter zero back to 0.

Menu 72 parameters are read-only.

9.1 SI-CiA417 Menus

The following table show the SI-CiA417 menus and their descriptions.

Menu	Description
17	SI-CiA417 option configuration setup menu
70	PLC register P – *Reserved for SI-CiA417 use*
71	PLC register Q – *Reserved for SI-CiA417 use*
72	PLC register R – *Reserved for SI-CiA417 use*
73	PLC register S
74	PLC register T
75	PLC register U
76	PLC register V
77	PLC register W
78	PLC register X
79	PLC register Y
81	SI-CiA417 option configuration setup menu (not available via keypad)
85	Timer functions
86	Digital I/O parameters
88	Status parameters
90	General parameters
91	Fast access parameters

NOTE

Some parameter references in the following sections refer to the Unidrive M drive and may not be relevant for the Elevator E300.

9.2 Menus 17 and 81 – Option Configuration Setup Parameters

The SI-CiA417 option module configuration (setup) parameters are held in the drive setup menu 17 and are mirrored in the internal menu 81. They are also available in the E300 drive menu R.

NOTE

The internal menu 81 is available using the onboard serial communication interface or an Ethernet enabled option module, it is not available via the drive keypad.

The SI-CiA417 option module configures the setup menu parameters automatically, therefore it is not recommended that any of the setup menu parameters, with the exception of *Save Request* (Pr **17.019**), are changed by the user. Changes made by the user may cause program errors or prevent the drive from operating correctly.

9.2.1 Menu 17 Single Line Descriptions

Parameter		Range	Default	Type					
17.001	Module option code	0 to 499		RO	Num	ND	NC	PT	BU
17.002	Module firmware version	0.00 to 99.99		RO	Num	ND	NC	PT	
17.003	DPL program status	0 (None), 1 (Stop), 2 (Run), 3 (Trip)		RO	Txt	ND	NC	PT	
17.004	Available System Resource	0 to 100 %		RO	Num	ND	NC	PT	
17.005	EIA-RS485 Address	0 to 255	11	RW	Num				BU
17.006	EIA-RS485 Mode	0 to 255	1	RW	Num				BU
17.007	EIA-RS485 Baud Rate	0 (300bps), 1 (600bps), 2 (1200bps), 3 (2400bps), 4 (4800bps), 5 (9600bps), 6 (19200bps), 7 (28400bps), 8 (57600bps), 9 (115200bps)	4 (4800bps)	RW	Txt				
17.008	EIA-RS485 Turn-around Delay	0 to 255	2	RW	Num				BU
17.009	EIA-RS485 Tx Enable Delay	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.010	DPL Print Routing	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.011	Clock Task Scheduling	0 to 200 ms	10 ms	RW	Num				BU
17.012	POS Task Scheduling Rate	0 (Disable), 1 (250µs), 2 (500µs), 3 (1ms), 4 (2ms), 5 (4ms), 6 (8ms)	0 (Disable)	RW	Txt				
17.013	Auto-run Enable	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.014	Global Run-time Trip Enable	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.015	Disable Reset on Trip Cleared	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.016	Encoder Data Update Rate	0 to 3	0	RW	Num				
17.017	Enable Parameter Over-range Trips	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.018	Watchdog Enable	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.019	Save Request	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.020	Enable Power-down Save	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.021	Enable Menu 20 (U) Save and Restore	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.022	CTNet Token Ring ID	0 to 255	0	RW	Num				BU
17.023	CTNet Node Address	0 to 255	0	RW	Num				BU
17.024	CTNet Baud Rate	0 (5Mbs), 1 (2.5Mbs), 2 (1.25Mbs), 3 (625kbs)	1 (2.5Mbs)	RW	Num				
17.025	CTNet Sync Setup	0 to 9999	0	RW	Num				
17.026	CTNet Easy Mode Setup Parameter 0	0 to 25503	0	RW	Num				
17.027	CTNet Easy Mode Setup Parameter 1	0 to 9999	0	RW	Num				
17.028	CTNet Easy Mode Setup Parameter 2	0 to 25503	0	RW	Num				
17.029	CTNet Easy Mode Setup Parameter 3	0 to 9999	0	RW	Num				
17.030	CTNet Easy Mode Setup Parameter 4	0 to 25503	0	RW	Num				
17.031	CTNet Easy Mode Setup Parameter 5	0 to 9999	0	RW	Num				
17.032	CTNet Easy Mode Setup Parameter 6	0 to 9999	0	RW	Num				
17.033	CTNet Easy Mode Setup Parameter 7	0 to 9999	0	RW	Num				

17.034	CTNet Easy Mode Setup Parameter 8	0 to 9999	0	RW	Num				
17.035	CTNet Sync Event Task ID	0 (Disabled), 1 (Event), 2 (Event1), 3 (Event2), 4 (Event3)	0 (Disabled)	RW	Txt				
17.036	CTNet Diagnostics	-3 to 32767		RO	Num	ND	NC	PT	
17.037	Reject Download if Drive Enabled	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.038	APC Run-time Trip	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.039	Inter-module Drive Sync Status	0 to 3		RO	Num		NC		BU
17.041	Indexer Control	0 (Run), 1 (Stop), 2 (Pause), 3 (Step)	0 (Run)	RW	Txt		NC		BU
17.042	Pass Freeze Through to Drive	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.043	Freeze Invert	0 (Off) to 1 (On)	0 (Off)	RW	Bit				
17.044	Task Priority Level	0 to 255	0	RW	Num				BU
17.045	User Set-up Parameter 1	0 to 65535		RO	Num	ND	NC		BU
17.046	User Set-up Parameter 2	0 to 32767		RO	Num	ND	NC		
17.047	User Set-up Parameter 3	0 to 255		RO	Num	ND	NC		BU
17.048	Line Number of Error	0 to 2147483647		RO	Num		NC	PT	
17.049	User Program ID	0 to 32767		RO	Num		NC	PT	
17.050	Run-time Error Code	0 to 255		RO	Num	ND	NC	PT	BU
17.051	Firmware - Minor Version	0 to 99		RO	Num	ND	NC	PT	

9.2.2 Menu 17 Full Parameter Descriptions

17.001	**Module option code**		
Minimum	0	**Maximum**	499
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT, BU		

Displays the option module identification code, for SI-CiA417 this is 304.

17.002	**Module firmware version**		
Minimum	0.00	**Maximum**	99.99
Default	N/A	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	2
Coding	RO, ND, NC, PT		

Specifies the major revision number of the operating system of the module.

Use in conjunction with Pr **17.051** to form the complete version number.

17.003	**DPL program status**		
Minimum	0 (None)	**Maximum**	3 (Trip)
Default	N/A	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	1 ms of change
Display Format	Text	**Decimal Places**	0
Coding	RO, ND, NC, PT		

Displays the DPL program status according to the following table.

Value	Text	Description
0	None	No DPL program present
1	Stop	DPL program is stopped
2	Run	DPL program is running
3	Trip	Run-time error. ERROR task running or DPL program stopped

17.004	Available System Resource		
Minimum	0	**Maximum**	100
Default	N/A	**Units**	%
Type	8 Bit Volatile	**Update Rate**	200 ms write
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT		

Displays the free CPU resource as a percentage of the current background execution time calculated over 200ms.

17.005	EIA-RS485 Address		
Minimum	0	**Maximum**	255
Default	11	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

Defines the address of this node for ANSI and Modbus communications protocols.

For the ANSI protocol the address range is 11 to 99 where the first digit is the group address and the second digit is the unit number. Both digits must be in the range of 1-9. Zero is not permitted since it is used by the master for addressing groups of nodes.

This parameter has no effect if the EIA-RS485 mode is 25 (CTSync) or 26 (CTSync).

17.006	EIA-RS485 Mode		
Minimum	0	**Maximum**	255
Default	1	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

Defines the mode of operation (or protocol) for the on-board EIA-RS485 port in accordance with the following table.

Mode	Description
1	4-wire CT-ANSI Slave The port is set to 1 start bit, 7 data bits, even parity and 1 stop bit.
2	*Reserved*
3	*Reserved*
4	*Reserved*
5	2-wire CT-ANSI Slave The port is set to 1 start bit, 7 data bits, even parity and 1 stop bit.
6	User mode. 1 start bit, 7 data bits, EVEN parity, 1 stop bit (10 bits total)
7	User mode. 1 start bit, 8 data bits, EVEN parity, 1 stop bit (11 bits total)
8	User mode. 1 start bit, 8 data bits, NO parity, 1 stop bit (10 bits total)
9	*Reserved*
10	*Reserved*
11	*Reserved*
12	*Reserved*
13, 43, 73	4-wire Modbus RTU slave The EIA-RS485 port is set for: Mode 13: 1 start bit, 8 data bits, NO parity, 2 stop bits. Mode 43: 1 start bit, 8 data bits, EVEN parity, 1 stop bit. Mode 73: 1 start bit, 8 data bits, ODD parity, 1 stop bit.
14, 44, 74	4-wire Modbus ASCII slave The EIA-RS485 port is set for: Mode 14: 1 start bit, 7 data bits, NO parity, 2 stop bits. Mode 44: 1 start bit, 7 data bits, EVEN parity, 1 stop bit. Mode 74: 1 start bit, 7 data bits, ODD parity, 1 stop bit.
15, 45, 75	2-wire Modbus RTU slave The EIA-RS485 port is set for: Mode 15: 1 start bit, 8 data bits, NO parity, 2 stop bits. Mode 45: 1 start bit, 8 data bits, EVEN parity, 1 stop bit. Mode 75: 1 start bit, 8 data bits, ODD parity, 1 stop bit.

16, 46, 76	2-wire Modbus ASCII slave The EIA-RS485 port is set for: Mode 16: 1 start bit, 7 data bits, NO parity, 2 stop bits. Mode 46: 1 start bit, 7 data bits, EVEN parity, 1 stop bit. Mode 76: 1 start bit, 7 data bits, ODD parity, 1 stop bit.
17, 47, 77	4-wire Modbus RTU master The EIA-RS485 port is set for: Mode 17: 1 start bit, 8 data bits, NO parity, 2 stop bits. Mode 47: 1 start bit, 8 data bits, EVEN parity, 1 stop bit. Mode 77: 1 start bit, 8 data bits, ODD parity, 1 stop bit.
18, 48, 78	4-wire Modbus ASCII master The EIA-RS485 port is set for: Mode 18: 1 start bit, 7 data bits, NO parity, 2 stop bits. Mode 48: 1 start bit, 7 data bits, EVEN parity, 1 stop bit. Mode 78: 1 start bit, 7 data bits, ODD parity, 1 stop bit.
19, 49, 79	2-wire Modbus RTU master The EIA-RS485 port is set for: Mode 19: 1 start bit, 8 data bits, NO parity, 2 stop bits. Mode 49: 1 start bit, 8 data bits, EVEN parity, 1 stop bit. Mode 79: 1 start bit, 8 data bits, ODD parity, 1 stop bit.
20, 50, 80	2-wire Modbus ASCII master The EIA-RS485 port is set for: Mode 20: 1 start bit, 7 data bits, NO parity, 2 stop bits. Mode 50: 1 start bit, 7 data bits, EVEN parity, 1 stop bit. Mode 80: 1 start bit, 7 data bits, ODD parity, 1 stop bit.
25	CT-Sync Master The baud rate is fixed at 896875 bps
26	CT-Sync Slave The baud rate is fixed at 896875 bps

17.007	**EIA-RS485 Baud Rate**		
Minimum	0 (300 bps)	**Maximum**	9 (115200 bps)
Default	4 (4800 bps)	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

Defines the baud-rate (or bits-per-second) for the on-board EIA-RS485 port in accordance with the following table.

Note that this parameter is not relevant when the EIA-RS485 port mode is set to 25 (CTSync Master) or 26 (CTSync Slave).

Value	Text
0	300 bps
1	600 bps
2	1200 bps
3	2400 bps
4	4800 bps
5	9600 bps
6	19200 bps
7	38400 bps
8	57600 bps
9	115200 bps

17.008	EIA-RS485 Turn-around Delay		
Minimum	0	**Maximum**	255
Default	2	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

Defines a fixed delay between receiving a message on the EIA-RS485 port and the response being transmitted. This can be useful in 2-wire configurations where it takes a finite time for the master (host) to switch from transmit mode to receive mode. There is always at least a 1 ms delay and this parameter can be used to extend it.

17.009	EIA-RS485 Tx Enable Delay		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

Enables or disables the EIA-RS485 Turn-around Delay specified in Pr **17.008**.

17.010	DPL Print Routing		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

This parameter controls where the output of the DPL PRINT command is sent. If set to zero (Off), the output is sent to the programming client (SyPTPro) and if set to 1 (On) it will be sent to the EIA-RS485 port.

17.011	Clock Task Scheduling		
Minimum	0	**Maximum**	200
Default	10	**Units**	ms
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

Defines the scheduling period (tick-time), in milliseconds, for the DPL CLOCK task. A value of zero will disable the CLOCK task.

17.012	POS Task Scheduling Rate		
Minimum	0	**Maximum**	6
Default	0	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

Defines the scheduling rate for the POS tasks to suit the application performance and the resource needed to run the user DPL program in accordance with the following table.

Value	Text
0	Disable
1	250 µs
2	500 µs
3	1 ms
4	2 ms
5	4 ms
6	8 ms

17.013	Auto-run Enable		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	1 (On)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

Setting this parameter to 1 (On) will cause the program in the module to automatically execute whenever the drive is powered up. If set to a 0 (Off), a run command must be issued via the programming software for the program to run.

17.014	Global Run-time Trip Enable		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	1 (On)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

Setting this parameter to 1 (On) will cause the drive to trip when certain run-time errors occur within the user DPL program.

17.015	Disable Reset on Trip Cleared		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

When this parameter is 0 (Off), the module will be reset when a drive trip is cleared. When set to 1 (On) the module will be unaffected by a drive trip reset (i.e. continue running).

17.016	Encoder Data Update Rate		
Minimum	0	**Maximum**	3
Default	0	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

This parameter configures when the APC and encoder data parameters are updated as shown in the following table.

Value	Description
0	APC data and menu 90 encoder parameters are updated every 250 µs.
1	APC data and menu 90 encoder parameters are updated immediately prior to every POS task.
2	APC data and menu 90 encoder parameters are updated immediately prior to every CLOCK task.
3	APC data and menu 90 encoder parameters are never updated. If these are never updated, more processor resource will become free.

17.017	Enable Parameter Over-range Trips		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

Defines the action taken if a user DPL program attempts to write an out of range value to a parameter. When set at 1 (On), a run-time trip will occur (number 44); when set at 0 (Off) the value will automatically be limited to the maximum/minimum of that parameter.

17.018	Watchdog Enable		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

When this parameter is set to 1 (On) it enables the DPL program watchdog function. The DPL WDOG command must then be executed every 200 ms. This can be used to protect the program against malfunction. If the command is not executed within a 200 ms time period the drive will trip on Slotx Watchdog. Please note that the WDOG command must also be executed once for the watchdog to be enabled. This is normally executed at the end of the Initial task.

17.019	Save Request		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	100 ms read
Display Format	Text	**Decimal Places**	0
Coding	RW		

Setting this parameter to 1 (On) will initiate a save of all non-volatile module data. This save may take up to approximately 100 ms before it is actioned. This consists of the menu 70, 71 and 74 to 79 PLC register sets and optionally menu 20 (Menu U on E300), depending upon the setting of Pr **81.021**.

Note that this will also cause a reset of the module and this parameter will revert to 0 (Off) automatically. Also if the drive is tripped it will be reset. Menu 81 will not be saved.

17.020	Enable Power-down Save		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Immediate
Display Format	Text	**Decimal Places**	0
Coding	RW		

Setting this parameter to 1 (On) signals that all non-volatile data of the module will be automatically saved upon an under voltage state of the drive.

Note that when an under voltage save occurs the module will be reset.

17.021	Enable Menu 20 Save and Restore		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Immediate
Display Format	Text	**Decimal Places**	0
Coding	RW		

If set to 1 (On), menu 20 parameters (Menu U on E300) will be saved/restored along with other non-volatile parameters upon a save request (Pr **81.019** = 1) or power-down save (Pr **81.020** = 1). If menu 20 (Menu U on E300) is to be restored on power-up the user must ensure that this parameter is saved in the drive before powering down.

Since menu 20 (Menu U on E300) is a global drive menu, only one option installed to the drive should be used to store and restore this menu, therefore if more than one SI-Applications module is installed to the drive only one should have this parameter set otherwise this menu will not be restored correctly on power-up.

Note that unlike other set-up parameters, parameters Pr **81.020** and Pr **81.021** are not cached, which means a change to the parameter takes immediate effect.

17.022	CTNet Token Ring ID		
Minimum	0	**Maximum**	255
Default	0	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter allows the user to specify the identity of the CTNet token ring to which the module is connected. In a system incorporating a single token ring this parameter can be left at its default value. In a system incorporating multiple token rings, separate IDs should be set for each ring. The combination of CTNet Token Ring ID and CTNet node address should be unique.

17.023	CTNet node Address		
Minimum	0	**Maximum**	255
Default	0	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

Defines the node address for CTNet. Every node on a CTNet network must have a unique address. Setting this to zero will disable CTNet on this node.

17.024	CTNet Baud Rate		
Minimum	0	**Maximum**	3
Default	1	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

Specifies the data rate for CTNet. All nodes on the network must be set to the same data-rate.

Value	Text
0	5 Mbs
1	2.5 Mbs
2	1.25 Mbs
3	625 kbs

17.025	CTNet Sync Setup		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

Specifies the synchronisation message generation rate for CTNet. This message is used to tell all nodes when to transmit cyclic data. Only one node on the CTNet network should have this parameter set. The format of the update parameter is SSFF, where FF defines the Fast Cyclic data channel update rate, and SS defines the slow cyclic data rate in multiples of FF. So if the parameter value is 1510, fast cyclic data is set every 10 ms and slow every 150 ms. When using easy mode (see Pr **81.026** to Pr **81.034**) it is only necessary to set up the FF (fast cyclic rate).

17.026	CTNet Easy Mode Setup Parameter 0		
Minimum	0	**Maximum**	25503
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

Easy mode cyclic link parameter source and destinations do not accept the **MM.PPP** style mappings for Unidrive M, only **MM.PP**. Where Pr **1.021** is to be accessed remove the first 0 after the decimal point to give a reference of 121, where 121 could be entered in Pr **81.027**, Pr **81.029**, Pr **81.031** to Pr **81.034**.

These parameters define the source and destinations for CTNet easy-mode cyclic data.

Parameter	Format	Channel	Description
Pr 81.026	NNNSS	1	Defines the destination node number and slot NNN = Node number (0-255) SS = Slot number (1-3) e.g. A value of 201 means node ID 2, slot 1.
Pr 81.027	MMPP	1	Defines the source drive parameter which is to be transmitted. MM = Menu number PP = Parameter number e.g. A value of 302 means Pr 03.002 (Speed feedback)
Pr 81.028	NNNSS	2	Destination node number and slot for channel 2
Pr 81.029	MMPP	2	Source drive parameter for channel 2
Pr 81.030	NNNSS	3	Destination node number and slot for channel 3
Pr 81.031	MMPP	3	Source drive parameter for channel 3
Pr 81.032	MMPP	1	Slot 1 destination parameter for incoming data
Pr 81.033	MMPP	2	Slot 2 destination parameter for incoming data
Pr 81.034	MMPP	3	Slot 3 destination parameter for incoming data

17.027	CTNet Easy Mode Setup Parameter 1		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.028	CTNet Easy Mode Setup Parameter 2		
Minimum	0	**Maximum**	25503
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.029	CTNet Easy Mode Setup Parameter 3		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.030	CTNet Easy Mode Setup Parameter 4		
Minimum	0	**Maximum**	25503
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.031	CTNet Easy Mode Setup Parameter 5		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.032	CTNet Easy Mode Setup Parameter 6		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.033	CTNet Easy Mode Setup Parameter 7		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.034	CTNet Easy Mode Setup Parameter 8		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

17.035	CTNet Sync Event Task ID		
Minimum	0	**Maximum**	4
Default	0	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

Identifies which of the EVENT tasks will be scheduled when a CTNet synchronisation message is received or generated. Synchronisation is generated by a master node (which can be this node) on the CTNet network at a fixed time-base.

Value	Text
0	Disabled
1	Event
2	Event1
3	Event2
4	Event3

17.036	CTNet Diagnostics		
Minimum	-3	**Maximum**	32767
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	1 s write
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT		

The status of the CTNet network is displayed in the CTNet Diagnostic parameter. When the module is communicating successfully on the CTNet network the number of messages per second is displayed.

Value	Status	Description
>0	Network OK	Indicates the number of messages processed per second
0	Network OK, no data transfer	The low-level token ring has been established and is active, but the node is not receiving any CTNet data messages
-1	RECON	A network reconfiguration has been detected
-2	Initialisation error	The SI-CiA417 module was unable to configure the CTNet interface. Check that the node address and data rate are set correctly
-3	MYRECON	The SI-CiA417 module forced a CTNet network reconfiguration

17.037	Reject Download if Drive Enabled		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Read on download
Display Format	Text	**Decimal Places**	0
Coding	RW		

If this parameter is set to 1 (On), then if the user attempts to download a new user DPL program or operating system to this module and the drive is enabled the download will be rejected and a run-time trip 70 will occur, if the global run-time trip parameter (Pr **81.014**) is set.

Since downloading stops normal operations of the module it may be considered unsafe to do this if the drive system is running, therefore setting this parameter will prevent downloading under this condition.

17.038	APC Run-time Trip		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

When this parameter is 0 (Off) the drive will trip with runtime error 81 if an APC non-recoverable error occurs, such as the use of an uninitialised CAM function. When this parameter is 1 (On), the drive will not trip when an APC non-recoverable error occurs.

17.039	Inter-module Drive Sync Status		
Minimum	0	**Maximum**	3
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RO, NC, BU		

This parameter displays the current module's synchronisation status.

Value	Status
0	The synchronisation master request is zero or another System Integration Module is synchronisation master
1	The System Integration Module is synchronisation master
3	The System Integration Module is synchronisation master, but the synchronisation frequency is out of specification or not present

17.041	Indexer Control		
Minimum	0	**Maximum**	3
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RW, NC, BU		

This is used to control the motion sequence user program.

Value	Status
0	Run
1	Stop
2	Pause
3	Step

17.042	Pass Freeze Through to Drive		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

When this parameter is set to 1 (On), the voltage on digital input 0 (DIGIN0 terminal 10) is passed through to the drive's internal Freeze line, this can then be seen by other classes of System Integration Modules. When Pr **81.042** is set to 1, then at power up and on REINIT Pr **03.100** and Pr **03.105** on the drive will be set to 4. This sets the common freeze line as the F1 and F2 freeze trigger sources on the drive.

17.043	Freeze Invert		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit User Save	**Update Rate**	Initialisation
Display Format	Text	**Decimal Places**	0
Coding	RW		

When this parameter is set to 0 (Off), a freeze occurs on the rising edge of the module's digital input 0 (DIGIN0 terminal 10). When it is set to 1 (On) a freeze occurs on the falling edge of the module's digital input 0 (DIGIN0).

17.044	Task Priority Level		
Minimum	0	**Maximum**	255
Default	0	**Units**	N/A
Type	8 Bit User Save	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

The priority levels of different tasks may be changed with this parameter. The parameter is accessed in a bit-wise manner:

Bit	Value	Description
0	0	CTNet task priority is higher than POS tasks priority
	1	CTNet task priority is lower than POS tasks priority. This will reduce the jitter of the POS tasks but could lead to the CTNet task being starved
1	0	Inter-option communication task priority is higher than the POS tasks
	1	Inter option communication task priority is lower than the POS tasks
2	0	Turbo CTNet Disabled
	1	Turbo CTNet Enabled

17.045	User Set-up Parameter 1		
Minimum	0	**Maximum**	65535
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, BU		

This parameter is dependant on what is running in the module i.e. Indexer.

17.046	User Set-up Parameter 2		
Minimum	0	**Maximum**	32767
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC		

This parameter is dependant on what is running in the module i.e. Indexer.

17.047	User Set-up Parameter 3		
Minimum	0	**Maximum**	255
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, BU		

This parameter is dependant on what is running in the module i.e. Indexer.

17.048	Line Number of Error		
Minimum	0	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	On error
Display Format	Number	**Decimal Places**	0
Coding	RO, NC, PT		

Indicates the DPL program line number that caused a run-time error.

This is valid only when:

- The user program has been compiled with the debug option set, and
- The error is one that can be generated by user code, for example divide by zero (50) or parameter does not exist (41).

If both of these conditions are not met, the line number parameter will display zero (0).

17.049	User Program ID		
Minimum	0	**Maximum**	32767
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RO, NC, PT		

This parameter is available for the user to read the ID code of their program. This may, for example, be the software version number. Use the function block SETUSERID() to write to this parameter.

For the SI-CiA417, this parameter returns the user program version in the format V0x.xx.xx.

The complete user program version number in the format V0x.xx.xx.xx is available in Pr **3.71.026**.

17.050	Run-time Error Code		
Minimum	0	**Maximum**	255
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	On error
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT, BU		

When a run-time error occurs, the error number is placed into this parameter.

17.051	Firmware - Minor Version		
Minimum	0	**Maximum**	99
Default	N/A	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT		

Specifies the minor revision number of the operating system of the module.

Use in conjunction with Pr **17.002** to form the complete version number.

9.3 Menu U

Parameter:	Name:
U20	MPDO Mask Input
Description:	This is the mask that indicates which object the MPDO and which device the MPDO is trying to access. Permitted objects are: 1.0x600A 2.0x6031
U21	MPDO Mask Output
Description:	This is the mask that indicates which object the MPDO the MPDO is returning and which device it is returning it to.
U22	MPDO Value Input
Description:	This is the value that the MPDO has sent, along with the input mask this can be used to correctly write to an object.
U23	MPDO Value Output
Description:	The is the value the CiA417 Module is returning, the destination can be seen in the MPDO Mask Output parameter.

9.4 Menu 70

Menu 70 contains the operating parameters for the SI-CiA417 module. The values contained in these parameters are the values used internally within the module, while they are readable and writeable, they should not be edited while the elevator is active.

Parameter:	Name:	Max / Min Value:	Associated Object:
70.000	Lift Number		0x6001
Description:	Sets the lift number to be used for MPDOs. Changes to this parameter value require a parameter save and reset using Pr **17.019** (R19) to activate. If the value is changed and not adjusted for 5 seconds or saved using Pr **17.019**, then the module will automatically reset itself and activate the new lift number.		
70.001	Control Word		0x6400
Description:	Displays the latest control word received from the lift controller. It is not recommended that this parameter is changed.		
70.002	Status Word		0x6401
Description:	Displays the latest status word that has been sent to the lift controller. It is not recommended that this parameter is changed.		
70.003	State machine State		N/A
Description:	Displays the current state of the CiA417 state machine as given by the specification where: 0 = Not Ready To Switch On 10 = Switched On Disabled 20 = Ready To Switch On 30 = Switched On 40 = Operation Enabled State 50 = Fault 60 = Fault Reaction 70 = Quickstop Active		
70.004	Mode of Operation		0x6403
Description:	Displays the latest requested Mode of operation. Changing this parameter will result in the SI-CiA417 Module changing modes between Profile Velocity Mode and Profile Position Mode. The change will take effect when the module is in a state that supports change of mode.		
70.005	Mode of Operation Display		0x6404
Description:	Displays the current mode of operation		
70.006	Control Effort		0x6406
Description:	Displays the Control Effort as calculated and used internally by the SI-CiA417 Module. The value displayed here is the value used internally by the SI-CiA417 Module. It is not recommended that this parameter is changed.		
70.007	Raw Control Effort		0x6406
Description:	Displays the Control Effort as outputted by SI-CiA417 Module to the lift controller (Position Conversion has been applied). It is not recommended that this parameter is changed.		
70.008	CAN Elevator Position		0x6383_1
Description:	This parameter shows the elevator position in the shaft in mm, after the conversion from encoder counter to mm has been applied.		
70.009	Raw CAN Elevator Position		0x6383_1
Description:	This parameter shows the elevator position in the shaft in encoder counts.		
70.010	Motor Position		0x6383_3
Description:	This parameter shows the position of the motor shaft in encoder counts.		
70.011	Target Position		0x6420
Description:	Displays the target position the SI-CiA417 module will use. The value displayed here is the value received from the lift controller after the Position Conversion has been applied.		
70.012	Profiles Velocity		0x6423
Description:	Displays the latest profile velocity received by the SI-CiA417 module from the lift controller.		
70.013	Target Velocity Parameter		0x6430
Description:	This parameter displays the target velocity as instructed by the lift controller.		
70.014	Creep Speed Threshold		
Description:	This parameter must be manually configured to the maximum possible value of ‘Creep Speed’, anything equal to or less than this value will be considered as ‘Creep Speed’ by the drive.		
70.015	Releveling Speed Threshold		
Description:	This parameter must be manually configured to the maximum possible value of ‘Releveling Speed’, anything equal to or less than this value will be considered as ‘Releveling Speed’ by the drive.		
70.016	Quickstop Complete		N/A
Description:	Displays a flag used to indicate when a quick stop has been completed.		

Parameter:	Name:	Max / Min Value:	Associated Object:
70.017	Velocity Window		0x6435_1
Description:	This parameter contains the velocity window that must be entered for the 'At Speed' flag to be set.		
70.018	Velocity Window Time		0x6435_2
Description:	The parameter contains the time in ms that the velocity must be within the velocity window for the 'At Speed' flag to be set.		
70.019	Software Position Limit Minimum		0x6422_1
Description:	Displays the minimum value for Target Position in mm. This parameter stores the latest value that has been written via the parameter or via the object. This value is stored by initiating a drive save.		
70.020	Software Position Limit Maximum		0x6422_2
Description:	Displays the minimum value for Target Position in mm. This parameter stores the latest value that has been written via the parameter or via the object. This value is stored by initiating a drive save.		
70.021	User Selected Node ID		
Description:	The Node ID that the drive uses on the CAN network defaults to a value of 2 when the drive is defaulted, or the module is new. This value is not always suitable therefore can be changed by the user. The default value can be changed by setting Pr**3.70.021** (User Selected Node ID) to the desired value, then performing a save. The new value will not be used until: • The drive is power cycled. • A module reset code is entered into Menu 0 (Code required is 1070). • Or the SI-CiA417 Module is given a 'Save Request' (Set Pr**3.81.019** to 'On') The range of available Node ID's is 1 to 127. If a value outside of this range is entered into the User Selected Node ID then the node ID will be set to: • If entered value is less than 1 then the value will be set to 1. • If entered value is greater than 127 then the Node ID will be set to 127.		
70.022	Position Limits Active		
Description:	Enables or disables the position limits. When this parameter is set to 0 (Off) the position limits are disabled and any target position will be accepted, this is useful during commissioning or when the actual position range exceeds the position range limits set in Pr **70.019** and Pr **70.020.** When this parameter is set to 1 (On) the position limits are enabled and only positions within the position range limits set in Pr **70.019** and Pr **70.020** are accepted, target position values that are outside these limits will be limited to the maximum or minimum limit value as appropriate.		
70.023	Remaining Distance Raw		
Description:	Displays the remaining distance in encoder counts.		
70.024	Remaining Distance Microns		
Description:	Displays the remaining distance in microns.		
70.025	Trim Distance		
Description:	Displays the distance in millimetres (mm) that is being removed from the remaining distance passed to the drive. This value compensates for the fact that the lift car has travelled further in the time it has taken to measure the position and transmit and process the information in the drive.		
70.026	Enable CiA417 Motor Contactor Control		
Description:	Set to 1 to enable the Motor Contactor Control based on the SI-CiA417's internal state machine. Set to 0 to disable this functionality.		
70.027	CiA417 Motor Contactor Control Mapping	18030 to 18050	
Description:	This parameter specifies the destination parameter to be used to display the value of the output from the Motor Contactor Control, if enabled (Pr **70.026** = 1). The value entered will be converted to the relevant E300 drive parameter (S31 to S50) which will be displayed in the E300 drive parameter AA00.		

9.5 Menu 71

Menu 71 contains additional parameters for the SI-CiA417 module. The values contained in these parameters are the values used internally within the module, while they are readable and writeable, they should not be edited while the elevator is active.

Parameter:	Name:	Max / Min Value:	Associated Object:
71.000	Restore SI-CiA417 Parameters		
Description:	Some parameters can now be defaulted to standard values. This is achieved by setting parameter **3.71.000** to a value of zero, when the parameters have been updated and saved this parameter will display a value of 417. The parameters that are affected by setting this parameter to zero are: • Pr **3.70.017**: Velocity Window = 5 mm/s • Pr **3.70.018**: Velocity Window Time = 100ms • Pr **3.70.019**: Software Position Limit Minimum = -2000000 • Pr **3.70.020**: Software Position Limit Maximum = +2000000 This process allows the SI-CiA417 module to set default values upon its first power on, but also allows for users to change these parameters as required which retaining the ability to reset them.		
71.001	Conversion, Number of Position Units		0x641F_1
Description:	This parameter contains the numerator for the conversion from encoder counts to mm		
71.002	Conversion, Total Length		0x641F_2
Description:	This parameter contains the denominator for the conversion from encoder counts to mm		
71.003	Display Error Info		0x6021_1
Description:			
71.004	Emergency String Text		0x6021_2
Description:			
71.005	Set Power Saving Mode		0x6031
Description:	This parameter displays and allows the user to change which power saving mode is selected.		
71.006	Power Saving Confirmation		0x6032
Description:	This parameter feeds back which power saving mode is selected.		
71.007	Parameter Setting		
Description:	This parameter allows the normal parameter set or the rescue parameter set to be selected.		
71.008	Nominal Lift Load		
Description:	This parameter will display the latest value written to it via the parameter or the object. This value is stored by initiating a drive save.		
71.010	Virtual Terminal Input		0x600A_1
Description:	Displays the latest value received from the lift controller used to command the virtual terminal.		
71.011	Virtual Terminal Output		0x600A_2
Description:	Displays the latest value that has been sent to the lift controller to construct the Virtual Terminal.		
71.012	Invert Keypad Arrows		
Description:	Some Virtual Terminal Keypads have the Up and Down Arrows inverted, setting this parameter to 0 will disable inversion, setting it to 1 will enable inversion.		
71.013	Sub-trip		N/A
Description:	Indicates a sub trip to the main drive trip when the drive trip has come directly from the SI-CiA417 module		
71.014	Clock Task Time		N/A
Description:	The time in us that the clock task took to run in its previous cycle.		
71.015	Clock Task Max		N/A
Description:	The maximum time in us the clock task has taken.		
71.016	Clock Task Min		N/A
Description:	The minimum time in us the clock task has taken.		
71.017	Background Task Time		N/A
Description:	The time in us that the background task took to run in its previous cycle.		
71.018	Background Task Max		N/A
Description:	The maximum time in us the background task has taken.		
71.019	Background Task Min		N/A
Description:	The minimum time in us the background task has taken.		
71.024	Motor Rated Power		0x6446
Description:	This parameter displays the motor rated power (Watts). The value is not used by the drive for motor control but can be read or written by the lift controller if required.		

Parameter:	Name:	Max / Min Value:	Associated Object:
71.025	Motor Connection Mode		0x6447
Description:	The motor's connection mode (Star or Delta) is displayed in this parameter. The value is not used by the drive for motor control but can be read or written by the lift controller if required.		
71.026	SI-CiA417 Firmware Version		
Description:	This parameter returns the complete version of the SI-CiA417 module user program in the format V0x.xx.xx.xx (**R49** returns the version in the format V0x.xx.xx)		
71.027	Relevelling Flag		
Description:	This parameter indicates if the re-levelling is active. 0 = Re-levelling is not active. 1 = Re-levelling is active.		

9.6 Menu 72

Menu 72 contains read only versions of all the objects implemented within the SI-CiA417 Module. These parameters are updated in the background task so are not updated cyclically. If the values in this menu are changed, they will not change the value of the object. Shown in a list below is all the objects that can be viewed, their parameter number and the object number:

Parameter:	Object Number:	Object Name:
72.001	0x1000	Device Type Object
72.002	0x600A_1	Virtual Terminal Interface: Input
72.003	0x600A_2	Virtual Terminal Interface: Output
72.004	0x6021_1	Error Info and Emergency Text: Display Error Info
72.005	0x6021_2	Error Info and Emergency Text: Emergency Text String
72.006	0x6030	Power Management Capability
72.007	0x6031	Set Power Saving Mode
72.008	0x6032	Set Power Saving Mode Confirmation
72.009	0x6380	Operating Parameters (Rotation CW or CCW)
72.010	0x6383_1	Position Value: Car Position
72.011	0x6383_2	Position Value: Unused
72.012	0x6383_3	Position Value: Motor Position
72.013	0x6400	Control Word
72.014	0x6401	Status Word
72.015	0x6402_1	Control Option Codes: Shut Down
72.016	0x6402_2	Control Option Codes: Disable Operation
72.017	0x6402_3	Control Option Codes: Quick Stop
72.018	0x6402_4	Control Option Codes: Halt
72.019	0x6402_5	Control Option Codes: Fault Reaction
72.020	0x6403	Modes of Operation
72.021	0x6404	Modes of Operation Display
72.022	0x6405	Motion Profile Type
72.023	0x6406	Control Effort
72.024	0x6408_1	Max Velocity and Speed: Max Profile Velocity
72.025	0x6408_2	Max Velocity and Speed: Max Motor Speed
72.026	0x640A	Quickstop Deceleration
72.027	0x640B_1	Profile Acceleration and Deceleration: Acceleration
72.028	0x640B_2	Profile Acceleration and Deceleration: Deceleration
72.029	0x640D_1	Profile Jerk: Jerk 1
72.030	0x640D_2	Profile Jerk: Jerk 2
72.031	0x640D_3	Profile Jerk: Jerk 3
72.032	0x640D_4	Profile Jerk: Jerk 4
72.033	0x640D_5	Profile Jerk: Jerk 5
72.034	0x640D_6	Profile Jerk: Jerk 6
72.035	0x6415	Velocity Encoder Resolution
72.036	0x6416_1	Gear Ratio: Motor Revolutions
72.037	0x6416_2	Gear Ratio: Shaft Revolutions
72.038	0x6417_1	Feed Constant: Feed for Feed Constant Numerator
72.039	0x6417_2	Feed Constant: Drive Shaft Revolutions for Feed Constant Denominator
72.040	0x641E	Polarity
72.041	0x641F_1	Position Conversion: Number of Position Units from Drive

Parameter:	Object Number:	Object Name:
72.042	0x641F_2	Position Conversion: Length travelled in mm for the number of position units given
72.043	0x6420	Target Position
72.044	0x6421_1	Position Range Limit: Minimum
72.045	0x6421_2	Position Range Limit: Maximum
72.046	0x6422_1	Software Position Limit: Minimum
72.047	0x6422_2	Software Position Limit: Maximum
72.048	0x6423	Profiles Velocity
72.049	0x6430	Target Velocity
72.050	0x6432	Velocity Demand Value
72.051	0x6433	Velocity Actual Value
72.052	0x6435_1	Velocity Window: Velocity Window
72.053	0x6435_2	Velocity Window: Velocity Window Time
72.054	0x6436_1	Velocity Threshold: Threshold Velocity
72.055	0x6436_2	Velocity Threshold: Threshold Velocity Time
72.056	0x6030	Power Management Capability
72.057	0x6031	Set Power Saving Mode
72.058	0x6032	Power Saving Mode Confirmation
72.059	0x6040_1	Measured Voltage: Voltage 1
72.060	0x6040_2	Measured Voltage: Voltage 2
72.061	0x6040_3	Measured Voltage: Voltage 3
72.062	0x6041_1	Measured Current: Current 1
72.063	0x6041_2	Measured Current: Current 2
72.064	0x6041_3	Measured Current: Current 3
72.065	0x6042_1	Measured Power: Power 1
72.066	0x6042_2	Measured Power: Power 2
72.067	0x6042_3	Measured Power: Power 3
72.068	0x6043_1	Measured Power Sum
72.069	0x6046	Measured Consumed Real Energy Sum
72.070	0x6047	Measured Supplied Real Energy Sum
72.071	0x6050	Parameter Setting Capability
72.072	0x6051	Parameter Setting Request
72.073	0x6052	Parameter Setting Display
72.074	0x6440	Motor Type
72.075	0x6441	Motor Rated Speed
72.076	0x6442	Motor Rated Frequency
72.077	0x6443	Motor Pole Pairs
72.078	0x6444	Motor Rated Current
72.079	0x6445	Motor Rated Voltage
72.080	0x6448	Motor Cos Phi
72.081	0x6450	Motor Encoder Type
72.082	0x6451	Motor Encoder Resolution
72.083	0x6452	Motor Encoder Alignment Angle
72.084	0x6460	Lift Installation Speed
72.085	0x6461	Motor RPM at Lift Installation Speed
72.086	0x6462	Sheave Diameter
72.087	0x6463	Suspension (Roping)
72.088	0x6465_1	Nominal Lift Load
72.089	0x6466_1	Delay Times: Contactor Debounce Time
72.090	0x6466_2	Delay Times: Brake Release Time
72.091	0x6466_3	Delay Times: Brake Apply Time

9.7 Menus 73 to 79 - PLC Registers S to Y

The SI-CiA417 module is based on the SI-Applications Compact and therefore contains the same menus and functions.

The PLC register menus 70, 71 and 72 are reserved for use by the SI-CiA417 user program and should only be changed with care.

9.7.1 Menus 73 to 79 Single Line Descriptions

Parameter		Range	Default	Type					
73.000 To 73.099	PLC Register S	-2147483648 To 2147483647	0	RW	Num				
74.000 To 74.099	PLC Register T	-2147483648 To 2147483647	0	RW	Num	US			
75.000 To 75.099	PLC Register U	-2147483648 To 2147483647	0	RW	Num	US			
76.000 To 76.099	PLC Register V	-2147483648 To 2147483647	0	RW	Num	US			
77.000 To 77.099	PLC Register W	-2147483648 To 2147483647	0	RW	Num	US			
78.000 To 78.099	PLC Register X	-2147483648 To 2147483647	0	RW	Num	US			
79.000 To 79.099	PLC Register Y	-2147483648 To 2147483647	0	RW	Num	US			

9.8 Menu 85 - Timer Menu

The SI-CiA417 module is based on the SI-Applications Compact and therefore contains the same menus and functions.

Although the Timer menu exists in the SI-CiA417, it can only be used within the user program and not directly by the user. The following information is provided for completeness, it is unlikely the user would need to refer to it.

9.8.1 Menu 85 Single Line Descriptions

Parameter		Range	Default	Type					
85.001	Timer Unit Control Word	0 to 8191		RW	Bin	ND	NC	PT	
85.002	Timer Unit Status Word	0 to 3		RO	Num	ND	NC	PT	BU
85.003	Timer Unit 16-bit Timer Count	0 to 65535		RW	Num	ND	NC	PT	BU
85.004	Timer Unit Wrap-around Limit	0 to 65535		RW	Num	ND	NC	PT	BU
85.005	Timer Unit Timer Capture Cache	0 to 65535		RW	Num	ND	NC	PT	BU

For more information please refer to the SI-Applications Plus User Guide or the online help provided by the drive commissioning software tool Connect.

9.9 Menu 86 - Digital I/O Menu

The SI-CiA417 module is based on the SI-Applications Compact and therefore contains the same menus and functions.

Although the digital I/O menu exists in the SI-CiA417, it can only be used within the user program and not directly by the user. The following information is provided for completeness, it is unlikely the user would need to refer to it.

9.9.1 Menu 86 Single Line Descriptions

Parameter		Range	Default	Type					
86.001	Digital Input 0	0 (Off) or 1 (On)		RO	Bit	ND			
86.002	Digital Input 1	0 (Off) or 1 (On)		RO	Bit	ND			
86.003	Digital Output 0	0 (Off) or 1 (On)	0	RW					
86.004	Digital Output 1	0 (Off) or 1 (On)	0	RW					
86.005	Digital Outputs 0 and 1	0 to 3	0	RW					BU

For more information please refer to the SI-Applications Plus User Guide or the online help provided by the drive commissioning software tool Connect.

9.10 Menu 88 - Status Menu

This menu provides status information on the DPL tasks and run-time error.

9.10.1 Menu 88 Single Line Descriptions

Parameter		Range	Default	Type					
88.001	Error Code / Reset	0 to 9999	0	RW	Num			PT	BU
88.002	Task in Error	0 to 50	0	RO	Num			PT	BU
88.003	POS Resource Monitoring	0 (Off) or 1 (On)	0 (Off)	RW	Bit				
88.004	Free Resource for Motion Engine Tasks	0 to 95	0	RO	Num			PT	BU
88.005	Motion Engine Peak Resource Detect	0 to 95	0	RO	Num			PT	BU
88.006	CLOCK Task Resource Monitoring	0 (Off) or 1 (On)	0 (Off)	RW	Bit				
88.007	Free Resource for Clock Task	0 to 95	0	RO	Num			PT	BU
88.008	Clock Task Peak Resource Detect	0 to 95	0	RO	Num			PT	BU

9.10.2 Menu 88 Full Parameter Descriptions

88.001	**Error Code / Reset**		
Minimum	0	**Maximum**	9999
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	On error
Display Format	Number	**Decimal Places**	0
Coding	RW, PT, BU		

This parameter has two purposes - when read it will return the identical run-time error as Pr **81.050** (note - it will not return drive trip codes). The parameter is cleared to zero on reset and when the user program execution is started.

When this parameter is written to with a value of 1070 the module will initiate a warm-restart of the drive and any other options. This can be used to restart the user program (providing auto-run Pr **81.013** = 1) and clear any drive trip. This reset action can be performed at any time, not just after a run-time error or in an ERROR task.

88.002	**Task in Error**		
Minimum	0	**Maximum**	50
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	On error
Display Format	Number	**Decimal Places**	0
Coding	RW, PT, BU		

The Task in Error parameter can be used to identify which task the error was generated in. This parameter is only valid if it is read from the ERROR task after a run-time trip has occurred.

The values will have the following meanings:

Value	Task
50	System
1	Initial
2	Background
3	Clock
4	Error
5	Pos0
6	Pos1
7	Event
8	Event1
9	Event2
10	Event3
11	APC

A value of zero will be returned if there is no error condition.

88.003	POS Resource Monitoring		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit Volatile	**Update Rate**	Immediate
Display Format	Text	**Decimal Places**	0
Coding	RW		

This parameter allows the user to enable or disable monitoring of the motion engine tasks free resource. When set to 1 (On), *Free Resource for Motion Engine Tasks* (Pr **88.004**) and *Motion Engine Peak Resource Detect* (Pr **88.005**) become active. If set to zero, *Free Resource for Motion Engine Tasks* (Pr **88.004**) and *Motion Engine Peak Resource Detect* (Pr **88.005**) will read zero.

88.004	Free Resource for Motion Engine Tasks		
Minimum	0	**Maximum**	95
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	See Pr **81.012**
Display Format	Number	**Decimal Places**	0
Coding	RO, PT, BU		

This parameter indicates the percentage resource available for running the motion engine tasks. These tasks are CTSync, CTSync Output Channels, POS0, PLCopen, APC, APC Output Channel and POS1. If this parameter value reaches zero a task overrun will occur. It is calculated every motion engine period and is displayed for the previous motion engine period.

88.005	Motion Engine Peak Resource Detect		
Minimum	0	**Maximum**	95
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	See Pr **81.012**
Display Format	Number	**Decimal Places**	0
Coding	RO, PT, BU		

This parameter displays the lowest value (i.e. highest resource usage) that *Free Resource for Motion Engine Tasks* (Pr **88.004**) reaches since the monitoring was enabled (*POS Resource Monitoring* (Pr **88.003**)). It will give a realistic indication of the worst case available resources for the motion engine tasks so that the user can see how close the module has been to a motion engine task overrun.

88.006	CLOCK Task Resource Monitoring		
Minimum	0 (Off)	**Maximum**	1 (On)
Default	0 (Off)	**Units**	N/A
Type	1 Bit Volatile	**Update Rate**	Immediate
Display Format	Text	**Decimal Places**	0
Coding	RW		

This parameter allows the user to enable or disable monitoring of the CLOCK task free resource. When set to 1 (On), *Free Resource for Clock Task* (Pr **88.007**) and *Clock Task Peak Resource Detect* (Pr **88.008**) become active. If set to zero, *Free Resource for Clock Task* (Pr **88.007**) and *Clock Task Peak Resource Detect* (Pr **88.008**) will read zero.

88.007	Free Resource for Clock Task		
Minimum	0	**Maximum**	95
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	See Pr **81.011**
Display Format	Number	**Decimal Places**	0
Coding	RO, PT, BU		

This parameter indicates the percentage resource available for running the Clock task. If this parameter value reaches zero a task overrun will occur. It is calculated every Clock period and is displayed for the previous Clock period.

88.008	**Clock Task Peak Resource Detect**		
Minimum	0	**Maximum**	95
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	See Pr **81.011**
Display Format	Number	**Decimal Places**	0
Coding	RO, PT, BU		

This parameter displays the lowest value (i.e. highest resource usage) that *Free Resource for Clock Task* (Pr **88.007**) reaches since the monitoring was enabled (*CLOCK Task Resource Monitoring* (Pr **88.006**)). It will give a realistic indication of the worst case available resources for the Clock task so that the user can see how close the module has been to a Clock task overrun.

9.11 Menu 90 - General Menu

This menu contains the reference and feedback encoder position values from the drive as well as other status information.

9.11.1 Menu 90 Single Line Descriptions

Parameter		Range	Default	Type					
90.001	Feedback Encoder Position	-2147483648 to 2147483647		RO	Num	ND			
90.002	Feedback Encoder Revolution Count	0 to 65535		RO	Num	ND			BU
90.003	Reference Encoder Position	-2147483648 to 2147483647		RO	Num	ND			
90.004	Reference Encoder Revolution Count	0 to 65535		RO	Num	ND			BU
90.010	Drive Mode	-32768 to 32767		RO	Num	ND	NC	PT	
90.011	Drive Status and Control Word	-32768 to 32767		RW	Num	ND	NC	PT	
90.012	Event Task Schedule Reason	0 to 65535		RO	Num	ND	NC	PT	BU
90.013	Event1 Task Schedule Reason	0 to 65535		RO	Num	ND	NC	PT	BU
90.014	Event2 Task Schedule Reason	0 to 65535		RO	Num	ND	NC	PT	BU
90.015	Event3 Task Schedule Reason	0 to 65535		RO	Num	ND	NC	PT	BU
90.018	Feedback Encoder Freeze Flag	0 to 1	0	RW	Num				BU
90.019	Feedback Encoder Freeze Position	-2147483648 to 2147483647	0	RO	Num				
90.020	Feedback Encoder Freeze Turns	0 to 65535	0	RO	Num				BU
90.024	Module Slot Number	0 to 3		RO	Num	ND	NC		BU
90.025	Feedback Encoder Marker Position	-2147483648 to 2147483647	0	RO	Num				
90.026	Feedback Encoder Marker Turns	0 to 65535	0	RO	Num				BU
90.027	Second Processor Database Version Number	0.00 to 655.35	0.00	RO	Num		NC		BU
90.028	Reference Encoder Freeze Flag	0 to 1		RW	Num	ND			BU
90.029	Reference Encoder Freeze Position	-2147483648 to 2147483647	0	RO	Num				
90.030	Reference Encoder Freeze Turns	0 to 65535	0	RO	Num				BU
90.031	Feedback Encoder Turns and Coarse Position	-2147483648 to 2147483647	0	RO	Num				
90.032	Reference Encoder Turns and Coarse Position	-2147483648 to 2147483647	0	RO	Num				
90.033	Feedback Encoder Freeze Turns and Coarse Position	-2147483648 to 2147483647	0	RO	Num				
90.034	Reference Encoder Freeze Turns and Coarse Position	-2147483648 to 2147483647	0	RO	Num				
90.035	Reference Encoder Marker Position	-2147483648 to 2147483647		RO	Num	ND			
90.036	Reference Encoder Marker Turns	0 to 65535	0	RO	Num				BU

90.037	Feedback Encoder Marker Turns and Coarse Position	-2147483648 to 2147483647	0	RO	Num				
90.038	Reference Encoder Marker Turns and Coarse Position	-2147483648 to 2147483647	0	RO	Num				
90.039	Drive Keypad Button Status	0 to 65535	0	RO	Num		NC	PT	BU
90.040	Event Task Trigger	0 to 4		RW	Num	ND		PT	BU
90.041	Reference Encoder Marker Flag	0 to 1	0	RW	Num				BU
90.042	Feedback Encoder Marker Flag	0 to 1	0	RW	Num				BU
90.043	Reference Encoder Source	0 to 11	0	RW	Num				BU
90.044	Feedback Encoder Source	0 to 11	0	RW	Num				BU
90.045	Reference Marker Flag Enable	0 to 1	0	RW	Num				BU
90.046	Feedback Marker Flag Enable	0 to 1	0	RW	Num				BU
90.047	Reference Freeze Enable	0 to 1	0	RW	Num				BU
90.048	Feedback Freeze Enable	0 to 1	0	RW	Num				BU
90.049	APC Runtime Error ID	-2147483648 to 2147483647	0	RW	Num				

9.11.2 Menu 90 Full Parameter Descriptions

90.001	Feedback Encoder Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	N/A	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, ND		

This parameter contains the feedback encoder position value.

The top 16-bits are scaled to 65536 counts per revolution regardless of the type of feedback device or scaling configured in the drive. The lower 16-bits give the fine position as available from the feedback device scaled to 65536. For standard encoders this will typically be zero, but for higher precision devices such as SinCos encoders, this extra precision will be available.

Marker pulses, etc. have no influence on this parameter.

90.002	Feedback Encoder Revolution Count		
Minimum	0	**Maximum**	65535
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, BU		

This parameter contains the feedback encoder revolution count value.

90.003	Feedback Encoder Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	N/A	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, ND		

This parameter contains the feedback encoder position value.

The top 16-bits are scaled to 65536 counts per rev regardless of the type of feedback device or scaling configured in the drive. The lower 16-bits give the fine position as available from the feedback device scaled to 65536. For standard encoders this will typically be zero, but for higher precision devices such as SinCos encoders, this extra precision will be available.

Marker pulses, etc. have no influence on this parameter.

90.004	Reference Encoder Revolution Count		
Minimum	0	**Maximum**	65535
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, BU		

This parameter contains the reference encoder revolution count value.

90.010	Drive Mode		
Minimum	-32768	**Maximum**	32767
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, BU		

This parameter provides a definitive method of identifying the drive operating mode. It is recommended that this parameter is used instead of Pr **11.031** or Pr **00.048** on the drive since those parameters indicate the requested, not the actual mode.

The values are defined as follows.

Value	Mode
26	Open-loop
27	RFC-A
28	RFC-S
29	Regen

In order to programmatically change the drive mode, use the MODEXFER or CMODEXFER function blocks.

90.011	Drive Status and Control Word		
Minimum	-32768	**Maximum**	32767
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, BU		

Writing to this parameter updates the drive control word, reading from this parameter reads the drive status word.

The following information relates to the Elevator E300 drive only.

For more information on the Elevator Control Word and Status Word refer to the Elevator E300 documentation.

Control Word (G51)

Bit	Description
b15	*Reserved*
b14	*Reserved*
b13	Control Word enable. This bit must be set to 1 to allow travel to start. If travel has started and the user wants to terminate travel instantly rather than waiting for the drive to profile to a stop, this bit may be set to 0. For normal travel this bit is set to 1 when travel is requested i.e. when the speed / direction / enable signals are applied, and set to 0 when travel has completed i.e. the motor contactor has been opened.
b12	Watchdog bit, must be set to 1 at least every 500 ms. Failure to do this will result in a trip **Ctrl Watchdog** fault. If a travel is in progress the Elevator will perform a controlled stop and then trip.
b11	Direction input 2 CW
b10	Direction input 1 CCW
b9	Selects V10 speed reference. If a higher priority speed is selected it will override this speed selection.
b8	Selects V9 speed reference. If a higher priority speed is selected it will override this speed selection.
b7	Selects V8 speed reference. If a higher priority speed is selected it will override this speed selection.
b6	Selects V7 speed reference. If a higher priority speed is selected it will override this speed selection.

b5	Selects V6 speed reference. If a higher priority speed is selected it will override this speed selection.
b4	Selects V5 speed reference. If a higher priority speed is selected it will override this speed selection.
b3	Selects V4 speed reference. If a higher priority speed is selected it will override this speed selection.
b2	Selects V3 speed reference. If a higher priority speed is selected it will override this speed selection.
b1	Selects V2 speed reference. If a higher priority speed is selected it will override this speed selection.
b0	Selects V1 speed reference. If a higher priority speed is selected it will override this speed selection. (Creep Speed by default *Creep Speed Select* (**G52**))

Status Word (L74)

Bit	Description
b15	*Reserved*
b14	*Reserved*
b13	Reverse Direction Running (**L28**)
b12	Reverse Direction Commanded (**L27**)
b11	Braking Resistor Alarm (**L17**)
b10	Braking IGBT Active (**L16**)
b9	Regenerating (**L14**)
b8	Current Limit Reached (**L15**)
b7	Rated Load Reached (**L13**)
b6	*Reserved*
b5	*Reserved*
b4	*Reserved*
b3	*Reserved*
b2	At Zero Speed (**L08**)
b1	Drive Active (**L06**)
b0	Drive OK (**L05**)

90.012	**Event Task Schedule Reason**		
Minimum	0	**Maximum**	65535
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	On Event
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT, BU		

The four EVENT parameters (Pr **90.012** - Pr **90.015**) give the reason why the particular EVENT task was scheduled. The value only has meaning when the particular EVENT task is running.

The value is bitmapped and defined as follows:

Bit	Description	Value
0-1	Slot triggering the task	0 = Local Slot 1 = Slot 1 2 = Slot 2 3 = Slot 3 or Embedded
2-7	Reason for the trigger	0-31 = Other System Integration Module Initiated 32 = CTNet Sync 33 = Timer Unit 34-63 = User-defined reason via the DPL command SCHEDULEEVENT

90.013	Event1 Task Schedule Reason		
Minimum	0	**Maximum**	65535
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	On Event1
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT, BU		

For details see Pr **90.012**.

90.014	Event2 Task Schedule Reason		
Minimum	0	**Maximum**	65535
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	On Event2
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT, BU		

For details see Pr **90.012**.

90.015	Event3 Task Schedule Reason		
Minimum	0	**Maximum**	65535
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	On Event3
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, PT, BU		

For details see Pr **90.012**.

90.018	Feedback Encoder Freeze Flag		
Minimum	0	**Maximum**	1
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter needs to be set to zero for the freeze position to be captured. Once the freeze has occurred this parameter is automatically set to 1. To re-arm it simply set it to zero.

90.019	Feedback Encoder Freeze Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter stores the position value of the feedback encoder at the time the freeze input has been activated.

90.020	Feedback Encoder Freeze Turns		
Minimum	0	**Maximum**	65535
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO, BU		

This parameter stores the turns value of the feedback encoder at the time the freeze input has been activated.

90.024	Module Slot Number		
Minimum	0	**Maximum**	3
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	0
Coding	RO, ND, NC, BU		

This parameter reports the slot number into which the SI-CiA417 module is installed. This parameter will reflect any changes made to the option slot menu assignments.

90.025	Feedback Encoder Marker Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, BU		

The top 16-bits are scaled to 65536 counts per revolution regardless of the type of feedback device or scaling configured in the drive.

90.026	Feedback Encoder Marker Turns		
Minimum	0	**Maximum**	65535
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, BU		

This parameter shows the feedback encoder marker revolution count.

90.027	Second Processor Database Version Number		
Minimum	0.00	**Maximum**	655.35
Default	0.00	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	Initialisation
Display Format	Number	**Decimal Places**	2
Coding	RO, NC, BU		

This parameter shows the SI-CiA417 database version number, it is read from the database after power-up.

90.028	Reference Encoder Freeze Flag		
Minimum	0	**Maximum**	1
Default	N/A	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RW, ND, BU		

This parameter needs to be set to zero for the freeze position to be captured. Once the freeze has occurred this parameter is set to 1 automatically. To re-arm it simply set it to zero.

90.029	Reference Encoder Freeze Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter stores the position value of the reference encoder at the time the freeze input has been activated.

90.030	Reference Encoder Freeze Turns		
Minimum	0	**Maximum**	65535
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO, BU		

This parameter stores the turns value of the reference encoder at the time the freeze input has been activated.

90.031	Feedback Encoder Turns and Coarse Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter stores the 16-bit turns value in the upper word and 16-bit position value in the lower word for the feedback encoder.

90.032	Reference Encoder Turns and Coarse Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter stores the 16-bit turns value in the upper word and 16-bit position value in the lower word for the reference encoder.

90.033	Feedback Encoder Freeze Turns and Coarse Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameters stores the 16-bit turns value in the upper word and the 16-bit position value in the lower word at the time the freeze input was activated for the feedback encoder.

90.034	Reference Encoder Freeze Turns and Coarse Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameters stores the 16-bit turns value in the upper word and the 16-bit position value in the lower word at the time the freeze input was activated for the reference encoder.

90.035	Reference Encoder Marker Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	N/A	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, ND		

This parameter stores the reference encoder position value at the time the marker pulse was activated.

90.036	Reference Encoder Marker Turns		
Minimum	0	**Maximum**	65535
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, BU		

This parameter stores the reference encoder revolution count at the time the marker pulse was activated.

90.037	Feedback Encoder Marker Turns and Coarse Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter stores the 16-bit turns value in the upper word and 16-bit position value in the lower word for the feedback encoder at the time the marker pulse was activated.

90.038	Reference Encoder Marker Turns and Coarse Position		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter stores the 16-bit turns value in the upper word and 16-bit position value in the lower word for the reference encoder at the time the marker pulse was activated.

90.039	Drive Keypad Button Status		
Minimum	0	**Maximum**	65535
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RO, NC, PT, BU		

The state of the Reverse, Run and Stop keys can be read using this parameter. The keys are represented by bits as follows:

Value	Description
b0	Reverse
b1	Run
b2	Stop

90.040	Event Task Trigger		
Minimum	0	**Maximum**	4
Default	N/A	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, ND, PT, NR, BU		

Upon setting this parameter to a value it will execute one of the Event tasks.

Value	Action
0	Do not trigger Event task
1	Trigger Event task
2	Trigger Event1 task
3	Trigger Event2 task
4	Trigger Event3 task

90.041	Reference Encoder Marker Flag		
Minimum	0	**Maximum**	1
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter is set to 1 if a relevant reference encoder marker pulse is activated, but only if the marker flag enable parameter has been set (*Reference Marker Flag Enable* (Pr **90.045**)). To re-arm the marker this parameter must be set to zero by the user. It cannot be set to 1 by the user.

90.042	Feedback Encoder Marker Flag		
Minimum	0	**Maximum**	1
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	See Pr **81.016**
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter is set to 1 if a relevant feedback encoder marker pulse is activated, but only if the marker flag enable parameter has been set (*Feedback Marker Flag Enable* (Pr **90.046**)). To re-arm the marker this parameter must be set to zero by the user. It cannot be set to 1 by the user.

90.043	Reference Encoder Source		
Minimum	0	**Maximum**	11
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter defines the source for the reference data. See the table below for the valid sources.

Value	Description	Freeze Functionality
0	P1 Drive encoder	Freeze operates on drive F1 freeze function
1	P1 Slot 1	Freeze operates on Slot 1 F1 freeze function
2	P1 Slot 2	Freeze operates on Slot 2 F1 freeze function
3	P1 Slot 3	Freeze operates on Slot 3 F1 freeze function
4	User program	
5	*Reserved*	
6	P2 Drive encoder	Freeze operates on drive F2 freeze function
7	P2 Slot 1	Freeze operates on Slot 1 F2 freeze function
8	P2 Slot 2	Freeze operates on Slot 2 F2 freeze function
9	P2 Slot 3	Freeze operates on Slot 3 F2 freeze function
10	P1 Slot 4	Freeze operates on Slot 4 F1 freeze function
11	P2 Slot 4	Freeze operates on Slot 4 F2 freeze function

When a P1 interface (drive or option module) is selected as the source, the position source for the F1 freeze function will be set to P1.

When a P2 interface (drive or option module) is selected as the source, the position source for the F2 freeze function will be set to P2.

90.044	Feedback Encoder Source		
Minimum	0	**Maximum**	11
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter defines the source for the feedback data. See the table below for the valid sources.

Value	Description	Freeze Functionality
0	P1 Drive encoder	Freeze operates on drive F1 freeze function
1	P1 Slot 1	Freeze operates on Slot 1 F1 freeze function
2	P1 Slot 2	Freeze operates on Slot 2 F1 freeze function
3	P1 Slot 3	Freeze operates on Slot 3 F1 freeze function
4	User program	
5	*Reserved*	
6	P2 Drive encoder	Freeze operates on drive F2 freeze function
7	P2 Slot 1	Freeze operates on Slot 1 F2 freeze function
8	P2 Slot 2	Freeze operates on Slot 2 F2 freeze function
9	P2 Slot 3	Freeze operates on Slot 3 F2 freeze function
10	P1 Slot 4	Freeze operates on Slot 4 F1 freeze function
11	P2 Slot 4	Freeze operates on Slot 4 F2 freeze function

When a P1 interface (drive or option module) is selected as the source, the position source for the F1 freeze function will be set to P1.

When a P2 interface (drive or option module) is selected as the source, the position source for the F2 freeze function will be set to P2.

90.045	Reference Marker Flag Enable		
Minimum	0	**Maximum**	1
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter must be set to 1 to allow the *Reference Encoder Marker Flag* (Pr **90.041**) to be set when the marker pulse is activated.

90.046	Feedback Marker Flag Enable		
Minimum	0	**Maximum**	1
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter must be set to 1 to allow the *Feedback Encoder Marker Flag* (Pr **90.042**) to be set when the marker pulse is activated.

90.047	Reference Freeze Enable		
Minimum	0	**Maximum**	1
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter must be set to 1 to allow the *Reference Encoder Freeze Flag* (Pr **90.028**) to be set when the freeze input is activated.

90.048	Feedback Freeze Enable		
Minimum	0	**Maximum**	1
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter must be set to 1 to allow the *Feedback Encoder Freeze Flag* (Pr **90.018**) to be set when the freeze input is activated.

90.048	APC Runtime Error ID		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW		

This parameter shows the error ID of an APC runtime error. This will be set when module trip 81 occurs. Brief descriptions of the error codes are shown in the following table.

Value	Description
0	No error or failure to set up encoder
1	CAM array too small
2	CAM segment overrun
3	CAM size has been specified as zero
4	CAM absolute reset failure

9.12 Menu 91 - Fast Access Menu

The parameters in this menu are virtual parameters which provide a faster update rate or enhanced resolution than drive parameters.

9.12.1 Menu 91 Single Line Descriptions

Parameter		Range	Default	Type					
91.001	Short-cut Enable	0 to 127	0	RW	Num				BU
91.002	Speed set-point	-2147483648 to 2147483647	0	RW	Num				
91.003	Hard-speed Reference	-2147483648 to 2147483647	0	RW	Num				
91.005	Full scale speed	-2147483648 to 2147483647	0	RW	Num				
91.006	Speed feedback	-2147483648 to 2147483647	0	RO	Num				
91.007	Current feedback	-32768 to 32767	0	RO	Num				
91.008	Drive analog input 1 value	-4000 to 4000	0	RO	Num				
91.009	Drive analog input 2 value	-2047 to 2047	0	RO	Num				
91.010	Drive analog input 3 value	-2047 to 2047	0	RO	Num				
91.016	Drive digital inputs	0 to 65535	0	RO	Num				BU
91.017	Number of Valid CTSync Messages Received	-2147483648 to 2147483647	0	RW	Num				
91.018	Number of Bad CTSync Messages Received	-2147483648 to 2147483647	0	RW	Num				
91.019	Number of Missing CTSync Messages	-2147483648 to 2147483647	0	RW	Num				
91.020	CTSync Synchronization Signal Width too Short	-2147483648 to 2147483647	0	RW	Num				
91.021	Inter-option Synchronization Control	0 to 2	0	RW	Num				BU
91.022	Inter-option Synchronization Status	0 to 255	0	RO	Num				BU
91.023	Enable CTSync Output Channels	0 to 1	1	RW	Num				BU

9.12.2 Menu 91 Full Parameter Descriptions

91.001	Short-cut Enable		
Minimum	0	**Maximum**	127
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter enables the short-cut parameters detailed later in this section. You must set the appropriate bit in this parameter. See the following table.

Bit	Function	Related Parameter
0	Speed reference shortcut enable	Speed set-point (Pr **91.002**)
1	Hard-speed reference shortcut enable	Hard-speed Reference (Pr **91.003**)
2	*Reserved*	
3	*Reserved*	
4	*Reserved*	
5	*Reserved*	
6	*Reserved*	
7	*Reserved*	

91.002	Speed set-point		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RW		

Sets the speed reference in units of 0.001 rpm. This value is mirrored in drive Pr **01.021** (preset speed 1), therefore in order to control the drive speed with this parameter ensure preset speed 1 is selected on the drive (Pr **01.014**=3, Pr **01.015**=1).

Ensure bit 0 of *Short-cut Enable* (Pr **91.001**) is set and the full-scale speed in *Full scale speed* (Pr **91.005**) is set accordingly when using this parameter.

91.003	Hard-speed Reference		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RW		

Controls the hard-speed reference on the drive in units of 0.001 rpm.

Ensure bit 1 of *Short-cut Enable* (Pr **91.001**) is set and the full-scale speed in *Full scale speed* (Pr **91.005**) is set accordingly when using this parameter.

Note that this parameter is valid only in RFC-A and RFC-S modes only.

91.005	Full scale speed		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RW		

Set this to the maximum (absolute) speed that will ever be written to with *Speed set-point* (Pr **91.002**) or *Hard-speed Reference* (Pr **91.003**). This is in units of 1 rpm.

This determines the resolution for the speed values sent to the drive. Attempting to write speed values to *Speed set-point* (Pr **91.002**) or *Hard-speed Reference* (Pr **91.003**) greater than the rpm value specified in *Full scale speed* (Pr **91.005**) will result in the value being limited or a value over range run-time error.

When the drive is in RFC-S mode, in the event of a module reset (Pr **81.019** = On), *Full scale spee*d (Pr **91.005**) will default to 3000 rpm.

91.006	Speed feedback		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter returns the value of the drive speed feedback in units of 0.01 rpm in RFC-A/S modes. This parameter will only be updated if the speed feedback is derived from the drive's encoder input, not a slot number. This can only happen if Pr **03.026** on the Unidrive M is set to a 0 to select the P1 interface or 6 to select the P2 interface on the drive. However, if a low resolution encoder is used there may be some jitter at low speed. For example, at 10 rpm with a 1024 ppr encoder this parameter may jump between 0 and 14.65 rpm. This is similar to the Unidrive M parameter Pr **03.002.**

91.007	Current feedback		
Minimum	-32768	**Maximum**	32767
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This parameter returns the value of drive current feedback (Pr **04.002**) in units of 0.001 A. For example a value of 1500 in *Current feedback* (Pr **91.007**) would indicate 1.5 A in Pr **04.002**.

91.008	Drive analog input 1 value		
Minimum	-4000	**Maximum**	4000
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This value will be taken from the drive's analog input 1 and is scaled for ±4000 to represent the +/- full scale signal at the input.

91.009	Drive analog input 2 value		
Minimum	-2047	**Maximum**	2047
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This value will be taken from the drive's analog input 2 and is scaled for ±2047 to represent the +/- full scale signal at the input.

91.010	Drive analog input 3 value		
Minimum	-2047	**Maximum**	2047
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO		

This value will be taken from the drive's analog input 3 and is scaled for ±2047 to represent the +/- full scale signal at the input.

91.016	Drive digital inputs		
Minimum	0	**Maximum**	65535
Default	0	**Units**	N/A
Type	16 Bit Volatile	**Update Rate**	250 µs
Display Format	Number	**Decimal Places**	0
Coding	RO, BU		

This parameter is similar to drive parameter Pr **08.020** in providing the status of 7 digital inputs in one single parameter. Logic polarity and inversions are taken into account.

The bits are assigned as follows:

Bit	Digital Input
0	F1
1	F2
2	F3
3	F4
4	F5
5	F6
6	Enable
7	*Reserved*

91.017	Number of Valid CTSync Messages Received		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RW		

This parameter will increment every time a good CTSync message is received with a valid checksum.

91.018	Number of Bad CTSync Messages Received		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RW		

This parameter will increment every time a CTSync message is received with a bad checksum.

91.019	Number of Missing CTSync Messages		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RW		

This parameter will increment every time a CTSync message has not been received when the module is expecting one.

91.020	CTSync Synchronization Signal Width too Short		
Minimum	-2147483648	**Maximum**	2147483647
Default	0	**Units**	N/A
Type	32 Bit Volatile	**Update Rate**	Synchronisation
Display Format	Number	**Decimal Places**	0
Coding	RW		

This parameter will increment every time the synchronisation signal is the incorrect width. During synchronisation this parameter is likely to increase, but should stabilise once synchronisation is complete. After synchronisation, if this parameter is incrementing then there is likely to be excessive noise on the EIA-RS485 network. In which case it is advisable to check the connections.

91.021	Inter-option Synchronization Control		
Minimum	0	**Maximum**	255
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RO, BU		

This parameter allows the user to set up the module in the Inter-System Integration Module Synchronisation scheme.

Bit	Description
0	Set this bit for the module to participate in the Inter-System Integration Module synchronisation scheme as a Producer
1	Set this bit for the module to participate in the Inter-System Integration Module synchronisation scheme as a Consumer

91.022	Inter-option Synchronization Control		
Minimum	0	**Maximum**	255
Default	0	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	Immediate
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

This parameter shows the status of the module in the Inter-System Integration Module synchronisation scheme.

Bit	Meaning	Description
0	Requested Inter-Module Synchronisation Role	This is identical to bit 0 of the Inter-System Integration Module Synchronisation Control Parameter as described in Inter-option Synchronization Control (Pr **91.021**)
1	Requested Inter-Module Synchronisation Role	This is identical to bit 1 of the Inter-System Integration Module Synchronisation Control Parameter as described in Inter-option Synchronization Control (Pr **91.021**)
2	Inter-Module Synchronisation Role Achieved	This bit indicates that for a module attempting to become inter-module synchronisation Producer it has achieved that role. In the event of more than one module on a given drive attempting to become the synchronisation Producer at least one of these modules will have this bit clear. For a module attempting to become inter-module synchronisation Consumer it indicates that it has not requested to become Producer, and that a Producer has been located in another slot and is being used as the source of synchronisation data. (If a Producer has been located in another slot but the rate of the synchronisation data is not compatible with the Consumer then this bit will be cleared because the Producer, although located, is not being used as the source of synchronisation data)
3	Synchronisation Producer Output within Specification	This bit is relevant only for modules which have been designated as the inter-module synchronisation Producer and CTSync Slave. This bit indicates that the signal being provided by the module synchronisation Producer is within the specified tolerance of the drive, and that the drive is now locked to the CTSync Slave's frequency. Note that this bit may only be set if bits 2 to 0 of this parameter are 1,0,1, indicating that the module is Producer (0,1) and that the Producer role has been achieved (1)
4	*Reserved*	
5	*Reserved*	
6	*Reserved*	
7	*Reserved*	

91.023	Enable CTSync Output Channels		
Minimum	0	**Maximum**	1
Default	1	**Units**	N/A
Type	8 Bit Volatile	**Update Rate**	N/A
Display Format	Number	**Decimal Places**	0
Coding	RW, BU		

Enable CTSync output channels on this module with motion engine even if the module is not in CTSync mode. (Note that one of POS0, APC, POS1 tasks must be running for CTSync output channels to be enabled). This parameter has a default value of 1. Setting this parameter to zero can help free up resources if the CTSync output channels are not required.

10 SI-CiA417 Diagnostics

10.1 Version Control

The SI-CiA417 Solution requires minimum firmware versions of:

1. E300 Firmware: V03.19.11.14 (Pr **J04**)
2. SI-CANopen V2 Module Firmware: V02.03.03.02 (Pr **2.00.002** or **16.002**)
3. SI-CiA417 Module Firmware: V03.03.08

The SI-CiA417 module major firmware version is available in Pr **17.002** (or **3.81.002**) and the minor firmware version in Pr **17.051** (or **3.81.051**).

The SI-CiA417 user program version is visible in Pr **17.049** (or **3.81.049**) displayed as an integer value without periods.

10.2 SI-CiA417 trips

The SI-CiA417 solution uses a combination of trips. Trips can originate from:

1. The E300 Drive: see relevant user guide for trip description and help
2. The SI-CANopen V2 Module: See section 10.3.4
3. The SI-CiA417 module: see section 10.4.
4. The SI-CiA417 Software can generate User Trip, these are described in the table below:

Table 10-1 Trip table

Trip Number	Trip Name	Trip Description	Suggested Fixes
40	Object Association Failed	An object association failed during start-up.	Check that the SI-CANopen V2 hardware and firmware is correct. Then power cycle the drive
41	Startup Object	An object in the startup list failed to be associated.	Check that the SI-CANopen V2 hardware and firmware is correct. Then power cycle the drive
42	State machine Failed	The state machine entered an unexpected state.	Power cycle the drive.
43	No CAN Module Fitted	No SI-CANopen V2 module has been detected.	Fit an SI-CANopen V2 module to the drive.
44	Unsupported Mode of Operation	The lift controller has requested an unsupported mode of operation	Only request Profile Position Mode or Profile Velocity Mode.
45	Unsupported Drive Type	An unsupported drive type has been detected	Make sure that the SI-CiA417 module is connected to a supported drive.

10.3 SI-CANopen V2 diagnostic and trips.

10.3.1 Overview

This section provides basic diagnostic information intended to resolve the most common problems encountered when setting up an SI-CANopen V2 module on a SI-CANopen V2 network.

A high percentage of problems reported are basic set-up problems which can usually be solved by reading the information in this chapter. If after reading this chapter you are still experiencing problems, please contact your supplier for support.

10.3.2 Drive trip display codes

If the option module detects an error during operation, it will force a trip on the drive. However, the trip string displayed on the drive will only indicate which slot initiated the trip. The exact reason for the trip will be indicated in the drive trip code parameters (Pr **10.020** and Pr **10.070**).

Table 10-2 shows the possible trips that will be displayed on the drive when a problem is detected with the option module or when the option module initiates a trip.

Table 10-2 Drive trip display codes

Trip	Description
SlotX HF	The drive has detected that an option module is present but is unable to communicate with it due to a hardware fault.
SlotX Error	User trip generated by the option module
SlotX Not Fitted	This trip will occur if a drive slot was previously configured with an option module but on power up, no option module was detected.
SlotX Different	This trip will occur if a drive slot was previously configured with an option module but on power up, a different option module was detected. Replacing the option module with another one of the same ID number will not initiate this trip. The trip will also occur if an option module is installed to a previously unused slot.

10.3.3 Module error codes

If the option module detects an internal error during operation, it will force a trip on the drive and provide a sub-trip string for a clearer definition of the trip. Table 10-3 below shows the possible module error codes.

Table 10-3 Module error codes

Value	Text	Description
200	SW fault	Software fault
201	BG Orun	Background task overrun
202	FW invalid	Invalid firmware for hardware version
203	Drv unknown	Unknown drive type
204	Drv unsupported	Unsupported drive type
205	Mode unknown	Unknown mode
206	Mode unsupported	Unsupported mode
207	FLASH corrupt	Corrupted Non-volatile Flash
208	Dbase init	Database initialization error
209	FS init	File system initialization error
210	Memory alloc	Memory allocation error
211	Filesystem	File system error
212	Save Configuration	Save Configuration file error
213	Load Configuration	Load Configuration file error
214	OHt	Overheated
215	TO drv	The drive has not responded with the watchdog period
216	eCMP	eCMP comms failure
217	TO eCMP slot 1	Slot 1 eCMP timeout
218	TO eCMP slot 2	Slot 2 eCMP timeout
219	TO eCMP slot 3	Slot 3 eCMP timeout
220	TO eCMP slot 4	Slot 4 eCMP timeout
221	Output overload	Digital output overload
222	Missing Factory Setting	Missing Factory Settings
223	Power on test	Error during power-up. e.g. Thermistor short/open circuit.

10.3.4 SI-CANopen V2 error codes

If the SI-CANopen V2 module detects a CANopen V2 error during operation, it will force a trip on the drive and provide a sub-trip string for a clearer definition of the trip. The table below shows all possible CANopen V2 error codes.

Table 10-4 CANopen V2 network error codes

Value	Text	Description
0	No trip	No trip.
100	Link Loss	The link to the network has been lost.
101	Bus Off	The CAN layer of the module has entered the Bus Off state.

10.3.5 SI-CANopen V2 network diagnostic

The operating status of the SI-CANopen V2 module can be viewed in the network diagnostic parameter (Pr **S.01.006**). All possible values for this parameter are described in Table 10-5 .

Table 10-5 SI-CANopen V2 network operating status Baud rate detection in progress

Value	Text	Description
0	Network OK	Network healthy.
1	Internal HW Fail	Indicates that part of the SI-CANopen V2 initialization sequence was not successful. If this fault persists after a power cycle, replace the SI-CANopen V2 module.
2	Init OK	Indicates that SI-CANopen V2 has initialized correctly, and is waiting for the CANopen V2 master to initialize communications.
3	Network No Data	Indicates the CANopen V2 master has established communications with SI-CANopen, V2 but currently there is no data transfer in progress.
4	Config Error	Indicates that there is an invalid setting in the SI-CANopen V2 configuration parameters. This could be due to a mapping error.
5	Software Error	An internal software error has occurred. Reset SI-CANopen V2 to clear this error. If the error persists, replace SI-CANopen V2.
6	Baud Detecting	Baud rate detection is in progress.
7	Device Disabled	Indicates that the CANopen V2 communications layer has been disabled by setting the node address to 0.
8	Initialize Delay	initialization delayed, waiting for application module(s) to finish initial task.

10.3.6 Alarms

If the SI-CANopen V2 detects an alarm during operation, it will cause the drive to display the appropriate alarm on the drive keypad. If more than one alarm is present, it will be shown as “first-in-first-out” (FIFO) order.

Value	Text	Description
0	No alarm	No alarm.
1	User Prog	A user program alarm has been generated.
2	eCMP	An eCMP alarm has been generated.
3	FS Usage	A file system alarm has been generated.
4	Too Hot	Module temperature is too high.
5	In Mapping	Error with Input mapping setup.
6	Out Mapping	Error with Output mapping setup.
7	Fbus Init	Fieldbus Initialization failed, possibly due to external 24 V missing or baud rate detection failed.
8	Read Err	Error during reading from a mapped parameter.
9	Write Err	Error during writing to a mapped parameter.

10.4 SI-CiA417 module trips. (SI-Applications Compact) diagnostics and trips.

The SI-CiA417 module is based upon the SI-Applications Compact module with a user application. The following section details trips associated with the SI-Applications Compact module. This section is included for completeness it is unlikely the user will have need to refer to it.

10.4.1 Run-time errors

A run-time error is an error which occurs in a specific operation of the SI-Applications Compact module. It can happen as a result of an error in the execution of the user’s DPL program (such as trying to write to a parameter that doesn't exist, or trying to divide a value by zero), a misconfiguration (such as incorrect CTNet setup) or a system error such as processor overload or *watchdog* time-out.

The action taken when an error occurs may be one or more of the following:

- User program may be halted or prevented from starting
- Drive may be tripped on **Slotx Error** (where x is the slot number) with the run-time error code placed into **Pr 81.050**
- Drive may be tripped on another **Slotx ****** code.
- The DPL **ERROR** task may be executed (if it exists).

Which of these occurs depends upon the type of error and the setting of the global run-time trip enable parameter **Pr 81.014**. This is detailed in section 10.3.

10.4.2 Drive display trip codes

The table below shows the possible trip codes that will be displayed on the drive when an error is detected in the SI-Applications Compact module which instigates a drive trip. Remember, not all run-time errors instigate a drive trip.

Table 10-6 Drive display trip codes

Drive trip code	Fault	Description
Slotx* HF	Hardware Fault	The drive has detected that an System Integration Module is present, but is unable to communicate with it.
Slotx* Watchdog	Watchdog Timeout	Indicates a user program which has utilised the watchdog feature has failed to issue the WDOG command within 200 ms.
Slotx* Error	Error	Run-time trip generated by the SI-Applications Compact module either due to a user DPL program error or some other event. The actual error code is placed into **Pr 81.050**.
Slotx* Not Fitted	Not installed	Module was disconnected while operational, or module has crashed. This trip will also occur if a drive slot is configured for a SI-Applications Compact module, but the module is not installed in the slot.
Slotx* Different	Different Installed	This trip will occur when an SI-Applications Compact module is installed to a slot previously occupied by another System Integration Module, or is installed to a previously unused slot.

* Where x determines the slot number. For example an error with the module in slot 3 would give a Slot3 Error trip.

10.4.3 SI-Applications Compact module run-time error codes

If the SI-Applications Compact module detects an error during operation the error code will be placed in the following parameter:

Pr 81.050	**Run-time Error Code**		
Access	RO	**Range**	0 to 255
Default	N/A	**Update Rate**	N/A

For certain errors the user may select if the drive should trip as well. This is configured with the Global Run-time Trip enable parameter:

Pr 81.014	**Global Run-time Trip**		
Access	RW	**Range**	0/1
Default	0	**Update Rate**	N/A

If set to 1 (On), the drive will trip on ALL run-time errors.

The table below shows the error codes and their meaning as well as if the drive will trip, the User program will stop and whether the DPL ERROR task will run.

NOTE

- "**May**" under Drive Trip indicates that the drive will only trip if the global run-time trip enable parameter is set
- "**Not Run**" under Program Halted indicates that the error occurs at Initialization and the program will not be started.

Table 10-7 SI-Applications Compact modules & motion processors error codes

Error Code	Reason	Drive trip?	ERROR task?	Prog Halted?
39	User program stack overflow	Yes	No	Yes
40	Unknown error - please contact supplier	Yes	No	Yes
41	Parameter does not exist. User has attempted to read or write a non-existent parameter in the DPL program.	May	Yes	Yes
42	Attempt to write to a read-only parameter.	May	Yes	Yes
43	Attempt to read from a write-only parameter.	May	Yes	Yes
44	Parameter value out of range. (User has written an illegal value to a parameter within a DPL program.) If parameter Pr **81.017**=0 the value written will be automatically limited and no error will occur.	May	Yes	Yes
45	Invalid synchronization modes	Yes	No	Not Run
46	Unused	N/A	N/A	N/A
48	EIA-485 not in user mode. Occurs if user attempts to use a user-mode EIA-485 DPL command but the EIA-485 port is not in a user-mode.	Yes	Yes	Yes
49	Invalid EIA-485 configuration. For example, invalid mode.	Yes	Yes	Yes
50	Maths error - divide by zero or overflow.	May	Yes	Yes
51	Array index out of range. E.g. arr%[20] where arr% has only been DIMensioned to 19 elements.	May	Yes	Yes
52	Control word user trip. Instigated by setting the trip bit in the control word Pr **90.011**	Yes	No	No
53	DPL program incompatible with target. For example, downloading a program compiled for UD70.	Yes	N/A	N/A
54	DPL task overrun. This occurs if the DPL code within a real-time task (e.g. POS0) cannot be completed in time. Use parameter Pr **88.002** to identify the task in which this error occurred. Check that the task scheduling rate is correct and that there are no loops in the task. This can also occur as a result of external influences such as a large burst of data coming in over CTNet. This problem may be overcome by changing the CTNet priority so that it is lower than the POS tasks. This, however, may cause the CTNet task to be starved. Refer to parameter **81.044** for further information.	May	Yes	Yes
55	Invalid encoder configuration. Only applies to system file V01.02.01 or earlier.	Yes	N/A	N/A
56	Invalid timer unit configuration	Yes	Yes	Yes
57	Function block does not exist.	Yes	Yes	Not Run
58	Flash PLC Storage corrupt. Occurs at startup and will mean that the PLC register set (P/Q/T/U/V/W/X/Y) and menu 20 will not have been restored. If this problem persists it may indicate a hardware failure so contact your supplier.	Yes	Yes	Not Run
59	Drive rejected application module as Sync master	Yes	Yes	Yes
60	CTNet hardware failure. Please contact your supplier	May	No	No
61	CTNet invalid configuration. Check all configuration parameters.	May	No	No
62	CTNet invalid baud-rate. Check Pr **81.024** and network connections.	May	No	No
63	CTNet invalid node ID. Check Pr **81.023**.	May	No	No
64	Digital Output overload. Both digital outputs will be taken inactive when this occurs and will remain inactive until the error condition is cleared. The trip threshold is 20 mA.	Yes	Yes	Yes
65	Invalid function block parameter(s). You have called a FB within a DPL program but one or more of the inputs are invalid.	Yes	Yes	Yes
66	User heap too large. The program has been compiled for a target that has more RAM than this one has. Occurs at startup.	Yes	No	Not Run
67	RAM file does not exist or a non-RAM file id has been specified.	Yes	Yes	Yes
68	The RAM file specified is not associated to an array.	Yes	Yes	Yes
69	Failed to update drive parameter database cache in Flash memory.	Yes	No	Not Run
70	User program downloaded while drive enabled. Will occur if Pr **81.037** = 1 and a program is downloaded.	May	No	Yes
71	Failed to change drive mode	Yes	No	Yes
72	Invalid CTNet buffer operation.	Yes	Yes	Yes
73	Fast parameter Initialization failure	Yes	No	No
74	Over-temperature	Yes	Yes	Yes
75	Hardware unavailable. The user program attempted to access unavailable hardware.	Yes	Yes	Yes
76	Module type cannot be resolved. Module is not recognized.	Yes	No	Not Run
77	Inter-System Integration Module comms error with module in slot 1.	Yes	Yes	Yes

Error Code	Reason	Drive trip?	ERROR task?	Prog Halted?
78	Inter-System Integration Module comms error with module in slot 2.	Yes	Yes	Yes
73	Fast parameter Initialization failure	Yes	No	No
74	Over-temperature	Yes	Yes	Yes
75	Hardware unavailable. The user program attempted to access unavailable hardware.	Yes	Yes	Yes
76	Module type cannot be resolved. Module is not recognized.	Yes	No	Not Run
77	Inter-System Integration Module comms error with module in slot 1.	Yes	Yes	Yes
78	Inter-System Integration Module comms error with module in slot 2.	Yes	Yes	Yes
79	Inter-System Integration Module comms error with module in slot 3.	Yes	Yes	Yes
80	Inter-System Integration Module comms error with module unknown slot.	Yes	Yes	Yes
81	• Slot selected as the reference or feedback does not contain a position System Integration Module • Attempt to change the Reference source or the Feedback source in more than one task. APC internal error. See Pr **81.038**. This may be caused by one of the following: • CAM table too small • A change of too many CAM segments has occurred at the CAM table input • CAM is selected but size is zero • CAM absolute mode selected and Reset Index or Reset Position in segment is out of range	May	Yes	Yes
82	Communications to drive faulty.	May	Yes	Yes

11 Replacement parts

Description	Part Number
SI-CiA417 Solution (Consists of a CiA417 module and a SI-CANopen V2 module).	82400000021700
SI-CANopen V2 (solution version component part number)	9656-0055
SI-CiA417	9656-0069

Index

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