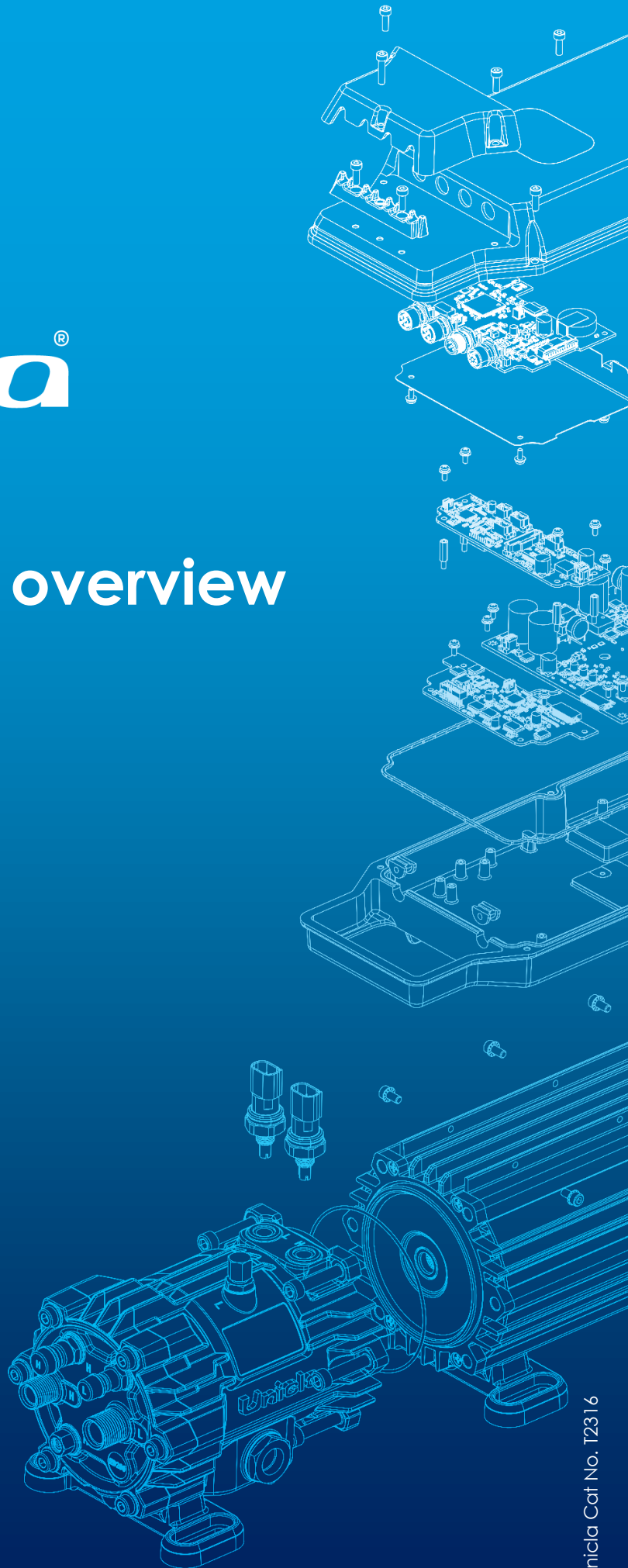


Unicla®

eDrive CAN overview



1. Introduction

Unicla eDrive CAN is in standard (not CANOpen) format. Data availability is split into two sections – ‘periodic’ and ‘on request.’

2. Periodic data

Publish rate is configurable from 200 - 5000ms. 1000ms default which includes critical data, refrigeration and some electrical values

Name	Type	Units	ID	Payload Bytes	0	1	2	3	4	5	6	7
Pressure	array (float)	bar-a	0x00	8	Suction				Discharge			
Temperature	array (float)	°C	0x01	8	Suction				Discharge			
Superheat	array (float)	K	0x02	8	Suction				Discharge			
Compressor/Motor	array (uint16)	...	0x03	8	RPM		Voltage (V)		Power (W)		Torque (Nm)	
Status	array (enum, uint)	...	0x04	8	Status	Compressor	% Demand	Refrigerant	Anti Short Timer (s)	Reserved		
Motor Temperatures	array (float)	°C	0x05	8	Motor				Switch			
Reserved			0x06									
Reserved			0x07									

3. On request data

Available requests are – Build Information, Running Limits/CAN config, and Commands

3.1 Build Information

Name	Type	Units	ID	Payload Bytes	0	1	2	3	4	5	6	7
Model (1 of 2)	ASCII	-	0x08	8								
Model (2 of 2)	ASCII	-	0x09	8								
Serial Number (1 of 2)	ASCII	-	0x0A	8								
Serial Number (2 of 2)	ASCII	-	0x0B	8								
Compressor Build	array (enum.uint)	-	0x0C	8	Refrig	Oil	Reserved		Min Speed (RPM)	Max Speed (RPM)		
Electrical Build	array (uint)	...	0x0D		Operating Voltage (V)	Power Rating (W)	Reserved					
Device Name (1 of 4)	ASCII	-	0x0E	8								
Device Name (2 of 4)	ASCII	-	0x0F	8								
Device Name (3 of 4)	ASCII	-	0x10	8								
Device Name (4 of 4)	ASCII	-	0x11	8								
Reserved			0x12									
Reserved			0x13									
Reserved			0x14									

3.2 Running Limits/ CAN Config

Name	Type	Units	ID	Payload Bytes	0	1	2	3	4	5	6	7
					Speed Control	array (uint)	RPM	0x15	8	Min Speed		
Pressure - Suction	array (float)	bar-a	0x16	8	Low Limit				High Limit			
Pressure - Discharge	array (float)	bar-a	0x17	8	Low Limit				High Limit			
Temperature - Suction	array (float)	°C	0x18	8	Low Limit				High Limit			
Temperature - Discharge	array (float)	°C	0x19	8	Low Limit				High Limit			
Superheat - Suction	array (float)	K	0x1A	8	Low Limit				High Limit			
Superheat - Discharge	array (float)	K	0x1B	8	Low Limit				High Limit			
CAN Config	array		0x1C	8	Base Message ID				Update rate (ms)		R e s e r v e d	C o n t r o l E n a b l e d
Reserved			0x1D									
Reserved			0x1E									

3.3 Commands

Set Run State requires a 16-bit speed value which needs to be between the configured min and max reported by eDrive. Sending a value of 0 is treated as a stop command.

Name	Type	ID	Payload Bytes	0	1	2	3	4	5	6	7
Read	array (uint)	0x 20	8	Group 0 = Build Information 1 = Running Limits	0	0	0	0	0	0	0
Set Run State ? See note below	array (uint)	0x 21	8	Speed Value	0	0	0	0	0	0	0
Acknowledge Faults	array (uint)	0x 22	8	0	0	0	0	0	0	0	0

4. Configurable parameters

The following parameters are settable in the eDrive UDXC module.

Group Name (Location)	Parameter	Type/ Unit	Default Value	Comments
XC Configuration	CAN Enabled	bool	false	Control the availability of the CAN module
XC CAN Configuration	CAN Mode	enum	Standard	Options are: <ul style="list-style-type: none"> • Standard -Default • Extended • CANOpen FUTURE • J1939 FUTURE
	CAN Base Message ID	uint16	0x0200	This will be 'OR'ed with the param ID above to give the final message ID. See below.
	CAN Baud Rate	enum	125	Options are: <ul style="list-style-type: none"> • 125 • 250 • 500 • 1000kbps
	CAN Periodic update	Uint 16/ ms	1000	<ul style="list-style-type: none"> • CAN periodic update rate. 200ms minimum, 5000ms maximum. Set in increments of 100ms? • Internally, the eDrive updates data every 1000ms so setting CAN update rate to 1000ms is recommended.

5. User design information

CAN message ID applies to CAN Standard and Extended modes only. The CAN message is derived as:

5.1 Standard CAN

11bit addressing where:

Bit	0	1	2	3	4	5	6	7	8	9	10	11
Reserved for message ID as defined above							Available to be assigned (Base ID)					

E.g. message id for Status (0x04) with default base id of (0x0200) is 0x0204

Bit	0	1	2	3	4	5	6	7	8	9	10	11
	0	0	1	0	0	0	0	0	0	1	0	0
Status 0x04							Base ID 0x0200					
Message ID = 0x204, 0b1000000100												

5.2 Extended CAN

Consist of 2x identifies, 11bit addressing and 18-bit. In extended mode, the message id is calculated as above and split into the 11 and 18-bit parts.

Unicla®

Unicla International Limited

Hong Kong: +852 2422 0180

Australia: +61 7 5549 4000

www.unicla.hk
sales@unicla.hk

