EL7 - CANopen

This specification is common to all CAN versions of the EL7 electronics (EL7-I, EL7-E)

EN

The following is the authorised translation of original document EL7 - CANopen no. 9153 _4cz_04/2026, issued by the manufacturer:

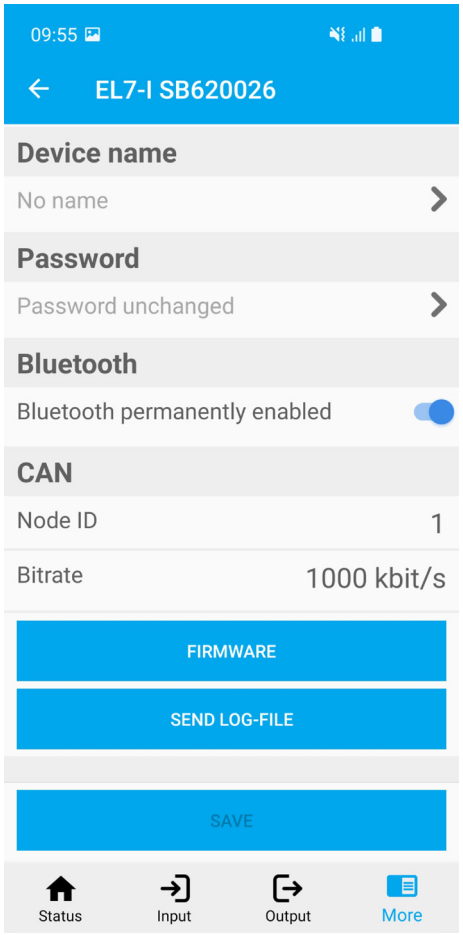
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Glossary of technical terms used

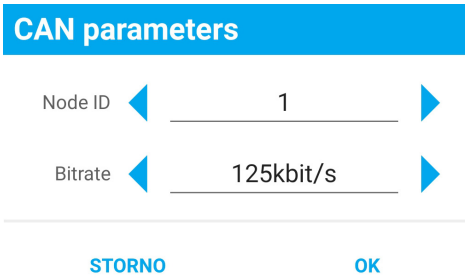
Bitrate – transfer rate (kbit/s)
CANopen – communication protocol for systems used in automation
EDS – configuration file for setting parameters and communication profiles of CANopen devices.
Node ID – address of the device on the network
PDO – Process Data Object – high priority communication object for process data
SDO – Service Data Object – low priority communication for sending messages (configuration, diagnostics…)
TDPO – Transmit Process Data Object - communication object for sending process data
RDPO – Receive Process Data Object - communication object for receiving process data
RO – read-only parameter
RW – parameter for reading and writing
LED_ERR – red LED on electronics indicating error status
SETP – desired value of the control signal (set point)

Description of CANopen implementation in EL7 electronics

The EL7 in the CAN version includes the CANopen protocol according to the DS301 standard. The electronics allow the use of one PDO channel to control the current to the coils. The operating parameters of the electronics can be set using SDO commands. Node ID and Bitrate are set using a mobile app.



The options for communication settings for CAN versions of the EL7 electronics can be found in the **Other** configuration window.



The electronics have **Node ID 1** and a **Bitrate of 125kbit/s.** by default.
Node ID can be set in the range of 1-100.
The speed can be set according to the table below, taking into account the bus length.

Transfer rate	Bus length
1000 kbit/s	25 m
500 kbit/s	100 m
250 kbit/s	250 m
125 kbit/s	500 m
50 kbit/s	1000 m
20 kbit/s	2500 m
10 kbit/s	5000 m

DANGER	**The user must take precautions in the event of a communication interruption if possible that it could lead to a dangerous situation. Appropriate measures must be taken for possible emergency shutdown.**
CAUTION	The CAN H and CAN L wires are not galvanically isolated from the supply voltage. When multiple devices are connected to each other, damage to the device may occur as a result of differing potential. It must be ensured that all devices on the bus are at the same potential.
INFORMATION	The CANopen bus must be terminated at both ends with 120 Ω resistors. For longer lines, larger resistor values may be appropriate. The EL7 electronics do not have an integrated terminating element, external resistors must be used.
INFORMATION	For longer wiring it is recommended to use twisted wires, ideally with shielding.
INFORMATION	EDS file for EL7 electronics can be downloaded here: https://1url.cz/@EDS_EL7-E_EL7-I_PRM9

Example of configuration for electronics with NODE-ID 1

HEARTBEAT

OPERATIONAL

CAN-ID	DLC	Message
0701	1	05

PRE OPERATIONAL

CAN-ID	DLC	Message
0701	1	7F

Operational data object - SDO

Example – setting coil current - **Control Position Set Point, 6300**

Report

	CAN-ID	DLC	Message
Master sets SDO 6300:1 to 16384	0601	8	2B 00 63 01 00 40 00 00
Valve confirm OK	0581	8	60 00 63 01 00 00 00 00

Reading

	CAN-ID	DLC	Message
Master reads status SDO 6300:1	0601	8	40 00 63 01 00 00 00 00
Valve returns value 5000 (0x1388)	0581	8	4B 00 63 01 88 13 00 00

Process data object - PDO

Example of TPDO mapping

	CAN-ID	DLC	Message
Master sets PRE OPERATIONAL status	0000	2	80 01
Master sets COB_ID TPDO1 to 0x181	0601	8	23 00 18 01 81 01 00 80
Valve confirms OK	0581	8	60 00 18 01 00 00 00 00
Master sets the transmission type 254 (asynchronous)	0601	8	2F 00 18 02 FE 00 00 00
Valve confirms OK	0581	8	60 00 18 02 00 00 00 00
Master sets the transmission period to 2 seconds	0601	8	2B 00 18 05 D0 07 00 00
Valve confirms OK	0581	8	60 00 18 05 00 00 00 00
Master sets the number of mapped objects in the TPDO table to 0 (deletes the table)	0601	8	2F 00 1A 00 00 00 00 00
Valve confirms OK	0581	8	60 00 1A 00 00 00 00 00
Master maps „Control Position Set Point“ as a 16 bit number (SDO 6300:1)	0601	8	23 00 1A 01 10 01 00 63
Valve confirms OK	0581	8	60 00 1A 01 00 00 00 00
Master maps „Device status word“ as a 16 bit number (SDO 6041:0)	0601	8	23 00 1A 02 10 00 41 60
Valve confirms OK	0581	8	60 00 1A 02 00 00 00 00
Master sets the number of mapped objects in the TPDO table to 2	0601	8	2F 00 1A 00 02 00 00 00
Valve confirms OK	0581	8	60 00 1A 00 00 00 00 00
Master sets the COB_ID of TPDO1 to 0x181, but with the highest bit set to zero (enabling TPDO1 transmission).	0601	8	23 00 18 01 81 01 00 00
Valve confirms OK	0581	8	60 00 18 01 00 00 00 00
Master sets the OPERATIONAL status	0000	2	01 01
The valve sends TPDO1 every 2 seconds. „Control Position Set Point“ – 16384 (0x4000) „Device status word“ – 4108 (0x100C)	0181	4	00 40 0C 10
Valve sends heartbeat OPERATIONAL status OPERATIONAL status is required for periodic transmission.	0701	1	05

Example of RDPO mapping

	CAN-ID	DLC	Message
Master sets PRE OPERATIONAL status	0000	2	80 01
Master sets COB_ID RPDO1 to 0x201	0601	8	23 00 14 01 01 02 00 80
Valve confirms OK	0581	8	60 00 14 01 00 00 00 00
Master sets transfer type 255	0601	8	2F 00 14 02 FF 00 00 00
Valve confirms OK	0581	8	60 00 14 02 00 00 00 00
Master sets the number of mapped objects in the RDPO table to 0 (deletes the table)	0601	8	2F 00 16 00 00 00 00 00
Valve confirms OK	0581	8	60 00 16 00 00 00 00 00
Master maps „Device control word“as a 16 bit number (SDO 6040:0)	0601	8	23 00 16 01 10 00 40 60
Valve confirms OK	0581	8	60 00 16 01 00 00 00 00
Master maps „Control Position Set Point“ as a 16 bit number (SDO 6300:1)	0601	8	23 00 16 02 10 01 00 63
Valve confirms OK	0581	8	60 00 16 02 00 00 00 00
Master sets the number of mapped objects in the TPDO table to 2	0601	8	2F 00 16 00 02 00 00 00
Valve confirms OK	0581	8	60 00 16 00 00 00 00 00
Master sets COB_ID of RPDO1 to 0x201, but with the highest bit set to 0 (switch on RPDO1 transmission)	0601	8	23 00 14 01 01 02 00 00
Valve confirms OK	0581	8	60 00 14 01 00 00 00 00
Master sets OPERATIONAL status	0000	2	01 01
Master transmits RPDO1. „Device control word“ – 12 (0x0004) „Control Position Set Point“ – 4096 (0x1000)	0201	4	04 00 00 10

Error codes and messages

- **6040h** – Device control word ... 0000 0000 0000 0100
- **6041h** – Device status word … 0001 E000 00WL 1100
- **6042h** – Device mode … 0x0001 for AIN variants, 0x0000 for CAN variants
- **6043h** – Device control mode … 0x0006 (Open loop movement)
- **604Eh** – Device error code … see Tab.1

All objects are „read only“, writing to them has no effect.

E … 1 if LED_ERR is lit or flashing
W …1 if the SETP value is in the minor error range or if a coil is disconnected
L … 1 for AIN variants, 0 for CAN variants

Tab. 1

Error code	
3110h	Input voltage out of range
3411h	Power supply voltage too high
3412h	Power supply voltage too low
3421h	Control voltage too high
3422h	Control voltage too low
4211h	Temperature of electronic too high
4212h	Temperature of electronic too low
5200h	Device control
5210h	Measurement circuits
5231h	Coil A disconnected
5232h	Coil B disconnected
5530h	EEPROM

Detailed description of the CANopen object:

Index	Subindex	Name	Type	Access	Default Value	Note
0x1000	0x00	Device Type	U32	CO	0x198	
0x1001	0x00	Error Register	U8	RO	0	
0x1003	0x00	Pre Defined Error Field	U8	RW	0	
	0x01	Error Field1	U32	RO	0	
	0x02	Error Field2	U32	RO	0	
	0x03	Error Field3	U32	RO	0	
	0x04	Error Field4	U32	RO	0	
	0x05	Error Field5	U32	RO	0	
	0x06	Error Field6	U32	RO	0	
	0x07	Error Field7	U32	RO	0	
	0x08	Error Field8	U32	RO	0	
0x1005	0x00	COB-ID SYNC message	U32	RW	0x80	<= 7FFh
0x1006	0x00	Communication cycle period	U32	RW		
0x1007	0x00	Synchronous window length	U32	RW	0	
0x1008	0x00	Manufacturer device name	VisStr	RO	EL7	
0x1009	0x00	Hardware Version	VisStr	CO	S-EL7-EMBD-CAN-1000-OEM	
0x100A	0x00	Software Version	VisStr	RO	1.8.1.x	
0x1014	0x00	Emergency ID	U32	RW		
0x1015	0x00	inhibit time EMCY	U16	RW	100	
0x1016	0x00	Consumer Heartbeat Time	U8	RO	1	
	0x01	Consumer Heartbeat Time	U32	RW	0	
0x1017	0x00	Producer Heartbeat Time	U16	RW	1000	Time of heartbeat in ms
0x1018	0x00	Identity Object	U8	RO	4	
	0x01	Vendor-ID	U32	RO	0xE6	
	0x02	Product Code	U32	RO	0x50524D39	
	0x03	Revision	U32	RO		
	0x04	Serial Number	U32	RO		
0x1019	0x00	Synchronous counter overflow value	U8	RW	0	
0x1029	0x00	Error Behavior	U8	CO	0x06	
	0x01	Communication	U8	RW	0	
	0x02	Communication other	U8	RW	0	
	0x03	Communication passive	U8	RW	1	
	0x04	Generic	U8	RW	0	
	0x05	Device profile	U8	RW	0	
	0x06	Manufacturer specific	U8	RW	0	
0x1200	0x00	SDO server parameter	U8	CO	0x02	
	0x01	COB-ID client to server	U32	RO	$NODEID+0x600	
	0x02	COB-ID server to client	U32	RO	$NODEID+0x580	

0x1400	0x00	RPDO communication parameter	U8	RO	2	
	0x01	COB-ID	U32	RW		
	0x02	Transmission Type	U8	RW	255	
0x1600	0x00	RPDO mapping parameter	U8	RO	0x02	
	0x01	mapped object 1	U32	RW	0x60400010	
	0x02	mapped object 2	U32	RW	0x63000110	
	0x03	mapped object 3	U32	RW	0x00000000	
	0x04	mapped object 4	U32	RW	0x00000000	
	0x05	mapped object 5	U32	RW	0x00000000	
	0x06	mapped object 6	U32	RW	0x00000000	
	0x07	mapped object 7	U32	RW	0x00000000	
	0x08	mapped object 8	U32	RW	0x00000000	
0x1800	0x00	TPDO communication parameter	U8	RO	6	
	0x01	COB-ID	U32	RW		
	0x02	Transmission Type	U8	RW	255	
	0x03	inhibit time	U16	RW	100	
	0x05	Event Timer	U16	RW	100	
	0x06	SYNC start value	U8	RW	0	
0x1A00	0x00	TPDO mapping parameter	U8	RO	1	
	0x01	mapped object 1	U32	RO	0x60410010	
	0x02	mapped object 2	U32	RW	0x00000000	
	0x03	mapped object 3	U32	RW	0x00000000	
	0x04	mapped object 4	U32	RW	0x00000000	
	0x05	mapped object 5	U32	RW	0x00000000	
	0x06	mapped object 6	U32	RW	0x00000000	
	0x07	mapped object 7	U32	RW	0x00000000	
	0x08	mapped object 8	U32	RW	0x00000000	
0x1F80	0x00	NMT startup	U32	RW	0	
0x2000	0x00	Cfg NONLIN_SETP_X	U8	RO	9	
	0x01	NONLIN_SETP1	I16	RW		-16384..+16384 -> -100% .. +100%
	0x02	NONLIN_SETP2	I16	RW		-16384..+16384 -> -100% .. +100%
	0x03	NONLIN_SETP3	I16	RW		-16384..+16384 -> -100% .. +100%
	0x04	NONLIN_SETP4	I16	RW		-16384..+16384 -> -100% .. +100%
	0x05	NONLIN_SETP5	I16	RW		-16384..+16384 -> -100% .. +100%
	0x06	NONLIN_SETP6	I16	RW		-16384..+16384 -> -100% .. +100%
	0x07	NONLIN_SETP7	I16	RW		-16384..+16384 -> -100% .. +100%
	0x08	NONLIN_SETP8	I16	RW		-16384..+16384 -> -100% .. +100%
	0x09	NONLIN_SETP9	I16	RW		-16384..+16384 -> -100% .. +100%

0x2001	0x00	Cfg NONLIN_SETP_Y	U8	RO	9	
	0x01	NONLIN_SETP1	I16	RW		-16384..+16384 -> -100% .. +100%
	0x02	NONLIN_SETP2	I16	RW		-16384..+16384 -> -100% .. +100%
	0x03	NONLIN_SETP3	I16	RW		-16384..+16384 -> -100% .. +100%
	0x04	NONLIN_SETP4	I16	RW		-16384..+16384 -> -100% .. +100%
	0x05	NONLIN_SETP5	I16	RW		-16384..+16384 -> -100% .. +100%
	0x06	NONLIN_SETP6	I16	RW		-16384..+16384 -> -100% .. +100%
	0x07	NONLIN_SETP7	I16	RW		-16384..+16384 -> -100% .. +100%
	0x08	NONLIN_SETP8	I16	RW		-16384..+16384 -> -100% .. +100%
	0x09	NONLIN_SETP9	I16	RW		-16384..+16384 -> -100% .. +100%
0x2002	0x00	State Temperature Electronic / 'C	I8	RO		['C]
0x2003	0x00	State Power Supply Voltage / mV	U16	RO		[mV]
0x2004	0x00	Cfg Currents / mA	U8	CO	0x02	
	0x01	Limit A	U16	RW	1000	[mA]
	0x02	Limit B	U16	RW	1000	[mA]
0x2010	0x00	State Output Current	U8	CO	0x02	
	0x01	Channel A	I16	RO		[mA]
	0x02	Channel B	I16	RO		[mA]
0x2020	0x00	Cfg INVSETP	U8	RW	0	0, 1
0x2021	0x00	Cfg THRSETP	I16	RW	0	0, 1
0x2022	0x00	Cfg SW_NONLIN_SETP	U8	RW	0	0, 1
0x2023	0x00	Cfg LINSETPPOSGAIN	U16	RW	10000	10000 = 1.0
0x2024	0x00	Cfg LINSETPPOSOFFSET	I16	RW	0	-16384..+16384 -> -100% .. +100%
0x2025	0x00	Cfg LINSETPNEGGAIN	U16	RW	10000	10000 = 1.0
0x2026	0x00	Cfg LINSETPNEGOFFSET	I16	RW		-16384..+16384 -> -100% .. +100%
0x2027	0x00	Cfg COILFREQ	U16	RW	1000	[Hz]
0x2200	0x00	Error status bits	OctStr	RO		
0x5FFF	0x00	EmSA	VisStr	RO		
0x6040	0x00	Device control word	U16	RWW	0x0004	
0x6041	0x00	Device status word	U16	RO	0x100C	see chapter ERR code
0x6042	0x00	DeviceMode	I8	RW	1	
0x6043	0x00	ControlMode	I8	RO	6	
0x6300	0x00	Control Position Set Point	U8	RO	1	
	0x01	Position Set Point	I16	RWW		-16384..+16384 -> -100% .. +100%
0x6330	0x00	Position Demand Value Generator Ramp Type	I8	CO	3	

0x6332	0x00	Position Demand Value Generator Acceleration Time Positive	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6333	0x00	Position Demand Value Generator Acceleration Time Negative	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6335	0x00	Position Demand Value Generator Deceleration Time Positive	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6336	0x00	Position Demand Value Generator Deceleration Time Negative	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6360	0x00	Dither Type	I8	CO	3	
0x6361	0x00	Dither Amplitude	U8	CO	0x03	
	0x01	Value	U16	RW	0	0..+16384 -> 0% .. +100%
	0x02	Units	U8	RW	0	
	0x03	Prefix	I8	CO	0	
0x6362	0x00	Dither Frequency	U8	CO	0x03	[Hz]
	0x01	Value	U16	RW	80	
	0x02	Units	U8	CO	0x20	
	0x03	Prefix	I8	CO	0	

EL7 - CANopen

Diese Spezifikation ist für alle CAN-Versionen der EL7-Elektronik gleich (EL7-I, EL7-E)

DE

Das Folgende ist die autorisierte Übersetzung der Originaldokuments EL7 - CANopen
Nummer 9153_4cz_4/2026, ausgestellt vom Hersteller:

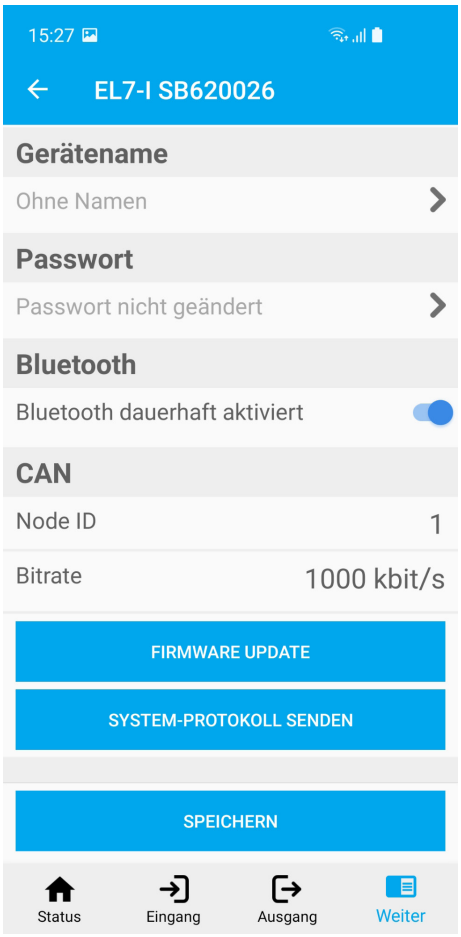
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Glossar der verwendeten Fachbegriffe

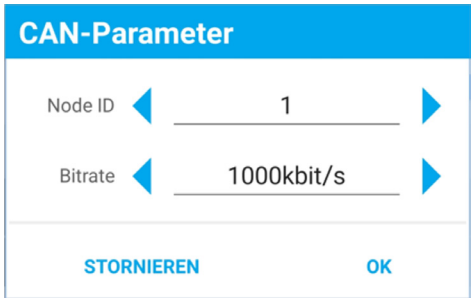
Bitrate – Datenübertragungsrate (kbit/s)
CANopen – Kommunikationsprotokoll für die in der Automatisierungstechnik verwendete Systeme
EDS – Konfigurationsdatei zur Einstellung von Parametern und Kommunikationsprofilen von CANopen-Geräten.
Node ID – Adresse des Geräts im Netz
PDO – Process Data Object – Kommunikationsobjekt hoher Priorität für Prozessdaten
SDO – Service Data Object – Kommunikationsobjekt mit niedriger Priorität für Übermittlung von Meldungen (Konfiguration, Diagnose …)
TDPO – Transmit Process Data Object - Kommunikationsobjekt zum Senden von Prozessdaten
RDPO – Receive Process Data Object - Kommunikationsobjekt zum Empfang von Prozessdaten
RO – Nur-Lese-Parameter
RW – Parameter zum Lesen und Schreiben
LED_ERR – Rote LED an der Elektronik, die einen Fehlerzustand anzeigt
SETP – Sollwert des Steuersignals (Setpoint)

Beschreibung der CANopen-Implementierung in der EL7-Elektronik

Die EL7 in der CAN-Version enthält das CANopen-Protokoll nach dem DS301-Standard. Die Elektronik ermöglicht die Verwendung eines PDO-Kanals zur Steuerung der Stromstärke zu den Spulen. Die Betriebsparameter der Elektronik können über SDO-Befehle eingestellt werden. Node ID und Bitrate (Baudrate) werden über eine mobile App eingestellt.



Die Optionen für die Kommunikationseinstellungen befinden sich bei der CAN-Versionen der EL7-Elektronik im Konfigurationsfenster **Weiter**.



Die Elektronik hat standardmäßig **Node ID 1** und **Bitrate 125kbit/s.**
Node ID kann im Bereich von 1-100 eingestellt werden.
Die Bitrate kann unter Berücksichtigung der Länge des Busses gemäß der nachstehenden Tabelle eingestellt werden.

Bitrate	Bus-Länge
1000 kbit/s	25 m
500 kbit/s	100 m
250 kbit/s	250 m
125 kbit/s	500 m
50 kbit/s	1000 m
20 kbit/s	2500 m
10 kbit/s	5000 m

GEFAHR	Der Benutzer muss Sicherheitsmaßnahmen für den Fall einer Unterbrechung der Kommunikation treffen, wenn dies zu einer gefährlichen Situation führen könnte. Es müssen geeignete Maßnahmen für eine mögliche Notabschaltung getroffen werden
WARNUNG	Die CAN H- und CAN L-Leitungen sind nicht galvanisch von der Versorgungsspannung getrennt. Wenn mehrere Geräte miteinander verbunden sind, kann es aufgrund des unterschiedlichen Potenzials zu Schäden am Gerät kommen. Es muss sichergestellt sein, dass alle Geräte am Bus auf dem gleichen Potential liegen.
INFORMATION	Der CANopen-Bus muss an beiden Enden mit 120Ω-Widerständen abgeschlossen werden. Bei längeren Leitungen können größere Widerstandswerte angemessen sein. Die EL7-Elektronik verfügt nicht über ein integriertes Abschlusselement, es müssen externe Widerstände verwendet werden
INFORMATION	Für längere Leitungen wird die Verwendung von verdrillten Drähten empfohlen, idealerweise mit Abschirmung.
INFORMATION	Die EDS-Datei für EL7-Elektronik kann hier heruntergeladen werden: https://1url.cz/@EDS_EL7-E_EL7-I_PRM9

Beispielkonfiguration für Elektronik mit NODE-ID 1

HEARTBEAT

OPERATIONAL

CAN-ID	DLC	Meldung
0701	1	05

PRE OPERATIONAL

CAN-ID	DLC	Meldung
0701	1	7F

Operatives Datenobjekt - SDO

Beispiel – Einstellung des Stroms für die Spulen - **Control Position Set Point, 6300**

Schreiben

	CAN-ID	DLC	Meldung
Master stellt SDO 6300:1 auf 16384 ein	0601	8	2B 00 63 01 00 40 00 00
Ventil bestätigt OK	0581	8	60 00 63 01 00 00 00 00

Lesen

	CAN-ID	DLC	Meldung
Master liest den Stand von SDO 6300:1	0601	8	40 00 63 01 00 00 00 00
Ventil gibt den Wert 5000 (0x1388) zurück	0581	8	4B 00 63 01 88 13 00 00

Prozessdatenobjekt - PDO

Beispiel für TPDO-Mapping

	CAN-ID	DLC	Meldung
Master stellt den Stand PRE OPERATIONAL ein	0000	2	80 01
Master stellt COB_ID TPDO1 auf 0x181 ein	0601	8	23 00 18 01 81 01 00 80
Ventil bestätigt OK	0581	8	60 00 18 01 00 00 00 00
Master stellt Übertragungstyp 254 (asynchron) ein	0601	8	2F 00 18 02 FE 00 00 00
Ventil bestätigt OK	0581	8	60 00 18 02 00 00 00 00
Master stellt Sendeperiode von 2 Sekunden ein	0601	8	2B 00 18 05 D0 07 00 00
Ventil bestätigt OK	0581	8	60 00 18 05 00 00 00 00
Master stellt die Anzahl von zugeordneten Objekten in der TPDO-Tabelle auf 0 (Löschen der Tabelle) ein	0601	8	2F 00 1A 00 00 00 00 00
Ventil bestätigt OK	0581	8	60 00 1A 00 00 00 00 00
Master ordnet „Control Position Set Point“ als 16 bit Nr. (SDO 6300:1) zu	0601	8	23 00 1A 01 10 01 00 63
Ventil bestätigt OK	0581	8	60 00 1A 01 00 00 00 00
Master ordnet „Device status word“ als 16 bit Nr. (SDO 6041:0) zu	0601	8	23 00 1A 02 10 00 41 60
Ventil bestätigt OK	0581	8	60 00 1A 02 00 00 00 00
Master stellt die Anzahl von zugeordneten Objekten in der TPDO-Tabelle auf 2 ein	0601	8	2F 00 1A 00 02 00 00 00
Ventil bestätigt OK	0581	8	60 00 1A 00 00 00 00 00
Master stellt COB_ID TPDO1 auf 0x181 ein, aber mit dem höchsten bit von 0 (Start der TPDO1-Sendung).	0601	8	23 00 18 01 81 01 00 00
Ventil bestätigt OK	0581	8	60 00 18 01 00 00 00 00
Master stellt OPERATIONAL- Status ein	0000	2	01 01
Ventil sendet TPDO1 alle 2 Sekunden. „Control Position Set Point“ – 16384 (0x4000) „Device status word“ – 4108 (0x100C)	0181	4	00 40 0C 10
Ventil sendet heartbeat OPERATIONAL -Status OPERATIONAL-Status ist für periodische Sendungen erforderlich	0701	1	05

Beispiel für RDPO-Mapping

	CAN-ID	DLC	Meldung
Master nastavuje PRE OPERATIONAL stav	0000	2	80 01
Master stellt COB_ID RPDO1 auf 0x201 ein	0601	8	23 00 14 01 01 02 00 80
Ventil bestätigt OK	0581	8	60 00 14 01 00 00 00 00
Master stellt Übertragungstyp 255 ein	0601	8	2F 00 14 02 FF 00 00 00
Ventil bestätigt OK	0581	8	60 00 14 02 00 00 00 00
Master stellt die Anzahl von zugeordneten Objekten in der RDPO-Tabelle auf 0 (Löschen der Tabelle) ein	0601	8	2F 00 16 00 00 00 00 00
Ventil bestätigt OK	0581	8	60 00 16 00 00 00 00 00
Master ordnet „Device control word“ als 16 bit Nr. (SDO 6040:0) zu	0601	8	23 00 16 01 10 00 40 60
Ventil bestätigt OK	0581	8	60 00 16 01 00 00 00 00
Master ordnet „Control Position Set Point“ als 16 bit Nr. (SDO 6300:1) zu	0601	8	23 00 16 02 10 01 00 63
Ventil bestätigt OK	0581	8	60 00 16 02 00 00 00 00
Master stellt die Anzahl von zugeordneten Objekten in der RDPO-Tabelle auf 2 ein	0601	8	2F 00 16 00 02 00 00 00
Ventil bestätigt OK	0581	8	60 00 16 00 00 00 00 00
Master stellt COB_ID RPDO1 na 0x201, aber mit dem höchsten bit von 0 (Start der RPDO1-Sendung).	0601	8	23 00 14 01 01 02 00 00
Ventil bestätigt OK	0581	8	60 00 14 01 00 00 00 00
Master stellt OPERATIONAL-status ein	0000	2	01 01
Master sendet RPDO1. „Device control word“ – 12 (0x0004) „Control Position Set Point“ – 4096 (0x1000)	0201	4	04 00 00 10

Fehlercodes und Meldungen

- **6040h** – Device control word ... 0000 0000 0000 0100
- **6041h** – Device status word … 0001 E000 00WL 1100
- **6042h** – Device mode … 0x0001 für AIN varianten, 0x0000 für CAN varianten
- **6043h** – Device control mode … 0x0006 (Open loop movement)
- **604Eh** – Device error code … siehe Tabelle1

Alle Objekte sind schreibgeschützt („read only“), das Schreiben in diese Objekte hat keine Auswirkung.

E … 1, wenn LED_ERR leuchtet oder blinkt
W …1 wenn der SETP-Wert im Bereich eines leichten Fehlers liegt oder eine Spule abgeklemmt ist
L … 1 für AIN-Varianten, 0 für CAN-Varianten

Tab. 1

Error code	
3110h	Input voltage out of range
3411h	Power supply voltage too high
3412h	Power supply voltage too low
3421h	Control voltage too high
3422h	Control voltage too low
4211h	Temperature of electronic too high
4212h	Temperature of electronic too low
5200h	Device control
5210h	Measurement circuits
5231h	Coil A disconnected
5232h	Coil B disconnected
5530h	EEPROM

Detaillierte Beschreibung der CANopen-Objektbibliothek:

Index	Subindex	Name	Type	Access	Default Value	Note
0x1000	0x00	Device Type	U32	CO	0x198	
0x1001	0x00	Error Register	U8	RO	0	
0x1003	0x00	Pre Defined Error Field	U8	RW	0	
	0x01	Error Field1	U32	RO	0	
	0x02	Error Field2	U32	RO	0	
	0x03	Error Field3	U32	RO	0	
	0x04	Error Field4	U32	RO	0	
	0x05	Error Field5	U32	RO	0	
	0x06	Error Field6	U32	RO	0	
	0x07	Error Field7	U32	RO	0	
	0x08	Error Field8	U32	RO	0	
0x1005	0x00	COB-ID SYNC message	U32	RW	0x80	<= 7FFh
0x1006	0x00	Communication cycle period	U32	RW		
0x1007	0x00	Synchronous window length	U32	RW	0	
0x1008	0x00	Manufacturer device name	VisStr	RO	EL7	
0x1009	0x00	Hardware Version	VisStr	CO	S-EL7-EMBD-CAN-1000-OEM	
0x100A	0x00	Software Version	VisStr	RO	1.8.1.x	
0x1014	0x00	Emergency ID	U32	RW		
0x1015	0x00	inhibit time EMCY	U16	RW	100	
0x1016	0x00	Consumer Heartbeat Time	U8	RO	1	
	0x01	Consumer Heartbeat Time	U32	RW	0	
0x1017	0x00	Producer Heartbeat Time	U16	RW	1000	Zeit heartbeat in ms
0x1018	0x00	Identity Object	U8	RO	4	
	0x01	Vendor-ID	U32	RO	0xE6	
	0x02	Product Code	U32	RO	0x50524D39	
	0x03	Revision	U32	RO		
	0x04	Serial Number	U32	RO		
0x1019	0x00	Synchronous counter overflow value	U8	RW	0	
0x1029	0x00	Error Behavior	U8	CO	0x06	
	0x01	Communication	U8	RW	0	
	0x02	Communication other	U8	RW	0	
	0x03	Communication passive	U8	RW	1	
	0x04	Generic	U8	RW	0	
	0x05	Device profile	U8	RW	0	
	0x06	Manufacturer specific	U8	RW	0	
0x1200	0x00	SDO server parameter	U8	CO	0x02	
	0x01	COB-ID client to server	U32	RO	$NODEID+0x600	
	0x02	COB-ID server to client	U32	RO	$NODEID+0x580	

0x1400	0x00	RPDO communication parameter	U8	RO	2	
	0x01	COB-ID	U32	RW		
	0x02	Transmission Type	U8	RW	255	
0x1600	0x00	RPDO mapping parameter	U8	RO	0x02	
	0x01	mapped object 1	U32	RW	0x60400010	
	0x02	mapped object 2	U32	RW	0x63000110	
	0x03	mapped object 3	U32	RW	0x00000000	
	0x04	mapped object 4	U32	RW	0x00000000	
	0x05	mapped object 5	U32	RW	0x00000000	
	0x06	mapped object 6	U32	RW	0x00000000	
	0x07	mapped object 7	U32	RW	0x00000000	
	0x08	mapped object 8	U32	RW	0x00000000	
0x1800	0x00	TPDO communication parameter	U8	RO	6	
	0x01	COB-ID	U32	RW		
	0x02	Transmission Type	U8	RW	255	
	0x03	inhibit time	U16	RW	100	
	0x05	Event Timer	U16	RW	100	
	0x06	SYNC start value	U8	RW	0	
0x1A00	0x00	TPDO mapping parameter	U8	RO	1	
	0x01	mapped object 1	U32	RO	0x60410010	
	0x02	mapped object 2	U32	RW	0x00000000	
	0x03	mapped object 3	U32	RW	0x00000000	
	0x04	mapped object 4	U32	RW	0x00000000	
	0x05	mapped object 5	U32	RW	0x00000000	
	0x06	mapped object 6	U32	RW	0x00000000	
	0x07	mapped object 7	U32	RW	0x00000000	
	0x08	mapped object 8	U32	RW	0x00000000	
0x1F80	0x00	NMT startup	U32	RW	0	
0x2000	0x00	Cfg NONLIN_SETP_X	U8	RO	9	
	0x01	NONLIN_SETP1	I16	RW		-16384..+16384 -> -100% .. +100%
	0x02	NONLIN_SETP2	I16	RW		-16384..+16384 -> -100% .. +100%
	0x03	NONLIN_SETP3	I16	RW		-16384..+16384 -> -100% .. +100%
	0x04	NONLIN_SETP4	I16	RW		-16384..+16384 -> -100% .. +100%
	0x05	NONLIN_SETP5	I16	RW		-16384..+16384 -> -100% .. +100%
	0x06	NONLIN_SETP6	I16	RW		-16384..+16384 -> -100% .. +100%
	0x07	NONLIN_SETP7	I16	RW		-16384..+16384 -> -100% .. +100%
	0x08	NONLIN_SETP8	I16	RW		-16384..+16384 -> -100% .. +100%
	0x09	NONLIN_SETP9	I16	RW		-16384..+16384 -> -100% .. +100%

0x2001	0x00	Cfg NONLIN_SETP_Y	U8	RO	9	
	0x01	NONLIN_SETP1	I16	RW		-16384..+16384 -> -100% .. +100%
	0x02	NONLIN_SETP2	I16	RW		-16384..+16384 -> -100% .. +100%
	0x03	NONLIN_SETP3	I16	RW		-16384..+16384 -> -100% .. +100%
	0x04	NONLIN_SETP4	I16	RW		-16384..+16384 -> -100% .. +100%
	0x05	NONLIN_SETP5	I16	RW		-16384..+16384 -> -100% .. +100%
	0x06	NONLIN_SETP6	I16	RW		-16384..+16384 -> -100% .. +100%
	0x07	NONLIN_SETP7	I16	RW		-16384..+16384 -> -100% .. +100%
	0x08	NONLIN_SETP8	I16	RW		-16384..+16384 -> -100% .. +100%
	0x09	NONLIN_SETP9	I16	RW		-16384..+16384 -> -100% .. +100%
0x2002	0x00	State Temperature Electronic / 'C	I8	RO		['C]
0x2003	0x00	State Power Supply Voltage / mV	U16	RO		[mV]
0x2004	0x00	Cfg Currents / mA	U8	CO	0x02	
	0x01	Limit A	U16	RW	1000	[mA]
	0x02	Limit B	U16	RW	1000	[mA]
0x2010	0x00	State Output Current	U8	CO	0x02	
	0x01	Channel A	I16	RO		[mA]
	0x02	Channel B	I16	RO		[mA]
0x2020	0x00	Cfg INVSETP	U8	RW	0	0, 1
0x2021	0x00	Cfg THRSETP	I16	RW	0	0, 1
0x2022	0x00	Cfg SW_NONLIN_SETP	U8	RW	0	0, 1
0x2023	0x00	Cfg LINSETPPOSGAIN	U16	RW	10000	10000 = 1.0
0x2024	0x00	Cfg LINSETPPOSOFFSET	I16	RW	0	-16384..+16384 -> -100% .. +100%
0x2025	0x00	Cfg LINSETPNEGGAIN	U16	RW	10000	10000 = 1.0
0x2026	0x00	Cfg LINSETPNEGOFFSET	I16	RW		-16384..+16384 -> -100% .. +100%
0x2027	0x00	Cfg COILFREQ	U16	RW	1000	[Hz]
0x2200	0x00	Error status bits	OctStr	RO		
0x5FFF	0x00	EmSA	VisStr	RO		
0x6040	0x00	Device control word	U16	RWW	0x0004	
0x6041	0x00	Device status word	U16	RO	0x100C	siehe Kapitel Fehlercodes
0x6042	0x00	DeviceMode	I8	RW	1	
0x6043	0x00	ControlMode	I8	RO	6	
0x6300	0x00	Control Position Set Point	U8	RO	1	
	0x01	Position Set Point	I16	RWW		-16384..+16384 -> -100% .. +100%
0x6330	0x00	Position Demand Value Generator Ramp Type	I8	CO	3	

0x6332	0x00	Position Demand Value Generator Acceleration Time Positive	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6333	0x00	Position Demand Value Generator Acceleration Time Negative	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6335	0x00	Position Demand Value Generator Deceleration Time Positive	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6336	0x00	Position Demand Value Generator Deceleration Time Negative	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6360	0x00	Dither Type	I8	CO	3	
0x6361	0x00	Dither Amplitude	U8	CO	0x03	
	0x01	Value	U16	RW	0	0..+16384 -> 0% .. +100%
	0x02	Units	U8	RW	0	
	0x03	Prefix	I8	CO	0	
0x6362	0x00	Dither Frequency	U8	CO	0x03	[Hz]
	0x01	Value	U16	RW	80	
	0x02	Units	U8	CO	0x20	
	0x03	Prefix	I8	CO	0	

EL7 - CANopen

Tato specifikace je společná pro všechny CAN verze elektroniky EL7 (EL7-I, EL7-E)

CZ

Toto je originální dokument EL7 - CANopen číslo 9153 _4cz_04/2026, vydaný výrobcem:

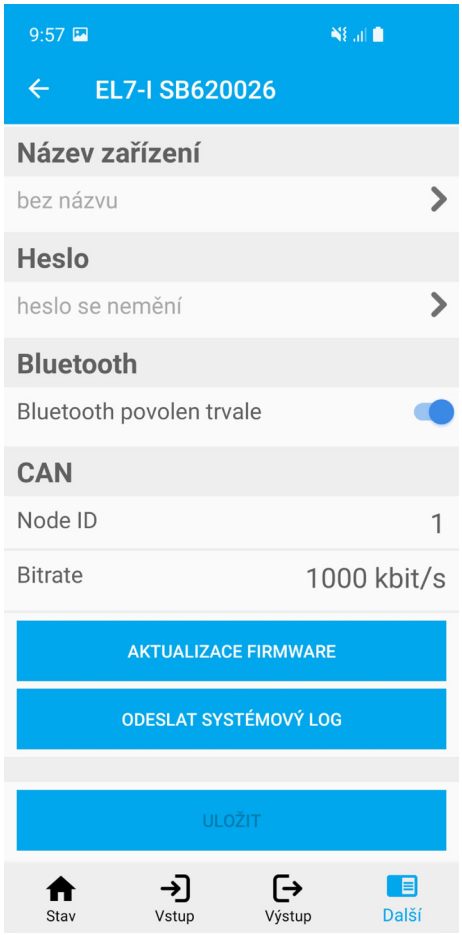
ARGO-HYTOS s.r.o.
Dělnická 1306, CZ 543 01 VRCHLABÍ
Info.cz@argo-hytos.com
+ 420 499 403 111

Významový slovník použitých odborných termínů

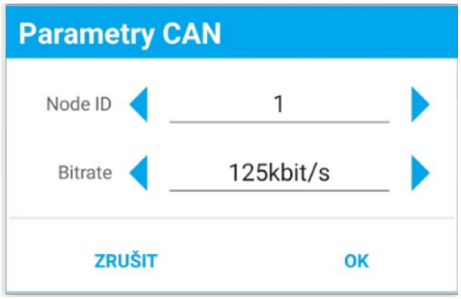
Bitrate – přenosová rychlost (kbit/s)
CANopen – komunikační protokol pro systémy používané v automatizaci
EDS – konfigurační soubor pro nastavení parametrů a komunikačních profilů CANopen zařízení.
Node ID – adresa zařízení v síti
PDO – Process Data Object – komunikační objekt s vysokou prioritou pro procesní data
SDO – Service Data Object – komunikační objekt s nízkou prioritou pro zasílání zpráv (konfigurace, diagnostika …)
TDPO – Transmit Process Data Object - komunikační objekt pro odesílání procesních dat
RDPO – Receive Process Data Object - komunikační objekt pro příjem procesních dat
RO – parametr pouze pro čtení
RW – parametr pro čtení i zápis
LED_ERR – červená LED na elektronice signalizující chybový stav
SETP – žádaná hodnota řídicího signálu (set point)

Popis implementace CANopen v elektronice EL7

EL7 ve verzi CAN obsahuje protokol CANopen dle standardu DS301. Elektronika umožnuje používat jeden PDO kanál pro řízení velikosti proudu do cívek. Provozní parametry elektroniky lze nastavovat pomocí SDO příkazů. Node ID a Bitrate (přenosová rychlost) se nastavuje pomocí mobilní aplikace.



Volby pro nastavení komunikace se u CAN verzí elektroniky EL7 nachází v konfiguračním okně **Další**.



Elektronika má ve výchozím nastavení **Node ID 1** a rychlost **Bitrate 125kbit/s.**
Node ID je možné nastavit v rozsahu 1-100.
Rychlost je možné nastavovat dle tabulky níže, s ohledem na délku sběrnice.

Přenosová rychlost	Délka sběrnice
1000 kbit/s	25 m
500 kbit/s	100 m
250 kbit/s	250 m
125 kbit/s	500 m
50 kbit/s	1000 m
20 kbit/s	2500 m
10 kbit/s	5000 m

NEBEZPEČÍ	**Uživatel musí provést bezpečnostní opatření pro případ přerušení komunikace, pokud to může vést k nebezpečné situaci. Musí být provedena vhodná opatření pro případné nouzové vypnutí**
VAROVÁNÍ	Vodiče CAN H a CAN L nejsou galvanicky oddělené od napájecího napětí. Při spojení více zařízení mezi sebou může vlivem rozdílného potenciálu dojít k poškození zařízení. Je třeba zajistit, aby všechna zařízení na sběrnici byla na stejném potenciálu.
INFORMACE	CANopen sběrnici je nutné na obou koncích zakončit 120 Ω rezistory. U delších vedení mohou být vhodné i větší hodnoty odporu. Elektronika EL7 nemá v sobě integrovaný ukončující člen, je třeba použít externí rezistory.
INFORMACE	Pro delší vedení se doporučuje použití kroucených vodičů, ideálně i se stíněním.
INFORMACE	EDS soubor pro elektroniku EL7 je ke stažení zde: https://1url.cz/@EDS_EL7-E_EL7-I_PRM9

Příklad konfigurace pro elektroniku s NODE-ID 1

HEARTBEAT

OPERATIONAL

CAN-ID	DLC	Zpráva
0701	1	05

PRE OPERATIONAL

CAN-ID	DLC	Zpráva
0701	1	7F

Provozní datový objekt - SDO

Příklad – nastavení proudu do cívek - **Control Position Set Point, 6300**

Zápis

	CAN-ID	DLC	Zpráva
Master nastavuje SDO 6300:1 na 16384	0601	8	2B 00 63 01 00 40 00 00
Ventil potvrzuje OK	0581	8	60 00 63 01 00 00 00 00

Čtení

	CAN-ID	DLC	Zpráva
Master čte stav SDO 6300:1	0601	8	40 00 63 01 00 00 00 00
Ventil vrací hodnotu 5000 (0x1388)	0581	8	4B 00 63 01 88 13 00 00

Procesní datový objekt - PDO

Příklad mapování TPDO

	CAN-ID	DLC	Zpráva
Master nastavuje PRE OPERATIONAL stav	0000	2	80 01
Master nastavuje COB_ID TPDO1 na 0x181	0601	8	23 00 18 01 81 01 00 80
Ventil potvrzuje OK	0581	8	60 00 18 01 00 00 00 00
Master nastavuje typ přenosu 254 (asynchronní)	0601	8	2F 00 18 02 FE 00 00 00
Ventil potvrzuje OK	0581	8	60 00 18 02 00 00 00 00
Master nastavuje periodu vysílání 2 sekundy	0601	8	2B 00 18 05 D0 07 00 00
Ventil potvrzuje OK	0581	8	60 00 18 05 00 00 00 00
Master nastavuje počet mapovaných objektů v tabulce TPDO na 0 (vymazání tabulky)	0601	8	2F 00 1A 00 00 00 00 00
Ventil potvrzuje OK	0581	8	60 00 1A 00 00 00 00 00
Master mapuje „Control Position Set Point“ jako 16 bit číslo (SDO 6300:1)	0601	8	23 00 1A 01 10 01 00 63
Ventil potvrzuje OK	0581	8	60 00 1A 01 00 00 00 00
Master mapuje „Device status word“ jako 16 bit číslo (SDO 6041:0)	0601	8	23 00 1A 02 10 00 41 60
Ventil potvrzuje OK	0581	8	60 00 1A 02 00 00 00 00
Master nastavuje počet mapovaných objektů v tabulce TPDO na 2	0601	8	2F 00 1A 00 02 00 00 00
Ventil potvrzuje OK	0581	8	60 00 1A 00 00 00 00 00
Master nastavuje COB_ID TPDO1 na 0x181, ale s nulovým nejvyšším bitem (zapnutí vysílání TPDO1).	0601	8	23 00 18 01 81 01 00 00
Ventil potvrzuje OK	0581	8	60 00 18 01 00 00 00 00
Master nastavuje OPERATIONAL stav	0000	2	01 01
Ventil vysílá TPDO1 každé 2 sekundy. „Control Position Set Point“ – 16384 (0x4000) „Device status word“ – 4108 (0x100C)	0181	4	00 40 0C 10
Ventil vysílá heartbeat OPERATIONAL stav OPERATIONAL stav je nutný pro periodické vysílání.	0701	1	05

Příklad mapování RDPO

	CAN-ID	DLC	Zpráva
Master nastavuje PRE OPERATIONAL stav	0000	2	80 01
Master nastavuje COB_ID RPDO1 na 0x201	0601	8	23 00 14 01 01 02 00 80
Ventil potvrzuje OK	0581	8	60 00 14 01 00 00 00 00
Master nastavuje typ přenosu 255	0601	8	2F 00 14 02 FF 00 00 00
Ventil potvrzuje OK	0581	8	60 00 14 02 00 00 00 00
Master nastavuje počet mapovaných objektů v tabulce RDPO na 0 (vymazání tabulky)	0601	8	2F 00 16 00 00 00 00 00
Ventil potvrzuje OK	0581	8	60 00 16 00 00 00 00 00
Master mapuje „Device control word" jako 16 bit číslo (SDO 6040:0)	0601	8	23 00 16 01 10 00 40 60
Ventil potvrzuje OK	0581	8	60 00 16 01 00 00 00 00
Master mapuje „Control Position Set Point" jako 16 bit číslo (SDO 6300:1)	0601	8	23 00 16 02 10 01 00 63
Ventil potvrzuje OK	0581	8	60 00 16 02 00 00 00 00
Master nastavuje počet mapovaných objektů v tabulce RPDO na 2	0601	8	2F 00 16 00 02 00 00 00
Ventil potvrzuje OK	0581	8	60 00 16 00 00 00 00 00
Master nastavuje COB_ID RPDO1 na 0x201, ale s nulovým nejvyšším bitem (zapnutí vysílání RPDO1)	0601	8	23 00 14 01 01 02 00 00
Ventil potvrzuje OK	0581	8	60 00 14 01 00 00 00 00
Master nastavuje OPERATIONAL stav	0000	2	01 01
Master vysílá RPDO1. „Device control word" – 12 (0x0004) „Control Position Set Point" – 4096 (0x1000)	0201	4	04 00 00 10

Chybové kódy a hlášení

- **6040h** – Device control word ... 0000 0000 0000 0100
- **6041h** – Device status word … 0001 E000 00WL 1100
- **6042h** – Device mode … 0x0001 pro AIN varianty, 0x0000 pro CAN varianty
- **6043h** – Device control mode … 0x0006 (Open loop movement)
- **604Eh** – Device error code … viz Tab.1

Všechny objekty jsou pouze pro čtení „read only", zápis do nich nemá žádný vliv.

E … 1 pokud svítí nebo bliká LED_ERR
W …pokud je SETP hodnota v pásmu slabé chyby anebo je odpojena nějaká cívka
L … 1 pro AIN varianty, 0 pro CAN varianty

Tab. 1	
Error code	
3110h	Input voltage out of range
3411h	Power supply voltage too high
3412h	Power supply voltage too low
3421h	Control voltage too high
3422h	Control voltage too low
4211h	Temperature of electronic too high
4212h	Temperature of electronic too low
5200h	Device control
5210h	Measurement circuits
5231h	Coil A disconnected
5232h	Coil B disconnected
5530h	EEPROM

Podrobný popis CANopen knihovny objektů:

Index	Subindex	Name	Type	Access	Default Value	Note
0x1000	0x00	Device Type	U32	CO	0x198	
0x1001	0x00	Error Register	U8	RO	0	
0x1003	0x00	Pre Defined Error Field	U8	RW	0	
	0x01	Error Field1	U32	RO	0	
	0x02	Error Field2	U32	RO	0	
	0x03	Error Field3	U32	RO	0	
	0x04	Error Field4	U32	RO	0	
	0x05	Error Field5	U32	RO	0	
	0x06	Error Field6	U32	RO	0	
	0x07	Error Field7	U32	RO	0	
	0x08	Error Field8	U32	RO	0	
0x1005	0x00	COB-ID SYNC message	U32	RW	0x80	<= 7FFh
0x1006	0x00	Communication cycle period	U32	RW		
0x1007	0x00	Synchronous window length	U32	RW	0	
0x1008	0x00	Manufacturer device name	VisStr	RO	EL7	
0x1009	0x00	Hardware Version	VisStr	CO	S-EL7-EMBD-CAN-1000-OEM	
0x100A	0x00	Software Version	VisStr	RO	1.8.1.x	
0x1014	0x00	Emergency ID	U32	RW		
0x1015	0x00	inhibit time EMCY	U16	RW	100	
0x1016	0x00	Consumer Heartbeat Time	U8	RO	1	
	0x01	Consumer Heartbeat Time	U32	RW	0	
0x1017	0x00	Producer Heartbeat Time	U16	RW	1000	doba heartbeat v ms
0x1018	0x00	Identity Object	U8	RO	4	
	0x01	Vendor-ID	U32	RO	0xE6	
	0x02	Product Code	U32	RO	0x50524D39	
	0x03	Revision	U32	RO		
	0x04	Serial Number	U32	RO		
0x1019	0x00	Synchronous counter overflow value	U8	RW	0	
0x1029	0x00	Error Behavior	U8	CO	0x06	
	0x01	Communication	U8	RW	0	
	0x02	Communication other	U8	RW	0	
	0x03	Communication passive	U8	RW	1	
	0x04	Generic	U8	RW	0	
	0x05	Device profile	U8	RW	0	
	0x06	Manufacturer specific	U8	RW	0	
0x1200	0x00	SDO server parameter	U8	CO	0x02	
	0x01	COB-ID client to server	U32	RO	$NODEID+0x600	
	0x02	COB-ID server to client	U32	RO	$NODEID+0x580	

0x1400	0x00	RPDO communication parameter	U8	RO	2	
	0x01	COB-ID	U32	RW		
	0x02	Transmission Type	U8	RW	255	
0x1600	0x00	RPDO mapping parameter	U8	RO	0x02	
	0x01	mapped object 1	U32	RW	0x60400010	
	0x02	mapped object 2	U32	RW	0x63000110	
	0x03	mapped object 3	U32	RW	0x00000000	
	0x04	mapped object 4	U32	RW	0x00000000	
	0x05	mapped object 5	U32	RW	0x00000000	
	0x06	mapped object 6	U32	RW	0x00000000	
	0x07	mapped object 7	U32	RW	0x00000000	
	0x08	mapped object 8	U32	RW	0x00000000	
0x1800	0x00	TPDO communication parameter	U8	RO	6	
	0x01	COB-ID	U32	RW		
	0x02	Transmission Type	U8	RW	255	
	0x03	inhibit time	U16	RW	100	
	0x05	Event Timer	U16	RW	100	
	0x06	SYNC start value	U8	RW	0	
0x1A00	0x00	TPDO mapping parameter	U8	RO	1	
	0x01	mapped object 1	U32	RO	0x60410010	
	0x02	mapped object 2	U32	RW	0x00000000	
	0x03	mapped object 3	U32	RW	0x00000000	
	0x04	mapped object 4	U32	RW	0x00000000	
	0x05	mapped object 5	U32	RW	0x00000000	
	0x06	mapped object 6	U32	RW	0x00000000	
	0x07	mapped object 7	U32	RW	0x00000000	
	0x08	mapped object 8	U32	RW	0x00000000	
0x1F80	0x00	NMT startup	U32	RW	0	
0x2000	0x00	Cfg NONLIN_SETP_X	U8	RO	9	
	0x01	NONLIN_SETP1	I16	RW		-16384..+16384 -> -100% .. +100%
	0x02	NONLIN_SETP2	I16	RW		-16384..+16384 -> -100% .. +100%
	0x03	NONLIN_SETP3	I16	RW		-16384..+16384 -> -100% .. +100%
	0x04	NONLIN_SETP4	I16	RW		-16384..+16384 -> -100% .. +100%
	0x05	NONLIN_SETP5	I16	RW		-16384..+16384 -> -100% .. +100%
	0x06	NONLIN_SETP6	I16	RW		-16384..+16384 -> -100% .. +100%
	0x07	NONLIN_SETP7	I16	RW		-16384..+16384 -> -100% .. +100%
	0x08	NONLIN_SETP8	I16	RW		-16384..+16384 -> -100% .. +100%
	0x09	NONLIN_SETP9	I16	RW		-16384..+16384 -> -100% .. +100%

0x2001	0x00	Cfg NONLIN_SETP_Y	U8	RO	9	
	0x01	NONLIN_SETP1	I16	RW		-16384..+16384 -> -100% .. +100%
	0x02	NONLIN_SETP2	I16	RW		-16384..+16384 -> -100% .. +100%
	0x03	NONLIN_SETP3	I16	RW		-16384..+16384 -> -100% .. +100%
	0x04	NONLIN_SETP4	I16	RW		-16384..+16384 -> -100% .. +100%
	0x05	NONLIN_SETP5	I16	RW		-16384..+16384 -> -100% .. +100%
	0x06	NONLIN_SETP6	I16	RW		-16384..+16384 -> -100% .. +100%
	0x07	NONLIN_SETP7	I16	RW		-16384..+16384 -> -100% .. +100%
	0x08	NONLIN_SETP8	I16	RW		-16384..+16384 -> -100% .. +100%
	0x09	NONLIN_SETP9	I16	RW		-16384..+16384 -> -100% .. +100%
0x2002	0x00	State Temperature Electronic / 'C	I8	RO		['C]
0x2003	0x00	State Power Supply Voltage / mV	U16	RO		[mV]
0x2004	0x00	Cfg Currents / mA	U8	CO	0x02	
	0x01	Limit A	U16	RW	1000	[mA]
	0x02	Limit B	U16	RW	1000	[mA]
0x2010	0x00	State Output Current	U8	CO	0x02	
	0x01	Channel A	I16	RO		[mA]
	0x02	Channel B	I16	RO		[mA]
0x2020	0x00	Cfg INVSETP	U8	RW	0	0, 1
0x2021	0x00	Cfg THRSETP	I16	RW	0	0, 1
0x2022	0x00	Cfg SW_NONLIN_SETP	U8	RW	0	0, 1
0x2023	0x00	Cfg LINSETPPOSGAIN	U16	RW	10000	10000 = 1.0
0x2024	0x00	Cfg LINSETPPOSOFFSET	I16	RW	0	-16384..+16384 -> -100% .. +100%
0x2025	0x00	Cfg LINSETPNEGGAIN	U16	RW	10000	10000 = 1.0
0x2026	0x00	Cfg LINSETPNEGOFFSET	I16	RW		-16384..+16384 -> -100% .. +100%
0x2027	0x00	Cfg COILFREQ	U16	RW	1000	[Hz]
0x2200	0x00	Error status bits	OctStr	RO		
0x5FFF	0x00	EmSA	VisStr	RO		
0x6040	0x00	Device control word	U16	RWW	0x0004	
0x6041	0x00	Device status word	U16	RO	0x100C	viz kap. Chybové kódy
0x6042	0x00	DeviceMode	I8	RW	1	
0x6043	0x00	ControlMode	I8	RO	6	
0x6300	0x00	Control Position Set Point	U8	RO	1	
	0x01	Position Set Point	I16	RWW		-16384..+16384 -> -100% .. +100%
0x6330	0x00	Position Demand Value Generator Ramp Type	I8	CO	3	

0x6332	0x00	Position Demand Value Generator Acceleration Time Positive	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6333	0x00	Position Demand Value Generator Acceleration Time Negative	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6335	0x00	Position Demand Value Generator Deceleration Time Positive	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6336	0x00	Position Demand Value Generator Deceleration Time Negative	U8	CO	0x03	
	0x01	Value	U16	RW	1	[x 0.1sec]
	0x02	Units	U8	CO	3	
	0x03	Prefix	I8	CO	-1	
0x6360	0x00	Dither Type	I8	CO	3	
0x6361	0x00	Dither Amplitude	U8	CO	0x03	
	0x01	Value	U16	RW	0	0..+16384 -> 0% .. +100%
	0x02	Units	U8	RW	0	
	0x03	Prefix	I8	CO	0	
0x6362	0x00	Dither Frequency	U8	CO	0x03	[Hz]
	0x01	Value	U16	RW	80	
	0x02	Units	U8	CO	0x20	
	0x03	Prefix	I8	CO	0	