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CANopen® protocol description POWER CHARGER

Description CANopen® protocol and object directory POWER CHARGER
In this document the CANopen® services as well as the implemented object dictionary supported by the POWER CHARGER are shown and explained.

Supported CANopen® services

The following standard CANopen® services and transfer types are supported:

- NMT services
- Node monitoring
- EMCY service
- LSS services
- SDO transfer
- PDO transfer

NMT services

With the Network Management Services (NMT) the selected generator POWER CHARGER resp. the entire CANopen® network can be controlled by the master. All NMT commands are always sent from the master to the CANopen® slaves. The protocol for the transmission of NMT commands is shown below:

COB-ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x000	NMT Command	Node ID	x	x	x	x	x	x

- NMT Command
  Command to control the selected node
  - 0x01: Switch the node to operational state
  - 0x02: Stop the node
  - 0x80: Switch the node to pre-operational state
  - 0x81: Re-start of the node
  - 0x82: Re-start of the CANopen® communication of the node
- Node ID
  The address of the selected node
  - 0x00: NMT command is globally executed for all nodes
  - 0x01 – 0x7F: NMT command is executed for the respective node
- X
  not used

Node monitoring

With the POWER CHARGER the Heartbeat Protocol can be used to monitor the CANopen® node. The heartbeat is sent cyclically by the generator in a time that can be set in steps of 100 ms. The structure of the protocol is shown below:

COB-ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x700 + Node-ID	Node State	x	x	x	x	x	x	x

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- Node State
  - 0x00: Boot-Up node
  - 0x04: Node in Stopped Mode
  - 0x05: Node in Operational Mode
  - 0x7F: Node in Pre-Operational Mode

EMCY service

With the Emergency Service (EMCY), error and warning messages are transmitted from the generator to the consumer of the EMCY messages. A confirmation by this service is also transmitted after the successful deletion of an error or a warning. The EMCY protocol is shown graphically below.

COB-ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x080 + Node-ID	EMCY Error Code		Error Register	Type	Code	x	x	x

- EMCY Error Code
  CANopen® specific error code of an error or warning
  - 0x0000: no error / warning occurred
  - 0x1000 – 0xFFFF: CANopen® specific error code; detailed information see CiA301
- Error Register
  display of the error type
  - 0x00: no error / warning occurred resp. deleted
  - 0x01 – 0xFF: error / warning occurred; detailed information see CiA 301
- Type
  display of the error type
- 0x01: error
- 0x05: warning
- Code
  number of the error / warning; detailed information see chapter 6.1 and 6.2 in the Operating Instructions of the POWER CHARGER.
- X
  not used: always 0x00

LSS Services

The LSS services can be used to set the CANopen® node address and baud rate. The procedure for setting the node address and the baud rate is basically the same. First, the node is started in the LSS Config Status, then the new configuration parameters are transmitted with the Configure Node-ID Service or Configure Bit Timing Parameters Service. The parameters are saved by the Store Configuration Service.

The new parameters are available after restarting the node or communication using the NMT services. The new baud rate can also be activated via the Activate Bit Timing Parameter Service. However, it must be ensured that all devices in the CANopen® network are converted to the new baud rate. Otherwise, communication errors will occur on the individual devices. For further information regarding the LSS services see CiA 305.

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PDO Transfer

The Process Data Object (PDO) transfer represents a direct transfer (without confirmation) by the recipient. The data is transferred without further information - only with the CAN identifier (COB-ID) - for identification. The objects marked in the object directory for PDO mapping are marked in the respective data bytes. The PDO transfer is only available in the operational mode. In the other CANopen® modes, there is no transmission or evaluation of the PDO data.
For detailed information of the PDO transfer and the set parameters, see the POWER CHARGER object directory and the CiA 301 specification.

SDO Transfer

All entries in the object directory can be accessed using Service Data Objects (SDO). This transmission is always confirmed with a response from the selected node.
The POWER CHARGER generator is configured as an SDO server. This means that other devices (SDO clients) within the CANopen® network can access the individual objects by downloading (read access) and uploading (write access). Due to the maximum data length of four bytes, segmented SDO transfer and block transfer are not supported.
The structure of the protocol for the SDO transfer is shown below.

COB-ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
COB-ID	Command Byte	Object Index LSB	Object Index MSB	Object Subindex	Data LSB first			

- COB-ID
  CAN Identifier of the message
  - 0x580 + Node-ID: Transfer from POWER CHARGER to SDO client
  - 0x600 + Node-ID: Transfer from SDO client to POWER CHARGER

- Command Byte
  SDO type of access to the selected object
  - 0x22: write access by SDO client
  - 0x40: read access by SDO client
  - 0x43: confirmation by SDO server reading 4 bytes
  - 0x4B: confirmation by SDO server reading 2 bytes
  - 0x4F: confirmation by SDO server reading 1 byte
  - 0x80: cancellation of the SDO transfer by SDO server

- Object Index LSB
  low byte of Object Index
- Object Index MSB
  most significant byte of Object Index
- Object Subindex
  subindex of the Object

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- Data (LSB first)
  Data field with the content of the object data. The low byte is the first in the data field. In this area, the new data are transferred in the case of a write access. When reading, the data are contained in the response from the SDO server. Certain CANopen®-specific error codes are also transmitted in the data field in the case of error events. If the entries are not required for the transfer, they must always be filled with 0x00.
  For further information see CANopen® specification CiA 301.

Overview POWER CHARGER CANopen® Object directory

All CANopen® objects supported by the POWER CHARGER are listed in the following table.

Object Index	Object name
0x1000	Device type
0x1001	Error register
0x1003	Pre-defined Error Field
0x1008	Manufacturer device name
0x100A	Manufacturer software version
0x1010	Store Parameter Field
0x1011	Restore Parameter Defaults
x01014	COB-ID EMCY message
0x1017	Producer Heartbeat time
0x1018	Identity Object
0x1200	Server SDO parameter
0x1400	1. Receive PDO parameter
0x1600	1. Receive PDO Mapping
0x1800	1. Transmit PDO parameter
0x1801	2. Transmit PDO parameter
0x1802	3. Transmit PDO parameter
0x1A00	1. Transmit PDO Mapping
0x1A01	2. Transmit PDO Mapping
0x1A03	3. Transmit PDO Mapping
0x2000	Read Operating Hours
0x2001	Read Actual Values
0x2002	Read/Write Parameters
0x2003	Clear Error/Warning
0x6000	Read Input 8 Bit
0x6200	Write Output 8 Bit
0x6401	Read Analog Input 16 Bit

In the further course of the document, the individual objects are explained regarding to the individual parameters for access and the sub-indices contained in an object.

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Object 0x1000 Device type

Object for the CANopen® device profile.

Index	0x1000
Subindex	0x00
Name	Device type
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x191 (401)
Low Limit	
High Limit	

Object 0x1001 Error register

Object for the CANopen® error register.

Index	0x1001
Subindex	0x00
Name	Error register
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

Object 0x1003 Pre-defined Error Field

Object for the CANopen® specifically pre-defined error field

Index	0x1003
Name	Pre-defined Error Field
Object Code	ARRAY

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Index	0x1003
Subindex	0x00
Name	Number of Errors
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	0x00 – 0xFE
Default Value	0
Low Limit	
High Limit	

Index	0x1003
Subindex	0x01
Name	Standard Error Field
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0
Low Limit	
High Limit	

Object 0x1008 Manufacturer device name

Object for the Eltex device name

Index	0x1008
Subindex	0x00
Name	Manufacturer device name
Object Code	VAR
Data Type	VISIBLE STRING
Data Size	3 Byte
Access Type	CONST
PDO Mapping	No
Value Range	
Default Value	PCSC
Low Limit	
High Limit	

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Object 0x100A Manufacturer software version

Object for the software version

Index	0x100A
Subindex	0x00
Name	Manufacturer software version
Object Code	VAR
Data Type	VISIBLE STRING
Data Size	4 Byte
Access Type	CONST
PDO Mapping	No
Value Range	
Default Value	
Low Limit	
High Limit	

Object 0x1010 Store Parameter Field

Object for saving the parameter data. If the object 0x1010 subindex 0x01 is addressed with a write access, all parameter values are stored in an internal memory.

Index	0x1010
Name	Store Parameter Field
Object Code	ARRAY

Index	0x100
Subindex	0x00
Name	Number of entries
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0x01 – 0x7F
Default Value	0x01
Low Limit	
High Limit	

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Index	0x1010
Subindex	0x01
Name	Save all parameters
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	
Low Limit	
High Limit	

Object 0x1011 Restore Default Parameters

Object for loading the factory settings for the parameters. If the object 0x1011 subindex 0x01 is addressed with a write access, all parameter values are reset to the factory settings; except the CANopen® node address and the bit timing; these parameters are not reset.

Index	0x1011
Name	Restore Parameter Defaults
Object Code	ARRAY

Index	0x101
Subindex	0x00
Name	Number of entries
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0x01 – 0x7F
Default Value	0x01
Low Limit	
High Limit	

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Index	0x1011
Subindex	0x01
Name	Restore all Default Parameters
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	
Low Limit	
High Limit	

Object 0x1014 COB-ID EMCY Message

Object for the CAN Identifier of the EMCY message

Index	0x1014
Subindex	0x00
Name	COB-ID EMCY Message
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x80 + Node-ID
Low Limit	
High Limit	

Object 0x1017 Producer Heartbeat Time

The heartbeat time for node monitoring can be set with this object. The time can be set in a range of 100ms - 60000ms (1min) in 100ms steps. If the value 0 is selected, the heartbeat is deactivated. By default, the heartbeat is sent every second.

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Index	0x1017
Subindex	0x00
Name	Producer heartbeat time
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	0
Low Limit	100
High Limit	60000

Object 0x1018 Identity Object

Object to identify the CANopen® node

Index	0x1011
Name	Identity Object
Object Code	RECORD

Index	0x118
Subindex	0x00
Name	Number of entries
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x04
Low Limit	
High Limit	

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Index	0x1018
Subindex	0x01
Name	Vendor ID
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x0000024E
Low Limit	
High Limit	

Index	0x1018
Subindex	0x02
Name	Product Code
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	
Low Limit	
High Limit	

Index	0x1018
Subindex	0x03
Name	Revision Number
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	
Low Limit	
High Limit	

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Index	0x1018
Subindex	0x04
Name	Serial Number
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	
Low Limit	
High Limit	

Object 0x1200 1. Server SDO parameters

Object with the SDO Server parameters

Index	0x1200
Name	1. Server SDO parameters
Object Code	RECORD

Index	0x1200
Subindex	0x00
Name	Number of entries
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x02
Low Limit	
High Limit	

Index	0x1200
Subindex	0x01
Name	COB-ID Client -> Server (rx)
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x600 + Node-ID
Low Limit	
High Limit	

Index	0x1200
Subindex	0x02
Name	COB-ID Server -> Client (tx)
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x580 + Node-ID
Low Limit	
High Limit	

Object 0x1400 1. Receive PDO parameter

Object with the communication parameters for the 1. Receive PDO

Index	0x1400
Name	1. Receive PDO Parameter
Object Code	RECORD

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Index	0x1400
Subindex	0x00
Name	Largest Sub-Index supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x02
Low Limit	
High Limit	

Index	0x1400
Subindex	0x01
Name	COB-ID used by PDO
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x200 + Node-ID
Low Limit	
High Limit	

Index	0x1400
Subindex	0x02
Name	Transmission Type
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	255
Low Limit	
High Limit	

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Object 0x1600 1. Receive PDO Mapping

Mapping parameter for the 1. Receive PDO

Index	0x1600
Name	1. Receive PDO Mapping
Object Code	RECORD

Index	0x1600
Subindex	0x00
Name	Number of mapped Application Objects supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0x01 – 0x40
Default Value	0x01
Low Limit	
High Limit	

Index	0x1600
Subindex	0x01
Name	1. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x62000108
Low Limit	
High Limit	

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Object 0x1800 1. Transmit PDO parameter

Object with the communication parameters for the 1. Transmit PDO

Index	0x1800
Name	1. Transmit PDO Parameter
Object Code	RECORD
Data Type	UNSIGNED32

Index	0x1800
Subindex	0x00
Name	Largest Sub-Index supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x02
Low Limit	
High Limit	

Index	0x1800
Subindex	0x01
Name	COB-ID used by PDO
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x180 + Node-ID
Low Limit	
High Limit	

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Index	0x1800
Subindex	0x02
Name	Transmission Type
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	255
Low Limit	
High Limit	

Object 0x1801 2. Transmit PDO parameter

Object with the communication parameters for the 2. Transmit PDO

Index	0x1801
Name	2. Transmit PDO Parameter
Object Code	RECORD

Index	0x1801
Subindex	0x00
Name	Largest Sub-Index supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x02
Low Limit	
High Limit	

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Index	0x1801
Subindex	0x01
Name	COB-ID used by PDO
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x280 + Node-ID
Low Limit	
High Limit	

Index	0x1801
Subindex	0x02
Name	Transmission Type
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	255
Low Limit	
High Limit	

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Object 0x1802 3. Transmit PDO parameter

Object with the communication parameters for the 3. Transmit PDO

Index	0x1802
Name	3. Transmit PDO Parameter
Object Code	RECORD

Index	0x1802
Subindex	0x00
Name	Largest Sub-Index supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x02
Low Limit	
High Limit	

Index	0x1802
Subindex	0x01
Name	COB-ID used by PDO
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x380 + Node-ID
Low Limit	
High Limit	

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Index	0x1802
Subindex	0x02
Name	Transmission Type
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	255
Low Limit	
High Limit	

Object 0x1A00 1. Transmit PDO Mapping

Mapping parameter for the 1st Transmit PDO

Index	0x1A00
Name	1. Transmit PDO Mapping
Object Code	RECORD

Index	0x1A00
Subindex	0x00
Name	Number of mapped Application Objects supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0x01 – 0x40
Default Value	0x08
Low Limit	
High Limit	

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Index	0x1A00
Subindex	0x01
Name	1. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000108
Low Limit	
High Limit	

Index	0x1A00
Subindex	0x02
Name	2. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000208
Low Limit	
High Limit	

Index	0x1A00
Subindex	0x03
Name	3. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000308
Low Limit	
High Limit	

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Index	0x1A00
Subindex	0x04
Name	4. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000408
Low Limit	
High Limit	

Index	0x1A00
Subindex	0x05
Name	5. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000508
Low Limit	
High Limit	

Index	0x1A00
Subindex	0x06
Name	6. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000608
Low Limit	
High Limit	

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Index	0x1A00
Subindex	0x07
Name	7. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000708
Low Limit	
High Limit	

Index	0x1A00
Subindex	0x08
Name	8. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x60000808
Low Limit	
High Limit	

Object 0x1A01 2. Transmit PDO Mapping

Mapping parameter for the 2nd Transmit PDO

Index	0x1A01
Name	2. Transmit PDO Mapping
Object Code	RECORD

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Index	0x1A01
Subindex	0x00
Name	Number of mapped Application Objects supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0x01 – 0x40
Default Value	0x04
Low Limit	
High Limit	

Index	0x1A01
Subindex	0x01
Name	1. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010110
Low Limit	
High Limit	

Index	0x1A01
Subindex	0x02
Name	2. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010210
Low Limit	
High Limit	

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Index	0x1A01
Subindex	0x03
Name	3. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010310
Low Limit	
High Limit	

Index	0x1A01
Subindex	0x04
Name	4. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010410
Low Limit	
High Limit	

Object 0x1A02 3. Transmit PDO Mapping

Mapping parameter for the 3rd Transmit PDO

Index	0x1A01
Name	3. Transmit PDO Mapping
Object Code	RECORD

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Index	0x1A02
Subindex	0x00
Name	Number of mapped Application Objects supported
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0x01 – 0x40
Default Value	0x04
Low Limit	
High Limit	

Index	0x1A02
Subindex	0x01
Name	1. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010510
Low Limit	
High Limit	

Index	0x1A02
Subindex	0x02
Name	2. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010610
Low Limit	
High Limit	

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Index	0x1A02
Subindex	0x03
Name	3. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010710
Low Limit	
High Limit	

Index	0x1A02
Subindex	0x04
Name	4. mapped Object
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0x64010810
Low Limit	
High Limit	

Object 0x2000 Read Operating Hours

Object contains individual entries for reading out the operating and high voltage hour counter. All entries can be read out by the SDO client. Write access is not supported.

Index	0x2000
Name	Read Operating Hours
Object Code	RECORD

CANopen® protocol description POWER CHARGER

Index	0x2000
Subindex	0x00
Name	Number of elements
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x0C
Low Limit	
High Limit	

- Subindex 0x01: Years of the operating hour counter

Index	0x2000
Subindex	0x01
Name	Read Operating Hours Years
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x02: Days of the operating hour counter

Index	0x2000
Subindex	0x02
Name	Read Operating Hours Days
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 365
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x03: Hours of the operating hour counter

Index	0x2000
Subindex	0x03
Name	Read Operating Hours Hours
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 60
Default Value	
Low Limit	
High Limit	

- Subindex 0x04: Minutes of the operating hour counter

Index	0x2000
Subindex	0x04
Name	Read Operating Hours Minutes
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 60
Default Value	
Low Limit	
High Limit	

- Subindex 0x05: Years of the Charging hour counter

Index	0x2000
Subindex	0x05
Name	Read Charging Hours Years
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x06: Days of the Charging hour counter

Index	0x2000
Subindex	0x06
Name	Read Charging Hours Days
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 365
Default Value	
Low Limit	
High Limit	

- Subindex 0x07: Hours of the Charging hour counter

Index	0x2000
Subindex	0x07
Name	Read Charging Hours Hours
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 60
Default Value	
Low Limit	
High Limit	

- Subindex 0x08: Minutes of the Charging hour counter

Index	0x2000
Subindex	0x08
Name	Read Charging Hours Minutes
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 60
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x09: Years of the Discharging hour counter
  Only available in the versions PC__/A and PC__/C.

Index	0x2000
Subindex	0x09
Name	Read Discharging Hours Years
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x0A: Days of the Discharging hour counter
  Only available in the versions PC__/A and PC__/C.

Index	0x2000
Subindex	0x0A
Name	Read Discharging Hours Days
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 365
Default Value	
Low Limit	
High Limit	

- Subindex 0x0B: Hours of the Discharging hour counter
  Only available in the versions PC__/A and PC__/C.

Index	0x2000
Subindex	0x0B
Name	Read Discharging Hours Hours
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 60
Default Value	
Low Limit	
High Limit	

- Subindex 0x0C: Minute of the Discharging hour counter
  Only available in the versions PC__/A and PC__/C.

Index	0x2000
Subindex	0x0C
Name	Read Discharging Hours Minutes
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	0 - 60
Default Value	
Low Limit	
High Limit	

Object 0x2001 Read Actual Values

The entries for reading out the measured actual values are summarized in this object and assigned to the measured variable.

Index	0x2001
Name	Read Actual Values
Object Code	RECORD

CANopen® protocol description POWER CHARGER

Index	0x2001
Subindex	0x00
Name	Number of elements
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x10Ac
Low Limit	
High Limit	

- Subindex 0x01: Supply voltage in mV

Index	0x2001
Subindex	0x01
Name	Read Supply Voltage
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x02: Supply current in mA

Index	0x2001
Subindex	0x02
Name	Read Supply Current
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	**Read Only**
PDO Mapping	**No**
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x03: Supply power in W with one decimal place

Index	0x2001
Subindex	0x03
Name	Read Supply Power
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x04: Percentage capacity of the supply power

Index	0x2001
Subindex	0x04
Name	Read Supply Power Capacity
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x05:Temperature power stage in °C

Index	0x2001
Subindex	0x05
Name	Read Temperature Power Stage
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x06: Internal housing temperature in °C

Index	0x2001
Subindex	0x06
Name	Read Temperature Internal
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x07: Temperature of the high voltage cascade in °C

Index	0x2001
Subindex	0x07
Name	Read Temperature Cascade
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x08: Error counter of strong sparks

Index	0x2001
Subindex	0x08
Name	Read Strong Sparks Error Counter
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x09: Warning counter of strong sparks

Index	0x2001
Subindex	0x09
Name	Read Strong Sparks Warning Counter
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x0A: Error counter of weak sparks

Index	0x2001
Subindex	0x0A
Name	Read Weak Sparks Error Counter
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x0B: Warning counter of weak sparks

Index	0x2001
Subindex	0x0B
Name	Read Weak Sparks Warning Counter
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x0C: Load resistor of the charging in Ω

Index	0x2001
Subindex	0x0C
Name	Read Load Resistor Charging
Object Code	VAR
Data Type	UNSIGNED32
Data Size	4 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	
Low Limit	
High Limit	

- Subindex 0x0D: Temperature of the discharging in °C
  Actual value only available in the variants PC__/A.

Index	0x2001
Subindex	0x0D
Name	Read Temperature Discharging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x0E: Discharging mode
  Operating state of the discharging. Actual value only available in the variants PC__/A.
  The indication of the operating status is divided into two parts. The low-order byte represents the current operating mode. The higher-order byte shows the limiters of the discharge.
  - Operating mode Discharging
    0 – Passive discharging
    1 – Active discharging
  - Limiter Discharging
    Bit 8 – Voltage limiter
    0 – Voltage limiter not active
    1 – Voltage limiter active

CANopen® protocol description POWER CHARGER

Index	0x2001
Subindex	0x0E
Name	Read Discharging Mode
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x0F: Active power of the discharge connection 1 in mW

Index	0x2001
Subindex	0x0F
Name	Read Power Discharge 1
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x10: : Active power of the discharge connection 2 in mW

Index	0x2001
Subindex	0x10
Name	Read Power Discharge 2
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

Object 0x2002 Read/Write Parameter

With the entries of object 0x2002, all parameters for operating the generator can be read and written. These entries represent the complete setting options.

Index	0x2002
Name	Read/Write Parameter
Object Code	RECORD

Index	0x2002
Subindex	0x00
Name	Number of elements
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x2A
Low Limit	
High Limit	

- Subindex 0x01: Read/Write Actual Value Transfer Time
  Setting the cycle time for transferring the actual values that are mapped in the two transmit PDOs. Cycle times in the range from 100 ms – 60000 ms (1min) can be set. A time of 500 ms is set by default. When setting this parameter, the entire bus load must be considered. If a low time is set, the bus load increases.

Index	0x2002
Subindex	0x01
Name	Read/Write Actual Value Transfer Time
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	500
Low Limit	100
High Limit	60000

CANopen® protocol description POWER CHARGER

- Subindex 0x02: Read/Write HV Release Mode
  The software release of the high voltage via the various options can be set with this parameter. The individual release options can be activated separately from one another. The output of the high voltage starts after setting the software and the respective hardware release via the interface.
  - Bit 0 – Autostart
    0 – Autostart deactivated
    1 – Autostart activated (automatic setting of the software release after switching on the supply voltage)
  - Bit 1 – Analog setpoint
    0 – Release of the analog setpoint is deactivated.
    1 – Release of the analog setpoint is activated (software release is controllable via the adjustment of the analog setpoint).
  - Bit 2 – HMI
    0 – HMI release deactivated
    1 – HMI release activated
    (release can be switched on / off via touch screen or keypad
  - Bit 3 – CANopen®
    0 – Release via CANopen® deactivated
    1 – Release via CANopen® activated
    (Software release can be controlled via the fieldbus)
  - Bit 4 – Fieldbus Ethernet
    0 – Release via Ethernet deactivated
    1 – Release via Ethernet activated
    (software release can be controlled via write access to register 0x1010)

Index	0x2002
Subindex	0x02
Name	Read/Write HV Release Mode
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	4
Low Limit	0
High Limit	31

CANopen® protocol description POWER CHARGER

- Subindex 0x03: Read/Write Analog Setpoint
  Output voltage (U-Const mode) or output current (I-Const mode) of charging.
  - 0 – analog interface deactivated + alarm signal limit inactive
  - 1 – current interface (0-20 mA) active + alarm signal inactive
  - 2 – voltage interface (0-10 V) active + alarm signal inactive
  - 3 – analog interface deactivated + alarm signal limit active
  - 4 – current interface (0-20 mA) active + alarm signal active
  - 5 – voltage interface (0-10 V) active + alarm signal active

Index	0x2002
Subindex	0x03
Name	Read Active Length
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	0
Low Limit	0
High Limit	5

- Subindex 0x04: Read/Write HV Release Timeout
  Timeout for the release of the high voltage. After the timeout has expired, the software approval is automatically deleted. The timer is reset when the release is sent again via the bus. The timeout can be set in a range of 500 ms – 60000 ms. For values less than 500 ms, the value is set to 0. This deactivates the timeout

Index	0x2002
Subindex	0x04
Name	Read/Write HV Release Timeout
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	60000

CANopen® protocol description POWER CHARGER

- Subindex 0x05: Read Burn-In Test State
  Reading of the burn-in test status.
  0x00: No burn-in test was carried out.
  0x01: Burn-in test was carried out successfully.

Index	0x2002
Subindex	0x05
Name	Read Burn-In Test State
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x06: Read/Write CANopen® Node ID
  Setting the CANopen® node address.
  To accept the new node address, it must first be saved using the SDO object 0x1010. The node must then be restarted. This can be done with the NMT command or by switching the supply voltage off and on.

Index	0x2002
Subindex	0x06
Name	Read/Write CANopen® Node ID
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	99
Low Limit	1
High Limit	127

CANopen® protocol description POWER CHARGER

- Subindex 0x07: Read/Write CANopen® Bit Timing
  Setting the CANopen® baud rate by selecting the corresponding table entry for the bit timing.
  To accept the new baud rate, it must first be saved using the SDO object 0x1010. The node must then be restarted. This can be done with the NMT command or by switching the supply voltage off and on.

  0x00: 1000 kBit/s, 0x01: 800 kBit/s, 0x02: 500 kBit/s, 0x03: 250 kBit/s
  0x04: 125 kBit/s, 0x06: 50 kBit/s, 0x07: 25 kBit/s, 0x08: 10 kBit/s

Index	0x2002
Subindex	0x07
Name	Read/Write CANopen® Bit Timing
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	4
Low Limit	0
High Limit	8

- Subindex 0x08: Read/Write Voltage Setpoint Charging
  Setting of the voltage setpoint for the charging in V, in the range of the minimum and maximum limit for the voltage of the charging.

Index	0x2002
Subindex	0x08
Name	Read/Write Voltage Setpoint Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	Minimum Voltage Charging
Low Limit	Voltage Limit Minimum Charging (Subindex 0x0C)
High Limit	Voltage Limit Maximum Charging (Subindex 0x0D)

CANopen® protocol description POWER CHARGER

- Subindex 0x09: Read/Write Current Setpoint Charging
  Setting of the current setpoint for the charging in µA, in the range of the minimum and maximum limit for the current of the charging.

Index	0x2002
Subindex	0x09
Name	Read/Write Current Setpoint Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	Maximum Current Charging
Low Limit	Current Limit Minimum Charging (Subindex 0x0E)
High Limit	Current Limit Maximum Charging (Subindex 0x0F)

- Subindex 0x0A: Read Power Setpoint Charging
  Power setpoint of the charging. The parameter is only readable. Changes are made exclusively via internal conditions, e.g. temperatures, input power, etc.

Index	0x2002
Subindex	0x0A
Name	Read Power Setpoing Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x0B: Read/Write Setppint Percent Charging
  Setting of the setpoint in %. Depending on the selected mode, the setpoint for the voltage or current of the charging is changed. If the converted value for the setpoint is less than the minimum adjustable setpoint, the value is limited to the minimum.

CANopen® protocol description POWER CHARGER

Index	0x2002
Subindex	0x08
Name	Read/Write Setpoint Percent Charging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	5
Low Limit	0
High Limit	100

- Subindex 0x0C: Read/Write Voltage Limit Minimum Charging
  Minimum limit for the voltage setpoint in V

Index	0x2002
Subindex	0x0C
Name	Read/Write Voltage Limit Minimum Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	Minimum Voltage Charging
Low Limit	Minimum Voltage Charging
High Limit	Voltage Limit Maximum Charging (Subindex 0x0D)

- Subindex 0x0D: Read/Write Voltage Limit Maximum Charging
  Maximum limit for the voltage setpoint in V

Index	0x2002
Subindex	0x0D
Name	Read/Write Voltage Limit Maximum Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	Maximum Voltage Charging
Low Limit	Voltage Limit Minimum Charging (Subindex 0x0C)
High Limit	Maximum Voltage Charging

CANopen® protocol description POWER CHARGER

- Subindex 0x0E: Read/Write Current Limit Minimum Charging
  Minimum limit for the current setpoint in µA

Index	0x2002
Subindex	0x0E
Name	Read/Write Current Limit Minimum Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	Minimum Current Charging
Low Limit	Minimum Current Charging
High Limit	Current Limit Maximum Charging (Subindex 0x0F)

- Subindex 0x0F: Read/Write Current Limit Maximum Charging
  Maximum limit for the voltage setpoint in µA

Index	0x2002
Subindex	0x0F
Name	Read/Write Current Limit Maximum Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	Maximum Current Charging
Low Limit	Current Limit Minimum Charging (Subindex 0x0F)
High Limit	Maximum Current Charging

CANopen® protocol description POWER CHARGER

- Subindex 0x10: Read/Write Charging Mode
  Setting the operating mode of the charging. The following operating modes are available:
  - 3 – voltage constant (U-Const.) mode
  - 4 – current constant (I-Const.) mode
  - 5 – operating mode: ESA film
  - 6 – operating mode: ESA paper
  - 7 – operating mode: ESA metallized materials

Index	0x2002
Subindex	0x10
Name	Read/Write Charging Mode
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	3 (PCRT, PCSC) 4 (PCMT) 5 (PCTL)
Low Limit	3 (PCMT, PCRT, PCSC) 5 (PCTL)
High Limit	4 (PCMT, PCRT, PCSC) 7 (PCTL)

- Subindex 0x11: Read/Write Ramp Time
  Setting of the ramp time for the charging high voltage in ms. When changing the setpoints or when switching on the high voltage, this parameter indicates the time after which the end point is reached.

Index	0x2002
Subindex	0x11
Name	Read/Write Ramp Time
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	500
Low Limit	100
High Limit	10000

CANopen® protocol description POWER CHARGER

- Subindex 0x12: Read/Write Web Width
  Setting of the web width in mm in the range of the parameterized limits. This value can be used to determine the current setpoint. If a web width of 0 mm is set, the web width is not converted into a corresponding setpoint.

Index	0x2002
Subindex	0x12
Name	Read/Write Web Width
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	0
Low Limit	Web Width Minimum (Subindex 0x13)
High Limit	Web Width Maximum (Subindex 0x14)

- Subindex 0x13: Read/Write Web Width Minimum
  Minimum limit for setting the web width. If a minimum is set that is larger than the current web width, the web width is automatically set to the new minimum.

Index	0x2002
Subindex	0x13
Name	Read/Write Web Width Minimum
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	0
Low Limit	0
High Limit	Web Width Maximum (Subindex 0x14)

CANopen® protocol description POWER CHARGER

- Subindex 0x14: Read/Write Web Width Maximum
  Maximum limit for setting the web width. If a maximum is set that is smaller than the current web width, the web width is automatically set to the new maximum.

Index	0x2002
Subindex	0x14
Name	Read/Write Web Width Maximum
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	5000
Low Limit	Web Width Minimum (Subindex 0x13)
High Limit	5000

- Subindex 0x15: Read/Write Current Width Factor
  Factor for converting the web width into the current setpoint, indicated in µA/m.

Index	0x2002
Subindex	0x15
Name	Read/Write Current Width Factor
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	1000
Low Limit	100
High Limit	5000

CANopen® protocol description POWER CHARGER

- Subindex 0x16: Read/Write Strong Sparks Factor
  Level for detection of strong sparks in the case of sudden changes of the charging current value. The setting is made in % of the maximum output current. The factor is calculated as follows:

$$f_{Strong} = \frac{Value_{Strong} * I_{\max Charging}}{8} \left[\frac{mA}{ms}\right]$$

The error or warning counter is counting up as soon as a current change is detected which is greater than the calculated level. The warning detection level is 80 % of the error detection level. If the level of the counters is exceeded, the corresponding error or warning message is set. The reasons for an occurrence are different (e.g., defective bar, defective high voltage cable, grounded materials in the area of the bar, etc.).

Index	0x2002
Subindex	0x16
Name	Read/Write Strong Sparks Factor
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	40
Low Limit	25
High Limit	40

CANopen® protocol description POWER CHARGER

- Subindex 0x17: Read/Write Weak Sparks Factor
  Level for detection of weak sparks in the case of sudden changes of the charging current value. The setting is made in % of the maximum output current. The factor is calculated as follows:

$$f_{Strong} = \frac{Value_{Weak} * I_{\max Charging}}{8} \left[\frac{mA}{ms}\right]$$

The error or warning counter is counting up as soon as a current change is detected which is greater than the calculated level. The warning detection level is 80 % of the error detection level. If the level of the counters is exceeded, the corresponding error or warning message is set. The reasons for an occurrence are different (e.g., defective bar, defective high voltage cable, grounded materials in the area of the bar, etc.).

Index	0x2002
Subindex	0x17
Name	Read/Write Weak Sparks Factor
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	25
Low Limit	10
High Limit	25

- Subindex 0x18: Read/Write Sparks Counter Limit
  Threshold value for the individual spark counters (register 0x2001, Subindex 0x08-0x0B) at which the corresponding error or warning message occurs.
  If the value 0 is set, no errors or warnings are set.

Index	0x2002
Subindex	0x18
Name	Read/Write Sparks Counter Limit
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	10
Low Limit	0
High Limit	1000

CANopen® protocol description POWER CHARGER

- Subindex 0x19: Read/Write Pollution Detection Charging
  Parameter for setting the pollution monitoring of the charging.
  Settings options:
  - 0 – monitoring deactivated
  - 1 – monitoring charging active
  - 2 – calibration of the pollution monitoring

  During operation, the calibration of the monitoring is necessary for a reliable detection of the charging bar pollution.
  It starts automatically if the nominal resistance of the charging (register 0x1500 and 0x1501) contains the default value and the monitoring is activated.
  It is recommended to clean the charging bar before the calibration. It is also advisable to carry out a separate calibration of the pollution detection for the different applications. The calibration is carried out if the high voltage is switched on and determines values over a period of 20 minutes. If the high voltage is deactivated, the detection waits for the release of the charge.

Index	0x2002
Subindex	0x19
Name	Read/Write Pollution Detection Charging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	2

CANopen® protocol description POWER CHARGER

- Subindex 0x1A: Read/Write Nominal Resistor Charging
  Nominal resistance in Ω determined via pollution calibration

Index	0x2002
Subindex	0x1A
Name	Read/Write Nominal Resistor Charging
Object Code	VAR
Data Type	UNSIGNE32
Data Size	4 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED32
Default Value	0
Low Limit	0
High Limit	0xFFFF FFFF

- Subindex 0x1B: Read/Write Limiter Warning
  Activate or deactivate the warnings generated by each limiter.
  The following settings are possible:
  - 0 – warnings of the limiter deactivated
  - 1 – warnings of the limiter activated

Index	0x2002
Subindex	0x1B
Name	Read/Write Limiter Warning
Object Code	VAR
Data Type	UNSIGNE8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	1
Low Limit	0
High Limit	1

CANopen® protocol description POWER CHARGER

- Subindex 0x1C: Read/Write Keyboard Lock
  Activation or deactivation of the keyboard lock of the keypad. When the keyboard lock is activated, an operation via the integrated keypad at the generator is not possible. Note that this parameter is not saved, and the keyboard lock is always deactivated after the generator is restarted.

  The following settings are possible:

  - 0 – keyboard lock not activated
  - 1 – keyboard lock activated

Index	0x2002
Subindex	0x1C
Name	Read/Write Keyboard Lock
Object Code	VAR
Data Type	UNSIGNE8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	1

- Subindex 0x1D: Read/Write LED Bar Mode
  Setting of the mode for displaying the actual values using the integrated LED bar.

  The following settings are possible:

  - 0 – display actual value Voltage
  - 1 – display actual value Current

Index	0x2002
Subindex	0x1D
Name	Read/Write LED Bar Mode
Object Code	VAR
Data Type	UNSIGNE8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	1

CANopen® protocol description POWER CHARGER

- Subindex 0x1E: Read/Write Voltage Setpoint Discharging
  Setting of the voltage setpoint of the discharge in V.
  The parameter is only available in the variants PC__/A.

Index	0x2002
Subindex	0x1E
Name	Read/Write Voltage Setpoint Discharging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	Maximum Voltage Discharging
Low Limit	Minimum Voltage Discharging
High Limit	Maximum Voltage Discharging

- Subindex 0x1F: Read Current Setpoint Discharging
  Setting of the current setpoint of the discharge in µA.
  The parameter is only available in the variants PC__/A.

Index	0x2002
Subindex	0x1F
Name	Read Current Setpoint Discharging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x20: Read Power Setpoint Discharging
  Setting of the power setpoint of the discharge in W.
  This parameter can only be read.
  Changes are made exclusively via internal conditions, e.g. temperatures, input power, etc. This parameter is only available in the variants PC__/A.

Index	0x2002
Subindex	0x20
Name	Read Power Setpoing Discharging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x21: Read/Write Setpoint Percent Discharging
  Percentage setting of the voltage setpoint for the discharge in %.
  This parameter is only available in the variants PC__/A.

Index	0x2002
Subindex	0x21
Name	Read/Write Setpoint Percent Discharging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	100
Low Limit	0
High Limit	100

CANopen® protocol description POWER CHARGER

- Subindex 0x22: Read/Write Discharging Mode
  Setting of the discharging mode. This parameter is only available in the variants PC__/A.

  The following settings can be selected:

  - 0 – passive discharging
  - 1 – active discharging

Index	0x2002
Subindex	0x22
Name	Read/Write Discharging Mode
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	1

- Subindex 0x25: Read/Write Parameter Adjustment Discharging
  Percentage settings of the parameter adjustment to optimize the discharging result. This parameter is only available in the variants PC__/A.

Index	0x2002
Subindex	0x25
Name	Read/Write Parameter Adjustment Discharging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	100

- Subindex 0x26: Read/Write Parameter Frequency Discharging
  Setting of the discharging voltage frequency. This parameter is only available in the variants PC__/A.
  The setting is made by selecting the respective index for the corresponding frequency. The following frequencies are available:
  - 0 – 50Hz
  - 1 – 55,7Hz
  - 2 – 62,5Hz
  - 3 – 71,4Hz
  - 4 – 83,3Hz
  - 5 – 100Hz
  - 6 – 125Hz
  - 7 – 166,7Hz
  - 8 – 250Hz

Index	0x2002
Subindex	0x26
Name	Read/Write Parameter Frequency Discharging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	8

CANopen® protocol description POWER CHARGER

- Subindex 0x27: Read/Write Parameter Software Release Discharging
  Parameter to disable or enable the software release for the discharging function.
  This parameter is only available in the variants PC__/A.
  If the software release is disabled, the release is performed exclusively via the hardware release of the discharge.
  - 0 – Software release discharging disabled
  - 1 – Software release discharging enabled

Index	0x2002
Subindex	0x27
Name	Read/Write Parameter Software Release Discharging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	1
Low Limit	0
High Limit	1

- Subindex 0x28: Read/Write Pollution Detection Discharging
  Parameter for setting the pollution monitoring. Pollution determination is only possible in connection with bars of the R60 and R60L series. The parameter is only available in variants PC__/A.
  When pollution monitoring is activated, the current value of the power for output 1 or 2 (Register 0x2001 Subindex 0x0F bzw. 0x10) is compared with the determined value of the nominal power for the output (register 0x2002 Subindex 0x29 bzw. 0x2A). The comparison of the values takes place in a known reference point, which is controlled automatically and independently of the set parameters for the discharge voltage.
  The pollution calibration can be used to determine the nominal power. Manual setting of the corresponding parameters for registers 0x1A70 and 0x1A80 is also possible.
  - 0 – Pollution monitoring Discharge deactivated
  - 1 – Pollution monitoring Discharge activated
  - 2 – Calibration Pollution monitoring Discharge

Index	0x2002
Subindex	0x28
Name	Read/Write Pollution Detection Discharging
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0
Low Limit	0
High Limit	2

- Subindex 0x29: Read/Write Nominal Power Discharge 1
  Setting of the nominal power for discharging connection 1 in mW. This parameter is used in conjunction with the pollution monitoring (Register 0x2002 Subindex 0x28).

Index	0x2002
Subindex	0x29
Name	Read/Write Nominal Power Discharge 1
Object Code	VAR
Data Type	UNSIGNED8
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	0
Low Limit	0
High Limit	1000

CANopen® protocol description POWER CHARGER

- Subindex 0x2A: Read/Write Nominal Power Discharge 2
  Setting of the nominal power for discharging connection 1 in mW. This parameter is used in conjunction with the pollution monitoring (Register 0x2002 Subindex 0x28).

Index	0x2002
Subindex	0x2A
Name	Read/Write Nominal Power Discharge 2
Object Code	VAR
Data Type	UNSIGNED8
Data Size	2 Byte
Access Type	Read/Write
PDO Mapping	No
Value Range	UNSIGNED16
Default Value	0
Low Limit	0
High Limit	1000

Object 0x2003 Clear Error/Warning

Object with entries for acknowledging occurred errors and warnings

Index	0x2003
Name	Clear Error/Warning
Object Code	RECORD

Index	0x2003
Subindex	0x00
Name	Number of elements
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x05
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x01: Clear Error
  Entry for acknowledging errors. The transmitted error code is deleted after an internal check.

Index	0x2003
Subindex	0x01
Name	Clear Error
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Write Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	0x01
High Limit	0x50

- Subindex 0x02: Clear Warning
  Entry for acknowledging warnings. The transmitted warning code is deleted after an internal check.

Index	0x2003
Subindex	0x02
Name	Clear Warning
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Write Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	
Low Limit	0x01
High Limit	0x60

CANopen® protocol description POWER CHARGER

Object 0x6000 Read Input 8 Bit

Object with 8 bit input data. These entries are mapped to the 1st Transmit PDO. In this, way, direct monitoring of the bar can be transferred without any great effort.

Index	0x6000
Name	Read Input 8 Bit
Object Code	ARRAY

Index	0x6000
Subindex	0x00
Name	Number of elements
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x08
Low Limit	
High Limit	

- Subindex 0x01: Read System Status
  Current system status of the generator. The status consists of several parts:
  - Bit 0 – high voltage release
    0 – high voltage deactivated
    1 – high voltage activated
  - Bit 1 – error
    0 – no error active
    1 – error occurred
  - Bit 2 - Warning
    0 – no warning occurred
    1 – warning occurred
  - Bit 3 – charge
    0 – charge deactivated
    1 – charge active
  - Bit 4 - discharge
    0 – discharge deactivated (resp. with existing discharge: passive mode)
    1 – discharge active
  - Bit 5 – software release
    0 – no software release
    1 – software release is set
  - Bit 6 – pollution calibration Charge
    0 – pollution calibration deactivated
    1 – pollution calibration active

CANopen® protocol description POWER CHARGER

Index	0x6000
Subindex	0x01
Name	Read System Status
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x02: Read Charging Voltage Capacity
  Percentage capacity of the voltage range for the Charging

Index	0x6000
Subindex	0x02
Name	Read Charging Voltage Capacity
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x03: Read Charging Current Capacity
  Percentage capacity of the current range for the Charging

Index	0x6000
Subindex	0x03
Name	Read Charging Current Capacity
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x04: Read Charging Power Capacity
  Percentage capacity of the power range for the Charging

Index	0x6000
Subindex	0x04
Name	Read Charging Power Capacity
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x05: Read Pollution Charging Bar
  Pollution of the charging bar in %. The pollution is calculated cyclically with activated pollution detection and high voltage.

Index	0x6000
Subindex	0x05
Name	Read Pollution Charging Bar
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x06: Read Discharging Capacity
  Percentage capacity of the Discharging. This parameter is only available in the variants PC__/A.

Index	0x6000
Subindex	0x06
Name	Read Discharging Capacity
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x07: Read Pollution Discharging Bar 1
  Display of the detected pollution of the discharging bar 1. This parameter is only available in the variant PC__/C. The following values represent the type of pollution:
  - 0 – no pollution detected
  - 1 – conductive pollution detected
  - 2 – insulated pollution detected

Index	0x6000
Subindex	0x07
Name	Read Pollution Discharging Bar 1
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

- Subindex 0x08: Read Pollution Discharging Bar 2
  Display of the detected pollution of the discharging bar 2. This parameter is only available in the variant PC__/C. The following values represent the type of pollution:
  - 0 – no pollution detected
  - 1 – conductive pollution detected
  - 2 – insulated pollution detected

Index	0x6000
Subindex	0x08
Name	Read Pollution Discharging Bar 2
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

Object 0x6200 Write Output 8 Bit

Object with 8 bit input data. These entries are mapped to the 1st Receive PDO. In this, way, direct monitoring of the bar can be transferred without any great effort.

Index	0x6200
Name	Write Output 8 Bit
Object Code	ARRAY

Index	0x6200
Subindex	0x00
Name	Number of elements
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x01
Low Limit	
High Limit	

- Subindex 0x01: Write HV Release
  The high voltage can be activated or deactivated via a write access. The option for a release via CANopen® must be set in the parameter, so that the controlling can take place via bus.
  - Release state
    0x00: Release blocked
    0x0F: High voltage released

Index	0x6200
Subindex	0x01
Name	Write HV Release
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Write Only
PDO Mapping	Yes
Value Range	UNSIGNED8
Default Value	
Low Limit	
High Limit	

Object 0x6401 Read Analog Input 16 Bit

Object with 16 bit input data. These entries are mapped to the 1st Receive PDO. In this, way, direct monitoring of the bar can be transferred without any great effort.

Index	0x6401
Name	Read Analog Input 16 Bit
Object Code	ARRAY
Index	0x6401
Subindex	0x00
Name	Number of elements
Object Code	VAR
Data Type	UNSIGNED8
Data Size	1 Byte
Access Type	Read Only
PDO Mapping	No
Value Range	UNSIGNED8
Default Value	0x08
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x01: Read Voltage Charging
  Actual value of the charging voltage in V

Index	0x6401
Subindex	0x01
Name	Voltage Charging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x02: Read Current Charging
  Actual value of the charging current in µA

Index	0x6401
Subindex	0x02
Name	Read Current Charging
Object Code	UNSIGNED16
Data Type	INTEGER16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x03: Read Power Charging
  Actual value of the charging power in W with one decimal place,
  (value 759 corresponds to 75.9 W).

Index	0x6401
Subindex	0x03
Name	Read Power Charging
Object Code	UNSIGNED16
Data Type	INTEGER16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x04: Read Mode Charging
  Operating state of the Charge.
  The indication of the operating status is divided into two parts. The low-order byte represents the current operating mode. The higher-order byte shows the charge limiters.
  - Operating mode Charge
    3 – Operating mode: voltage constant (U-Const)
    4 – Operating mode: current constant (I-Const)
    5 – Operating mode ESA Film
    6 – Operating mode ESA Paper
    7 – Operating mode ESA Metallized materials
  - Limiter Charge
    Bit 8 – Voltage limiter
    0 – Voltage limiter not active
    1 – Voltage limiter active
    Bit 9 – Current limiter
    0 – Current limiter not active
    1 – Current limiter active
    Bit 10 – Power limiter
    0 – Power limiter not active
    1 – Power limiter active

CANopen® protocol description POWER CHARGER

Index	0x6401
Subindex	0x04
Name	Voltage Discharging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x05: Read Voltage Discharging
  Actual value of the effective discharging voltage in V.
  This actual value is only available in the variants PC__/A and PC__/C.

Index	0x6401
Subindex	0x05
Name	Voltage Discharging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x06: Read AC Current Discharging
  Actual value of the effective discharging current in V.
  This actual value is only available in the variants PC__/A and PC__/C.

Index	0x6401
Subindex	0x06
Name	AC Current Discharging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

- Subindex 0x07: Read DC Current Discharging
  Actual value of the signed DC discharging current in µA.
  This actual value is only available in the variants PC__/A and PC__/C.

Index	0x6401
Subindex	0x07
Name	DC Current Discharging
Object Code	VAR
Data Type	INTEGER16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	

CANopen® protocol description POWER CHARGER

- Subindex 0x08: Read Power Discharging
  Actual value of the effective discharging power in W with one decimal place, (value 759 corresponds to 75.9 W). This actual value is only available in the variants PC__/A and PC__/C.

Index	0x6401
Subindex	0x08
Name	Power Discharging
Object Code	VAR
Data Type	UNSIGNED16
Data Size	2 Byte
Access Type	Read Only
PDO Mapping	Yes
Value Range	UNSIGNED16
Default Value	
Low Limit	
High Limit	