

CANopen® protocol description PRO IONIZER

Description CANopen® protocol and object directory PRO IONIZER

In this document the CANopen® services as well as the implemented object dictionary supported by the PRO IONIZER 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 power supply PRO IONIZER 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	NMTCommand	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 PRO IONIZER the Heartbeat Protocol can be used to monitor the CANopen® node. The heartbeat is sent cyclically by the power supply 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

- Node State
Status des Knotens
 - 0x00: Boot-Up Knoten
 - 0x04: Knoten im Stopped Modus
 - 0x05: Knoten im Operational Modus
 - 0x7F: Knoten im Pre-Operational Modus

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EMCY service

With the Emergency Service (EMCY), error and warning messages are transmitted from the power supply 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	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 PRO IONIZER.
- 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 PRO IONIZER 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 IONIZER power supply 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 PRO IONIZER to SDO client
 - 0x600 + Node-ID: Transfer from SDO client to PRO IONIZER
- 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
least significant byte of Object Index
- Object Index MSB
most significant byte of Object Index
- Object Subindex
subindex of the Object
- Data (LSB first)
Data field with the content of the object data. The least significant 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.

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Overview PRO IONIZER CANopen® Object directory

All CANopen® objects supported by the PRO IONIZER are listed in the following table.

Objekt Index	Objektname
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 st Receive PDO parameter
0x1600	1 st Receive PDO Mapping
0x1800	1 st Transmit PDO parameter
0x1801	2 nd Transmit PDO parameter
0x1802	3 rd Transmit PDO parameter
0x1A00	1 st Transmit PDO Mapping
0x1A01	2 nd Transmit PDO Mapping
0x1A02	3 rd 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

The following table lists the individual entries of the [objects 0x2000 Read Operating Hours](#).

Subindex	Objektname
0x01	Read Operating Hours Years
0x02	Read Operating Hours Days
0x03	Read Operating Hours Hours
0x04	Read Operating Hours Minutes
0x09	Read Discharging Hour Years
0x0A	Read Discharging Hour Days
0x0B	Read Discharging Hour Hours
0x0C	Read Discharging Hour Minutes

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The following table lists the individual entries of the [objects 0x2001 Read Actual Values](#).

Subindex	Objektname
0x01	Read Voltage Discharging Positive
0x02	Read Voltage Discharging Negative
0x03	Read Supply Voltage
0x04	Read Temperature Device
0x05	Read Discharging Mode
0x06	Read Power Discharge 1
0x07	Read Power Discharge 2
0x08	Read Power Discharge 3
0x09	Read Power Discharge 4
0x0A	Read Pollution Discharge 1
0x0B	Read Pollution Discharge 2
0x0C	Read Pollution Discharge 3
0x0D	Read Pollution Discharge 4
0x0E	Read Revolutions Speed Sensor 1
0x0F	Read Revolutions Speed Sensor 2
0x10	Read Revolutions Speed Sensor 3
0x11	Read Revolutions Speed Sensor 4
0x12	Read Revolutions Speed Sensor 5
0x13	Read Revolutions Speed Sensor 6
0x14	Read Revolutions Speed Sensor 7
0x15	Read Revolutions Speed Sensor 8
0x16	Read Revolutions Speed Sensor 9
0x17	Read Revolutions Speed Sensor 10
0x18	Read State Digital Inputs D1-D10, A1-A2
0x19	Read Analog Voltage Input A1
0x1A	Read Analog Voltage Input A2
0x1B	Read Sensor Ambient Temperature 1
0x1C	Read Sensor Ambient Temperature 2
0x1D	Read Sensor Humidity 1
0x1E	Read Sensor Humidity 2
0x1F	Read Sensor Metal Detector
0x20	Read Sensor Suction Monitoring

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The following table lists the individual entries of the [objects 0x2002 Read/Write Parameter](#).

Subindex	Objektname
0x01	Read/Write Actual Value Transfer Time
0x02	Read/Write HV Release Mode
0x03	Read/Write Output Signal Mode
0x04	Read/Write HV Release Timeout
0x05	Read Burn in Test State
0x06	Read/Write CANopen® Node ID
0x07	Read/Write CANopen® Bit Timing
0x08	Read/Write Voltage Setpoint Discharging
0x09	Read Current Setpoint Discharging
0x0A	Read Power Setpoint Discharging
0x0B	Read/Write Setpoint Percent Discharging
0x0C	Read/Write Frequency Discharging
0x0D	Read/Write Ion Balance Discharging
0x0E	Read/Write Discharging Mode
0x0F	Read/Write Keyboard Lock
0x10	Read/Write LED Bar Mode
0x11	Read/Write Pollution Detection Discharge 1
0x12	Read/Write Pollution Detection Discharge 2
0x13	Read/Write Pollution Detection Discharge 3
0x14	Read/Write Pollution Detection Discharge 4
0x15	Read/Write Nominal Power Discharge 1
0x16	Read/Write Nominal Power Discharge 2
0x17	Read/Write Nominal Power Discharge 3
0x18	Read/Write Nominal Power Discharge 4
0x19	Read/Write Power Limit A Discharge 1
0x1A	Read/Write Power Limit A Discharge 2
0x1B	Read/Write Power Limit A Discharge 3
0x1C	Read/Write Power Limit A Discharge 4
0x1D	Read/Write Power Limit B Discharge 1
0x1E	Read/Write Power Limit B Discharge 2
0x1F	Read/Write Power Limit B Discharge 3
0x20	Read/Write Power Limit B Discharge 4
0x21	Read/Write Active Length Discharge 1
0x22	Read/Write Active Length Discharge 2
0x23	Read/Write Active Length Discharge 3
0x24	Read/Write Active Length Discharge 4
0x25	Read/Write Cable Length Discharge 1
0x26	Read/Write Cable Length Discharge 2
0x27	Read/Write Cable Length Discharge 3
0x28	Read/Write Cable Length Discharge 4
0x29	Read/Write Warning Limit Discharge 1
0x2A	Read/Write Warning Limit Discharge 2
0x2B	Read/Write Warning Limit Discharge 3
0x2C	Read/Write Warning Limit Discharge 4
0x2D	Read/Write Reference Point Activation
0x2E	Read/Write Discharging Overload Warning
0x2F	Read/Write Sensor Input Mode

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Subindex	Objektname
0x30	Read/Write Minimum Revolutions Speed Sensor
0x31	Read/Write Type E-Field Sensor 1
0x32	Read/Write Distance E-Field Sensor 1
0x33	Read/Write Warning Level E-Field Sensor 1
0x34	Read/Write Error Level E-Field Sensor 1
0x35	Read/Write Zero Point E-Field Sensor 1
0x36	Read/Write Type E-Field Sensor 2
0x37	Read/Write Distance E-Field Sensor 2
0x38	Read/Write Warning Level E-Field Sensor 2
0x39	Read/Write Error Level E-Field Sensor 2
0x3A	Read/Write Zero Point E-Field Sensor 2
0x3B	Read/Write Sensor Extension Mode D1-D8
0x3C	Read/Write Sensor Extension Mode D9-D10, A1-A2
0x3D	Read/Write Sensor Temperature 1 Low Value
0x3E	Read/Write Sensor Temperature 1 High Value
0x3F	Read/Write Sensor Temperature 2 Low Value
0x40	Read/Write Sensor Temperature 2 High Value

The following table lists the individual entries of the [objects 0x2003 Clear Error/Warning](#).

Subindex	Objektname
0x01	Clear Error
0x02	Clear Warning

The following table lists the individual entries of the [objects 0x6000 Read Input 8 Bit](#).

Subindex	Objektname
0x01	Read System Status
0x02	Read Discharging Capacity
0x03	Read Status Discharge 1
0x04	Read Status Discharge 2
0x05	Read Status Discharge 3
0x06	Read Status Discharge 4

The following table lists the individual entries of the [objects 0x6200 Write Output 8 Bit](#).

Subindex	Objektname
0x01	Write HV Release

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The following table lists the individual entries of the [objects 0X6401 Read Input 16 Bit](#).

Subindex	Objektname
0x01	Read Voltage Discharging
0x02	Read AC Current Discharging
0x03	Read DC Current Discharging
0x04	Read Power Discharging
0x05	Read E-Field Sensor 1
0x06	Read Ripple E-Field Sensor 1
0x07	Read E-Field Sensor 2
0x08	Read Ripple E-Field Sensor 2

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.

All these objects are also summarized in the CANopen® EDS Datei (ES61.eds).

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Object 0x1000 Device type

Object for the CANopen[®] device profile

Index	0x1000
Subindex	0x00
Name	Device type
Data Type	UNSIGNED32
Access Type	Read Only
PDO Mapping	No
Default Value	0x000F0191
Low Limit	
High Limit	

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Object 0x1001 Error register

Object for the CANopen[®] error register

Index	0x1001
Subindex	0x00
Name	Error register
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

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Object 0x1003 Pre-defined Error Field

Object for the CANopen® specifically Pre-defined error field

Index	0x1003
Name	Pre-defined Error Field

Index	0x1003
Subindex	0x00
Name	Number of Errors
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	
High Limit	

Index	0x1003
Subindex	0x01
Name	Standard Error Field
Data Type	UNSIGNED32
Access Type	Read Only
PDO Mapping	No
Default Value	0
Low Limit	
High Limit	

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Object 0x1008 Manufacturer device name

Object for the Eltex device name

Index	0x1008
Subindex	0x00
Name	Manufacturer device name
Data Type	VISIBLE STRING
Access Type	CONST
PDO Mapping	No
Default Value	ES61
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
Data Type	VISIBLE STRING
Access Type	CONST
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

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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

Index	0x100
Subindex	0x00
Name	Number of entries
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x01
Low Limit	
High Limit	

Index	0x1010
Subindex	0x01
Name	Save all parameters
Data Type	UNSIGNED32
Access Type	Read/Write
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

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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

Index	0x101
Subindex	0x00
Name	Number of entries
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x01
Low Limit	
High Limit	

Index	0x1011
Subindex	0x01
Name	Restore all Default Parameters
Data Type	UNSIGNED32
Access Type	Read/Write
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

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Object 0x1014 COB-ID EMCY Message

Object for the CAN Identifier of the EMCY message

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

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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 100 ms – 60000 ms (1 min) in 100 ms steps. If the value 0 is selected, the heartbeat is deactivated. By default, the heartbeat is sent every second.

Index	0x1017
Subindex	0x00
Name	Producer heartbeat time
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	1000
Low Limit	100
High Limit	60000

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Object 0x1018 Identity Object

Object to identify the CANopen® node

Index	0x1011
Name	Identity Object

Index	0x118
Subindex	0x00
Name	Number of entries
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x04
Low Limit	
High Limit	

Index	0x1018
Subindex	0x01
Name	Vendor ID
Data Type	UNSIGNED32
Access Type	Read Only
PDO Mapping	No
Default Value	0x0000024E
Low Limit	
High Limit	

Index	0x1018
Subindex	0x02
Name	Product Code
Data Type	UNSIGNED32
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Index	0x1018
Subindex	0x03
Name	Revision Number
Data Type	UNSIGNED32
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

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Index	0x1018
Subindex	0x04
Name	Serial Number
Data Type	UNSIGNED32
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

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Object 0x1200 1. Server SDO parameters

Object with the SDO Server parameters

Index	0x1200
Name	1. Server SDO parameters

Index	0x1200
Subindex	0x00
Name	Number of entries
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x02
Low Limit	
High Limit	

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

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

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Object 0x1400 1st Receive PDO-Parameter

Object with the communication parameters for the 1st Receive PDO

Index	0x1400
Name	1. Receive PDO Parameter

Index	0x1400
Subindex	0x00
Name	Largest Sub-Index supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x02
Low Limit	
High Limit	

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

Index	0x1400
Subindex	0x02
Name	Transmission Type
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	255
Low Limit	
High Limit	

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Object 0x1600 1st Receive PDO Mapping

Mapping parameter for the 1st Receive PDO

Index	0x1600
Name	1. Receive PDO Mapping

Index	0x1600
Subindex	0x00
Name	Number of mapped Application Objects supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x01
Low Limit	
High Limit	

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

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Object 0x1800 1st Transmit PDO parameter

Object with the communication parameters for the 1st Transmit PDO

Index	0x1800
Name	1. Transmit PDO Mapping

Index	0x1800
Subindex	0x00
Name	Largest Sub-Index supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x02
Low Limit	
High Limit	

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

Index	0x1800
Subindex	0x02
Name	Transmission Type
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	255
Low Limit	
High Limit	

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Object 0x1801 2nd Transmit PDO parameter

Object with the communication parameters for the 2nd Transmit PDO

Index	0x1801
Name	2. Transmit PDO Parameter

Index	0x1801
Subindex	0x00
Name	Largest Sub-Index supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x02
Low Limit	
High Limit	

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

Index	0x1801
Subindex	0x02
Name	Transmission Type
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	255
Low Limit	
High Limit	

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Object 0x1802 3rd Transmit PDO parameter

Object with the communication parameters for the 3rd Transmit PDO

Index	0x1802
Name	3. Transmit PDO Parameter

Index	0x1802
Subindex	0x00
Name	Largest Sub-Index supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x02
Low Limit	
High Limit	

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

Index	0x1802
Subindex	0x02
Name	Transmission Type
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	255
Low Limit	
High Limit	

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Object 0x1A00 1st Transmit PDO Mapping

Mapping parameter for the 1st Transmit PDO

Index	0x1A00
Name	1. Transmit PDO Mapping

Index	0x1A00
Subindex	0x00
Name	Number of mapped Application Objects supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x06
Low Limit	
High Limit	

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

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

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

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

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

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

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Object 0x1A01 2nd Transmit PDO Mapping

Mapping parameter for the 2nd Transmit PDO

Index	0x1A01
Name	2. Transmit PDO Mapping

Index	0x1A01
Subindex	0x00
Name	Number of mapped Application Objects supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x04
Low Limit	
High Limit	

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

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

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

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

CANopen® protocol description PRO IONIZER

Object 0x1A02 3rd Transmit PDO Mapping

Mapping parameter for the 3rd Transmit PDO

Index	0x1A02
Name	3. Transmit PDO Mapping

Index	0x1A02
Subindex	0x00
Name	Number of mapped Application Objects supported
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x04
Low Limit	
High Limit	

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

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

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

CANopen[®] protocol description PRO IONIZER

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

CANopen[®] protocol description PRO IONIZER

Object 0x2000 Read Operating Hours

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

Index	0x2000
Name	Read Operating Hours

Index	0x2000
Subindex	0x00
Name	Number of elements
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x0C
Low Limit	
High Limit	

Subindex 0x01 Read Operating Hours Years

Years of the operating hours counter.

Index	0x2000
Subindex	0x01
Name	Read Operating Hours Years
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x02 Read Operating Hours Days

Days of the operating hours counter.

Index	0x2000
Subindex	0x02
Name	Read Operating Hours Days
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x03 Read Operating Hours Hours

Hours of the operating hours counter.

Index	0x2000
Subindex	0x03
Name	Read Operating Hours Hours
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x04 Read Operating Hours Minutes

Minutes of the operating hours counter.

Index	0x2000
Subindex	0x04
Name	Read Operating Hours Minutes
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x09 Read Discharging Hours Years

Years of the hours counter Discharge.

Index	0x2000
Subindex	0x09
Name	Read Discharging Hours Years
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x0A Read Discharging Hours Days

Days of the hours counter Discharge.

Index	0x2000
Subindex	0x0A
Name	Read Discharging Hours Days
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x0B Read Discharging Hours Hours

Hours of the hours counter Discharge.

Index	0x2000
Subindex	0x0B
Name	Read Discharging Hours Hours
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x0C Read Discharging Hours Minutes

Minutes of the hours counter Discharge.

Index	0x2000
Subindex	0x0C
Name	Read Discharging Hours Minutes
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen® protocol description PRO IONIZER

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.

All possible entries are listed here. Depending on the variant of the device, not all are supported. If an unsupported value is accessed, the SDO error 0x06090011 (Sub-index does not exist) is transmitted as a response.

Index	0x2001
Name	Read Actual Values

Index	0x2001
Subindex	0x00
Name	Number of elements
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x20
Low Limit	
High Limit	

Subindex 0x01 Read Voltage Discharging Positive

Effective discharge voltage of the positive half-wave in V.

Index	0x2001
Subindex	0x01
Name	Read Voltage Discharging Positive
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x02 Read Voltage Discharging Negative

Effective discharge voltage of the negative half-wave in V.

Index	0x2001
Subindex	0x01
Name	Read Voltage Discharging Negative
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x03 Read Supply Voltage

Supply voltage in mV.

Index	0x2001
Subindex	0x03
Name	Read Supply Voltage
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x04 Read Temperature Device

Internal device temperature in °C.

Index	0x2001
Subindex	0x04
Name	Read Temperature Device
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x05 Read Discharging Mode

Operating state of the discharging.

The indication of the operating state is divided into two parts. The low-order byte represents the current operating mode. The higher-order byte represents the limits of the discharge.

- Discharge Operating mode
0 – Passive Discharge
1 – Active Discharge
- Bit 8 - Limiter Discharge
0 – Voltage limiter not active
1 – Voltage limiter active

Index	0x2001
Subindex	0x05
Name	Read Discharging Mode
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x06 Read Power Discharge 1

Effective power Discharge connection 1 in mW.

Index	0x2001
Subindex	0x06
Name	Read Power Discharge 1
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x07 Read Power Discharge 2

Effective power Discharge connection 2 in mW.

Index	0x2001
Subindex	0x07
Name	Read Power Discharge 2
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x08 Read Power Discharge 3

Effective power Discharge connection 3 in mW.

Index	0x2001
Subindex	0x08
Name	Read Power Discharge 3
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x09 Read Power Discharge 4

Effective power Discharge connection 4 in mW.

Index	0x2001
Subindex	0x09
Name	Read Power Discharge 4
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x0A Read Pollution Discharge 1

Pollution Discharge connection 1 in %.

Index	0x2001
Subindex	0x0A
Name	Read Pollution Discharge 1
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x0B Read Pollution Discharge 2

Pollution Discharge connection 2 in %.

Index	0x2001
Subindex	0x0B
Name	Read Pollution Discharge 1
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x0C Read Pollution Discharge 3

Pollution Discharge connection 3 in %.

Index	0x2001
Subindex	0x0C
Name	Read Pollution Discharge 3
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x0D Read Pollution Discharge 4

Pollution Discharge connection 4 in %.

Index	0x2001
Subindex	0x0D
Name	Read Pollution Discharge 4
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x0E Read Revolutions Speed Sensor 1

Number of revolutions per minute, speed sensor 1.

Index	0x2001
Subindex	0x0E
Name	Read Revolutions Speed Sensor 1
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x0F Read Revolutions Speed Sensor 2

Number of revolutions per minute, speed sensor 2.

Index	0x2001
Subindex	0x0F
Name	Read Revolutions Speed Sensor 2
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x10 Read Revolutions Speed Sensor 3

Number of revolutions per minute, speed sensor 3.

Index	0x2001
Subindex	0x10
Name	Read Revolutions Speed Sensor 3
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x11 Read Revolutions Speed Sensor 4

Number of revolutions per minute, speed sensor 4.

Index	0x2001
Subindex	0x11
Name	Read Revolutions Speed Sensor 4
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x12 Read Revolutions Speed Sensor 5

Number of revolutions per minute, speed sensor 5.

Index	0x2001
Subindex	0x12
Name	Read Revolutions Speed Sensor 5
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x13 Read Revolutions Speed Sensor 6

Number of revolutions per minute, speed sensor 6.

Index	0x2001
Subindex	0x13
Name	Read Revolutions Speed Sensor 6
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x14 Read Revolutions Speed Sensor 7

Number of revolutions per minute, speed sensor 7.

Index	0x2001
Subindex	0x14
Name	Read Revolutions Speed Sensor 7
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen® protocol description PRO IONIZER

Subindex 0x15 Read Revolutions Speed Sensor 8

Number of revolutions per minute, speed sensor 8.

Index	0x2001
Subindex	0x15
Name	Read Revolutions Speed Sensor 8
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x16 Read Revolutions Speed Sensor 9

Number of revolutions per minute, speed sensor 9.

Index	0x2001
Subindex	0x16
Name	Read Revolutions Speed Sensor 9
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x17 Read Revolutions Speed Sensor 10

Number of revolutions per minute, speed sensor 10.

Index	0x2001
Subindex	0x17
Name	Read Revolutions Speed Sensor 10
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen® protocol description PRO IONIZER

Subindex 0x18 Read State Digital Inputs D1-D10, A1-A2

Status of the digital input of the sensor inputs D1-D10 and A1-A2. The status is signalled by the corresponding bit for the respective sensor input.

The digital status of the sensor input is arranged as follows:

Byte 0								Byte 1							
LSB				MSB				LSB				MSB			
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	A1	A2				

Index	0x2001
Subindex	0x18
Name	Read State Digital Inputs D1-D10, A1-A2
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x19 Read Analog Voltage Input A1

Voltage of the analog sensor input A1 in mV.

Index	0x2001
Subindex	0x19
Name	Read Analog Voltage Input A1
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x1A Read Analog Voltage Input A2

Voltage of the analog sensor input A2 in mV.

Index	0x2001
Subindex	0x1A
Name	Read Analog Voltage Input A2
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x1B Read Sensor Ambient Temperature 1

Measured value ambient temperature sensor 1 in °C.

Index	0x2001
Subindex	0x1B
Name	Read Sensor Ambient Temperature 1
Data Type	INTEGER16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x1C Read Sensor Ambient Temperature 2

Measured value ambient temperature sensor 2 in °C.

Index	0x2001
Subindex	0x1C
Name	Read Sensor Ambient Temperature 2
Data Type	INTEGER 16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x1D Read Sensor Humidity 1

Measured value humidity sensor 1 in %.

Index	0x2001
Subindex	0x1D
Name	Read Sensor Humidity 1
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x1E Read Sensor Humidity 2

Measured value humidity sensor 2 in %.

Index	0x2001
Subindex	0x1E
Name	Read Sensor AHumidity
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

S Subindex 0x1F Read Sensor Metal Detection

Status of the metal detection

- 0 – Metal not detected
- 1 – Metal detected

Index	0x2001
Subindex	0x1F
Name	Read Sensor Metal Detection
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x20 Read Sensor Suction Monitoring

Status of the suction monitoring

- 0 – Suction not active
- 1 – Suction active

Index	0x2001
Subindex	0x20
Name	Read Sensor Suction Monitoring
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen® protocol description PRO IONIZER

Object 0x2002 Read/Write Parameter

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

All possible entries are listed here. Depending on the variant of the device, not all are supported. If an unsupported value is accessed, the SDO error 0x06090011 (Sub-index does not exist) is transmitted as a response.

Index	0x2002
Name	Read/Write Parameter

Index	0x2002
Subindex	0x00
Name	Number of elements
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x40
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 (1 min) can be set. A time of 500 ms is set by default. Setting this parameter, the entire bus load must be considered. If a lower time is set, the bus load increases.

Index	0x2002
Subindex	0x01
Name	Read/Write Actual Value Transfer Time
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	500
Low Limit	100
High Limit	60000

CANopen® protocol description PRO IONIZER

Subindex 0x02 Read/Write HV Release Mode

Setting of the release option of the high voltage. The individual options can be activated separately. The output of the high voltage starts after the conditions for the release have been set.

- Bit 0 – Autostart
0 – Autostart deactivated
1 – Autostart activated (Automatic setting of the software release after witching on the supply voltage)
- Bit 1 – HMI
0 – HMI release deactivated
1 – HMI release activated (release can be switched on / off via touchscreen or keypad)
- Bit 2 – CANopen®
0 – Release via CANopen® deactivated
1 – Release via CANopen® activated (software release can be controlled via write access to [Index 0x6200 Subindex 0x01](#))
- Bit 3 – Fieldbus Ethernet
0 – Release via Ethernet deactivated
1 – Release via Ethernet activated
- Bit 4 – Hardware release
0 – Hardware release deactivated
1 – Hardware release activated

Index	0x2002
Subindex	0x02
Name	Read/Write HV Release Mode
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	2
Low Limit	0
High Limit	31

Subindex 0x03 Read/Write Output Signal Mode

Setting the mode for the signal output for signaling the individual device states.

- 0 – HV Active
- 1 – Warning
- 2 – Pollution

Index	0x2002
Subindex	0x03
Name	Read/Write Output Signal Mode
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	2

CANopen® protocol description PRO IONIZER

Subindex 0x04 Read/Write HV Release Timeout

Timeout for the release of the high voltage. After the timeout has expired, the software release 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
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	60000

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
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x06 Read/Write CANopen® Node ID

Setting of 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
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	99
Low Limit	1
High Limit	127

CANopen® protocol description PRO IONIZER

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.

- 0 – 1000 kBit/S
- 1 – 1000 kBit/S
- 2 – 1000 kBit/S
- 3 – 1000 kBit/S
- 4 – 1000 kBit/S
- 5 – 1000 kBit/S
- 6 – 1000 kBit/S
- 7 – 1000 kBit/S
- 8 – 1000 kBit/S
- 9 - CANopen® Communication deactivated

Index	0x2002
Subindex	0x07
Name	Read/Write CANopen® Bit Timing
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	4
Low Limit	0
High Limit	9

Subindex 0x08 Read/Write Voltage Setpoint Discharging

Setting of the voltage setpoint of the Discharge in V.

Index	0x2002
Subindex	0x08
Name	Read/Write Voltage Setpoint Discharging
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	Maximum Voltage Discharging
Low Limit	Minimum Voltage Discharging
High Limit	Maximum Voltage Discharging

Subindex 0x09 Read Current Setpoint Discharging

Setting of the current setpoint of the Discharge in μ A.
This parameter can only be read.

Index	0x2002
Subindex	0x09
Name	Read Current Setpoint Discharging
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x0A Read Power Setpoint Discharging

Setting of the power setpoint of the Discharge in W.
The value for the power is displayed with one decimal place
(indication 125 corresponds to 12.5 W).

Index	0x2002
Subindex	0x0A
Name	Read Power Setpoint Discharging
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	No
Default Value	
Low Limit	
High Limit	

Subindex 0x0B Read/Write Setpoint Percent Discharging

Setting the voltage setpoint of the Discharge in %.

Index	0x2002
Subindex	0x0B
Name	Read/Write Setpoint Percent Discharging
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	100
Low Limit	0
High Limit	100

Subindex 0x0C Read/Write Frequency Discharging

Selection of the frequency for the discharge voltage. The setting is made by selecting the respective index for the frequency. The following frequencies can be set:

- 0 – 50 Hz
- 1 – 62,5 Hz
- 2 – 75 Hz
- 3 – 87,5 Hz
- 4 – 100 Hz
- 5 – 125 Hz
- 6 – 150 Hz
- 7 – 175 Hz
- 8 – 200 Hz

Index	0x2002
Subindex	0x0C
Name	Read/Write Frequency Discharging
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	8

CANopen® protocol description PRO IONIZER

Subindex 0x0D Read/Write Ion Balance Discharging

Adjustment of the balance between the positive and negative half-wave to optimize the residual charge. The ion balance is adjustable for both polarities to optimize the residual charge.

If the setting is 100, there is no adaptation.

If the set value is below 100, the positive polarity is adapted and if the setting is above 100, the negative polarity is adapted.

Index	0x2002
Subindex	0x0D
Name	Read/Write Ion Balance Discharging
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	100
Low Limit	0
High Limit	200

Subindex 0x0E Read/Write Discharging Mode

Setting of the discharge mode. The following settings can be selected:

- 0 – Passive discharge
- 1 – Active discharge

Index	0x2002
Subindex	0x0E
Name	Read/Write Discharging Mode
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	1
Low Limit	0
High Limit	1

Subindex 0x0F 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 power supply is not possible. Note that this parameter is not saved, and the keyboard lock is always deactivated after the power supply is restarted.

- 0 – Keyboard lock not activated
- 1 – Keyboard lock activated

Index	0x2002
Subindex	0x0F
Name	Read/Write Keyboard Lock
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	1

CANopen[®] protocol description PRO IONIZER

Subindex 0x10 Read/Write LED Bar Mode

Setting of the mode for displaying the actual values using the integrated LED bar.

- 0 – Display: Actual value of the voltage
- 1 – Display: Frequency parameter of the discharge
- 2 – Display: Parameter of the ion balance
- 3 – Display: Actual value of the pollution, connection 1
- 4 – Display: Actual value of the pollution, connection 2
- 5 – Display: Actual value of the pollution, connection 3
- 6 – Display: Actual value of the pollution, connection 4
- 7 – Display: Actual value with automatic selection of the connection

Index	0x2002
Subindex	0x10
Name	Read/Write LED Bar Mode
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	7

Subindex 0x11 Read/Write Pollution Detection Discharge 1

Setting of the discharge pollution monitoring, Discharge 1.

- 0 – Pollution monitoring deactivated
- 1 – Pollution monitoring activated
- 2 – Display: Calibration of the pollution monitoring

Index	0x2002
Subindex	0x11
Name	Read/Write Pollution Detection Discharge 1
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	2

Subindex 0x12 Read/Write Pollution Detection Discharge 2

Setting of the discharge pollution monitoring, Discharge 2.

- 0 – Pollution monitoring deactivated
- 1 – Pollution monitoring activated
- 2 – Display: Calibration of the pollution monitoring

Index	0x2002
Subindex	0x12
Name	Read/Write Pollution Detection Discharge 2
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	2

CANopen[®] protocol description PRO IONIZER

Subindex 0x13 Read/Write Pollution Detection Discharge 3

Setting of the discharge pollution monitoring, Discharge 3.

- 0 – Pollution monitoring deactivated
- 1 – Pollution monitoring activated
- 2 – Display: Calibration of the pollution monitoring

Index	0x2002
Subindex	0x13
Name	Read/Write Pollution Detection Discharge 3
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	2

Subindex 0x14 Read/Write Pollution Detection Discharge 4

Setting of the discharge pollution monitoring, Discharge 4.

- 0 – Pollution monitoring deactivated
- 1 – Pollution monitoring activated
- 2 – Display: Calibration of the pollution monitoring

Index	0x2002
Subindex	0x14
Name	Read/Write Pollution Detection Discharge 4
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	2

Subindex 0x15 Read/Write Nominal Power Discharge 1

Setting of the nominal power in mW of the device operated at connection 1 determined by the calibration of the pollution monitoring. This value represents the 0 % reference point for determining the pollution for connection 1.

Index	0x2002
Subindex	0x15
Name	Read/Write Nominal Power Discharge 1
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

CANopen[®] protocol description PRO IONIZER

Subindex 0x16 Read/Write Nominal Power Discharge 2

Setting of the nominal power in mW of the device operated at connection 2 determined by the calibration of the pollution monitoring. This value represents the 0 % reference point for determining the pollution for connection 2.

Index	0x2002
Subindex	0x16
Name	Read/Write Nominal Power Discharge 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

Subindex 0x17 Read/Write Nominal Power Discharge 3

Setting of the nominal power in mW of the device operated at connection 3 determined by the calibration of the pollution monitoring. This value represents the 0 % reference point for determining the pollution for connection 3.

Index	0x2002
Subindex	0x17
Name	Read/Write Nominal Power Discharge 3
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

Subindex 0x18 Read/Write Nominal Power Discharge 4

Setting of the nominal power in mW of the device operated at connection 4 determined by the calibration of the pollution monitoring. This value represents the 0 % reference point for determining the pollution for connection 4.

Index	0x2002
Subindex	0x18
Name	Read/Write Nominal Power Discharge 4
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

CANopen[®] protocol description PRO IONIZER

Subindex 0x19 Read/Write Power Limit A Discharge 1

Setting the lower power limit in mW for calculating the pollution for connection 1. This value represents the 100 % reference point for determining the pollution for connection 1.

Index	0x2002
Subindex	0x19
Name	Read/Write Power Limit A Discharge 1
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

Subindex 0x1A Read/Write Power Limit A Discharge 2

Setting the lower power limit in mW for calculating the pollution for connection 2. This value represents the 100 % reference point for determining the pollution for connection 2.

Index	0x2002
Subindex	0x1A
Name	Read/Write Power Limit A Discharge 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

Subindex 0x1B Read/Write Power Limit A Discharge 3

Setting the lower power limit in mW for calculating the pollution for connection 3. This value represents the 100 % reference point for determining the pollution for connection 3.

Index	0x2002
Subindex	0x1B
Name	Read/Write Power Limit A Discharge 3
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

Subindex 0x1C Read/Write Power Limit A Discharge 4

Setting the lower power limit in mW for calculating the pollution for connection 4. This value represents the 100 % reference point for determining the pollution for connection 4.

Index	0x2002
Subindex	0x1C
Name	Read/Write Power Limit A Discharge 4
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	3500

CANopen[®] protocol description PRO IONIZER

Subindex 0x1D Read/Write Power Limit B Discharge 1

Setting the upper power limit in mW for calculating the pollution for connection 1. This value represents the 100 % reference point for determining the pollution for connection 1.

Index	0x2002
Subindex	0x1D
Name	Read/Write Power Limit B Discharge 1
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	10000

Subindex 0x1E Read/Write Power Limit B Discharge 2

Setting the upper power limit in mW for calculating the pollution for connection 2. This value represents the 100 % reference point for determining the pollution for connection 2.

Index	0x2002
Subindex	0x1E
Name	Read/Write Power Limit B Discharge 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	10000

Subindex 0x1F Read/Write Power Limit B Discharge 3

Setting the upper power limit in mW for calculating the pollution for connection 3. This value represents the 100 % reference point for determining the pollution for connection 3.

Index	0x2002
Subindex	0x1F
Name	Read/Write Power Limit B Discharge 3
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	10000

Subindex 0x20 Read/Write Power Limit B Discharge 4

Setting the upper power limit in mW for calculating the pollution for connection 4. This value represents the 100 % reference point for determining the pollution for connection 4.

Index	0x2002
Subindex	0x20
Name	Read/Write Power Limit B Discharge 4
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	10000

CANopen[®] protocol description PRO IONIZER

Subindex 0x21 Read/Write Active Length Discharge 1

Setting of the active length in mm of the device connected to connection 1. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x21
Name	Read/Write Active Length Discharge 1
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	6000

Subindex 0x22 Read/Write Active Length Discharge 2

Setting of the active length in mm of the device connected to connection 2. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x22
Name	Read/Write Active Length Discharge 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	6000

Subindex 0x23 Read/Write Active Length Discharge 3

Setting of the active length in mm of the device connected to connection 3. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x23
Name	Read/Write Active Length Discharge 3
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	6000

Subindex 0x24 Read/Write Active Length Discharge 4

Setting of the active length in mm of the device connected to connection 4. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x24
Name	Read/Write Active Length Discharge 4
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	6000

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Subindex 0x25 Read/Write Cable Length Discharge 1

Setting of the cable length in dm of the device connected to connection 1. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x25
Name	Read/Write Cable Length Discharge 1
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	350

Subindex 0x26 Read/Write Cable Length Discharge 2

Setting of the cable length in dm of the device connected to connection 2. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x26
Name	Read/Write Cable Length Discharge 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	350

Subindex 0x27 Read/Write Cable Length Discharge 3

Setting of the cable length in dm of the device connected to connection 3. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x27
Name	Read/Write Cable Length Discharge 3
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	350

Subindex 0x28 Read/Write Cable Length Discharge 4

Setting of the cable length in dm of the device connected to connection 4. This setting adjusts the sensitivity of the pollution monitoring according to the setting.

Index	0x2002
Subindex	0x28
Name	Read/Write Cable Length Discharge 4
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	350

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Subindex 0x29 Warning Level Discharge 1

Setting of the warning level for the pollution of connection 1 in %. If the calculated pollution for the connection exceeds the set value, the corresponding warning is set.

Index	0x2002
Subindex	0x29
Name	Read/Write Warning Level Discharge 1
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	50
Low Limit	29
High Limit	90

Subindex 0x2A Warning Level Discharge 2

Setting of the warning level for the pollution of connection 2 in %. If the calculated pollution for the connection exceeds the set value, the corresponding warning is set.

Index	0x2002
Subindex	0x2A
Name	Read/Write Warning Level Discharge 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	50
Low Limit	29
High Limit	90

Subindex 0x2B Warning Level Discharge 3

Setting of the warning level for the pollution of connection 3 in %. If the calculated pollution for the connection exceeds the set value, the corresponding warning is set.

Index	0x2002
Subindex	0x2B
Name	Read/Write Warning Level Discharge 3
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	50
Low Limit	29
High Limit	90

Subindex 0x2C Warning Level Discharge 4

Setting of the warning level for the pollution of connection 4 in %. If the calculated pollution for the connection exceeds the set value, the corresponding warning is set.

Index	0x2002
Subindex	0x2C
Name	Read/Write Warning Level Discharge 4
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	50
Low Limit	29
High Limit	90

CANopen[®] protocol description PRO IONIZER

Subindex 0x2D Read/Write Reference Point Activation

Setting for activating the reference point. When the reference point is activated, the maximum discharge voltage is set with a frequency of 50 Hz and no adjustment of the ion balance.

These settings are used to determine the current power of the connected devices and to assess the current status of the respective device. Once the determination has been carried out, the previously set values for the discharge voltage are reloaded.

- 0 – HV release
- 1 – Reference point permanently activated
- 2 – Cyclical activation of the reference point, 1 minute interval
- 3 – Cyclical activation of the reference point, 10 minutes interval
- 4 – Cyclical activation of the reference point, 30 minutes interval
- 5 – Cyclical activation of the reference point, 60 minutes interval
- 6 – Activation on request via the field bus (see [Index 0x6200 Subindex 0x01](#))

Index	0x2002
Subindex	0x2D
Name	Read/Write Reference Point Activation
Data Type	UNSIGNED
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	6

Subindex 0x2E Read/Write Discharging Overload Warning

Setting to detect the warnings in case of an overload of the connection.

- 0 – Overload detection Warnings deactivated
- 1 – Overload detection Warnings activated

Index	0x2002
Subindex	0x2E
Name	Read/Write Discharging Overload Warning
Data Type	UNSIGNED
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	1

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Subindex 0x2F Read/Write Sensor Input Mode

Setting the mode for the sensor input

- 0 – Sensor input deactivated
- 1 – Speed sensor mode
- 2 – E-field sensor mode
- 3 – External sensor mode: expansion box D1-D2, A1-A2
- 4 – External sensor mode: expansion box D1-D6, A1-A2
- 5 – External sensor mode: expansion box D1-D10, A1-A2
- 6 – Humidity sensor
- 7 – Temperature sensor
- 8 – Metal detection
- 9 – Suction monitoring

Index	0x2002
Subindex	0x2F
Name	Read/Write Sensor Input Mode
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	9

Subindex 0x30 Read/Write Minimum Revolutions Speed Sensor

Setting of the minimum number of revolutions per minute of the connected speed sensors. If a sensor falls below this value, the device generates the corresponding warning.

Index	0x2002
Subindex	0x30
Name	Read/Write Minimum Revolutions Speed Sensor
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	300
Low Limit	0
High Limit	1200

Subindex 0x31 Read/Write Type E-Field Sensor 1

Setting the type of E-field sensor 1.

- 0 – SMC IZD 10-110
- 1 – SMC IZD 10-510

Index	0x2002
Subindex	0x31
Name	Read/Write Type E-Field Sensor 1
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	1

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Subindex 0x32 Read/Write Distance E-Field Sensor 1

Setting the working distance in mm for E-field sensor 1 to convert the measured E-field into the corresponding voltage.

Index	0x2002
Subindex	0x32
Name	Read/Write Distance E-Field Sensor 1
Data Type	UNSIGNED
Access Type	Read/Write
PDO Mapping	No
Default Value	25 – SMC IZD 10-110 50 – SMC IZD 10-510
Low Limit	10 – SMC IZD 10-110 25 – SMC IZD 10-510
High Limit	50 – SMC IZD 10-110 75 – SMC IZD 10-510

Subindex 0x33 Read/Write Warning Level E-Field Sensor 1

Setting the warning level in V to recognize the corresponding warning of E-field sensor 1.

Index	0x2002
Subindex	0x33
Name	Read/Write Warning Level E-Field Sensor 1
Data Type	UNSIGNED
Access Type	Read/Write
PDO Mapping	No
Default Value	800 – SMC IZD 10-110 28000 – SMC IZD 10-510
Low Limit	0 – SMC IZD 10-110 0 – SMC IZD 10-510
High Limit	1000 – SMC IZD 10-110 30000 – SMC IZD 10-510

Subindex 0x34 Read/Write Error Level E-Field Sensor 1

Setting the error level in V to recognize the corresponding error of E-field sensor 1.

Index	0x2002
Subindex	0x34
Name	Read/Write Error Level E-Field Sensor 1
Data Type	UNSIGNED
Access Type	Read/Write
PDO Mapping	No
Default Value	1000 – SMC IZD 10-110 30000 – SMC IZD 10-510
Low Limit	0 – SMC IZD 10-110 0 – SMC IZD 10-510
High Limit	1000 – SMC IZD 10-110 30000 – SMC IZD 10-510

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Subindex 0x35 Read/Write Zero Point E-Field Sensor 1

Setting the zero point deviation in V of the E-field sensor 1.

Index	0x2002
Subindex	0x35
Name	Read/Write Zero Point E-Field Sensor 1
Data Type	INTEGER16
Access Type	Read/Write
PDO Mapping	No
Default Value	0 – SMC IZD 10-110 0 – SMC IZD 10-510
Low Limit	-100 – SMC IZD 10-110 -1000 – SMC IZD 10-510
High Limit	100 – SMC IZD 10-110 1000 – SMC IZD 10-510

Subindex 0x36 Read/Write Type E-Field Sensor 2

Setting the type of E-field sensor 2.

- 0 – SMC IZD 10-110
- 1 – SMC IZD 10-510

Index	0x2002
Subindex	0x36
Name	Read/Write Type E-Field Sensor 2
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	0
High Limit	1

Subindex 0x37 Read/Write Distance E-Field Sensor 2

Setting the working distance in mm for E-field sensor 2 to convert the measured E-field into the corresponding voltage.

Index	0x2002
Subindex	0x37
Name	Read/Write Distance E-Field Sensor 2
Data Type	UNSIGNED8
Access Type	Read/Write
PDO Mapping	No
Default Value	25 – SMC IZD 10-110 50 – SMC IZD 10-510
Low Limit	10 – SMC IZD 10-110 25 – SMC IZD 10-510
High Limit	50 – SMC IZD 10-110 75 – SMC IZD 10-510

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Subindex 0x38 Read/Write Warning Level E-Field Sensor 2

Setting the warning level in V to recognize the corresponding warning of E-field sensor 2.

Index	0x2002
Subindex	0x38
Name	Read/Write Warning Level E-Field Sensor 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	800 – SMC IZD 10-110 28000 – SMC IZD 10-510
Low Limit	0 – SMC IZD 10-110 0 – SMC IZD 10-510
High Limit	1000 – SMC IZD 10-110 30000 – SMC IZD 10-510

Subindex 0x39 Read/Write Error Level E-Field Sensor 2

Setting the error level in V to recognize the corresponding error of E-field sensor 2.

Index	0x2002
Subindex	0x39
Name	Read/Write Error Level E-Field Sensor 2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	1000 – SMC IZD 10-110 30000 – SMC IZD 10-510
Low Limit	0 – SMC IZD 10-110 0 – SMC IZD 10-510
High Limit	1000 – SMC IZD 10-110 30000 – SMC IZD 10-510

Subindex 0x3A Read/Write Zero Point E-Field Sensor 2

Setting the zero point deviation in V of the E-field sensor 1.

Index	0x2002
Subindex	0x3A
Name	Read/Write Zero Point E-Field Sensor 2
Data Type	INTEGER16
Access Type	Read/Write
PDO Mapping	No
Default Value	0 – SMC IZD 10-110 0 – SMC IZD 10-510
Low Limit	-100 – SMC IZD 10-110 -1000 – SMC IZD 10-510
High Limit	100 – SMC IZD 10-110 1000 – SMC IZD 10-510

CANopen[®] protocol description PRO IONIZER

Subindex 0x3B Read/Write Sensor Extension Mode D1-D8

Selection of the mode of the external sensor expansion box of the sensors to be evaluated for the inputs D1-D8.

The following modes are available for evaluating the inputs:

- 0 – Sensor input deactivated
- 1 – Speed sensor selected for the sensor input
- 2 – Metal detection
- 3 – Suction monitoring

The mode selection for the respective sensor inputs is arranged as follows:

Byte 0				Byte 1			
LSB		MSB		LSB		MSB	
D1	D2	D3	D4	D5	D6	D7	D8

Index	0x2002
Subindex	0x3B
Name	Read/Write Sensor Extension Mode D1-D8
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0x0000
Low Limit	0x0000
High Limit	0xFFFF

Subindex 0x3C Read/Write Sensor Extension Mode D9-D10, A1-A2

Selection of the mode of the external sensor extension box of the sensors to be evaluated for the inputs D9-D10 and A1-A2.

The following modes are available for evaluating the inputs D9-D10:

- 0 – Sensor input deactivated
- 1 – Speed sensor selected for the sensor input
- 2 – Metal detection
- 3 – Suction monitoring

The following modes are available for evaluating the inputs A1-A2:

- 0 – Sensor input deactivated
- 1 – E-field sensor selected for the sensor input
- 2 – Humidity sensor
- 3 – Temperature sensor

The mode selection for the respective sensor inputs is arranged as follows:

Byte 0				Byte 1			
LSB		MSB		LSB		MSB	
D9	D10	A1	A2				

Index	0x2002
Subindex	0x3C
Name	Read/Write Sensor Extension Mode D9-D10, A1-A2
Data Type	UNSIGNED16
Access Type	Read/Write
PDO Mapping	No
Default Value	0x0000
Low Limit	0x0000
High Limit	0x00FF

CANopen[®] protocol description PRO IONIZER

Subindex 0x3D Read/Write Sensor Temperature 1 Low Value

Setting the 0 V reference point for calculating the analog measured value of temperature sensor 1 in °C.

Index	0x2002
Subindex	0x3D
Name	Read/Write Sensor Temperature 1 Low Value
Data Type	INTEGER16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	-40
High Limit	200

Subindex 0x3E Read/Write Sensor Temperature 1 High Value

Setting the 10 V reference point for calculating the analog measured value of temperature sensor 1 in °C.

Index	0x2002
Subindex	0x3E
Name	Read/Write Sensor Temperature 1 High Value
Data Type	INTEGER16
Access Type	Read/Write
PDO Mapping	No
Default Value	100
Low Limit	-40
High Limit	200

Subindex 0x3F Read/Write Sensor Temperature 2 Low Value

Setting the 0 V reference point for calculating the analog measured value of temperature sensor 2 in °C.

Index	0x2002
Subindex	0x3F
Name	Read/Write Sensor Temperature 2 Low Value
Data Type	INTEGER16
Access Type	Read/Write
PDO Mapping	No
Default Value	0
Low Limit	-40
High Limit	200

Subindex 0x40 Read/Write Sensor Temperature 2 High Value

Setting the 10 V reference point for calculating the analog measured value of temperature sensor 2 in °C.

Index	0x2002
Subindex	0x40
Name	Read/Write Sensor Temperature 2 High Value
Data Type	INTEGER16
Access Type	Read/Write
PDO Mapping	No
Default Value	100
Low Limit	-40
High Limit	200

CANopen[®] protocol description PRO IONIZER

Object 0x2003 Clear Error/Warning

Object with entries for acknowledging occurred errors and warnings

Index	0x2003
Name	Clear Error/Warning

Index	0x2003
Subindex	0x00
Name	Number of elements
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x02
Low Limit	
High Limit	

Subindex 0x01 Clear Error

After a successful internal check, the selected error message is deleted.

Index	0x2003
Subindex	0x01
Name	Clear Error
Data Type	UNSIGNED8
Access Type	Write Only
PDO Mapping	No
Default Value	
Low Limit	0x01
High Limit	0x50

Subindex 0x02 Clear Warning

After a successful internal check, the selected warning message is deleted.

Index	0x2003
Subindex	0x02
Name	Clear Warning
Data Type	UNSIGNED8
Access Type	Write Only
PDO Mapping	No
Default Value	
Low Limit	0x01
High Limit	0x60

CANopen[®] protocol description PRO IONIZER

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

Index	0x6000
Subindex	0x00
Name	Number of elements
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x06
Low Limit	
High Limit	

Subindex 0x01 Read System Status

Current system status of the power supply. The status is composed 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 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 – Hardware release
0 – no hardware release
1 – hardware release is set

Index	0x6000
Subindex	0x01
Name	Read System Status
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

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Subindex 0x02 Read Discharging Capacity

Percentage utilization of the discharge capacity.

Index	0x6000
Subindex	0x02
Name	Read Discharging Capacity
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x03 Read Status Discharge 1

Discharge status of connection 1.

The individual values for the possible states are listed below:

- 0 – No device connected
- 1 – Device detected
- 2 – Pollution of the connected device detected
- 3 – Overload of the connection due to the connected device
- 4 – Error detected within the connection resp. the connected device

Index	0x6000
Subindex	0x03
Name	Read Status Discharge 1
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x04 Read Status Discharge 2

Discharge status of connection 2.

The individual values for the possible states are listed below:

- 0 – No device connected
- 1 – Device detected
- 2 – Pollution of the connected device detected
- 3 – Overload of the connection due to the connected device
- 4 – Error detected within the connection resp. the connected device

Index	0x6000
Subindex	0x04
Name	Read Status Discharge 2
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

CANopen[®] protocol description PRO IONIZER

Subindex 0x05 Read Status Discharge 3

Discharge status of connection 3.

The individual values for the possible states are listed below:

- 0 – No device connected
- 1 – Device connected
- 2 – Pollution of the connected device detected
- 3 – Overload of the connection due to the connected device
- 4 – Error detected within the connection resp. the connected device

Index	0x6000
Subindex	0x05
Name	Read Status Discharge 3
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x06 Read Status Discharge 4

Discharge status of connection 4.

The individual values for the possible states are listed below:

- 0 – No device connected
- 1 – Device connected
- 2 – Pollution of the connected device detected
- 3 – Overload of the connection due to the connected device
- 4 – Error detected within the connection resp. the connected device

Index	0x6000
Subindex	0x06
Name	Read Status Discharge 4
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

CANopen® protocol description PRO IONIZER

Object 0x6200 Write Output 8 Bit

Object with 8-bit output 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

Index	0x6200
Subindex	0x00
Name	Number of elements
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
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.

- 0x00 – Deleting the software release
- 0x0A – Setting the software release and activating the reference point to perform the connection monitoring. For more information see [Index 0x2002 Subindex 0x2D](#).
- 0x0F – Setting the software release

Index	0x6200
Subindex	0x01
Name	Write HV Release
Data Type	UNSIGNED8
Access Type	Write Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

CANopen® protocol description PRO IONIZER

Object 0x6401 Read Analog Input 16 Bit

Object with 16-bit analog input data. These entries are mapped to the 2nd and 3rd 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

Index	0x6401
Subindex	0x00
Name	Number of elements
Data Type	UNSIGNED8
Access Type	Read Only
PDO Mapping	No
Default Value	0x08
Low Limit	
High Limit	

Subindex 0x01 Read Voltage Discharging

Effective discharge voltage in V.

Index	0x6401
Subindex	0x01
Name	Read Voltage Discharging
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x02 Read AC Current Discharging

Effective AC discharge current in μ A.

Index	0x6401
Subindex	0x02
Name	Read AC Current Discharging
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x03 Read DC Current Discharging

Signed DC discharge current in μ A.

Index	0x6401
Name	Read DC Current Discharging
Data Type	INTEGER16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

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Subindex 0x04 Read Power Discharging

Discharging Power in watt with one decimal place.

Index	0x6401
Subindex	0x04
Name	Read Power Discharging
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x05 Read E-Field Sensor 1

Measured value of E-field sensor 1 in V.

Index	0x6401
Subindex	0x05
Name	Read E-Field Sensor 1
Data Type	INTEGER16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x06 Read Ripple E-Field Sensor 1

Ripple of the measured value E-field sensor 1 in V.

Index	0x6401
Subindex	0x06
Name	Read Ripple E-Field Sensor 1
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

Subindex 0x07 Read E-Field Sensor 2

Measured value of E-field sensor 2 in V.

Index	0x6401
Subindex	0x07
Name	Read E-Field Sensor 2
Data Type	INTEGER16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	

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Subindex 0x08 Read Ripple E-Field Sensor 2

Ripple of the measured value E-field sensor 2 in V.

Index	0x6401
Subindex	0x08
Name	Read Ripple E-Field Sensor 2
Data Type	UNSIGNED16
Access Type	Read Only
PDO Mapping	Yes
Default Value	
Low Limit	
High Limit	