



Smartline Vacuum Transmitter EtherCAT Communication Manual



VSR/VSP



VSM



VSH

Version: 1.4
Release: November 16, 2018
Copyright: © 2018 Thyracont Vacuum Instruments GmbH

Content

1 Communication 3

1.1 Communication Types 3

1.2 Process Data Objects (PDOs) 3

1.3 CANopen over EtherCAT (CoE) 3

1.4 Data exchange with Smartline Transmitter Slaves 3

2 Process Data Objects (PDOs) 4

2.1 PDO List 4

2.2 TxPDO Content (0x1A00) – Pressure Status 4

2.3 TxPDO Content (0x1A01) – Status and Type 4

2.4 TxPDO Content (0x1A02) – Transmitter Status 6

2.5 TxPDO Content (0x1A03) – Syntax 7

2.6 RxPDO Content (0x1600) – Outputs 8

3 Commands (0x7000:04) 9

3.1 Command List 9

3.2 General Commands for all Smartline Transmitter 10

3.2.1 0x00 (0) – Zero Command 10

3.2.2 0x01 (1) – Adjust High Vacuum 10

3.2.3 0x02 (2) – Adjust Atmospheric Pressure 10

3.2.4 0x03 (3) – Set Gas Correction Factors 10

3.3 VSR Commands 10

3.3.1 0x39 (57) – Set Sensor Switch Mode 10

3.4 VSM Commands 11

3.4.1 0x46 (70) – Activate Cold Cathode 11

3.4.2 0x47 (71) – Deactivate Cold Cathode 11

3.4.3 0x4D (77) – Set Sensor Switch Mode 11

3.5 VSH Commands 11

3.5.1 0x50 (80) – Activate Hot Cathode 11

3.5.2 0x51 (81) – Deactivate Cold Cathode 11

3.5.3 0x55 (85) – Activate DeGas 11

3.5.4 0x56 (86) – Deactivate DeGas 11

3.5.5 0x57 (87) – Set Sensor Switch Mode 12

4 ESI File 12

5 Document History 12

6 License 12

1 Communication

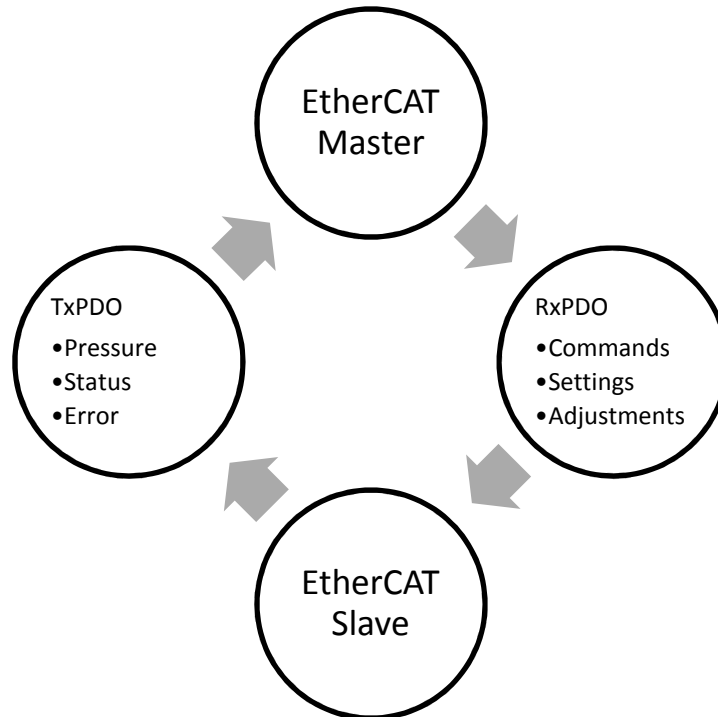
1.1 Communication Types

All Smartline Transmitter support the following communication type:

- Process Data Communication (PDO)

1.2 Process Data Objects (PDOs)

Process Data Objects (PDOs) are used to transfer data with a cyclic communication between slave and master. Reception PDOs (RxPDOs) are used to receive data and transmission PDOs (TxPDOs) transmit data.



1.3 CANopen over EtherCAT (CoE)

The Object Dictionary can be accessed by a Master via acyclic SDO services or from the device description from ESI file. Both Master and Slave need to exchange data cyclically. For this reason, CoE protocol allows to configure a specific subset of the Objects defined in the Object Dictionary as Process Data. The Process Data are not a second source of information for the Slave device: they are simply a subset of the Objects provided by the Slave which are exchanged with a preferred cyclic channel and the values are copied directly from the EtherCAT frame to the local variable in the Slave's firmware and vice-versa instead of processed by the mailbox.

1.4 Data exchange with Smartline Transmitter Slaves

All Objects from Smartline Transmitter are defined as Process Data and due to the cyclic data exchange Input and Output Data can be read/write as followed:



Input Data

- Values can be read by PDOs and CoE.

Output Data

- Values can be written only by PDO, writing via CoE doesn't work (see 1.3).

2 Process Data Objects (PDOs)

2.1 PDO List

Index	Bitsize	Name	Flags
0x1A00	64	Pressure Status	mandatory, fixed
0x1A01	8	Status and Type	mandatory, fixed
0x1A02	8	Transmitter Status	mandatory, fixed
0x1A03	16	Syntax	mandatory, fixed
0x1600	80	Outputs	mandatory, fixed

2.2 TxPDO Content (0x1A00) – Pressure Status

Index	Bitsize	Name	Type
0x6000:01	32	Actual Pressure	REAL
0x6000:02	16	Actual GCF 1	UINT
0x6000:03	16	Actual GCF 2	UINT

Subindex	Description
----------	-------------

0x01 Actual Pressure: Contains the actual pressure value

0x02 Actual GCF 1: Contains the actual Gas Correction Factor (GCF) for Pirani sensor of all Smartline transmitters.

Type	Data Range
VSR	0x0014 – 0x0320 (20 – 800)
VSP	0x0014 – 0x0320 (20 – 800)
VSM	0x0014 – 0x0320 (20 – 800)
VSH	0x0014 – 0x0320 (20 – 800)

0x03 Actual GCF 2: Contains the actual Gas Correction Factor (GCF) for hot or cold cathode for Smartline transmitters.

Type	Data Range
VSR	0x0000 (0), fixed
VSP	0x0000 (0), fixed
VSM	0x0014 – 0x0320 (20 – 800) for cold cathode
VSH	0x0014 – 0x0320 (20 – 800) for hot cathode

2.3 TxPDO Content (0x1A01) – Status and Type

Index	Bitsize	Name	Type
0x6000:04	3	Sensor Type	BIT3
0x6000:05	1	DeGas active	BIT
0x6000:06	1	High vacuum cathode inactive	BIT
0x6000:07	1	Spare Filament	BIT
0x6000:08	2	Sensor Switch Mode	BIT2

Subindex	Description																								
0x04	Sensor Type: Contains the Smartline Transmitter Type																								
	<table border="1"> <thead> <tr> <th>Type</th> <th>Data</th> </tr> </thead> <tbody> <tr> <td>VSR</td> <td>0x1 (1)</td> </tr> <tr> <td>VSP</td> <td>0x2 (2)</td> </tr> <tr> <td>VSM</td> <td>0x3 (3)</td> </tr> <tr> <td>VSH</td> <td>0x4 (4)</td> </tr> </tbody> </table>	Type	Data	VSR	0x1 (1)	VSP	0x2 (2)	VSM	0x3 (3)	VSH	0x4 (4)	<p>Note: TwinCAT may have a problem to display the CoE object value on screen only; however the value of the parameter is correct (Confirmed Display Bug of TwinCAT).</p>													
Type	Data																								
VSR	0x1 (1)																								
VSP	0x2 (2)																								
VSM	0x3 (3)																								
VSH	0x4 (4)																								
0x05	Degas active: Indicates the status of DeGas.																								
	<table border="1"> <thead> <tr> <th>Type</th> <th>Data</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>VSR</td> <td>0x0 (0)</td> <td>fixed</td> </tr> <tr> <td>VSP</td> <td></td> <td></td> </tr> <tr> <td>VSM</td> <td></td> <td></td> </tr> <tr> <td rowspan="2">VSH</td> <td>0x0 (0)</td> <td>Degas is inactive (default)</td> </tr> <tr> <td>0x1 (1)</td> <td>Degas is active</td> </tr> </tbody> </table>	Type	Data	Description	VSR	0x0 (0)	fixed	VSP			VSM			VSH	0x0 (0)	Degas is inactive (default)	0x1 (1)	Degas is active							
Type	Data	Description																							
VSR	0x0 (0)	fixed																							
VSP																									
VSM																									
VSH	0x0 (0)	Degas is inactive (default)																							
	0x1 (1)	Degas is active																							
0x06	High vacuum cathode inactive: For certain vacuum processes it may be favored to suppress the start of the hot cathode (VSH) or cold cathode (VSM) sensor, which is automatically controlled by the transducer electronics.																								
	<table border="1"> <thead> <tr> <th>Type</th> <th>Data</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>VSR</td> <td>0x0 (0)</td> <td>fixed</td> </tr> <tr> <td>VSP</td> <td></td> <td></td> </tr> <tr> <td rowspan="2">VSM</td> <td>0x0 (0)</td> <td>cold cathode is active (default)</td> </tr> <tr> <td>0x1 (1)</td> <td>cold cathode is inactive</td> </tr> <tr> <td rowspan="2">VSH</td> <td>0x0 (0)</td> <td>hot cathode is active (default)</td> </tr> <tr> <td>0x1 (1)</td> <td>hot cathode is inactive</td> </tr> </tbody> </table>	Type	Data	Description	VSR	0x0 (0)	fixed	VSP			VSM	0x0 (0)	cold cathode is active (default)	0x1 (1)	cold cathode is inactive	VSH	0x0 (0)	hot cathode is active (default)	0x1 (1)	hot cathode is inactive					
Type	Data	Description																							
VSR	0x0 (0)	fixed																							
VSP																									
VSM	0x0 (0)	cold cathode is active (default)																							
	0x1 (1)	cold cathode is inactive																							
VSH	0x0 (0)	hot cathode is active (default)																							
	0x1 (1)	hot cathode is inactive																							
0x07	Spare Filament: VSH transmitters have two filaments. This bit indicates that the VSH transmitter has switched to the spare filament, filament 1 is depleted.																								
	<table border="1"> <thead> <tr> <th>Type</th> <th>Data</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>VSR</td> <td>0x0 (0)</td> <td>fixed</td> </tr> <tr> <td>VSP</td> <td></td> <td></td> </tr> <tr> <td>VSM</td> <td></td> <td></td> </tr> <tr> <td rowspan="2">VSH</td> <td>0x0 (0)</td> <td>Filament 1 is active, CoE Object is FALSE</td> </tr> <tr> <td>0x1 (1)</td> <td>Filament 2 (spare Filament) is active, CoE Object is TRUE</td> </tr> </tbody> </table>	Type	Data	Description	VSR	0x0 (0)	fixed	VSP			VSM			VSH	0x0 (0)	Filament 1 is active, CoE Object is FALSE	0x1 (1)	Filament 2 (spare Filament) is active, CoE Object is TRUE							
Type	Data	Description																							
VSR	0x0 (0)	fixed																							
VSP																									
VSM																									
VSH	0x0 (0)	Filament 1 is active, CoE Object is FALSE																							
	0x1 (1)	Filament 2 (spare Filament) is active, CoE Object is TRUE																							
0x08	Sensor Switch Mode: By default the VSR, VSM and VSH transmitter performs a continuous transition between their sensors principles over a pressure range whereupon an assimilation of the sensor signals is carried out. The Sensor Switch Mode contains the actual mode. Note: TwinCAT may have a problem to display the CoE object value on screen only; however the value of the parameter is correct (Confirmed Display Bug of TwinCAT).																								
	<table border="1"> <thead> <tr> <th>Type</th> <th>Data</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="2">VSR</td> <td>0x0 (0)</td> <td>no transition, direct switch at 1 mbar</td> </tr> <tr> <td>0x1 (1)</td> <td>continuous transition between 5 mbar and 15 mbar (default)</td> </tr> <tr> <td>VSP</td> <td>0x0 (0)</td> <td>fixed</td> </tr> <tr> <td rowspan="2">VSM</td> <td>0x0 (0)</td> <td>no transition, direct switch at 1E-3 mbar</td> </tr> <tr> <td>0x1 (1)</td> <td>continuous transition between 1E-3 mbar and 2E-3 mbar (default)</td> </tr> <tr> <td rowspan="3">VSH</td> <td>0x0 (0)</td> <td>no transition, direct switch at 4E-4 mbar</td> </tr> <tr> <td>0x1 (1)</td> <td>continuous transition between 1E-3 mbar and 2E-3 mbar (default)</td> </tr> <tr> <td>0x2 (2)</td> <td>continuous transition between 2E-3 mbar and 5E-3 mbar</td> </tr> </tbody> </table>	Type	Data	Description	VSR	0x0 (0)	no transition, direct switch at 1 mbar	0x1 (1)	continuous transition between 5 mbar and 15 mbar (default)	VSP	0x0 (0)	fixed	VSM	0x0 (0)	no transition, direct switch at 1E-3 mbar	0x1 (1)	continuous transition between 1E-3 mbar and 2E-3 mbar (default)	VSH	0x0 (0)	no transition, direct switch at 4E-4 mbar	0x1 (1)	continuous transition between 1E-3 mbar and 2E-3 mbar (default)	0x2 (2)	continuous transition between 2E-3 mbar and 5E-3 mbar	
Type	Data	Description																							
VSR	0x0 (0)	no transition, direct switch at 1 mbar																							
	0x1 (1)	continuous transition between 5 mbar and 15 mbar (default)																							
VSP	0x0 (0)	fixed																							
VSM	0x0 (0)	no transition, direct switch at 1E-3 mbar																							
	0x1 (1)	continuous transition between 1E-3 mbar and 2E-3 mbar (default)																							
VSH	0x0 (0)	no transition, direct switch at 4E-4 mbar																							
	0x1 (1)	continuous transition between 1E-3 mbar and 2E-3 mbar (default)																							
	0x2 (2)	continuous transition between 2E-3 mbar and 5E-3 mbar																							

2.4 TxPDO Content (0x1A02) – Transmitter Status

Index	Bitsize	Name	Type
0x6000:09	1	Warning – Overrange	BIT
0x6000:0A	1	Warning – Underrange	BIT
-	1	-	Padding Bit
0x6000:0C	1	Error – Filament 1 defect	BIT
0x6000:0D	1	Error – Filament 2 defect	BIT
0x6000:0E	1	Error – Internal Communication	BIT
0x6000:0F	1	Error – EEPROM failure	BIT
0x6000:10	1	Error – Sensor defect/stacked out	BIT

Subindex

Description

0x09

Warning – Overrange

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	overrange detected, pressure level exceeds the measurement range

0x0A

Warning – Underrange

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	underrange detected, pressure level is lower than the measurement range. The Actual Pressure (0x6000:01) will be fixed to the minimum measurement value of the transmitter.

0x0C

Error – Filament 1 defect

Type	Data	Description
VSR VSP VSM	0x0 (0)	fixed
VSH	0x0 (0)	no error
	0x1 (1)	Filament 1 is defect

0x0D

Error – Filament 2 defect

Type	Data	Description
VSR VSP VSM	0x0 (0)	fixed
VSH	0x0 (0)	no error
	0x1 (1)	Filament 2 (spare filament) is defect

0x0E

Error – Internal Communication

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	internal communication error of the transmitter electronics

0x0F

Error – EEPROM failure

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	failure on EEPROM

0x10 Error – Sensor defect/stacked out

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	sensor head is stacked out or sensor head is defect

2.5 TxPDO Content (0x1A03) – Syntax

Index	Bitsize	Name	Type
-	2	-	Padding Bits
0x6000:13	1	Error – Sensor Switch Mode, Value mismatch	BIT
0x6000:14	1	Error – GCF 1, Value mismatch	BIT
0x6000:15	1	Error – GCF 2, Value mismatch	BIT
0x6000:16	1	Error – Pressure Adjust, Value mismatch	BIT
0x6000:17	1	Error – Command supported	BIT
0x6000:18	1	Error – Command invalid	BIT
0x6000:19	8	Command executed	BYTE

Subindex Description

0x13 Error – Sensor Switch Mode, Value mismatch

Type	Data	Description
VSP	0x0 (0)	fixed
VSR	0x0 (0)	no error
VSH	0x1 (1)	The value in Data Sensor Switch Mode (0x7000:05) is wrong or out of range
VSM		

0x14 Error – GCF 1, Value mismatch

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	The value in Data GCF 1 (0x7000:03) is wrong or out of range

0x15 Error – GCF 2, Value mismatch

Type	Data	Description
VSR	0x0 (0)	fixed
VSP		
VSH	0x0 (0)	no error
VSM	0x1 (1)	The value in Data GCF 2 (0x7000:01) is wrong or out of range

0x16 Error – Pressure Adjust, Value mismatch

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	The value in Data Pressure (0x7000:02) is wrong or out of range

0x17 Error – Command Supported

Type	Data	Description
all	0x0 (0)	Command not supported
	0x1 (1)	no error

0x18 Error – Command invalid

Type	Data	Description
all	0x0 (0)	no error
	0x1 (1)	Command is invalid and can't be executed

0x19 Command executed

Type	Data	Description
all		Contains the value of the last executed command that was written in Command (0x7000:04)

2.6 RxPDO Content (0x1600) – Outputs

Index	Bitsize	Name	Type
0x7000:01	16	Data GCF 2	UINT
0x7000:02	32	Data Pressure	REAL
0x7000:03	16	Data GCF 1	UINT
0x7000:04	8	Command	BYTE
0x7000:05	8	Data Sensor Switch Mode	BYTE

Subindex Description

0x01

Data GCF 2

Type	Data	Description
VSR VSP		all data values will be ignored
VSH VSM	0x0014 – 0x0320 (20 – 800)	New value for the GCF 2, used for hot cathode and cold cathode

0x02

Data Pressure

Type	Data	Description
all	Var.	Contains a Pressure value as 32bit Real

0x03

Data GCF 1

Type	Data	Description
all	0x0014 – 0x0320 (20 – 800)	New value for the GCF 1, used for Pirani sensor

0x04

Command

Type	Data	Description
all	0x00 (0)	Zero Command
	0x01 (1)	Adjust High Vacuum
	0x02 (2)	Adjust Atmospheric Pressure
	0x03 (3)	Set Gas Correction Factors (GCF)
VSR	0x39 (57)	Set Sensor Switch Mode
VSP	-	no special VSP commands
VSM	0x46 (70)	Activate Cold Cathode
	0x47 (71)	Deactivate Cold Cathode
	0x4D (77)	Set Sensor Switch Mode

VSH	0x50 (80)	Active Hot Cathode
	0x51 (81)	Deactivate Hot Cathode
	0x55 (85)	Activate DeGas
	0x56 (86)	Deactivate DeGas
	0x57 (87)	Set Sensor Switch Mode

0x05

Data Sensor Switch Mode

Type	Data	Description
VSR	0x0 (0)	no transition, direct switch at 1 mbar
	0x1 (1)	continuous transition between 5 mbar and 15 mbar (default)
VSP	-	VSP has no transition
VSM	0x0 (0)	no transition, direct switch at 1E-3 mbar
	0x1 (1)	continuous transition between 1E-3 mbar and 2E-3 mbar (default)
VSH	0x0 (0)	no transition, direct switch at 4E-4 mbar
	0x1 (1)	continuous transition between 1E-3 mbar and 2E-3 mbar (default)
	0x2 (2)	continuous transition between 2E-3 mbar and 5E-3 mbar

3 Commands (0x7000:04)

3.1 Command List

All commands are separated into two groups:

- General Commands, that are valid for all Smartline transmitter
- Commands, that are valid only for a specific transmitter

Rules for commands:

- Each command will be executed only once.
- Always the last executed command will be written into Command executed (0x6000:19)

Type	Data	Name
all	0x00 (0)	Zero Command
	0x01 (1)	Adjust High Vacuum
	0x02 (2)	Adjust Atmospheric Pressure
	0x03 (3)	Set Gas Correction Factors (GCF)
VSR	0x39 (57)	Set Sensor Switch Mode
VSP	-	No special VSP commands
VSM	0x46 (70)	Activate Cold Cathode
	0x47 (71)	Deactivate Cold Cathode
	0x4D (77)	Set Sensor Switch Mode
VSH	0x50 (80)	Active Hot Cathode
	0x51 (81)	Deactivate Hot Cathode
	0x55 (85)	Activate DeGas
	0x56 (86)	Deactivate DeGas
	0x57 (87)	Set Sensor Switch Mode

3.2 General Commands for all Smartline Transmitter

3.2.1 0x00 (0) – Zero Command

Type	Chain	PDO	Name	Data	Description
all	1.	0x7000:04	Zero Command	0x00 (0)	clear 0x6000:19

3.2.2 0x01 (1) – Adjust High Vacuum

Type	Chain	PDO	Name	Data	Description
all	1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x01 (1)
	2.	0x7000:02	Data Pressure	0x00 (0)	mandatory
	3.	0x7000:04	Command	0x01 (1)	adjust high vacuum

3.2.3 0x02 (2) – Adjust Atmospheric Pressure

Type	Chain	PDO	Name	Data	Description
VSR	1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x02 (2)
	2.	0x7000:02	Data Pressure	variable	actual atmospheric pressure
	3.	0x7000:04	Command	0x02 (2)	adjust atmospheric pressure
VSP	1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x02 (2)
VSM	2.	0x7000:02	Data Pressure	0x03E8 (1000)	1000 mbar
VSH	3.	0x7000:04	Command	0x02 (2)	adjust atmospheric pressure

3.2.4 0x03 (3) – Set Gas Correction Factors

Type	Chain	PDO	Name	Data	Description
VSR	1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x03 (3)
VSP	2.	0x7000:03	Data GCF 1 Pirani	0x0014 (20) – 0x0320 (800)	Gas Correction Factor for Pirani
	3.	0x7000:01	Data GCF 2 BA / CC	d.c.	will be ignored, value
	4.	0x7000:04	Command	0x03 (3)	set GCF factors
VSH	1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x03 (3)
	2.	0x7000:03	Data GCF 1 Pirani	0x0014 (20) – 0x0320 (800)	Gas Correction Factor for Pirani
	3.	0x7000:01	Data GCF 2 BA / CC	0x0014 (20) – 0x0320 (800)	Gas Correction Factor for Hot Cathode (BA) or Cold Cathode (CC)
	4.	0x7000:04	Command	0x03 (3)	set GCF factors

3.3 VSR Commands

3.3.1 0x39 (57) – Set Sensor Switch Mode

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x39 (57)
2.	0x7000:05	Data Sensor Switch Mode	0x0 (0) or 0x1 (1)	
3.	0x7000:04	Command	0x39 (57)	set sensor switch mode

3.4 VSM Commands

3.4.1 0x46 (70) – Activate Cold Cathode

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x46 (70)
2.	0x7000:04	Command	0x46 (70)	activate cold cathode

3.4.2 0x47 (71) – Deactivate Cold Cathode

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x47 (71)
2.	0x7000:04	Command	0x47 (71)	deactivate cold cathode

3.4.3 0x4D (77) – Set Sensor Switch Mode

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x4D (77)
2.	0x7000:05	Data Sensor Switch Mode	0x0 (0) or 0x1 (1)	
3.	0x7000:04	Command	0x4D (77)	set sensor switch mode

3.5 VSH Commands

3.5.1 0x50 (80) – Activate Hot Cathode

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x50 (80)
2.	0x7000:04	Command	0x50 (80)	activate hot cathode

3.5.2 0x51 (81) – Deactivate Hot Cathode

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x51 (81)
2.	0x7000:04	Command	0x51 (81)	deactivate hot cathode

3.5.3 0x55 (85) – Activate DeGas

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x55 (85)
2.	0x7000:04	Command	0x55 (85)	activate DeGas

3.5.4 0x56 (86) – Deactivate DeGas

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x56 (86)
2.	0x7000:04	Command	0x56 (86)	deactivate DeGas

3.5.5 0x57 (87) – Set Sensor Switch Mode

Chain	PDO	Name	Data	Description
1.	0x7000:04	Zero Command	0x00 (0)	mandatory if 0x6000:19 is 0x57 (87)
2.	0x7000:05	Data Sensor Switch Mode	0x0 (0), 0x1 (1) or 0x2 (2)	Data value depends on transmitter
3.	0x7000:04	Command	0x57 (87)	set sensor switch mode

4 ESI File

You can download the ESI file and this document from the Thyracont webpage:

1. Open Thyracont webpage www.thyracont-vacuum.com
2. Browse to Support → [Download Center](#)
3. Section “Smartline - Intelligent Vacuum Measurement”

The ZIP File contains:

1. ESI File

5 Document History

Date	Version	Comment	Revision Number (0x1018:13)	Software Version (0x100A)
2014-01-14	1.0	Initial Release v1.0	0x2774 (10100)	-
2014-03-17	1.1	Editorial changes	0x2774 (10100)	-
2014-05-30	1.2	Description of CoE Objects (first public release)	0x2774 (10100)	3.0e
2014-07-09	1.3	1.) Several names of parameters changed and editorial changes of their description 6000:01 → “Actual GCF 1” 6000:02 → “Actual GCF 2” 6000:07 → “Spare Filament” 6000:14 → “Error – GCF 1, value mismatch” 6000:15 → “Error – GCF 2, value mismatch” 7000:01 → “Data GCF 2” 7000:03 → “Data GCF 1” 2.) Notes on Display Bug of TwinCAT added for Sensor Type (0x6000:04) and Sensor Switch Mode (0x6000:08)	0x27D8 (10200)	3.0g
2016-02-03	1.3	Typing errors in RxPDO Content (0x1A01)		
2017-11-06	1.3	Some corrections		
2018-11-16	1.4	Some corrections		

6 License

EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.