CiA® 420

Profiles for extruder downstream devices

Part 2: Puller

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HISTORY

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1 Scope

The CANopen application profile for extruder downstream devices includes several parts:

Part 1 specifies general definitions
Part 2 specifies the device profile for the puller downstream device
Part 3 specifies the device profile for the corrugator downstream device
Part 4 specifies the device profile for the saw downstream device
Part 5 specifies the device profile for the co-extruder device
Part 6 specifies the device profile for the calibration-table downstream device

NOTE All parts of this specification have been developed jointly with the European Committee of Machinery Manufacturers for the Plastics and Rubber Industries (Euromap) and is documented there as Euromap 27.

This part specifies the CANopen interface for the puller downstream device.

2 References

/CiA420-1/ CiA 420, CANopen profile for extruder downstream devices — Part 1: General definitions

The references given in /CiA420-1/ apply to this specification as well.

3 Abbreviations and definitions

3.1 Abbreviations

The abbreviations given in /CiA420-1/ apply to this specification as well.

3.2 Definitions

The definitions given in /CiA420-1/ apply to this specification as well.

4 Operating principles

4.1 General

The puller downstream device interface shall support all mandatory functions of /CiA301/ and /CiA420-1/ as well as all mandatory functions defined in this specification.

4.2 Load controller function

The load controller function is optional.

5 PDO specification

5.1 Overview

Table 1 shows the process data mapped into TPDOs and RPDOs.

Table 1 – TPDO and RPDO mapping

PDO number	Index/sub-index	Name/description
TPDO 1	6030 00_h 6000 00_h 6006 00 xxxx xx	Status word Puller speed actual value Puller load actual value Manufacturer-specific process data
TPDO 2	6004 00_h 6008 00_h	Puller speed set echo Product speed
RPDO 1	6020 00_h 6002 00_h 600B 00_h xxxx xx	Control word Puller speed set value Puller load set value Manufacturer-specific process data (NOTE)
NOTE The RPDO 1 is able to map one and only one Manufacturer-specific process data		

5.2 First TPDO

This TPDO shall be transmitted to the master-extruder. It contains by default the *status word*, the *puller speed actual value*, and the *puller load actual value*.

Table 2 specifies the object description of the PDO communication parameter and Table 3 specifies the associated entry description. The values are defined in /CiA301/. The sub-index 04_h is reserved for compatibility reasons and shall not be implemented.

Table 2 — Object description

Attribute	Value
Index	1800_h
Name	TPDO 1 communication parameter
Object code	RECORD
Data type	PDO communication parameter record
Category	Mandatory

Table 3 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	02_h to 06_h
Default value	Manufacturer-specific
Sub-index	01_h
Description	COB-ID
Entry category	Mandatory
Access	rw
PDO mapping	No
Value range	4000 0180_h + node-ID or C000 0180_h + node-ID
Default value	4000 0180_h + node-ID
Sub-index	02_h
Description	Transmission type
Entry category	Mandatory
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	01_h

Attribute	Value
Sub-index	03_h
Description	Inhibit time
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h
Sub-index	05_h
Description	Event timer
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h
Sub-index	06_h
Description	Sync start value
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h

Table 4 specifies the object description of the PDO mapping parameter and Table 5 specifies the associated entry description. The values are defined in /CiA301/. The unused bytes in the data field shall only be used for a manufacturer-specific second status word.

Table 4 — Object description

Attribute	Value
Index	$1A00_h$
Name	TPDO 1 mapping parameter
Object code	RECORD
Data type	PDO mapping parameter record
Category	Mandatory

Table 5 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	rw (const in NMT operational state)
PDO mapping	No
Value range	00_h, 03_h to 04_h
Default value	Manufacturer-specific
Sub-index	01_h
Description	1st application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	6030 00 10_h
Default value	6030 00 10_h
Sub-index	02_h
Description	2nd application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	6000 00 10_h
Default value	6000 00 10_h
Sub-index	03_h
Description	3rd application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	6006 00 10_h
Default value	6006 00 10_h
Sub-index	04_h
Description	4th application object
Entry category	Optional
Access	const
PDO mapping	No
Value range	See /CiA301/
Default value	Manufacturer-specific

5.3 Second TPDO

This TPDO shall be transmitted to the master-extruder. It contains by default the *puller speed set echo*, and the *product speed*.

Table 6 specifies the object description of the PDO communication parameter and Table 7 specifies the associated entry description. The values are defined in /CiA301/. The sub-index 04_h is reserved for compatibility reasons and shall not be implemented.

Table 6 — Object description

Attribute	Value
Index	1801_h
Name	TPDO 2 communication parameter
Object code	RECORD
Data type	PDO communication parameter record
Category	Mandatory

Table 7 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	02_h to 06_h
Default value	Manufacturer-specific
Sub-index	01_h
Description	COB-ID
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	See /CiA301/
Default value	4000 0280_h + node-ID
Sub-index	02_h
Description	Transmission type
Entry category	Mandatory
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	01_h
Sub-index	03_h
Description	Inhibit time
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h

Attribute	Value
Sub-index	05_h
Description	Event timer
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h
Sub-index	06_h
Description	Sync start value
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h

Table 8 specifies the object description of the PDO mapping parameter and Table 9 specifies the associated entry description. The values are defined in /CiA301/.

Table 8 — Object description

Attribute	Value
Index	$1A01_h$
Name	TPDO 2 mapping parameter
Object code	RECORD
Data type	PDO mapping parameter record
Category	Mandatory

Table 9 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	02_h
Default value	02_h
Sub-index	01_h
Description	1st application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	6004 00 10_h
Default value	6004 00 10_h

Attribute	Value
Sub-index	02_h
Description	2nd application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	6008 00 20_h
Default value	6008 00 20_h

5.4 First RPDO

This RPDO shall be received from the master-extruder. It contains by default the *control word*, and the *puller speed set value*. Additionally, it shall contain the *puller load set value* if the puller load control function is implemented.

Table 10 specifies the object description of the PDO communication parameter and Table 11 specifies the associated entry description. The values are defined in /CiA301/. The sub-index 04_h is reserved for compatibility reasons and shall not be implemented.

Table 10 — Object description

Attribute	Value
Index	1400_h
Name	RPDO 1 communication parameter
Object code	RECORD
Data type	PDO communication parameter record
Category	Mandatory

Table 11 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	02_h to 05_h
Default value	Manufacturer-specific
Sub-index	01_h
Description	COB-ID
Entry category	Mandatory
Access	rw
PDO mapping	No
Value range	4000 0200_h + node-ID or C000 0200_h + node-ID
Default value	4000 0200_h + node-ID

Attribute	Value
Sub-index	02_h
Description	Transmission type
Entry category	Mandatory
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	01_h
Sub-index	03_h
Description	Inhibit time
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h
Sub-index	05_h
Description	Event timer
Entry category	Optional
Access	rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000_h

Table 12 specifies the object description of the PDO mapping parameter and Table 13 specifies the associated entry description. The values are defined in /CiA301/. The unused bytes in the data field shall only be used for a manufacturer-specific second control word.

Table 12 — Object description

Attribute	Value
Index	1600_h
Name	RPDO 1 mapping parameter
Object code	RECORD
Data type	PDO mapping parameter record
Category	Mandatory

Table 13 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	rw (const in NMT operational state)
PDO mapping	No
Value range	00_h, 03_h to 04_h
Default value	Manufacturer-specific
Sub-index	01_h
Description	1st application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	6020 00 10_h
Default value	6020 00 10_h
Sub-index	02_h
Description	2nd application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	6002 00 10_h
Default value	6002 00 10_h
Sub-index	03_h
Description	3rd application object
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	600B 00 10_h
Default value	600B 00 10_h
Sub-index	04_h
Description	4th application object
Entry category	Optional
Access	const
PDO mapping	No
Value range	See /CiA301/
Default value	Manufacturer-specific

6 Application object specification

6.1 Object 6000_h: Puller speed actual value

This object shall provide the actual speed value of the puller. The value shall be given in 0,01% of the maximum speed. Negative values shall be given if the direction is reversed.

Table 14 specifies the object description and Table 15 specifies the entry description.

Table 14 — Object description

Attribute	Value
Index	6000_h
Name	Puller speed actual value
Object code	VAR
Data type	INTEGER16
Category	Mandatory

Table 15 — Entry description

Attribute	Value
Sub-index	00_h
Access	ro
PDO mapping	Default
Value range	-10000_d to $+10000_d$
Default value	No

6.2 Object 6001_h: Puller speed real maximum

This object shall provide the maximum speed value of the puller based on the real maximum puller speed at 100% set value. The value shall be given in 1 mm/min.

Table 16 specifies the object description and Table 17 specifies the entry description.

Table 16 — Object description

Attribute	Value
Index	6001_h
Name	Puller speed real maximum
Object code	VAR
Data type	UNSIGNED32
Category	Mandatory

Table 17 — Entry description

Attribute	Value
Sub-index	00_h
Access	const
PDO mapping	Optional
Value range	UNSIGNED32
Default value	Device specific

6.3 Object 6002_h: Puller speed set value

This object shall indicate the speed set value send by the master-extruder. The value shall be given in 0,01% of the maximum speed. Negative values shall be given if the direction is reversed.

Table 18 specifies the object description and Table 19 specifies the entry description.

Table 18 — Object description

Attribute	Value
Index	6002_h
Name	Puller speed set value
Object code	VAR
Data type	INTEGER16
Category	Mandatory

Table 19 — Entry description

Attribute	Value
Sub-index	00_h
Access	rw
PDO mapping	Default
Value range	-10000_d to $+10000_d$
Default value	0_d

6.4 Object 6003_h: Puller speed set maximum

This object shall indicate the maximum speed set value of the puller. The value shall be given in 1 mm/min.

Table 20 specifies the object description and Table 21 specifies the entry description.

Table 20 — Object description

Attribute	Value
Index	6003_h
Name	Puller speed set maximum
Object code	VAR
Data type	UNSIGNED32
Category	Mandatory

Table 21 — Entry description

Attribute	Value
Sub-index	00_h
Access	rw
PDO mapping	Optional
Value range	UNSIGNED32
Default value	Value as given in object 6001_h

6.5 Object 6004_h: Puller speed set echo

This object shall provide the puller speed set value after recovering from bus-off state. The value shall be given in 0,01% of the maximum speed. Negative values shall be given if the direction is reversed. The scaling is given in object 6003_h.

Table 22 specifies the object description and Table 23 specifies the entry description.

Table 22 — Object description

Attribute	Value
Index	6004_h
Name	Puller speed set echo
Object code	VAR
Data type	INTEGER16
Category	Mandatory

Table 23 — Entry description

Attribute	Value
Sub-index	00_h
Access	ro
PDO mapping	Default
Value range	-10000_d to $+10000_d$
Default value	No

6.6 Object 6005_h: Puller speed step

This object shall indicate the size of the first speed change at using increase or decrease key requested by the master-extruder. The value shall be given in 0,01% of the maximum speed. The scaling is given in object 6003_h.

Table 24 specifies the object description and Table 25 specifies the entry description.

Table 24 — Object description

Attribute	Value
Index	6005_h
Name	Puller speed step
Object code	VAR
Data type	UNSIGNED16
Category	Mandatory

Table 25 — Entry description

Attribute	Value
Sub-index	00_h
Access	rw
PDO mapping	Optional
Value range	0_d to 10000_d
Default value	0_d

6.7 Object 6006_h: Puller load actual value

This object shall provide the actual value of the puller load. The value shall be given in 0,01% of the maximum load. Negative value shall be given if the load is negative.

Table 26 specifies the object description and Table 27 specifies the entry description.

Table 26 — Object description

Attribute	Value
Index	6006_h
Name	Puller load actual value
Object code	VAR
Data type	INTEGER16
Category	Mandatory

Table 27 — Entry description

Attribute	Value
Sub-index	00_h
Access	ro
PDO mapping	Default
Value range	INTEGER16
Default value	No

6.8 Object 6007_h: Scaling factor

This object shall indicate the default factor between counted pulses and length. The value shall be given in pulse/m.

NOTE Pulse/mm does not allow the necessary scaling resolution that is required for calibration.

Table 28 specifies the object description and Table 29 specifies the entry description.

Table 28 — Object description

Attribute	Value
Index	6007_h
Name	Scaling factor
Object code	VAR
Data type	UNSIGNED32
Category	Mandatory

Table 29 — Entry description

Attribute	Value
Sub-index	00_h
Access	rw
PDO mapping	Optional
Value range	UNSIGNED32
Default value	Manufacturer-specific

6.9 Object 6008_h: Product speed

This object shall provide the actual value calculated from measuring wheel or motor encoder pulses and time. The accuracy of this value shall be better than 0,3%. The value shall be given in 0,1 mm/min. Negative values shall be given if the direction is reversed.

Table 30 specifies the object description and Table 31 specifies the entry description.

Table 30 — Object description

Attribute	Value
Index	6008_h
Name	Product speed
Object code	VAR
Data type	INTEGER32
Category	Mandatory

Table 31 — Entry description

Attribute	Value
Sub-index	00_h
Access	ro
PDO mapping	Default
Value range	INTEGER32
Default value	No

6.10 Object 6009_h: Height adjustments

This object shall indicate the height adjustment values configured by the master-extruder (e.g. the distance from the centerline to the bottom of the product). The values shall be given in 0,1 mm. Positive values shall be given if the distance is above the centerline and negative values shall be given if the distance is below the centerline.

Writing the value 00_h to sub-index 00_h by means of SDO write access shall disable the entire parameter set and object 6009_h is not used by the application. In this case the saw changes the track position locally. Enabling of object 6009_h is done by writing the appropriate highest sub-index supported to object 6009_h sub-index 00_h. In case the object 6009_h is disabled, any access to sub-index 01_h and higher shall be aborted by means of SDO abort code $0800\ 0022_h$ - Data cannot be transferred or stored to the application because of the present device state.

Table 32 specifies the object description and Table 33 specifies the entry description.

Table 32 — Object description

Attribute	Value
Index	6009_h
Name	Height adjustments
Object code	ARRAY
Data type	INTEGER16
Category	Optional

Table 33 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	const or rw
PDO mapping	No
Value range	00_h to $0A_h$
Default value	Manufacturer-specific

Attribute	Value
Sub-index	01_h
Description	Height adjustment 1
Entry category	Mandatory
Access	rw
PDO mapping	Optional
Value range	INTEGER16
Default value	0000_h
Sub-index	02_h
Description	Height adjustment 2
Entry category	Optional
Access	rw
PDO mapping	Optional
Value range	INTEGER16
Default value	0000_h
to	
Sub-index	$0A_h$
Description	Height adjustment 10
Entry category	Optional
Access	rw
PDO mapping	Optional
Value range	INTEGER16
Default value	0000_h

6.11 Object $600A_h$: Pressure set values

This object shall indicate the pressure set values configured by the master-extruder (e.g. for upper caterpillar) The value shall be given in 0,01% of the maximum pressure.

Table 34 specifies the object description and Table 35 specifies the entry description.

Table 34 — Object description

Attribute	Value
Index	$600A_h$
Name	Pressure set value array
Object code	ARRAY
Data type	UNSIGNED16
Category	Optional

Table 35 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	01_h to $0A_h$
Default value	Manufacturer-specific
Sub-index	01_h
Description	Pressure set value 1
Entry category	Mandatory
Access	rw
PDO mapping	Optional
Value range	0_d to 10000_d
Default value	0_d
Sub-index	02_h
Description	Pressure set value 2
Entry category	Optional
Access	rw
PDO mapping	Optional
Value range	0_d to 10000_d
Default value	0_d
to	
Sub-index	$0A_h$
Description	Pressure set value 10
Entry category	Optional
Access	rw
PDO mapping	Optional
Value range	0_d to 10000_d
Default value	0_d

6.12 Object $600B_h$: Puller load set value

This object shall indicate the set value of the puller load controller. The value shall be given in 0,01%.

Table 36 specifies the object description and Table 37 specifies the entry description.

Table 36 — Object description

Attribute	Value
Index	$600B_h$
Name	Puller load set value
Object code	VAR
Data type	UNSIGNED32
Category	Optional

Table 37 — Entry description

Attribute	Value
Sub-index	00_h
Access	rw
PDO mapping	Default if load controller is available
Value range	0_d to 10000_d
Default value	0_d

6.13 Object 6010_h: Configuration word

This object shall provide the configured functionality. Figure 1 specifies the object structure and Table 38 defines the values. Table 39 specifies the object description and Table 40 specifies the entry description.

31 … 9	8	7	6	5	4	3	2	1	0
r	ada	lc	f3	f2	f1	r	ps	ha	s
MSB									LSB

Figure 1 — Object structure

Table 38 — Value definition

Signal	Value	Definition
s (speed measuring)	0_b 1_b	Speed measuring not available Speed measuring available
ha (height adjustment)	0_b 1_b	Height adjustment not available Height adjustment available
ps (pressure set values)	0_b 1_b	Pressure set values not available Pressure set values available
f1, f2, f3 (auxiliary function)	0_b 1_b	Auxiliary function not available Auxiliary function available
lc (load control)	0_b 1_b	Load controller not available Load controller available
ada (automatic diameter adaptation)	0_b 1_b	automatic diameter adaptation not available automatic diameter adaptation available
r (reserved)	Reserved; always 0	

Table 39 — Object description

Attribute	Value
Index	6010_h
Name	Configuration word
Object code	VAR
Data type	UNSIGNED32
Category	Mandatory

Table 40 — Entry description

Attribute	Value
Sub-index	00_h
Access	ro
PDO mapping	No
Value range	See Table 38
Default value	No

6.14 Object 6020_h: Control word

This object shall indicate the commands transmitted by the master-extruder. The master-extruder shall set the bits to 1_b if the corresponding button is pressed but not shorter than 100 ms.

Figure 2 specifies the object structure and Table 41 defines the values. Table 42 specifies the object description and Table 43 specifies the entry description.

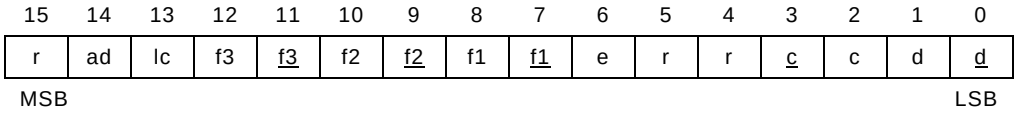

Figure 2 — Object structure

Table 41 — Value definition

Signal	Value	Definition
d (drive stop)	0_b 1_b	No command (default value) Stop drive (start prevention)
d (drive start)	0_b 1_b	No command (default value) Start drive
c (clamp open)	0_b 1_b	No command (default value) Open clamp (close prevention)
c (clamp close)	0_b 1_b	No command (default value) Close clamp
e (extruder run)	0_b 1_b	Extruder stopped (default value) Extruder is running
f1, f2, f3 (function stop)	0_b 1_b	No command (default value) Stop function (start prevention)
f1, f2, f3 (function start)	0_b 1_b	No command (default value) Start function
lc (load controller mode)	0_b 1_b	Load controller off (default value) Load controller on
ad (automatic diameter adaptation)	0_b 1_b	Disable automatic diameter adaptation (NOTE1) Enable automatic diameter adaptation (NOTE2)
r (reserved)	Reserved; always 0	
NOTE1 The extruder disables the automatic diameter adaption. Track position is not adjusted automatically. Only local manual movement is allowed.		
NOTE2 The extruder enables the automatic diameter adaption function (ON also during constant diameter). Track position change is executed according to the settings of object 6009_h if used. If object 6009_h is not used (set obj6009^h sub00 = 0) the track position is changed locally by the saw.		

Table 42 — Object description

Attribute	Value
Index	6020_h
Name	Control word
Object code	VAR
Data type	UNSIGNED16
Category	Mandatory

Table 43 — Entry description

Attribute	Value
Sub-index	00_h
Access	rw
PDO mapping	Default
Value range	See Table 41
Default value	See Table 41

6.15 Object 6030_h: Status word

This object shall provide the status transmitted to the master-extruder. The puller downstream device shall set the bits to 1_b if the corresponding button is pressed but not shorter than 100 ms.

The *speed set mode* (*sm*) signal shall indicate if the puller takes the *speed set value* object (remote mode) as defined in clause 6.3 or if the puller adjusts the speed locally (local mode). In local mode, the puller reports its speed set by the *puller speed set echo* object (see clause 6.5).

Figure 3 specifies the object structure and Table 44 defines the values. Table 45 specifies the object description and Table 46 specifies the entry description.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
sm	rd	f3	f3	f2	f2	f1	f1	ad	d	i	a	f	c	ds	dr
MSB															LSB

Figure 3 — Object structure

Table 44 — Value definition

Signal	Value	Definition
dr (drive run)	0_b 1_b	Drive is not running (drive controller disabled) (see Note 1) Drive is running (drive controller enabled) (see Note 2)
ds (drive ready to start)	0_b 1_b	Drive is not ready to start Drive is ready to start
c (clamp closed)	0_b 1_b	Clamp opened Clamp closed
f (fault downstream equipment)	0_b 1_b	No fault Fault (puller switched-off and start prevention of puller)
a (alarm downstream equipment)	0_b 1_b	No alarm Alarm (puller not switched-off, puller start still permitted)

Signal	Value	Definition
i (increase set value)	0_b 1_b	No request Increase speed request (Example: Is the signal shorter than 1 s only one step takes place. A longer signal activates one step and after the first second the selected ramp is used to increase the speed)
d (decrease set value)	0_b 1_b	No request Decrease speed request (Example: Is the signal shorter than 1 s only one step takes place. A longer signal activates one step and after the first second the selected ramp is used to decrease the speed)
rd (reverse direction)	0_b 1_b	Normal direction Reverse direction
f1, f2, f3 (function run)	0_b 1_b	Function is not running Function is running
f1, f2, f3 (function ready to start)	0_b 1_b	Function is blocked Function is ready to start
sm (speed set mode)	0_b 1_b	Remote mode Local mode
ad (automatic diameter adaptation)	0_b 1_b	automatic diameter adaptation disabled automatic diameter adaptation enabled
NOTE 1 Independent of the actual speed. NOTE 2 Independent of the speed settings.		

Table 45 — Object description

Attribute	Value
Index	6030_h
Name	Status word
Object code	VAR
Data type	UNSIGNED16
Category	Mandatory

Table 46 — Entry description

Attribute	Value
Sub-index	00_h
Access	ro
PDO mapping	Default
Value range	See Table 44
Default value	No

6.16 Object 6031_h: Actual tracks diameter

This object shall provide the actual tracks diameter values to the master-extruder. The values shall be given in 0,1 mm.

Table 47 specifies the object description and Table 48 specifies the entry description.

Table 47 — Object description

Attribute	Value
Index	6031_h
Name	Actual tracks diameter
Object code	ARRAY
Data type	INTEGER16
Category	Optional

Table 48 — Entry description

Attribute	Value
Sub-index	00_h
Description	Highest sub-index supported
Entry category	Mandatory
Access	const
PDO mapping	No
Value range	01_h to $0A_h$
Default value	Manufacturer-specific
Sub-index	01_h
Description	Diameter 1
Entry category	Mandatory
Access	ro
PDO mapping	Optional
Value range	INTEGER16
Default value	No
Sub-index	02_h
Description	Diameter 2
Entry category	Optional
Access	ro
PDO mapping	Optional
Value range	INTEGER16
Default value	No
to	
Sub-index	$0A_h$
Description	Diameter 10
Entry category	Optional
Access	ro
PDO mapping	Optional
Value range	INTEGER16
Default value	No

6.17 Object 6032_h: Maximum pressure

This object shall provide the device's maximum pressure. The value shall be given in 0,1Bar.

Table 49 specifies the object description and Table 50 specifies the entry description.

Table 49 — Object description

Attribute	Value
Index	6032_h
Name	Maximum pressure
Object code	VAR
Data type	UNSIGNED16
Category	Optional

Table 50 — Entry description

Attribute	Value
Sub-index	00_h
Access	ro
PDO mapping	No
Value range	UNSIGNED16
Default value	No

