

CiA Draft Standard Proposal 420



Profiles for Extruder Downstream Devices

Part 4: Saw

This is a draft standard proposal and may be changed without notification

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HISTORY

Date	Changes
22/10/2002	<ul style="list-style-type: none"><li data-bbox="445 315 715 344">• First public release

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1 Scope

Part 4 of the CANopen profile for extruder downstream devices specifies the CANopen interface for saw devices. The normative references, definitions, acronyms, and abbreviations given in part 1 apply to this part, too.

2 Predefinitions

2.1 1st TPDO mapping

This TPDO shall be transmitted to the extruder controller. The COB-ID parameter shall be *ro* (read-only) and the default value of the transmission type parameter shall be *1* and *rw* (read/write). If inhibit and event timers are implemented, the default values shall be *0*.

Mapping Parameter Set

Index	Sub-Index	Comment	Default Value
1A00 _h	0 _h	number of mapped objects	2 _h
	1 _h	Status_word	6030 00 10 _h
	2 _h	Counter_value	6000 00 20 _h

2.2 2nd TPDO mapping

This TPDO shall be transmitted to the extruder controller. The COB-ID parameter shall be *ro* and the default value of the transmission type parameter shall be *1* and *rw*. If inhibit and event timers are implemented, the default values shall be *0*.

Mapping Parameter Set

Index	Sub-Index	Comment	Default Value
1A01 _h	0 _h	number of mapped objects	2 _h
	1 _h	Actual_saw_counter	6001 00 20 _h
	2 _h	Product_speed	6007 00 20 _h

2.3 1st RPDO mapping

This RPDO shall be received from the extruder controller. The COB-ID parameter shall be *ro* and the default value of the transmission type parameter shall be *1* and *rw*.

Mapping Parameter Set

Index	Sub-Index	Comment	Default Value
1600 _h	0 _h	number of mapped objects	3 _h
	1 _h	Control_word	6020 00 10 _h
	2 _h	Saw_sync_speed_set_value	6005 00 10 _h
	3 _h	Product_length_set_value	6002 00 20 _h

3 Object dictionary

3.1 Detailed specification of object entries

3.1.1 Object 6000_h: Counter value

This object shall provide the actual counts from measuring wheel or motor encoder.

VALUE DESCRIPTION

The value shall be counted from 0 up to its overrun at FFFF FFFF_h.

OBJECT DESCRIPTION

INDEX	6000_h
Name	Counter_value
Object Code	VAR
Data Type	Unsigned32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	ro
PDO Mapping	Default
Value Range	Unsigned32
Default Value	No

3.1.2 Object 6001_h: Actual saw counter

This object shall provide the actual counter value.

VALUE DESCRIPTION

The value shall be given in 0.1 mm per bit. Negative values shall indicate wrong direction

OBJECT DESCRIPTION

INDEX	6001_h
Name	Actual_saw_counter
Object Code	VAR
Data Type	Integer32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	ro
PDO Mapping	Default
Value Range	Integer32
Default Value	No

3.1.3 Object 6002_h: Product length set value

This object shall store the product length to cut requested by the extruder controller.

VALUE DESCRIPTION

The value shall be given in 0.1 mm per bit.

OBJECT DESCRIPTION

INDEX	6002_h
Name	Product_length_set_value
Object Code	VAR
Data Type	Integer32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	wo
PDO Mapping	Default
Value Range	Integer32
Default Value	0 _d

3.1.4 Object 6003_h: Scaling factor

This object shall provide the configured factor between counted pulses and length.

VALUE DESCRIPTION

The value shall be given in 1/m per bit. (*Remark: 1/mm per bit does not allow the necessary scaling resolution that is required for calibration*). A value of FFFF FFFF_h shall mean that scaling factor has not been configured.

OBJECT DESCRIPTION

INDEX	6003_h
Name	Scaling_factor
Object Code	VAR
Data Type	Unsigned32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	rw
PDO Mapping	Possible
Value Range	Unsigned32
Default Value	0 _h

3.1.5 Object 6004_h: Saw minimum product length

This object shall provide the minimum product length due to the limitations of the saw device.

VALUE DESCRIPTION

The value shall be given in 0.1 mm per bit.

OBJECT DESCRIPTION

INDEX	6004_h
Name	Saw_minimum_product_length
Object Code	VAR
Data Type	Integer32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	ro
PDO Mapping	Possible
Value Range	Integer32
Default Value	No

3.1.6 Object 6005_h: Saw sync speed set value

This object shall store the set value of puller (line) speed cyclically transmitted from the extruder controller. This value may be used to synchronize saw motion and puller.

VALUE DESCRIPTION

The value shall be given in 0.01% per bit.

OBJECT DESCRIPTION

INDEX	6005_h
Name	Saw_sync_speed_set_value
Object Code	VAR
Data Type	Unsigned16
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	rw
PDO Mapping	Possible
Value Range	0 to 10,000 _d
Default Value	0 _h

3.1.7 Object 6006_h: Saw sync speed set maximum

This object shall provide the maximum set value of the puller.

VALUE DESCRIPTION

The value shall be given in 1 mm/min per bit.

OBJECT DESCRIPTION

INDEX	6006_h
Name	Saw_sync_speed_set_maximum
Object Code	VAR
Data Type	Integer32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	ro
PDO Mapping	Possible
Value Range	Integer32
Default Value	No

3.1.8 Object 6007_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%.

VALUE DESCRIPTION

The value shall be given in 1 mm/min per bit.

OBJECT DESCRIPTION

INDEX	6007_h
Name	Product_speed
Object Code	VAR
Data Type	Integer32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
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Access	ro
PDO Mapping	Default
Value Range	Integer32
Default Value	No

3.1.9 Object 6009_h: Height adjustment

This object shall provide the distance from the centerline to the bottom of the product needed for height adjustment configured by the extruder.

VALUE DESCRIPTION

The value shall be given in 0.1 mm per bit.

OBJECT DESCRIPTION

INDEX	6009_h
Name	Height_adjustment
Object Code	VAR
Data Type	Integer16
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	wo
PDO Mapping	Possible
Value Range	Integer16
Default Value	0 _d

3.1.10 Object 600A_h: Saw cut depth

This object shall store the set value received from the extruder controller.

VALUE DESCRIPTION

The value shall be given in mm per bit measured from the ground position.

OBJECT DESCRIPTION

INDEX	600A_h
Name	Saw_cut_depth
Object Code	VAR
Data Type	Integer16
Category	Mandatory

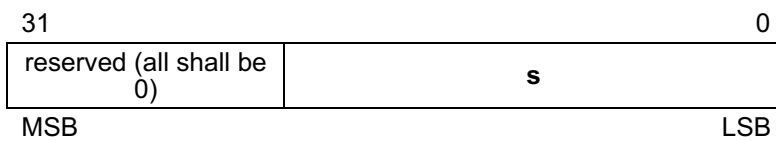
ENTRY DESCRIPTION

Sub-Index	0 _h
Access	wo
PDO Mapping	Possible
Value Range	Integer16
Default Value	0 _h

3.1.11 Object 6010_h: Configuration word

This object shall provide the configured functionality.

VALUE DESCRIPTION



s: *speed measuring*

0 = speed measuring not available

1 = speed measuring available

OBJECT DESCRIPTION

INDEX	6010_h
Name	Configuration_word
Object Code	VAR
Data Type	Unsigned32
Category	Mandatory

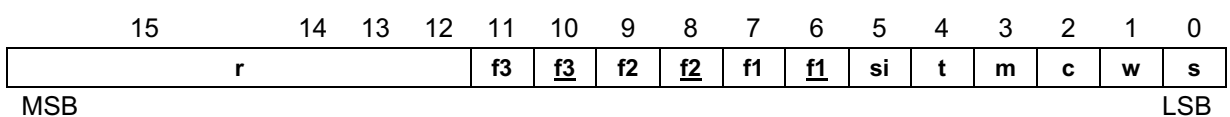
ENTRY DESCRIPTION

Sub-Index	0 _h
Access	ro
PDO Mapping	No
Value Range	See value description
Default Value	No

3.1.12 Object 6020_h: Control word

This object shall provide the commands transmitted by the extruder.

VALUE DESCRIPTION



s: *saw program on/off*

0 = saw program is off and actual saw counter is reset and off (default value)

1 = saw program is on an actual saw counter is on

w: *wall-thickening active*

0 = after a manual cut wall-thickening is off – the current product length will be repeated (default value)

1 = after a manual cut wall-thickening is on – the current product length will be destroyed and not repeated

c: *change of actual length setting*

The new product length shall be loaded prior to the cut of the current product and shall be taken automatically by the comparator after the next cut. Each change (from 0-to-1 and from 1-to-0) shall force the saw to takeover the new length setting (default value shall be 0).

m: *manual cut by extruder*

0 = no cut command (default value)

1 = immediate cut

(Note: Pulse length as actual key pressed duration, but at minimum 100 ms)

t: *tip pulse*

0 = no tip command (default value)

1 = tip out product

(Note: Pulse length is selectable and is generated by the extruder controller)

si: *stop immediately*

0 = no action (default value)

1 = saw shall stop immediately and shall move to its initial position

f1, f2, f3: *function 1 stop, function 2 stop, function 3 stop*

0 = no command (default value)

1 = stop function and no start allowed

f1, f2, f3: *function 1 start, function 2 start, function 3 start*

0 = no start requested (default value)

1 = start function if it is possible to start the function

r: *reserved*

default value is 0

(Note: These bits shall be set if the button is pressed but not shorter than 100 ms)

OBJECT DESCRIPTION

INDEX	6020_h
Name	Control_word
Object Code	VAR
Data Type	Unsigned16
Category	Mandatory

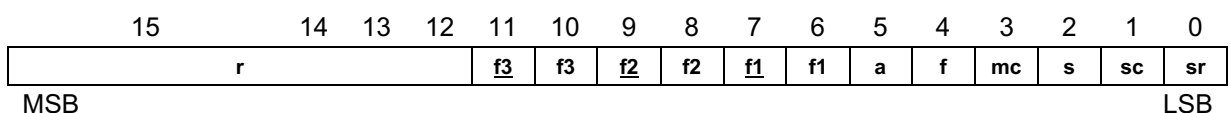
ENTRY DESCRIPTION

Sub-Index	0 _h
Access	rw
PDO Mapping	Default
Value Range	See value description
Default Value	See value description

3.1.13 Object 6030_h: Status word

This object shall provide the status transmitted to the extruder.

VALUE DESCRIPTION



- sr:** *saw ready*
 - 0 = saw is not ready to cut
 - 1 = saw is ready to cut and cut in progress
- sc:** *saw is cutting*
 - 0 = saw is not cutting
 - 1 = saw is cutting
- s:** *sample*
 - 0 = no command
 - 1 = insert sample after actual product
 - (Note: pulse length corresponds to operator pressed key duration, but at minimum 100 ms)
- mc:** *manual cut by saw*
 - 0 = no immediate cut
 - 1 = immediate cut
 - (Note: Pulse length as actual key pressed duration, but at minimum 100 ms)
- f:** *fault downstream device*
 - 0 = no fault
 - 1 = fault
- a:** *alarm downstream device*
 - 0 = no alarm
 - 1 = alarm
 - 1 = extruder enabled to run
- f1, f2, f3:** *function 1 run, function 2 run, function 3 run*
 - 0 = function is not running
 - 1 = function is running
- f1, f2, f3:** *function 1 ready to start, function 2 ready to start, function 3 ready to start*
 - 0 = function is blocked
 - 1 = function is ready to start
- r:** *reserved*
 - default value is 0

OBJECT DESCRIPTION

INDEX	6030_h
Name	Status_word
Object Code	VAR
Data Type	Unsigned16
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0 _h
Access	ro
PDO Mapping	Default
Value Range	See value description
Default Value	No