CiA Draft Standard Proposal 420

Profiles for Extruder Downstream Devices

Part 2: Puller

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

Version 1.0
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HISTORY

Date	Changes
22/10/2002	First public release

CONTENTS

1 Scope

Part 2 of the CANopen profile for extruder downstream devices specifies the CANopen interface for puller 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	4_h
	1_h	Status_word	6030 00 10_h
	2_h	Puller_speed_actual_value	6000 00 10_h
	3_h	Puller_load_actual_value	6006 00 10_h

Note: The unused bytes in the data field shall only be used for a manufacturer-specific second status word.

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	1_h
	1_h	Puller_speed_get_echo	6004 00 10_h
	2_h	Product_speed	6008 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
1600_h

Note: The unused bytes in the data field shall only be used for a manufacturer-specific second control word.

3 Object dictionary

3.1 Detailed specification of object entries

3.1.1 Object 6000_h: Puller speed actual value

This object shall provide the actual speed value of the puller.

VALUE DESCRIPTION

The value shall be given in percentage of the maximum speed (0.01%/bit). Negative value shall be given if the direction is reversed.

OBJECT DESCRIPTION

INDEX	**6000_h**
Name	Puller_speed_actual_value
Object Code	VAR
Data Type	Integer16
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0_h
Access	ro
PDO Mapping	Default
Value Range	$-10{,}000_d$ to $10{,}000_d$
Default Value	No

3.1.2 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.

VALUE DESCRIPTION

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

OBJECT DESCRIPTION

INDEX	**6001_h**
Name	Puller_speed_real_maximum
Object Code	VAR
Data Type	Unsigned32
Category	Mandatory

ENTRY DESCRIPTION

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

3.1.3 Object 6002_h: Puller speed set value

This object shall store the speed value requested by the extruder controller.

VALUE DESCRIPTION

The value shall be given in percentage of the maximum speed (0.01%/bit). Negative value shall be given if the direction is reversed.

OBJECT DESCRIPTION

INDEX	**6002_h**
Name	Puller_speed_set_value
Object Code	VAR
Data Type	Integer16
Category	Mandatory

ENTRY DESCRIPTION

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

3.1.4 Object 6003_h: Puller speed set maximum

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

VALUE DESCRIPTION

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

OBJECT DESCRIPTION

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

ENTRY DESCRIPTION

Sub-Index	0_h
Access	rw
PDO Mapping	Possible
Value Range	Unsigned32
Default Value	$10{,}000_d$

3.1.5 Object 6004_h: Puller speed set echo

This object shall provide the speed value set after recovering from bus-off state.

VALUE DESCRIPTION

The value shall be given in percentage of the maximum speed (0.01 %/bit). Negative value shall be given if the direction is reversed. Scaling is given in object 6003_h.

OBJECT DESCRIPTION

INDEX	**6004_h**
Name	Puller_speed_set_echo
Object Code	VAR
Data Type	Integer16
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0_h
Access	ro
PDO Mapping	Default
Value Range	$-10{,}000_d$ to $10{,}000_d$
Default Value	No

3.1.6 Object 6005_h: Puller speed step

This object shall provide the size of the first speed change at using increase or decrease key requested by the extruder controller.

VALUE DESCRIPTION

The value shall be given in percentage of the maximum speed (0.01%/bit). Negative value shall be given if the direction is reversed. Scaling is given in object 6003_h.

OBJECT DESCRIPTION

INDEX	**6005_h**
Name	Puller_speed_step
Object Code	VAR
Data Type	Integer16
Category	Mandatory

ENTRY DESCRIPTION

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

3.1.7 Object 6006_h: Puller load actual value

This object shall provide the actual value of the puller load.

VALUE DESCRIPTION

The value shall be given in percentage of the maximum speed (0.01%/bit). Negative value shall be given if the load is negative.

OBJECT DESCRIPTION

INDEX	**6006_h**
Name	Puller_load_actual_value
Object Code	VAR
Data Type	Integer16
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0_h
Access	ro
PDO Mapping	Default
Value Range	$-32{,}768_d$ to $+32{,}767_d$
Default Value	No

3.1.8 Object 6007_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	**6007_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

3.1.9 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%.

VALUE DESCRIPTION

The value shall be given in 0.1 mm/min per bit.

OBJECT DESCRIPTION

INDEX	**6008_h**
Name	Product_speed
Object Code	VAR
Data Type	Integer32
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0_h
Access	ro
PDO Mapping	Default
Value Range	0 to $10{,}000_d$
Default Value	No

3.1.10 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	Unsigned16
Category	Mandatory

ENTRY DESCRIPTION

Sub-Index	0_h
Access	rw
PDO Mapping	Possible
Value Range	Unsigned16
Default Value	0_d

3.1.11 Object $600A_h$: Pressure set value

This object shall provide the pressure set value for upper catterpillar as configured by the extruder.

VALUE DESCRIPTION

The value shall be given in percentage of the maximum pressure (0.01%/bit). Negative value shall be given if the load is negative.

OBJECT DESCRIPTION

INDEX	**$600A_h$**
Name	Pressure_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_d

3.1.12 Object 6010_h: Configuration word

This object shall provide the configured functionality.

VALUE DESCRIPTION

31	0
reserved (all shall be 0)	**s**
MSB	LSB

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

3.1.13 Object 6020_h: Control word

This object shall provide the commands transmitted by the extruder.

VALUE DESCRIPTION

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
r			**f3**	**f3**	**f2**	**f2**	**f1**	**f1**	**e**	**r**	**r**	**c**	**c**	**m**	**m**
MSB															LSB

m: *motor stop*
0 = no command (default value)
1 = stop motor (start prevention)
m: *motor start*
0 = no command (default value)
1 = start motor
c: *clamp open*
0 = no command (default value)
1 = open clamp (close prevention)
c: *clamp close*
0 = no command (default value)
1 = close clamp
e: *extruder run*
0 = extruder stopped (default value)
1 = extruder is running
f1, f2, f3: *function 1 stop, function 2 stop, function 3 stop*
0 = no command (default value)
1 = stop function (start prevention)
f1, f2, f3: *function 1 start, function 2 start, function 3 start*
0 = no command (default value)
1 = start 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

3.1.14 Object 6030_h: Status word

This object shall provide the status transmitted to the extruder.

VALUE DESCRIPTION

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
r		**f3**	**f3**	**f2**	**f2**	**f1**	**f1**	**rd**	**d**	**i**	**a**	**f**	**c**	**rs**	**mr**
MSB															LSB

mr: *motor run*
0 = motor is not running
1 = motor is running
rs: *motor ready to start*
0 = motor is blocked
1 = motor is ready to start
c: *clamp closed*
0 = clamp open
1 = clamp closed
f: *fault downstream equipment*
0 = no fault
1 = fault
a: *alarm downstream equipment*
0 = no alarm
1 = alarm
i: *increase set valuet*
0 = no change
1 = increase speed
(*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 = no change
1 = decrease speed
(*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 = normal direction
1 = reverse direction

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

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