bürkert
FLUID CONTROL SYSTEMS

Type LFPC 8763
CANopen

Object Description

Content

1 Overview

Used datatypes:

Unsigned8	8 bit: unsigned integer
Unsigned16	16 bit: unsigned integer
Unsigned32	32 bit: unsigned integer
REAL32	32 bit: float value IEEE 754
Visible String	Character string

2 Objects

2.1 Cyclic data

Object 0x2500 – Pressure

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Pressure	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output for Pressure value

Internal settings: for internal use only

Object 0x2501 Temperature

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Temperature	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output for Temperature value

Internal settings: for internal use only

Object 0x2502 In Ch1

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	In Ch1 Scaled Input	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of user scaled analog input value of input 1

Internal settings: for internal use only

Object 0x2503 In Ch2

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	In Ch2 Scaled Input	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of user scaled analog input value of input 2

Internal settings: for internal use only

Object 0x2504 Valve Control

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Valve Control	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of the duty cycle applied to control or exhaust valve. Positive value indicate Control valve is driven; negative values indicate exhaust valve is driven.

Internal settings: for internal use only

Object 0x2505 Pump Control

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Valve Control	Unsigend8	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of the DO1 state

Internal settings: for internal use only

Object 0x2506 TTL

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Valve Control	Unsigend8	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of the DO2 state

Internal settings: for internal use only

Object 0x2508 In Ch1 Input Value

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	In Ch1 Input Value	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of physical input at input 1. Scaled to selected unit (V or A)

Internal settings: for internal use only

Object 0x2509 In Ch2 Input Value

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	In Ch2 Input Value	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of physical input at input 2. Scaled to selected unit (V or A)

Internal settings: for internal use only

Object 0x250A Control Deviation

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Control Deviation	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output Control Deviation

Internal settings: for internal use only

Object 0x250B Setpoint

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Setpoint	REAL32	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output used set point value

Internal settings: for internal use only

Object 0x250B Namur Status

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Namur Status	Unsigned8	0	x		x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic output of NAMUR status

Internal settings: for internal use only

Object 0x2540 Pressure Setpoint

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Pressure Setpoint	REAL32	0	x	x	x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic input for Pressure Setpoint

Internal settings: for internal use only

Object 0x2541 Pump Setpoint

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Pump Setpoint	Unsigned8	0	x	x	x
0x02 - 0x07	Internal settings			x		

Description of the subindexes

Value: cyclic input for Pump Setpoint (DO1)

Internal settings: for internal use only.

Object 0x254C Valve Setpoint

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	7	x		
0x01	Valve Setpoint	REAL32	0	x	x	x
0x02-0x07	Internal settings			x		

Description of the subindexes

Value: cyclic input for Valve Setpoint

Internal settings: for internal use only

2.2 Acyclic data

The standard objects are described in seperate operating instruction:
www.burkert.com → Type 8763 “CANopen Network configuration”
The device specific objects are described below

Object 0x200A Power Supply alarm Values

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	5	x		
0x01	Voltage error limit high	Real32	35.0	x		
0x02	Voltage error limit low	Real32	18.0	x		
0x05	Voltage hysteresis	Real32	0.4	x		

Description of the subindexes

Voltage error limit high: Limit value supply voltage, error message when exceeded

Voltage error limit low: Limit value supply voltage, error message when undercut

Voltage hysteresis: Tolerance range upper and lower limit value supply voltage

Object 0x200B Temperature Alarm Values

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	5	x		
0x01	Temperature error limit high	Real32	353.15	x		
0x02	Temperature error limit low	Real32	283.15	x		
0x05	Temperature hysteresis	Real32	2.0	x		

Description of the subindexes

Temperature error limit high: Limit value device temperature, error message when exceeded

Temperature error limit low: Limit value device temperature, error message when undercut

Temperature hysteresis: Tolerance range upper and lower limit value device temperature

Object 0x2C00 Device

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	0	x		
0x01	Variant	Unsigned8	1	x		

Description of the subindexes

Variant: Device variant.0: Digital variant, 1: Analog variant

Object 0x2C11 Pressure Sensor

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	6	x		
0x02	Temperature Filter Response Time	REAL32	0	X	X	
0x03	Pressure Filter Response Time	REAL32	0	X	X	

Description of the subindexes

Temperature Filter Response Time: response time of filter in second. 0 means inactive.
Pressure Filter Response Time: response time of filter in second. 0 means inactive.

Object 0x2C13 AMS 5812

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	6	x		
0x01	Minimum Pressure	REAL32		x		
0x02	Maximum Pressure	REAL32		x		

Description of the subindexes

Minimum Pressure: sensor minimum allowed pressure
Maximum Pressure: sensor maximum allowed pressure

Object 0x2C21 Controller

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	10	x		
0x0B	Kp Close	REAL32		x	x	
0x0C	Kp Open	REAL32		x	x	
0x08	Deadband	REAL32		x	x	

Description of the subindexes

Kp Close: Kp of exhaust valve
Kp Open: Kp of ventilation valve
Deadband: insensitivity range of controller in percent of maximum pressure

Object 0x2C22 Setpoint Handling

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	6	x		
0x01	State	Unsigned8	0	x		
0x02	Setpoint Source	Unsigned8	0	x	x	
0x04	Fixed Setpoint	REAL32	0	x	x	
0x05	Manual Setpoint	REAL32	0	x	x	
0x06	Rise Time	REAL32	0,2	x	x	

Description of the subindexes

State: State of set point handling (0: error, 1: closed loop control, 2: exhaust, 3:.open loop control)
Setpoint Source: Used set point Source (0: büS, 1: fixed, 2: manual, 3: open loop, 4: Analog Input 1, 5: Analog input 2)
Fixed Setpoint: Value used as set point if fixed set point source selected
Manual Setpoint: Value used as set point if manual set point source selected
Rise Time: rise time of pre-filter for set point value in seconds to limit dynamics of set point jumps

Object 0x2C31 Control Valve

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	8	x		
0x02	Manual Setpoint	REAL32		x		
0x07	Current Value	REAL32		x		
0x08	Nominal Width	REAL32		x		

Description of the subindexes

Manual Setpoint currently active duty cycle, which is applied to valve
Current Value: current consumption of valve
Nominal Width: valve nominal width

Object 0x2C32 Exhaust Valve

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	8	x		
0x02	Manual Setpoint	REAL32		x		
0x07	Current Value	REAL32		x		
0x08	Nominal Width	REAL32		x		

Description of the subindexes

Manual Setpoint currently active duty cycle, which is applied to valve
Current Value: current consumption of valve
Nominal Width: valve nominal width

Object 0x2C34 Pump Task

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	8	x		
0x01	Setpoint Source	Unsigned8	0	x	x	
0x02	Value Pump On Analog Source Physical	REAL32	0	x	x	
0x03	Value Pump Off Analog Source Physical	REAL32	0	x	x	
0x04	Value Pump On Analog Source Scaled	REAL32	0	x	x	
0x05	Value Pump Off Analog Source Scaled	REAL32	0	x	x	

Description of the subindexes

Setpoint Source: set point source used for DO1 (0: off, 1: on, 2: analog threshold, 3:analog threshold scaled, 4: büS)
Value Pump On Analog Source Physical: DO1 will turn on if physical input at AI1 goes below this value
Value Pump Off Analog Source Physical: DO1 will turn off if physical input at AI1 goes above this value
Value Pump On Analog Source Scaled: DO1 will turn on if scaled input at AI1 goes below this value
Value Pump Off Analog Source Scaled: DO1 will turn off if physical input at AI1 goes above this value

Object 0x2D00 In Channel 1

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	15	x		
0x01	Type	Unsigned8	1	x		
0x02	Config Mode	Unsigned8				
0x03	Mode Name	Visible String				
0x06	Low Point	REAL32				
0x07	High Point	REAL32				
0x08	Filter Response Time	REAL32				
0x0C	Raw Unit	Unsigned32				
0x0F	Percent	REAL32				

Description of the subindexes

Type: Type of input (1: Analog input)
Config Mode: Configuration of input mode (0: not configured, 1: 4-20mA, 3: 0-10V)
Mode Name: Name of mode (either 4-20mA or 0-10V)
Low Point: Low point for user scaling
High Point: High point for user scaling
Filter Response Time: Input filter response time in second
Raw Unit: CANopen unit of selected input type (mA or V)
Percent: Input value scaled to percent

Object 0x2D01 In Channel 2

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	15	x		
0x01	Type	Unsigned8	1	x		
0x02	Config Mode	Unsigned8		x	x	
0x03	Mode Name	Visible String		x		
0x06	Low Point	REAL32		x	x	
0x07	High Point	REAL32		x	x	
0x08	Filter Response Time	REAL32		x	x	
0x0C	Raw Unit	Unsigned32		x		
0x0F	Percent	REAL32		x	x	

Description of the subindexes

Type: Type of input (1: Analog input)
Config Mode: Configuration of input mode (0: not configured, 1: 4-20mA, 3: 0-10V)
Mode Name: Name of mode (either 4-20mA or 0-10V)
Low Point: Low point for user scaling
High Point: High point for user scaling
Filter Response Time: Input filter response time in second
Raw Unit: CANopen unit of selected input
Percent: Input value scaled to percent

Object 0x2D02 Binary Out (DO2)

Sub-Index	Name	Data type	Default	Access		PDO mappable
				Read	Write	
0x00	Number Of Entries	Unsigned8	4	x		
0x01	Active	Unsigned8		x	x	
0x02	Polarity	Unsigned8		x	x	
0x03	Threshold	REAL32		x	x	
0x04	Hysteresis	REAL32		x	x	
0x06	Interconnected Sensor	Unsigned8	0	x	x	

Description of the subindexes

Active: set DO2 active
Polarity: Polarity for DO2
Threshold: Threshold, if control deviation in % full scale pressure range goes below this value, DO1 is set to polarity
Hysteresis: Value that needs to be overcome to set from on to off
InterconnectedSensor: Link external pressure sensor connected to AI2 to DO2 to allow DO2 to trigger if AI2 is close to the setpoint pressure

3 Autotune

For the autotune functionality, a *user requested autotune setpoint pressure in Pa* must be set. Make sure this value is between minimum and maximum allowed supply pressure.

1. Save setpoint source before autotune:
   - Save contents of address "2C22sub2".
2. Set setpoint source to manual:
   - Set address "2C22sub2" to value 2.
3. Enter setpoint for autotune
   - Set address "2C22sub5" to *user requested autotune setpoint pressure in Pa.*
   - Set address "2C21sub16" to *user requested autotune setpoint pressure in Pa.*
4. Start autotune
   - Set address "2C21sub12" to value 3.
5. Check progress of autotune
   - Poll address "2C21sub12" (startTune) and "2C21sub13" (tuneStatus)
   - if tuneStatus <= 0 or startTune == -1:
     autotune is still running
6. Check result of autotune
   - if tuneStatus == 0 :
     autotune successful
     elif tuneStatus < 0 or tuneStatus == initialValue or startTune == -1:
     autotune failed
7. (optional) if autotune successful:
   - read new kPopen from address "2C21subC"
   - read new kPclose from address "2C21subB"
8. Restore initial setpoint source after autotune
   - Restore contents of address "2C22sub2" saved in step 1.