

CANopenFD_NXP_SDK_Accel

Electronic Datasheet Information

Version 2, revision 1

CANopen Library for NXP SDK - CiA401 style accelerometer example

Created on 09-25-2019, 07:06PM by Pf

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Provided by Embedded Systems Academy

www.em-sa.com/nxp

This version is based on the CiA401 example, here implementing object for an accelerometer as present on the NXP LPC55S16-EVK.

Product Information

Property	Value
Vendor Name	NXP Semiconductors BV
Vendor ID	0xAF0002DC
Product Name	CANopenFD NXP accelerometer example
Product Code	0xC0DE0021
Revision Number	0x20200417
Order Code	C0DE0021

Commissioning Information

Property	Value
Node ID	0x03
Name	GenIO
Baudrate	500 kbps
Network Number	0
Network Name	
LSS Serial Number	0x00000000
CANopen Manager	No

PDO Configuration

Communication Parameters

PDO	COBID	Tx Type	Inhibit Time	Event Time	Sync Start
RPDO1	\$NODEID+0x200	255			
TPDO1	\$NODEID+0x40000180	255	250.0 ms	1000 ms	
TPDO2	\$NODEID+0x40000280	255	20.0 ms	500 ms	

Mappings

PDO	Mappings
RPDO1	[0x6200,0x01] Command - CommandByte (Unsigned8)
TPDO1	[0x2200,0x00] LoopCount (Unsigned32)
TPDO2	[0x6401,0x01] Position - PosX (Integer16)

[0x6401,0x02] Position - PosY (Integer16)

[0x6401,0x03] Position - PosZ (Integer16)

Object Dictionary

Overview

Index	Subindex	Name	Type	Access	Default Value
0x0002	0x00	INTEGER8	I8	CO	
0x0003	0x00	INTEGER16	I16	CO	
0x0004	0x00	INTEGER32	I32	CO	
0x0005	0x00	UNSIGNED8	U8	CO	
0x0006	0x00	UNSIGNED16	U16	CO	
0x0007	0x00	UNSIGNED32	U32	CO	
0x1000	0x00	Device Type	U8	CO	0x01
	0x01	Logical Device 1	U32	CO	0x00000000
0x1001	0x00	Error Register	U8	CO	
0x1002	0x00	Manufacturer Status Register	U32	RO	
0x1005	0x00	COB-ID SYNC	U32	CO	0x00000080
0x1008	0x00	Manufacturer Device Name	VisStr	RO	See description
0x1009	0x00	Manufacturer Hardware Version	VisStr	RO	See description
0x100A	0x00	Manufacturer Software Version	VisStr	RO	See description
0x1010	0x00	Store Parameters	U8	CO	0x04
	0x01	Save All Parameters	U32	RW	
	0x02	Save Communication Parameters	U32	RW	
	0x03	Save Application Parameters	U32	RW	
	0x04	Save Manufacturer Parameters	U32	RW	
0x1011	0x00	Restore Parameters	U8	CO	0x04
	0x01	Save All Parameters	U32	RW	
	0x02	Restore Communication Parameters	U32	RW	
	0x03	Restore Application Parameters	U32	RW	
	0x04	Restore Manufacturer Parameters	U32	RW	
0x1014	0x00	COB-ID EMCY	U32	CO	\$NODEID+0x80
0x1015	0x00	Inhibit Time Emergency	U16	CO	100
0x1016	0x00	Consumer Heartbeat Time	U8	CO	3
	0x01	Consumer Heartbeat Time 1	U32	RW	0x000103E8
	0x02	Consumer Heartbeat Time 2	U32	RW	0x00020000
	0x03	Consumer Heartbeat Time	U32	RW	0x00030000

		3			
0x1017	0x00	Producer Heartbeat Time	U16	RW	1000
0x1018	0x00	Identity Object	U8	CO	4
	0x01	Vendor ID	U32	CO	0xAF0002DC
	0x02	Product Code	U32	CO	0xC0DE0021
	0x03	Revision number	U32	CO	0x20200417
	0x04	Serial number	U32	CO	
0x1400	0x00	Receive PDO	U8	CO	2
		Communication Parameter			
	0x01	COB-ID	U32	RW	\$NODEID+0x200
	0x02	Transmission Type	U8	RW	255
0x1600	0x00	Receive PDO Mapping	U8	CO	0x01
		Parameter			
	0x01	PDO Mapping Entry	U32	CO	0x62000108
0x1800	0x00	Transmit PDO	U8	CO	5
		Communication Parameter			
	0x01	COB-ID	U32	RW	\$NODEID+0x40000180
	0x02	Transmission Type	U8	RW	255
	0x03	Inhibit Time	U16	RW	2500
	0x05	Event Timer	U16	RW	1000
0x1801	0x00	Transmit PDO	U8	CO	5
		Communication Parameter			
	0x01	COB-ID	U32	RW	\$NODEID+0x40000280
	0x02	Transmission Type	U8	RW	255
	0x03	Inhibit Time	U16	RW	200
	0x05	Event Timer	U16	RW	500
0x1A00	0x00	Transmit PDO Mapping	U8	CO	1
		Parameter			
	0x01	PDO Mapping Entry	U32	CO	0x22000020
0x1A01	0x00	Transmit PDO Mapping	U8	CO	3
		Parameter			
	0x01	PDO Mapping Entry	U32	CO	0x64010110
	0x02	PDO Mapping Entry	U32	CO	0x64010210
	0x03	Mapping 3	U32	CO	0x64010310
0x2010	0x00	128byte Buffer	VisStr	RW	See description
		Segmentation Test			
0x2200	0x00	LoopCount	U32	RO	
0x6200	0x00	Command	U8	CO	0x01
	0x01	CommandByte	U8	RWW	
0x6401	0x00	Position	U8	CO	0x03
	0x01	PosX	I16	RO	0x1234
	0x02	PosY	I16	RO	0x2345
	0x03	PosZ	I16	RO	0x3456

Device Type (0x1000)

Subindex	0x00
Name	Highest Subindex
Data Type	Unsigned8

Access	Const
Can be mapped	No
Default Value	0x01
Subindex	0x01
Name	Logical Device 1
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0x00000000

Error Register (0x1001)

Subindex	0x00
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	

Manufacturer Status Register (0x1002)

Subindex	0x00
Data Type	Unsigned32
Access	ReadOnly
Can be mapped	No
Default Value	

COB-ID SYNC (0x1005)

Subindex	0x00
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0x00000080

Manufacturer Device Name (0x1008)

Subindex	0x00
Data Type	Visible String
Access	ReadOnly
Can be mapped	No
Default Value	CANopenLibNXPSDK Accelerometer Example

Manufacturer Hardware Version (0x1009)

Subindex	0x00
Data Type	Visible String
Access	ReadOnly
Can be mapped	No
Default Value	LPC55S16-EVK

Manufacturer Software Version (0x100A)

Subindex	0x00
Data Type	Visible String

Access	ReadOnly
Can be mapped	No
Default Value	EmSA MCOP 7.0 2019-09-25

Store Parameters (0x1010)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	0x04

Subindex	0x01
Name	Save All Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

Subindex	0x02
Name	Save Communication Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

Subindex	0x03
Name	Save Application Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

Subindex	0x04
Name	Save Manufacturer Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

Restore Parameters (0x1011)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	0x04

Subindex	0x01
Name	Save All Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

Subindex	0x02
Name	Restore Communication Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

Subindex	0x03
Name	Restore Application Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

Subindex	0x04
Name	Restore Manufacturer Parameters
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	

COB-ID EMCY (0x1014)

Subindex	0x00
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	\$NODEID+0x80

Inhibit Time Emergency (0x1015)

Subindex	0x00
Data Type	Unsigned16
Access	Const
Can be mapped	No
Default Value	100

Consumer Heartbeat Time (0x1016)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	3

Subindex	0x01
Name	Consumer Heartbeat Time 1
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	0x000103E8

Subindex	0x02
Name	Consumer Heartbeat Time 2
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	0x00020000

Subindex	0x03
Name	Consumer Heartbeat Time 3
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	0x00030000

Producer Heartbeat Time (0x1017)

Subindex	0x00
Data Type	Unsigned16
Access	ReadWrite
Can be mapped	No
Default Value	1000

Note that CiA 401 sets the default to 0 and thereby disables heartbeat. In order to have a periodic transmission from the node right after initialization, this is changed to 1000 ms. This allows an easy verification that CAN is working and the stack is running, even before any interaction with a CANopen manager.

Identity Object (0x1018)

Subindex	0x00
Name	number of entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	4

Subindex	0x01
Name	Vendor ID
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0xAF0002DC

Subindex	0x02
Name	Product Code
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0xCODE0021

Subindex	0x03
Name	Revision number
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0x20200417

Subindex	0x04
Name	Serial number
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	

Receive PDO Communication Parameter (0x1400)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	2

Subindex	0x01
Name	COB-ID
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	\$NODEID+0x200

Subindex	0x02
Name	Transmission Type
Data Type	Unsigned8
Access	ReadWrite
Can be mapped	No
Default Value	255

Receive PDO Mapping Parameter (0x1600)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8

Access	Const
Can be mapped	No
Default Value	0x01

Subindex	0x01
Name	PDO Mapping Entry
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0x62000108 [0x6200,0x01] Command - CommandByte (Unsigned8)

Transmit PDO Communication Parameter (0x1800)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	5

Subindex	0x01
Name	COB-ID
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	\$NODEID+0x40000180

Subindex	0x02
Name	Transmission Type
Data Type	Unsigned8
Access	ReadWrite
Can be mapped	No
Default Value	255

Subindex	0x03
Name	Inhibit Time
Data Type	Unsigned16
Access	ReadWrite
Can be mapped	No
Default Value	2500

Subindex	0x05
Name	Event Timer
Data Type	Unsigned16
Access	ReadWrite
Can be mapped	No
Default Value	1000

Transmit PDO Communication Parameter (0x1801)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	5
Subindex	0x01
Name	COB-ID
Data Type	Unsigned32
Access	ReadWrite
Can be mapped	No
Default Value	\$NODEID+0x40000280
Subindex	0x02
Name	Transmission Type
Data Type	Unsigned8
Access	ReadWrite
Can be mapped	No
Default Value	255
Subindex	0x03
Name	Inhibit Time
Data Type	Unsigned16
Access	ReadWrite
Can be mapped	No
Default Value	200
Subindex	0x05
Name	Event Timer
Data Type	Unsigned16
Access	ReadWrite
Can be mapped	No
Default Value	500

Transmit PDO Mapping Parameter (0x1A00)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	1
Subindex	0x01
Name	PDO Mapping Entry
Data Type	Unsigned32
Access	Const

Can be mapped	No
Default Value	0x22000020 [0x2200,0x00] LoopCount (Unsigned32)

Transmit PDO Mapping Parameter (0x1A01)

Subindex	0x00
Name	Number of Entries
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	3

Subindex	0x01
Name	PDO Mapping Entry
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0x64010110 [0x6401,0x01] Position - PosX (Integer16)

Subindex	0x02
Name	PDO Mapping Entry
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0x64010210 [0x6401,0x02] Position - PosY (Integer16)

Subindex	0x03
Name	Mapping 3
Data Type	Unsigned32
Access	Const
Can be mapped	No
Default Value	0x64010310 [0x6401,0x03] Position - PosZ (Integer16)

128byte Buffer Segmentation Test (0x2010)

Subindex	0x00
Data Type	Visible String
Access	ReadWrite
Can be mapped	No
Default Value	This is a 128 byte long test string for the NXP MCUXpresso SDK Micro CANopen FD demo by Embedded Systems Academy (www.em-sa.com)

LoopCount (0x2200)

Subindex	0x00
Data Type	Unsigned32
Access	ReadOnly
Can be mapped	Yes

Default Value

Command (0x6200)

Subindex	0x00
Name	Number of Elements
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	0x01

Subindex	0x01
Name	CommandByte
Data Type	Unsigned8
Access	ReadWriteWrite
Can be mapped	Yes
Default Value	

Position (0x6401)

Subindex	0x00
Name	Number of Elements
Data Type	Unsigned8
Access	Const
Can be mapped	No
Default Value	0x03

Subindex	0x01
Name	PosX
Data Type	Integer16
Access	ReadOnly
Can be mapped	Yes
Default Value	0x1234

Subindex	0x02
Name	PosY
Data Type	Integer16
Access	ReadOnly
Can be mapped	Yes
Default Value	0x2345

Subindex	0x03
Name	PosZ
Data Type	Integer16
Access	ReadOnly
Can be mapped	Yes
Default Value	0x3456