

SoftMotion: DriveInterface: LexiumCAN

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Hardware interface	CAN; must support 3S_CANdrv.lib
Supported drives	Lexium05A , Lexium15LP, Lexium15MP
Runtimes	Any
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Components	LexiumCANDrive.lib; 3S_CanDrv.lib; SM_CAN.lib; SysLibCallback.lib; SysLibFile.lib
Version	1.9.3.0

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1 Parameters in PLC config

1.1 BusInterface

wParam1	Not used
wParam2	Not used
dwParam1	Not used
dwParam2	Not used

1.2 AxisGroup

wParam1	CAN channel No (typically 0)
wParam2	Baudrate in kBit (125, 250, 500, 1000)
wParam3	SYNC generator: 0: PLC generates SYNC (only possible if PLC is highly precise); 1: first drive of AxisGroup generates SYNC 2: SYNC device generates SYNC (additional hardware needed)
wParam4	Not used
dwParam1	Reserved
dwParam2	Reserved
dwParam3	Not used
dwParam4	Not used

1.3 supported Drive.wControlType

The cyclic send data must consist of: fSetPosition.

The cyclic receive data can consist of: fActPosition.

1.4 Additional structure *LexiumCAN_AXIS_REF*

name	Type
eType	LexiumDriveType internal use
byDriveState, byDriveStateOld	BYTE internal use
wStateCounter	WORD internal use
wp	SMC_WriteCANParameter internal use
wStatusWord	WORD Status word (16#6041)
wControlWord	WORD Control word (16#6040)
dwSetPosition	DWORD Set position transmitted to drive
strConfigFile	STRING full name and path of config file
acit	internal use
crap	SMC_CANReadAllParams internal use

pParameterlist	POINTER TO CAN_InitTelegram	internal use
wLimitSw	WORD	Internal use
bOldLimitState	BOOL	Internal use
wType	WORD	Internal use
byOperatingMode	BYTE	Internal use

2 Features

- **RegulatorOn, DriveStart**
- Detecting and acknowledging **errors**
- **reading/writing** SoftMotion and **drive parameters** (to access index 0xaabb subindex 0xcc with length 0xdd in byte (only necessary for writing) either use MC_Read/Write(Bool)Parameter with parameter number -16#ddaabbcc) or SMC_ReadCANParameter and SMC_WriteCANParameter to address a standard CAN object via index, subindex.
- any **gearing factors** (dwRatioTechUnitsDenom/iRatioTechUnitsNum)
- **linear/rotary axes**
- **controlling modes:** position.
- drive internal **homing** (first configure 16#6098, 16#6099)

Lexium05:

- **capturing:** 2 possible latching inputs: CAP1 (TriggerNumber=1), CAP2 (TriggerNumber=2). To set, whether the inputs react on rising or falling edges, use the drive internal object 0x300A.
- **hardware limit switches:** when one of the hardware limits is reached, the drive goes in state errorstop. To be used again, it must be resetted (MC_Reset) and homed (MC_Home). It is not possible to run the drive again without homing first.
- **configuration from file**
- **configuration from dialogs in PLC config**
- supported **SYNC generators** (to be set in PLC Configuration, AxisGroup) : PLC, SYNC-Device

Lexium15LP:

- **capturing:** configurable latching input: (TriggerNumber=1). To set, whether the inputs react on rising or falling edges, use the drive internal object 0x20A0-0x20A3.
- **hardware limit switches:** when one of the hardware limits is reached, it is possible to move in free direction otherwise drive goes in errorstop.
- **configuration from file**
- **configuration from dialogs in PLC config**
- supported **SYNC generators** (to be set in PLC Configuration, AxisGroup) : PLC, SYNC-Device

Lexium15MP:

- **capturing:** configurable latching input: (TriggerNumber=1). To set, whether the inputs react on rising or falling edges, use the drive internal object 0x2026
- **hardware limit switches:** when one of the hardware limits is reached, it is possible to move in free direction otherwise drive goes in errorstop.
- **configuration from file**
- **configuration from dialogs in PLC config**
- supported **SYNC generators** (to be set in PLC Configuration, AxisGroup) : PLC, SYNC-Device

3 configured parameters during startup

The following parameters are set during startup Lexium05:

Parameter	Wert
16#1005:0	16#80
16#1014:0	0
16#1400-16#14FF	PDO mapping
16#3006:7	16#20000
16#3006:8	1
16#3004:1	1 (after this wait, until 16#3004:1Bit0 is reset)

The following parameters are set during startup Lexium15LP:

Parameter	Wert
16#1005:0	16#80
16#1014:0	0
16#1400-16#1A03	PDO mapping
16#60C2:1	CycleTime
16#60C2:2	16#FC
16#3683:1	3
16#35CA:1	16#100000
16#35CB:1	1
16#35CF:1	0

The following parameters are set during startup Lexium15MP:

Parameter	Wert
16#1005:0	16#80
16#1014:0	0
16#1400-16#1A03	PDO mapping
16#60C2:1	CycleTime
16#60C2:2	16#FC
16#3683:1	3
16#363B:1	3
16#35CA:1	1
16#35CB:1	1

4 CAN-Traffic

base load:

<i>Telegram</i>	<i>Data bytes</i>	<i>Bit length</i>	<i>125 kBit/s</i>	<i>250 kBit/s</i>	<i>500 kBit/s</i>	<i>1 MBit/s</i>
SYNC	0	47	0,376 ms	0,188 ms	0,094 ms	0,047 ms
SDO	8	111	0,888 ms	0,444 ms	0,222 ms	0,111 ms
Overall			1,264 ms	0,632 ms	0,316 ms	0,158ms

Lexium 05 drive :

<i>Telegram</i>	<i>Data bytes</i>	<i>Bit length</i>	<i>125 kBit/s</i>	<i>250 kBit/s</i>	<i>500 kBit/s</i>	<i>1 MBit/s</i>
Control Word, set position	6	95	0,760 ms	0,380 ms	0,190 ms	0,095 ms
Status Word, actual position	6	95	0,760 ms	0,380 ms	0,190 ms	0,095 ms
overall			1,520 ms	0,760 ms	0,380 ms	0,190 ms

Lexium15LP and Lexium15MP drive :

<i>Telegram</i>	<i>Data bytes</i>	<i>Bit length</i>	<i>125 kBit/s</i>	<i>250 kBit/s</i>	<i>500 kBit/s</i>	<i>1 MBit/s</i>
Control Word, set position	7	103	0,824 ms	0,412 ms	0,206ms	0,103 ms
Status Word, actual position	7	103	0, 824 ms	0,412 ms	0,206 ms	0,103 ms
overall			1,648 ms	0,824 ms	0,412ms	0,206 ms

According to that, the following table shows the maximum number of drives per cycle time:

Network with Lexium 05, Lexium15LP and Lexium15MP drives :

max. number of drives	125 kBit/s	250 kBit/s	500 kBit/s	1 MBit/s
1 ms	0	1	1	4
2 ms	0	1	3	8
3 ms	1	2	6	12
4 ms	1	3	8	16
5 ms	2	4	10	20