

SoftMotion: DriveInterface: AMCDigiflex

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Hardware interface	CAN; must support 3S_CANdrv.lib
Supported drives	Advanced Motion Controls: Digiflex
Runtimes	all
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Components	AMCDigiflexDrive.lib; 3S_CanDrv.lib; SM_CAN.lib; SysLibCallback.lib; SysLibFile.lib
Version	1.9.4.0

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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: not supported by the drive 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

T / - no	V/V no	V/P no	P/P yes	PV/PV no	V/- no	CONF no
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The cyclically sent data must consist of: fSetPosition, fSetVelocity.

The received data can consist of: fActPosition.

1.4 Additional structure *AMCDigiflex_AXIS_REF*

name	Type	
wStatusWord, wControlWord	WORD	status and control word received/sent from/to drive
wOldControl, wOldStatus	WORD	last status and control word
byModeofOperation	BYTE	actual mode of operation
byOldOpMode	BYTE	last mode of operation
dwBufferedPVTs	DWORD	Actual number of pvts stored in the drive
dwEmergencyMessage	DWORD	last 4 bytes of emergency message
strConfigFile	STRING	Path and file name of ASCII configuration file

acit		Initialization telegrams
srcan	SMC_ReadCANParameter	internal use
swcan	SMC_WriteCANParameter	internal use
crap	SMC_CANReadAllParams	internal use
pParameterlist	POINTER TO CAN_InitTelegram	internal use
bCaptureOccured, bCaptureStarted	BOOL	internal use
generatePVT	AMCDigiflexGeneratePVT	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)
- any **gearing factors** (dwRatioTechUnitsDenom/iRatioTechUnitsNum)
- **linear/rotary axes**
- **controlling modes:** position
- drive internal **homing** (first configure Object 16#6098, 16#6099.16#609A)
Note: when enabled, the home position cannot be set in the drive. Therefore MC_Home generates an error, when its input Position doesn't fit the content of 607Ch.
- **latching:** TriggerNumber (1 -> rising edge, 2 -> falling edge, 3 -> rising or falling edge)
- **limit switches** should be connected to the drive. If configured in the drive, an error is set if one of them gets FALSE.
- **configuration from dialogs in PLC config**
- supported **SYNC generators** (to be set in PLC Configuration, AxisGroup): PLC, SYNC-Device

2.1 Time stamp

The controller sends a time stamp object (16#0100) with a time period defined in the global variable g_uiTimeStampPeriod (default: 10000 = 10s), if g_bProduceTimeStamps is TRUE (default).

If the controller receives an emergency message, which tells that the time stamp object was not accepted by the drive (reason: time bases are too different between PLC and drive), it sets the variable g_bTimeStampNotAccepted to TRUE.

2.2 Pvt cycle time

A minimum cycle time for pvt telegrams can be set with the global variable g_byMinPVTTime [ms]. When the PLC cycle is faster than this value, non every cycle a pvt message is sent:

Example:

G_byMinPVTTime = 30

Cycle time t#4ms

è every 8th cycle a pvt with 32 ms is produced and sent

When the global variable g_bUsePLLForPVTs is set to TRUE (default), a PLL controls the time value of pvts. This applies, when the time bases of controller and drive differ. The PLL automatically adapts the time of pvts to make sure, that the number of stored pvt objects inside the drive stays about constant.

3 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/time stamp	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

per 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, operation mode (RPDO2)	3	71	0,568 ms	0,284 ms	0,142 ms	0,071 ms
pvt (RPDO21)	8	111	0,824 ms	0,412 ms	0,206 ms	0,103 ms
Status Word, operation_mode_display , actposition (TPDO26)	7	103	0,888 ms	0,444 ms	0,222 ms	0,111 ms
Pvt Buffer status (TPDO24)	4	79	0,632 ms	0,316 ms	0,158 ms	0,079 ms
overall			2,912 ms	1,456 ms	0,728 ms	0,364ms

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

Max. number of drives	125 kBit/s	250 kBit/s	500 kBit/s	1 MBit/s
2 ms	0	1	2	5
3 ms	1	2	4	8
4 ms	1	2	5	10
6 ms	2	4	6	16
8 ms	2	5	8	21