

AN300054-000: Using Adlos KannMOTION Protocol Simplification

Introduction

This particular document explains simplifications for the handling of the KannMOTION Protocol, if used with Adlos Tools.



Common Infos

With some of the Adlos Tools, the direct use of the protocol is simplified for better usage.

This is the case for following tools:

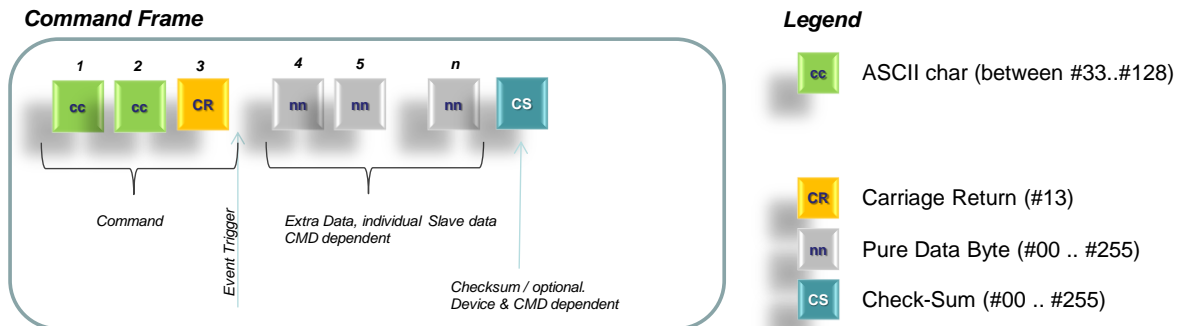
- COM-Watch
- API LLL
- API HAL
- API BAL

Example of simplifying communication with Adlos Tools:

Usage in Adlos Tools	Bytes sent to device (HEX)
Dr#0D#XL2[1000]#CK	44 72 0D E8 03 52


Protocol

First, a short explanation of the KannMOTION Protocol structure.



Data and checksum are only needed with **WRITE**-Commands. For **READ**-Commands, only the command itself has to be sent.

Read	ID#0D
Write	Dr#0D#XL2[1000]#CK

	Control chars (#0D – CR - Carriage Return) are not in displayed in normal charset, use HEX instead.
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Command

The actual command is always 2 ASCII letters followed by a carriage return.

Dr #0D#XL2[1000]#CK

The commands can be written with ASCII letters and gets converted to HEX-Chars

Example			
Typed	#Dr#0D	Transmitted	#44#72#0D
	#Dp#0D		#44#70#0D

Data

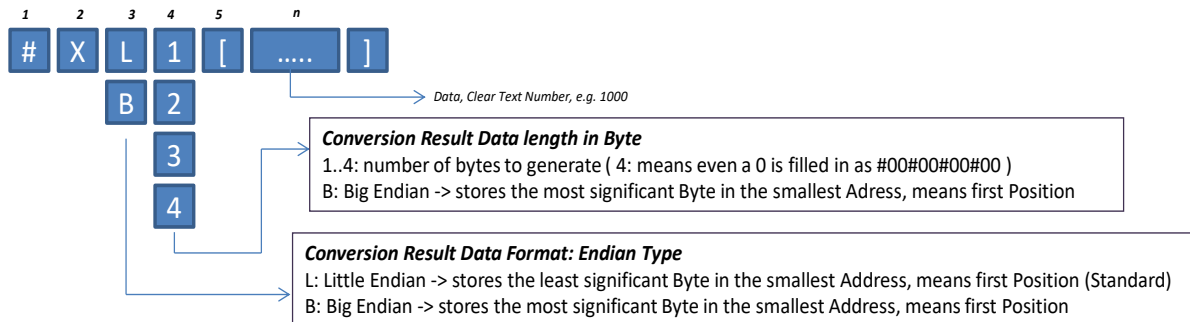
The data can be different sizes, depends on the actual command.

```
Dr#0D#XL2[1000]#CK
```

XL/XB Tag

The XL/XB tag helps to convert numbers into HEX-Chars.

Numeric values, especially bigger than 1 byte, can be written with converting tags:



Example			
Typed	#XL2 [0x100]	Transmitted	#00#01
	#XL2 [256]		#00#01
	#XB2 [0x100]		#01#00
	#XB2 [256]		#01#00

XS Tag

The XS helping tag is meant for writing strings to the device, it converts strings to HEX-Chars.

Example			
Typed	#XS4 [test]	Transmitted	#74#65#73#74
	#XS2 [Hi]		#48#69

If the length of the string exceeds the given length, the rest of the string will be ignored

Example			
Typed	#XS3 [test]	Transmitted	#74#65#73

Checksum

The checksum is at the end of all commands, which write data to the device. It is not needed for read commands. See *Protocol*.

```
Dr#0D#XL2[1000]#CK
```

The sum of the full command or answer (Command +Data + Checksum) has always to be <0>. In the following example, the tools calculate the checksum automatically, to simplify the usage.

Example			
Typed	Dr#0D#E8#03#CK	Transmitted	#44#72#0D#E8#03#52

Here is how the checksum is calculated:

Size	1 Byte
Formula	$CK = 256 - ((Command + Data) \% 256)$

For example, lets take the command above and go step by step.

Simplified command	Dr#0D#XL2[1000]#CK
Data as HEX, little endian	Dr#0D#E8#03#CK
Command as HEX (ASCII)	0x44 0x72 0x0D 0xE8 0x03 CK
Command as INT	68 114 13 232 3 CK
Checksum	$CK = 256 - ((68 + 114 + 13 + 232 + 3) \% 256) = 82 = 0x52$
Command in HEX	0x44 0x72 0x0D 0xE8 0x03 0x52

Documentation & Links

API, Protocols and more infos are found under following links, documents and articlenumbers.

Art. Nr.	Description	Link
100570	RS232 Protocol	http://www.kannmotion.com/homepage/generation2/manuals_docs/manuals/100570_007_KannMotionProtokoll_RS232.pdf
100524	CANopen Protocol	http://www.kannmotion.com/homepage/generation2/manuals_docs/manuals/100524_KannMotionProtocoll_CanOpen.pdf
300054	Protocol Simplification	http://www.kannmotion.com/homepage/generation2/app_notes/AN300054_UsingAdlosKannMOTIONProtocolSimplification.pdf
190077	COM-Watch Tool	http://kannmotion.adlos.com/download/comwatchtool/ComWatchSetup.zip
190073	LLL API	http://www.kannmotion.com/homepage/generation2/updates/tools/Adlos_KMAPI_LLL.zip
190074	HAL API	http://www.kannmotion.com/homepage/generation2/updates/tools/Adlos_KMAPI_HAL.zip
190080	BAL API	http://www.kannmotion.com/homepage/generation2/updates/tools/Adlos_KMAPI_BAL.zip
300045	LLL App Note	http://www.kannmotion.com/homepage/generation2/app_notes/AN300045_UsingAdlosCom_LLL_API.zip
300046	HAL App Note	http://www.kannmotion.com/homepage/generation2/app_notes/AN300046_UsingAdlosCom_HAL_API.zip
300047	BAL App Note	http://www.kannmotion.com/homepage/generation2/app_notes/AN300047_UsingAdlosCom_BAL_API.zip

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