FAQ COMBIVIS

Configure offline scope FAQ No.0002

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Introduction

This document explains the parameters of certain KEB-devices, which can be used to configure the offline scope in the device and read out the recorded data.

General Information about the offline scope

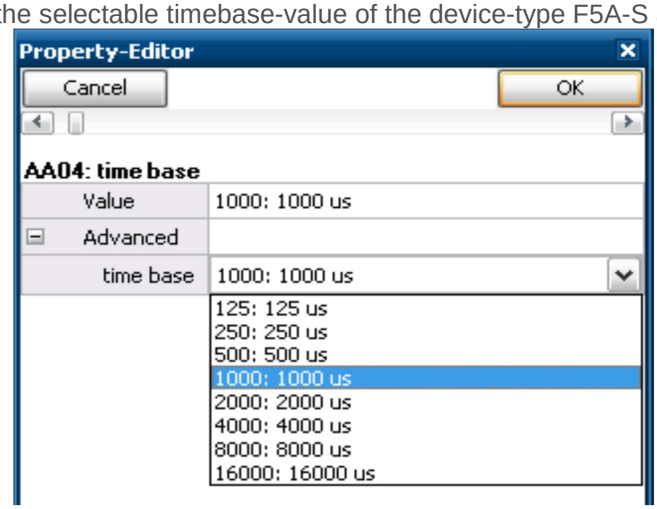
The offline scope, which is implemented in the software of certain KEB-Devices (F5 [not F5-B], H6, …) provides a functionality to record values of up to 4 different device-parameters with a high resolution for a certain time-span.
The recorded values can be used for later statistics and/or diagnosis purpose.

Compatibility

The offline-scope functionality is integrated in the KEB parameter-structure and can therefore be accessed and used in PLC-applications if the device is connected via the proprietary KEB protocols “DIN66019II” and “HSP5” as well as via other fieldbuses (e.g. EtherCAT, ProfiNET, ProfiBUS, PowerLink, CANopen, and many more).

Timebase

Depending on the device-type the time-raster in which the data is recorded can be chosen between 63µs and 32ms
The screenshot shows the selectable timebase-value of the device-type F5A-S as an example:



Offline memory

Depending on the device-type a different amount of memory is available for the offline scope.
Therefore, the time-span, which can be recorded, depends on the datatype of the parameters, that shall be recorded, and the available offline-memory.

Example 1:

Timebase = 125 µs

Memory = 4 kByte

Parameters: 2x32 Bit + 2x16Bit

$$t = 4 \times 1024 Byte \times 8 \frac{Bits}{Byte} \div \frac{(2 \times 16 + 2 \times 32) Bit}{125 \mu s} \approx 42 ms$$

Example 2:

Timebase = 16000 µs

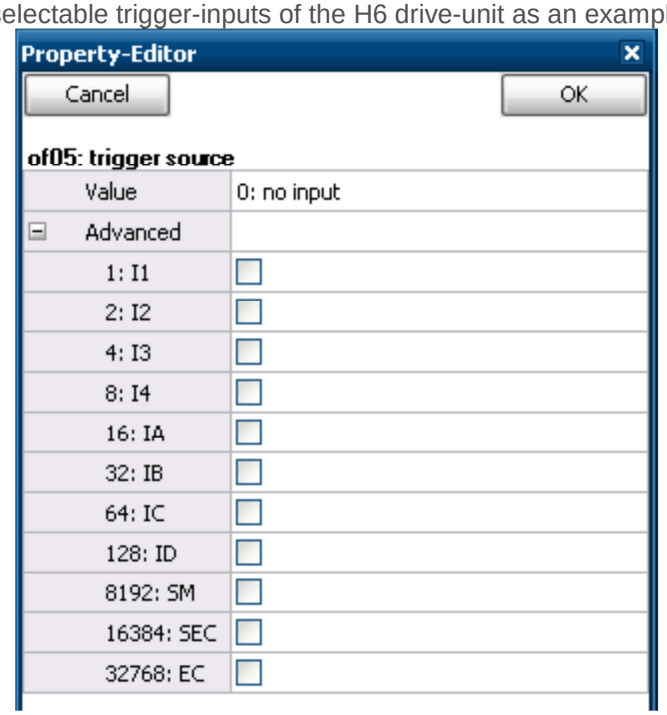
Memory = 4 kByte

Parameters: 2x16 Bit, 3rd and 4th Parameter disabled

$$t = 4 \times 1024 Byte \times 8 \frac{Bits}{Byte} \div \frac{2 \times 16 Bit}{16000 \mu s} \approx 16{,}38 s$$

Trigger source

Also depending on the device-type different digital inputs can be configured as trigger-conditions. The screenshot shows the selectable trigger-inputs of the H6 drive-unit as an example:



Trigger position

The trigger-position is a value between 0 and 100 [%], which defines the position of the trigger event in the range of the recorded data, which is stored in FIFO-buffer. A value of 0% means, that the recording is started right with the trigger event. A value of 50% means, that 50% of the offline memory will be used to store values before the trigger event and 50% after the event. A value of 100% means, that the recording is stopped when the trigger event occurs.

Offline scope parameters

Each device, that supports offline scope, has the same set of 14 parameters for the configuration of the offline scope. Only the start address of the parameters may differ between different device-types.

The most often used base addresses are:

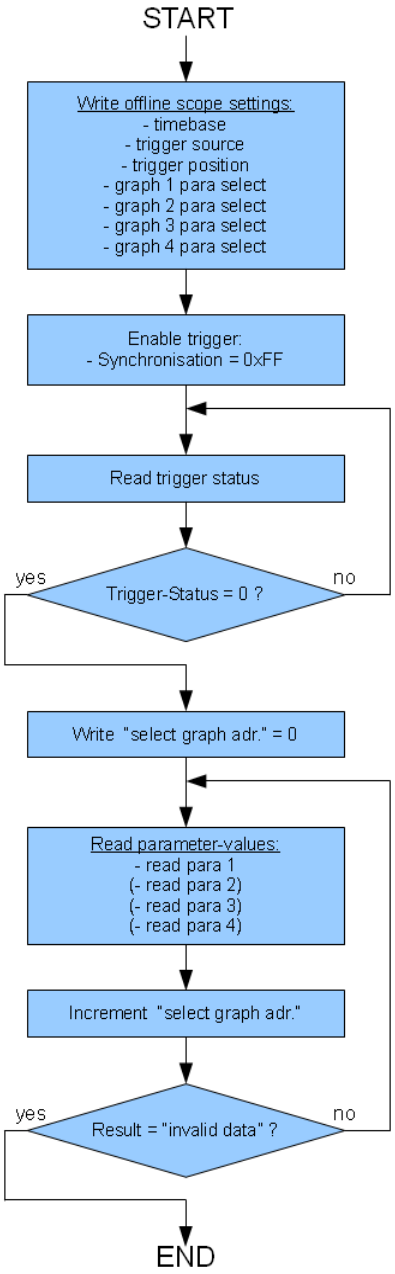
F5/ B6/ R5/ R6 :0x1200
H6: 0x2D00
G6: 0x3200

Address -Offset	Name	Datatype	Unit	Lower limit	Upper limit	Description
0x00	graph 1 para select	word	-	-1	32767	Address of 1st recorded parameter
0x01	graph 2 para select	word	-	-1	32767	Address of 2nd recorded parameter
0x02	graph 3 para select	word	-	-1	32767	Address of 3rd recorded parameter
0x03	graph 4 para select	word	-	-1	32767	Address of 4th recorded parameter
0x04	time base	unsigned word	µs	*	*	See chapter 2.1
0x05	trigger source	unsigned word	-	*	*	See chapter 2.3
0x06	trigger position	unsigned byte	%	0 %	100 %	See chapter 2.4
0x07	synchronisation	unsigned byte	-	0	255	This parameter is used to enable the scope. Write a value of 255, to enable the trigger, which has to be configured before. To trigger the scope manually, write a value != 255 on this parameter.
0x08	trigger status	unsigned byte	-	0	255	This value has to be monitored, after the offline scope was configured. The following values are returned: 0 : Ready. The application may now rad out the offline memory 1 : Offline scope is waiting for trigger-event 2 : Offline scope is recording data (after trigger-event)
0x09	select graph address	unsigned word	-	0	*	Index of data. To read out the recorded data, start with 0 and increment this value. The recorded data can be accessed via the 4 parameters below. The error-code 'invalid data' indicates, that the end of the offline memory was reached.
0x0A	read para 1	long	-	-2147483647	2147483647	Value of 1st recorded parameter
0x0B	read para 2	long	-	-2147483647	2147483647	Value of 2nd recorded parameter
0x0C	read para 3	long	-	-2147483647	2147483647	Value of 3rd recorded parameter
0x0D	read para 4	long	-	-2147483647	2147483647	Value of 4th recorded parameter

**: Depending on device type*

Offline scope procedure

Flow chart



The following flow chart shows the complete configuration-, monitoring-, and reading procedure of the offline scope:

Parameter read / write request

The following list shows the read request (*R*) and write request (*W*), that have to be performed to use the offline scope:

Addr.-Offset	Name	R/W	Value	Description
0x00	graph 1 para select	W	address of 1st recorded parameter	
0x01	graph 2 para select	W	address of 2nd recorded parameter	-1 = 'disabled'
0x02	graph 3 para select	W	address of 3rd recorded parameter	-1 = 'disabled'
0x03	graph 4 para select	W	address of 4th recorded parameter	-1 = 'disabled'
0x04	time base	W	timebase (in µs)	See chapter 2.1
0x05	trigger source	W	trigger source (Bit-coded, > 0)	See chapter 2.3
0x06	trigger position	W	trigger position (in %)	See chapter 2.4
0x07	synchronisation	W	0xFF (255)	Enable trigger
0x08	*trigger status*	*R*	*repeat until value == 0* *(Ready to read out)*	
0x09	select graph address	W	0	Start-index
0x0A	read para 1	R	1st value of 1st recorded parameter	
0x0B	read para 2	R	1st value of 2nd recorded parameter (only if para enabled)	
0x0C	read para 3	R	1st value of 3rd recorded parameter (only if para enabled)	
0x0D	read para 4	R	1st value of 4th recorded parameter (only if para enabled)	
0x09	select graph address	W	1...n	Increment each
0x0A	read para 1	R	Increment parameter “select graph address” (address-offset 0x09) and read the corresponding parameter values (address-offset 0x0A...0x0D) until write-request for data-index fails with error-code 'invalid data'	
0x0B	read para 2	R		
0x0C	read para 3	R		
0x0D	read para 4	R		
...	…	…	…	…

Disclaimer

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Application and use of our units in the target products is outside of our control and therefore lies exclusively in the area of responsibility of the user.

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