

'Fine interpolator position (FIPO)'

Translation of the "Original Dokumentation"

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Name: FKT_Feininterpolator_FIPO_en**Version:**

Version: 2019/45	
Change	Letter symbol
• Controller card KW-R27 added	STL

Previous version: 2018/44**Product version:**

Product (AMK part no.)	Firmware Version (AMK part no.)
KW-R06 (O835) KW-R07 (O807) KW-R16 (O872) KW-R17 (O873)	AE-R05/R06 V1.05 2010/32 (203194)
KW-R24-R (O954)	AE-R24-R V2.11 2016/46 (206643)
KW-R25 (O902)	AE-R25 V2.02 2014/23 (205217)
KW-R26 (O903)	AE-R26 V2.02 2014/23 (205215)
KW-R27 (O957)	AE-R26 V2.12 2018/40 (207284)
iX / iC / iDT5	iX V1.00 2011/21 (203699)
iX(-R3) / iC(-R3) / iDT5(-R3) /	iX V2.08 2015/46 (206017)
ihX	ihX V1.00 2015/06 (205440)

Publisher:

AMK Arnold Müller GmbH & Co. KG

Gaußstraße 37 – 39,
D-73230 Kirchheim/Teck
Germany

Phone: +49 7021/50 05-0,

Fax: +49 7021/50 05-176

E-Mail: info@amk-group.comHomepage: www.amk-group.com

Personally liable shareholder: AMK Verwaltungsgesellschaft mbH, Kirchheim/Teck

Registration court: Stuttgart HRB 231283; HRA 230681

1 'Fine interpolator position (FIPO)'

Supported Hardware: KW-R06 / KW-R16 / KW-R07 / KW-R17 / iX / iC / iDT5 / iX(-R3) / iC(-R3) / iDT5(-R3) / ihXT / KW-R24-R / KW-R25 / KW-R26 / KW-R27 /

The fine interpolator is a functionality of the position control. Without FIPO, position setpoints are cyclically scanned according to ID2 'SERCOS cycle time'. With active FIPO, changes of the specified position setpoint are subdivided into smaller scan steps of 250 µs each so that the deviation between the ideal and real setpoint is minimized. The motor runs more smoothly due to smaller jumps in the setpoint.

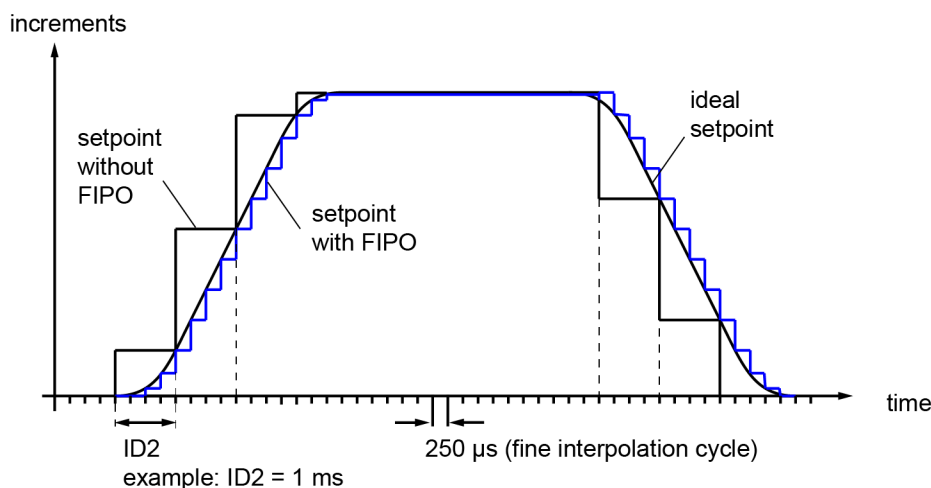
The FIPO can be activated/deactivated in ID3280x Bit 10, independently of the position setpoint source.

Possible setpoint sources:

- Pulse encoder input
- Internal interpolator
- Position setpoint according to ID47 'Position command value'

For active fine interpolation, the number of fine interpolator cycles within an ID2 'SERCOS cycle time' is calculated according to the following formula:

$$\text{Interpolation cycles per SERCOS cycle} = \frac{\text{ID2 'SERCOS cycle time'}}{250\mu\text{s}}$$



1.1 Relevant parameters

Parameter	Meaning / information
ID1 'NC cycle time'	 The following condition must be fulfilled for the fine interpolator: ID2 'SERCOS cycle time' = ID1 'NC cycle time'
ID2 'SERCOS cycle time'	
ID3280x 'AMK operating modes' Bit 0-3	Code 0x4: Position control operating mode
ID3280x 'AMK operating modes' Bit 10	FIPO position control loop Bit 10 = 0: FIPO deactivated Bit 10 = 1: FIPO activated

Appendix

ID32800 ... ID32809 'AMK operating modes' bit 0-3

Bit no.	Condition	Meaning
0-3	0x0	No operating mode defined
	0x1	Reserved
	0x2	KW-R06 / KW-R16 / KW-R07 / KW-R17 / iX / iC / iDT5 / iX(-R3) / iC(-R3) / iDT5(-R3) / ihXT / KW-R24-R / KW-R25 / KW-R26 / KW-R27 / Torque control
	0x3	Speed control
	0x4	KW-R06 / KW-R16 / KW-R07 / KW-R17 / iX / iC / iDT5 / iX(-R3) / iC(-R3) / iDT5(-R3) / ihXT / KW-R24-R / KW-R25 / KW-R26 / KW-R27 / Position control
	0x5	KW-R06 / KW-R16 / KW-R07 / KW-R17 / Parallel connection of the servo controller (operating mode for the slave) iX / iC / iDT5 / iX(-R3) / iC(-R3) / iDT5(-R3) / ihXT / KW-R24-R / KW-R25 / KW-R26 / KW-R27 / Reserved
	0x6	Reserved
	0x7	Reserved

ID32800 ... ID32809 'AMK operating modes' bit 10

Bit no.	Condition	Meaning
10	0	KW-R06 / KW-R16 / KW-R07 / KW-R17 / iX / iC / iDT5 / iX(-R3) / iC(-R3) / iDT5(-R3) / ihXT / KW-R24-R / KW-R25 / KW-R26 / KW-R27 / Position fine interpolator (FIPO) inactive
	1	KW-R06 / KW-R16 / KW-R07 / KW-R17 / iX / iC / iDT5 / iX(-R3) / iC(-R3) / iDT5(-R3) / ihXT / KW-R24-R / KW-R25 / KW-R26 / KW-R27 / Position fine interpolator (FIPO) active in the position control operating mode The position fine interpolator supplies 1 position setpoint/250µs, synchronised to ID2 'SERCOS cycle time'.