

Data sheet

FM 054 - Motion module - Stepper (054-2BA10)

Technical data

TypePM 064 - Motion module - StepperModulo0984 600Centeral informationNoto-FeaturesCC 448 /, S.A.FeaturesCC 448 /, S.A.FeaturesCC 448 /, S.A.Composition of the participation	Order no.	054-2BA10
General information Note - Features DC 2448 V, 5 A Closed Loop (feed-viented control) Pseudo Closed Loop (readjustment) Oper Loop Size puttern, F-04 micro steps Encodar inputs 5V, A+, A, B+, B-, Z+, Z- step putern, S-04 micro steps Encodar inputs 5V, A+, A, B+, B-, Z+, Z- step putern, S-04 micro steps Encodar inputs 5V, A+, A, B+, B-, Z+, Z- step putern, S-04 micro steps Encodar inputs 5V, A+, A, B+, B-, Z+, Z- step putern, S-04 micro steps Encodar inputs 5V, A+, A, B+, B-, Z+, Z- step putern, S-04 micro steps Encodar inputs 5V, A+, A, B+, B-, Z+, Z- step putern, S-04 micro steps Encodar inputs 50, DC 24 V (user programmable) Current consumption from backplane bus 100 mA Power loss 2 W Technical data digital inputs 3 Cable length, unshielded 100 m Cable length, unshielded 100 m Cable length, unshielded 100 m Carrent consumption from load voltage L+ (without load) 20 mA Rated value DC 20.428.8 V Input voltage for signal '0' DC 1128.8 V Input voltage for signal '1' 0 Input voltage for signal '1' 3 mA Connection of Two-Wire-BEROS possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of '1' to '0' - Input delay of '1' to '0' -	Туре	FM 054 - Motion module - Stepper
Note - Features DC 2448 V.5 A Ciscer Loop (field-oriented control) Pseudo Ciscer Loop (field-dijustinent) Open Loop Step pattem, 64-108 lines of steps PWM frequency 28 kHz Current consumption/power loss DV 24 V (user programmable) Current consumption/power loss 100 mA Power loss 00 mA Power loss 3 Cable length, shielded 100 m Cable length, shielded 100 m Cable length, unshielded 1 m Rated voltage DC 2428. V Current consumption from load voltage L+ (without load) 20 mA Rated voltage for signal '0' DC 05 V Input voltage for signal '1' DC 1128.8 V Input voltage for signal '1' CA - 4.28.8 V Input voltage for signal '1' DC 1128.8 V Input voltage for signal '1' DC 1128.8 V Input voltage for signal '1' CA - 4.28.8 V Input voltage for signal '1' CA - 4.28.8 V Input voltage for signal '1' CA - 428.8 V Input voltage for signal '1' CA - 428.8 V Input voltage for signal '1' CA - 428.8 V	Module ID	0984 6800
Features DC 2448 V, 5 A Closed Loop (feadjustment) Open Loop Step pattern, bood micro steps steps of the pattern, bood micro steps Step pattern, bood micro steps Step pattern, bood micro steps Current consumption/power loss 100 mA Current consumption from backplane bus 100 mA Power loss 2 W Technical data digital inputs 3 Cable length, unshielded 1 m Rate load voltage DC 20 428.8 V Current consumption from load voltage L+ (without load) 20 mA Rated load voltage DC 20 428.8 V Current consumption from load voltage L+ (without load) 20 mA Rated value DC 21 428.8 V Input voltage for signal '0' DC 05 V Input voltage for signal '1' DC 1128.8 V Input voltage for signal '1' DC 1128.8 V Input voltage for signal '1' SmA Input voltage for signal '1' Green consumption from load voltage L+ (without load) Input voltage for signal '1' DC 1128.8 V Input voltage for signal '1' Green consumption from load voltage L+ (without load) Input voltage for signal '1' SmA Input voltage for signal '1' Concel con signal consumption from	General information	
Closed Loop (field-cinented control) Pseudo Closed Loop (readjusmen) open Loop Step pattern, 64-fold micro steps Current consumption/power loss Current consumption from backplane bus 100 mA Power loss 2 W Technical data digital inputs 3 Cable length, shielded 100 m Cable length, unshielded 1 m Rated load voltage DC 20 428.8 V Current consumption from book plane bus 20 mA Cable length, unshielded DC 20 428.8 V Current consumption from book voltage L+ (without load) 20 mA Rated value DC 20 428.8 V Input voltage for signal *0* DC 1128.8 V Input voltage for signal *1* DC 1128.8 V Input deley of *1* 1* O Inp	Note	-
Current consumption from backplane bus 100 mA Power loss 2 W Technical data digital inputs 3 Cable length, shielded 100 m Cable length, unshielded 1 m Rated load voltage DC 20.428.8 V Current consumption from load voltage L+ (without load) 20 mA Rated value DC 20.428.8 V Input voltage for signal *0* DC 05 V Input voltage for signal *1* DC 1128.8 V Input voltage for signal *1* DC 1128.8 V Input voltage hysteresis - Signal logic input - Frequency range - Input voltage hysteresis - Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of *0* to *1* - Input delay of *1* to *0° - <td>Features</td> <td>Closed Loop (field-oriented control) Pseudo Closed Loop (readjustment) Open Loop Step pattern, 64-fold micro steps PWM frequency 32 kHz Encoder inputs 5V, A+, A-, B+, B-, Z+, Z- 3x DI, DC 24 V (user programmable)</td>	Features	Closed Loop (field-oriented control) Pseudo Closed Loop (readjustment) Open Loop Step pattern, 64-fold micro steps PWM frequency 32 kHz Encoder inputs 5V, A+, A-, B+, B-, Z+, Z- 3x DI, DC 24 V (user programmable)
Power loss2 WTechnical data digital inputsNumber of inputs3Cable length, shielded100 mCable length, unshielded1 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)20 mARated valueDC 20.428.8 VInput voltage for signal "0"DC 05 VInput voltage for signal 1"DC 1128.8 VInput voltage for signal "1"DC 1128.8 VInput voltage for signal "1"0.Signal logic input-Frequency range-Input voltage for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax, permissible BERO quiescent current1.5 mAInput delay of "1" to "0"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal-Input carceristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputs1Cable length, shielded100 mCable length, shielded100 m	Current consumption/power loss	
Technical data digital inputs Number of inputs 3 Cable length, shielded 100 m Cable length, unshielded 1 m Rated load voltage DC 20.428.8 V Current consumption from load voltage L+ (without load) 20 mA Rated value DC 20.428.8 V Input voltage for signal '0' DC 05 V Input voltage for signal '1' DC 1128.8 V Input voltage hysteresis - Signal logic input - Input resistance - Input delay of '10' for '1'' 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of '1' to '0' - Input delay of '1' to '0' - Number of simultaneously utilizable inputs horizontal configuration -	Current consumption from backplane bus	100 mA
Number of inputs3Cable length, shielded100 mCable length, unshielded1 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)20 mARated valueDC 20.428.8 VInput voltage for signal "0"DC 05 VInput voltage for signal "11"DC 1128.8 VInput voltage for signal "11"DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input resistance-Input resistance-Input degrege of signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "1" to "0"-Number of simultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs wertical configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputs1Cable length, shielded100 mCable length, shielded100 m	Power loss	2 W
Cable length, shielded100 mCable length, unshielded1 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)20 mARated valueDC 20.428.8 VInput voltage for signal "0"DC 05 VInput voltage for signal "1"DC 1128.8 VInput voltage for signal "1"DC 1128.8 VInput voltage for signal "1"DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "1" to "0"-Number of simultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs vertical configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputs1Cable length, shielded100 mCable length, shielded100 m	Technical data digital inputs	
Cable length, unshielded1 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)20 mARated valueDC 20.428.8 VInput voltage for signal "0"DC 05 VInput voltage for signal "1"DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input voltage BERO quiescent current3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputs1Cable length, shielded100 mCable length, shielded1 m	Number of inputs	3
Rated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)20 mARated valueDC 20.428.8 VInput voltage for signal '0'DC 05 VInput voltage for signal '1'DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input voltage EDR quiescent current3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of '0' to '1'-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputs1Cable length, shielded100 mCable length, unshielded1 m	Cable length, shielded	100 m
Current consumption from load voltage L+ (without load)20 mARated valueDC 20428.8 VInput voltage for signal "0"DC 05 VInput voltage for signal "1"DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input voltage for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "1" to "0"-Number of simultaneously utilizable inputs horizontal configuration-Input dela size3 BitTechnical data digital outputs1Mumber of outputs1Contrest for signal number of simultaneously utilizable inputs horizontal-Input filter delay3 BitContext filter delay3 BitContext filter delay1Number of simultaneously utilizable inputs horizontal configuration-Input dela size3 BitContext filter delay1Context filter delay1Number of simultaneously utilizable inputs vertical configuration-Input dela size3 BitContext filter delay1Context filter delay1Context filter delay1Number of simultaneously utilizable inputs vertical configuration-Input dela size3 BitContext filter delay100 mCable length, shielded100 mCable length, unshielded1 m <td>Cable length, unshielded</td> <td>1 m</td>	Cable length, unshielded	1 m
Rated valueDC 20.428.8 VInput voltage for signal "0"DC 05 VInput voltage for signal "1"DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input resistance-Input resistance-Input resistance-Input resistance-Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "1" to 0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input dela size3 BitTechnical data digital outputs1Mumber of outputs1Cable length, shielded100 mCable length, unshielded1 m	Rated load voltage	DC 20.428.8 V
Input voltage for signal "0"DC 05 VInput voltage for signal "1"DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input for signultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs vertical configuration-Input delay size3 BitTechnical data digital outputs1Number of outputs1Cable length, shielded1 m	Current consumption from load voltage L+ (without load)	20 mA
Input voltage for signal "1"DC 1128.8 VInput voltage hysteresis-Signal logic input-Frequency range-Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputs100 mCable length, ushielded1 m	Rated value	DC 20.428.8 V
Input voltage hysteresis-Signal logic input-Frequency range-Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "0" to "1"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input data size3 BitTechnical data digital outputs1Number of outputs1Quable length, shielded100 m	Input voltage for signal "0"	DC 05 V
Signal logic input-Frequency range-Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "0" to "1"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputs1Number of outputs1Cable length, shielded100 mCable length, unshielded1 m	Input voltage for signal "1"	DC 1128.8 V
Frequency range-Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "0" to "1"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Intial data size3 BitTechnical data digital outputs1Number of outputs1Cable length, shielded100 mCable length, unshielded1 m	Input voltage hysteresis	-
Input resistance-Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "0" to "1"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Intial data size3 BitTechnical data digital outputsNumber of outputs1Cable length, shielded100 mCable length, unshielded1 m	Signal logic input	-
Input current for signal "1"3 mAConnection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Intial data size3 BitTechnical data digital outputsNumber of outputs1Cable length, shielded100 mCable length, unshielded1 m	Frequency range	-
Connection of Two-Wire-BEROs possibleyesMax. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "0" to "1"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Input characteristic curveIEC 61131-2, type 3Intitial data size3 BitTechnical data digital outputsNumber of outputs1Coable length, shielded100 m	Input resistance	-
Max. permissible BERO quiescent current1.5 mAInput delay of "0" to "1"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs vertical configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputsNumber of outputs1Cable length, shielded100 mCable length, unshielded1 m	Input current for signal "1"	3 mA
Input delay of "0" to "1"-Input delay of "0" to "1"-Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs vertical configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputsNumber of outputs1Cable length, shielded100 mCable length, unshielded1 m	Connection of Two-Wire-BEROs possible	yes
Input delay of "1" to "0"-Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs vertical configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputsNumber of outputs1Cable length, shielded100 mCable length, unshielded1 m	Max. permissible BERO quiescent current	1.5 mA
Input filter delayinternal cycle 1ms, no filterNumber of simultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs vertical configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputsNumber of outputs1Cable length, shielded1 00 mCable length, unshielded1 m	Input delay of "0" to "1"	-
Number of simultaneously utilizable inputs horizontal configuration-Number of simultaneously utilizable inputs vertical configuration-Input characteristic curveIEC 61131-2, type 3Initial data size3 BitTechnical data digital outputsNumber of outputs1Cable length, shielded1 m	Input delay of "1" to "0"	-
configuration Input characteristic curve IEC 61131-2, type 3 Input characteristic curve IEC 61131-2, type 3 Initial data size 3 Bit Technical data digital outputs 1 Number of outputs 100 m Cable length, unshielded 1 m	Input filter delay	internal cycle 1ms, no filter
Input characteristic curve IEC 61131-2, type 3 Initial data size 3 Bit Technical data digital outputs 1 Number of outputs 1 Cable length, shielded 100 m Cable length, unshielded 1 m		-
Initial data size 3 Bit Technical data digital outputs 1 Number of outputs 1 Cable length, shielded 100 m Cable length, unshielded 1 m	Number of simultaneously utilizable inputs vertical configuration	-
Technical data digital outputs Number of outputs 1 Cable length, shielded 100 m Cable length, unshielded 1 m	Input characteristic curve	IEC 61131-2, type 3
Number of outputs1Cable length, shielded100 mCable length, unshielded1 m	Initial data size	3 Bit
Cable length, shielded 100 m Cable length, unshielded 1 m	Technical data digital outputs	
Cable length, unshielded 1 m	Number of outputs	1
	Cable length, shielded	100 m
Rated load voltage DC 20.428.8 V	Cable length, unshielded	1 m
	Rated load voltage	DC 20.428.8 V

YASKAWA

Reverse polarity protection of rated load voltage	yes
Current consumption from load voltage L+ (without load)	20 mA
Output voltage signal "1" at min. current	L+ (-0 V)
Output voltage signal "1" at max. current	L+ (-250 mV)
Output current at signal "1", rated value	500 mA (DC general use)
Signal logic output	-
Output current at signal "0" max. (residual current)	5 μΑ
Output delay of "0" to "1"	internal cycle 1ms
Output delay of "1" to "0"	internal cycle 1ms
Minimum load current	-
Lamp load	10 W (not in scope of UL evaluation)
Parallel switching of outputs for redundant control of a load	not possible
Parallel switching of outputs for increased power	not possible
Actuation of digital input	yes
Switching frequency with resistive load	max. 300 Hz
Switching frequency with inductive load	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-45 V)
Short-circuit protection of output	yes, electronic
Trigger level	2.3 A
Number of operating cycle of relay outputs	-
Switching capacity of contacts	-
Output data size	-
Status information, alarms, diagnostics	
Status display	green LED per channel
Interrupts	yes, parameterizable
Process alarm	no
Diagnostic interrupt	yes, parameterizable
Diagnostic functions	yes
Diagnostics information read-out	possible
Supply voltage display	green LED
Group error display	red LED
Channel error display	-
Datasizes	
Input bytes	36
Output bytes	36
Parameter bytes	56
Diagnostic bytes	20
Isolation	
Between channels	-
Between channels of groups to	-
Between channels and backplane bus	yes
Between areas	Backplane bus, 24V DI / DO / encoder, motor output stage, FE (shield)
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 50 V
Insulation tested with	AC 500 V
Technical data positioning module	
Number of channels	1
Cable length (motor supply)	20 m shielded, see assembly instructions

YASKAWA

Input voltage (rated value)	DC 48 V
Input voltage (permitted range)	DC 20.457.6 V
Motor current	5 A
Derating	yes
Cable length (motor)	20 m shielded, see assembly instructions
Power stage	2x Full bridge PWM
Short-circuit protection	yes
Brake chopper	externally, if necessary
PWM frequency	32 kHz
Pulse train frequency	
Micro steps	64
Steps per rotation	parameterizable
Type of encoder	A/B/Z-track 5V differential
Cable length (encoder)	20 m shielded, see assembly instructions
Encoder frequency	50 kHz
Encoder resolution (internal)	parameterizable
Control type	open loop, closed loop
Temperature sensor controller	yes
Temperature sensor H-bridge	yes
Operating modes position functions	
Homing via homing switch	yes
Positioning via torque	-
Positioning without encoder	yes
Positioning with encoder	yes
Speed control	yes
Torque control	yes
Housing	
Material	PPE / PPE GF10
Mounting	Profile rail 35 mm
Mechanical data	
Dimensions (WxHxD)	25.8 mm x 109 mm x 76.5 mm
Net weight	70 g
Weight including accessories	80 g
Gross weight	101 g
Environmental conditions	
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
Certifications	
UL certification	yes
KC certification	yes
UKCA certification	yes
ChinaRoHS certification	yes