YASKAWA

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

Technical data

Order no.	054-2BA10
Type	FM 054 - Motion module - Stepper
Module ID	0984 6800
General information	
Note	-
Features	DC 24...48 V, 5 A 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) 1x DO, DC 24 V (user programmable)
Current consumption/power loss	
Current consumption from backplane bus	100 mA
Power loss	2 W
Technical data digital inputs	
Number of inputs	3
Cable length, shielded	100 m
Cable length, unshielded	1 m
Rated load voltage	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	20 mA
Rated value	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V
Input voltage for signal "1"	DC 11...28.8 V
Input voltage hysteresis	-
Signal logic input	-
Frequency range	-
Input resistance	-
Input current for signal "1"	3 mA
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"	-
Input filter delay	internal cycle 1ms, no filter
Number of simultaneously utilizable inputs horizontal configuration	-
Number of simultaneously utilizable inputs vertical configuration	-
Input characteristic curve	IEC 61131-2, type 3
Initial data size	3 Bit
Technical data digital outputs	
Number of outputs	1
Cable length, shielded	100 m
Cable length, unshielded	1 m
Rated load voltage	DC 20.4...28.8 V

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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 µA
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

Input voltage (rated value)	DC 48 V
Input voltage (permitted range)	DC 20.4...57.6 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