

Motor controller CMC14

1 Features

- Speed adjustable via potentiometer
- Power supply DC 12...24 V
- Motor current 10 A continuously, temporary 20 A
- Adjustable start and break ramps
- Status and error displayed by LED
- Short-circuit-proof
- Wear free



2 Description

The CMC14 is a control device for DC motor operation. The Motor speed is set by corresponding potentiometer on the front of the device. To adjust the acceleration and deceleration ramp another potentiometer is used. Up to two motors can be operated independently of each other. Mechanical shocks and high current peaks are prevented; the lifetime of the entire system is increased.

Motor controllers of the CMC line comply to DIN standard 43880. Installation width is 14 mm.

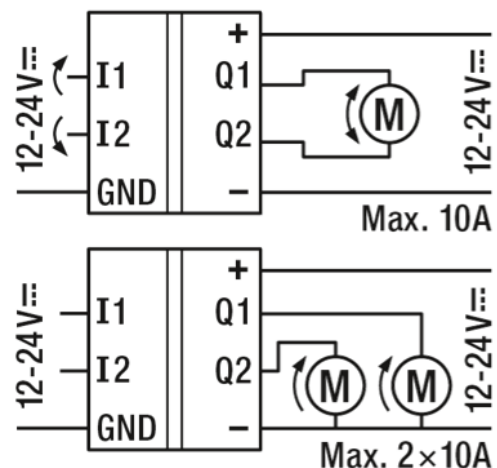
3 Order designation

Motor controller (speed adjustable) CMC14/DC12-24V

4 Connection diagram

Terminal	Description
I1	Input 1
I2	Input 2
GND	Ground
Q1	Output 1
Q2	Output 2
+, -	Power supply

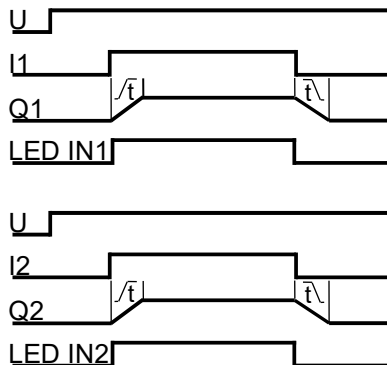
The output stage is galvanically isolated.



5 Function description

The motor speed can be set by the potentiometer on the front of the device. The CMC14 can be used to operate one or two DC motors simultaneously. In case of one motor operation a signal at I1 or I2 is used to set the direction of rotation. For two motor operation I1 is used to control the motor connected to Q1 and I2 controls the motor connected to Q2. The acceleration and deceleration ramp can be set between 0 ... 4 s using the potentiometer. Exceeding current or torque peaks are avoided due to controlled acceleration and deceleration. The voltage at the load is adjusted very low-loss by pulse width modulation (PWM). The power output stage is protected against short-circuit and overheating. Errors are displayed by LED.

5.1 Function (ramps)



When triggering the input I1, the voltage on output Q1 will be raised to the nominal value linearly during the preset time slot. The motor is accelerated to defined speed.

If input I1 is switched off, the voltage at output Q1 is shut down linearly to zero during the preset time slot. The motor is decelerated to a halt.

When triggering the input I2, the voltage on output Q2 will be raised to the nominal value linearly during the preset time slot. The motor is accelerated to defined speed.

If input I2 is switched off, the voltage at output Q2 is shut down linearly to zero during the preset time slot. The motor is decelerated to a halt.

6 Specifications

6.1 General data

6.1.1 Mechanical data

Housing	System DIN
Outside dimension (W x H x D):	14 x 90 x 63 mm
Fastening	DIN rail TS35
Connection	Screw terminal 2.5 mm ²
Ingress protection degree	IP20
Case material	Aluminum
Weight	80 g

6.1.2 Ambient conditions

Storage temperature range	-40 °C ... +85 °C
Operating temperature range	-25 °C ... +70 °C
Relative humidity	10 % ... +95 % (non condensed)

6.1.3 Life cycle

Expected life time (MTTF)	100 000 h (at 25 °C)
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6.2 Electrical data

6.2.1 Power supply +, -

Nominal voltage	12 ... 24 V DC
Admissible voltage range	8 ... 28 V DC
Current consumption without load max.	10 mA
Power consumption without load at 12 V max.	120 mW
Power consumption without load at 24 V max.	240 mW

6.2.2 Inputs I1, I2

Nominal voltage	12 ... 24 V DC
Admissible voltage range	8 ... 28 V DC
Current consumption at 12 V max.	3 mA
Current consumption at 24 V max.	6 mA

6.2.3 Outputs Q1, Q2

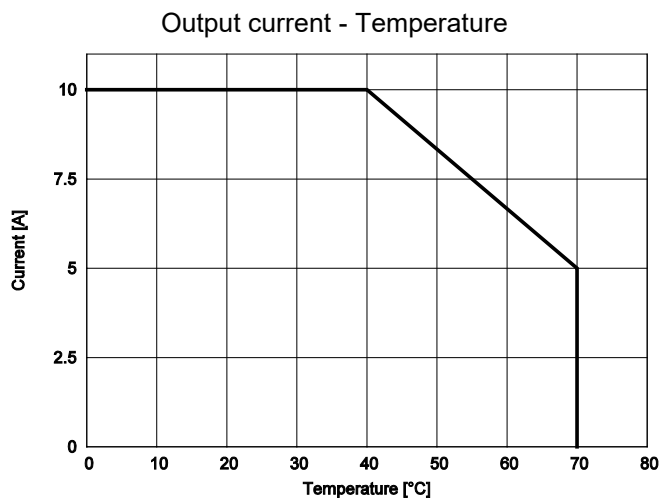
Nominal voltage	12 ... 24 V DC
Output	MOSFET H-bridge
Nominal current (40 °C max.)	16 A
Inrush current (3 s max.)	20 A
Switching current 24 V DC-1, DC-13	16 A
Switching current 24 V DC-3, DC-5	10 A
Motorspeed	10 – 100%

6.3 Time response

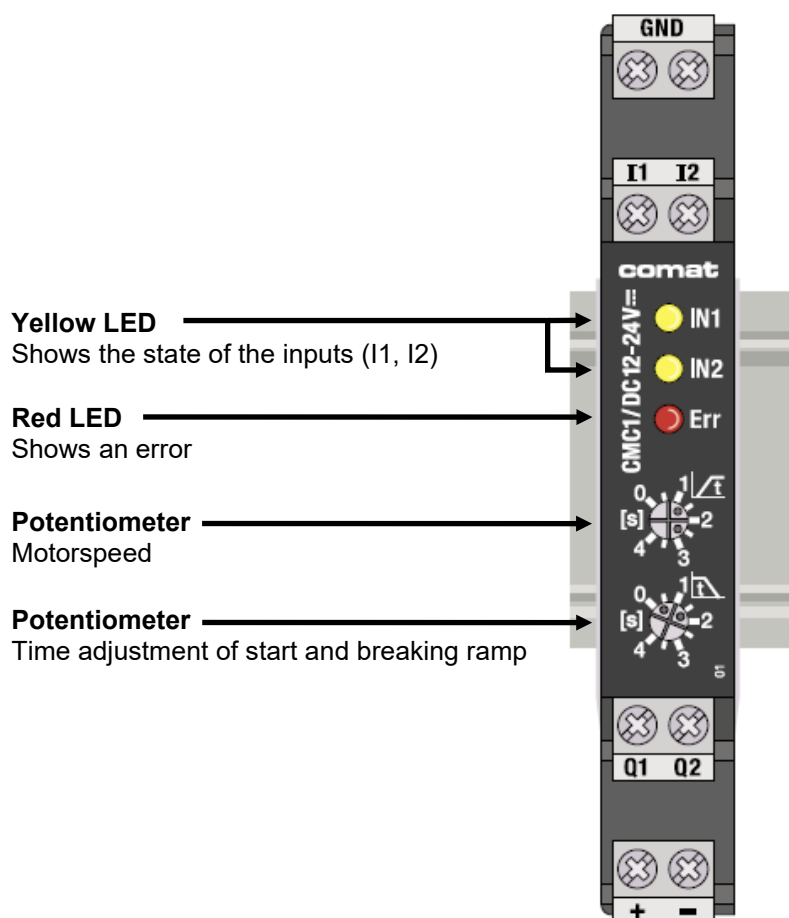
6.3.1 Ramps

Start and braking ramp	0 ... 4 s
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

6.4 Derating



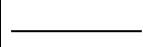
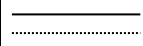

7 Operation



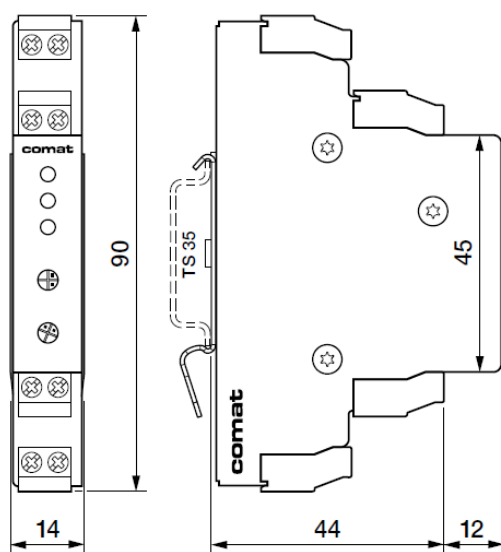
7.1 Function display

Element	Function (one load)	Function (Two loads)
Poti 1 	Motorspeed 10 – 100%	Motorspeed 10 – 100%
Poti 2 	Ramp time acceleration and deceleration 0...4 s	Ramp time acceleration and deceleration 0...4 s
LED IN1	Control input I1 on → motor in motion e.g. forward	Control input I1 on → motor 1 is on
LED IN2	Control input I2 on → motor in motion e.g. backward	Control input I2 on → motor 2 is on
LED Err (Error)	Error detected → chapter 7.2 7.2 7.2	Error detected → chapter 7.2 7.2 7.2

7.2 Error display

LED Err (red)		Status	Troubleshooting
Not illuminated		Normal operation	
Illuminated at power-on		Output current too high	Reduce the load, extend the acceleration ramp
Blinking		Output stage overheated	Cool down (> 10 s), switch off inputs, reduce the load

8 Dimension



9 Standards

Interference immunity

EN 61000-6-2:2005
 EN 61000-4-2:2001 Level 3 (Air: 8 kV)
 EN 61000-4-4:2004 Level 3 (2 kV)
 EN 61000-4-5:2006 (100 V)

Interference emission

EN 61000-6-3:2007
 EN 55022:2006 Class B

Safety

EN 60730-1:2000

Conformities, identifications

CE

10 Revision

Version	Date	Resp.	Modification
55082-101-57-001	24.08.2017	Sc	Version 1