





1.7 Motor Control Relays



Application	Types	Output	DC ratings	Mounting
DC Motor controller	CMC1	 2x MOSFET	16 A (20 A) / 24 V	DIN
	CMC15	 2x MOSFET H bridge	10 A (20 A) / 24 V	DIN
	CMC16	 2x MOSFET H bridge	10 A (20 A) / 24 V	DIN
DC Motor control relay	KDM3-24	 1x PNP & 1x NPN	3 A / 32 V	S7-C

CMC1

DC Motor controller with adjustable start and breaking ramps for DC motors up to 384W

Type: CMC1/DC12-24V

The CMC is a control device for DC motors and permits operation in both rotating directions, i. e. the rotating direction can be reversed with the input signal. Alternatively, two motors can be operated in the same direction.

The CMC1 allows also to control lamps or electromagnets. The start and breaking ramps of the connected loads can be adjusted by two potentiometers in the time range 0 - 4 seconds.

Maximum load **16 A / 24 V**

Outputs	Drive
Type	MOSFET
Nominal switching current	16 A
Inrush current	20 A (short-term)
Nominal voltage	24 V
Switching power	384 W

Control input $V_n =$	12-24 V
Nominal operating voltage range (DC)	12 – 24 V
Admissible voltage range (DC)	8 – 28 V
Current consumption	DC
12 V	3 mA
24 V	6 mA

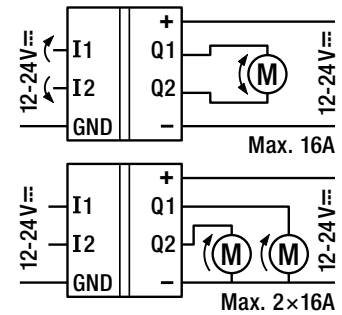
Power supply	12 – 24 V
Nominal operating voltage (DC)	12 – 24 V
Operating voltage (DC)	8 – 28 V
Max. current consumption without load	10 mA
Max. power consumption	DC
12 V	120 mW
24 V	240 mW

General Specifications	-40 – +85°C / -25 – +60°C
Ambient temperature storage/operation	-40 – +85°C / -25 – +60°C
Connection terminals	Screw terminal 2.5 mm ²
DC voltage endurance at rated load	> 100 000 h (at 25 °C)
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	Aluminium
Weight	80 g

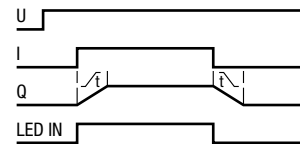
Standard types	CMC1/DC12-24V
DC 12-24	CMC1/DC12-24V



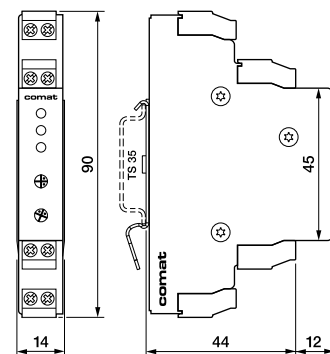
Connection diagram



Function diagramm



Dimensions [mm]



Technical approvals, conformities



CMC15

DC Motor controller with adjustable start and breaking ramps and speed control by 0 ... 10 V signal for DC motors up to 240W

Type: CMC15/DC12-24V

The CMC15 is a control device for DC motors and permits operation in both rotating directions, i. e. the rotating direction can be reversed with the input signal. Alternatively two motors can be operated in the same rotating direction. The motor speed is set by a 0 – 10 V signal.

Maximum load **10 A / 24 V**

Outputs	Drive
Type	MOSFET H bridge
Nominal switching current	10 A
Inrush current	20 A / max. 3 s
Nominal voltage	24 V
Switching power	240 W

Analogue inputs	
Nominal operating voltage range (DC)	0 – 10 V
Resolution	8 Bit
Input impedance	55 kΩ

Power supply	
Nominal operating voltage (DC)	12 – 24 V
Operating voltage (DC)	8 – 28 V
Max. current consumption without load	10 mA
Max. power consumption	DC
12 V	120 mW
24 V	240 mW

Time response	
Start ramp	0 – 2 s
Breaking ramp	0 – 2 s

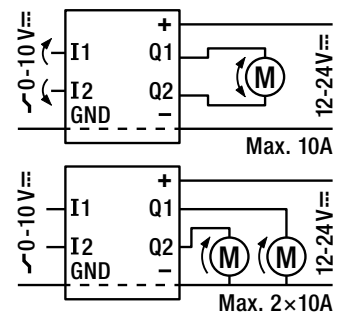
General Specifications	
Ambient temperature storage/operation	-40 – +85°C / -25 – +60°C
Connection terminals	Screw terminal 2.5 mm ²
DC voltage endurance at rated load	> 100 000 h (at 25 °C)
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	Aluminium
Weight	80 g

Standard types

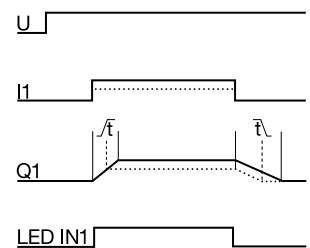
DC 12-24 **CMC15/DC12-24V**



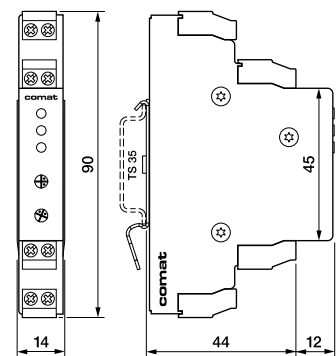
Connection diagram



Function diagramm



Dimensions [mm]



Technical approvals, conformities



CMC16

DC Motor controller with adjustable start and breaking ramps and speed control by 4 ... 20 mA signal for DC motors up to 240W

Type: CMC16/DC12-24V

The CMC16 is a control device for DC motors and permits operation in both rotating directions, i. e. the rotating direction can be reversed with the input signal. Alternatively two motors can be operated in the same rotating direction. The motor speed is set by a 4 – 20 mA signal.

Maximum load **10 A / 24 V**

Outputs	Drive
Type	MOSFET H bridge
Nominal switching current	10 A
Inrush current	20 A / max. 3 s
Nominal voltage	24 V
Switching power	240 W

Analogue inputs	
Nominal operating voltage range (DC)	4 – 20 mA
Resolution	8 Bit
Input impedance	190 Ω

Power supply	
Nominal operating voltage (DC)	12 – 24 V
Operating voltage (DC)	8 – 28 V
Max. current consumption without load	10 mA
Max. power consumption	DC
12 V	120 mW
24 V	240 mW

Time response	
Start ramp	0 – 2 s
Breaking ramp	0 – 2 s

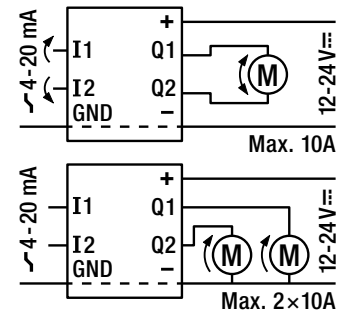
General Specifications	
Ambient temperature storage/operation	-40 – +85°C / -25 – +60°C
Connection terminals	Screw terminal 2.5 mm ²
DC voltage endurance at rated load	> 100 000 h (at 25 °C)
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	Aluminium
Weight	80 g

Standard types

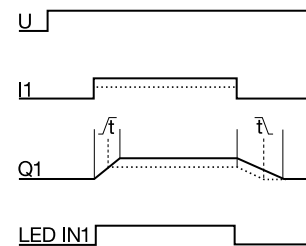
DC 12-24 **CMC16/DC12-24V**



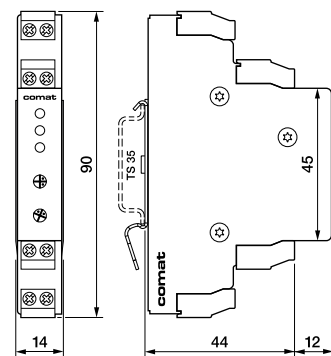
Connection diagram



Function diagramm



Dimensions [mm]



Technical approvals, conformities



KDM 3-24

DC Motor control relay with brake function, DC 24 V 1 high side switch and 1 N-channel brake switch

Type: KDM 3-24/DC12-24V R

Solid state relay for DC-motor control and similar applications

1 high side + 1 N channel transistor switch

All overload and short circuit protected

Adjustable or disabled brake function by

external resistor or jumper

LED status indicator

Pluggable module

Maximum load **3 A / 32 V**

Outputs

Type: Power MOS FET

Max. switching current

Max. continuous current

Max. inrush current, 1 sec ²⁾

Switching voltage range

Max. Load

Thermal overload protection ²⁾

Over current limiting ²⁾

Clamp voltage

Max. inductive switch-off energy ²⁾

ON resistance @ 25 °C

Leakage current

Drive

High side

3 A

3 A (5 A) ¹⁾

20 A

10 ... 32 V

100 W

self restoring

typ. 35 A

typ. 58 V

1 Ws single pulse

≤ 50 mΩ

≤ 10 μA

Brake

N-channel

3 A, 10 sec

2 A

7

10 ... 32 V

65 W

self restoring

7 ... 14 A

60 ... 70 V

0.4 Ws single pulse

≤ 100 mΩ

¹⁾ Repetitive operation: When the ratio t_{pulse} / t_{cycle} is a low value then the current can be increased up to 5 A @ $T_A \leq 50$ °C.

²⁾ Not for continuous repetitive operation

Control input $V_N =$

Operating voltage range

Release voltage

Typical input current @ 12 / 24 V

Power consumption @ 12 / 24 V

Polarity reversal

DC 12-24 V

9 ... 28 V

≤ 2 V

2 / 6.5 mA

25 / 160 mW

protected

General Specifications

Ambient temperature storage/operation

ON delay

Release time

Ingress protection degree

Housing material

Weight

-40 ... +85°C / -25 ... +60°C

1 ms

1 ms

IP 40 when the device is plugged in

Lexan

27 g

Standard types

DC 12-24

KDM3-24/DC12-24V R

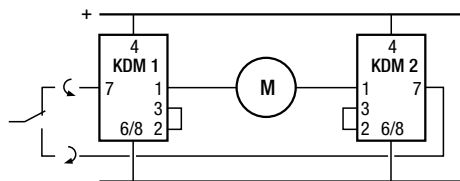
Accessories

Socket:

S7-C

Application example

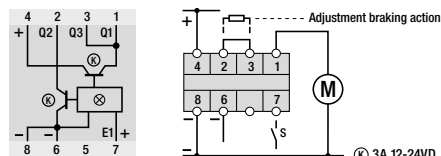
Four quadrant (forward / reversed) motor control



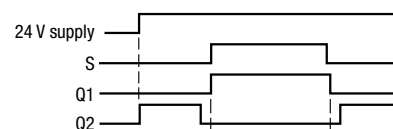
Operating with brake resistors (on 2-3) is not recommended in this application.



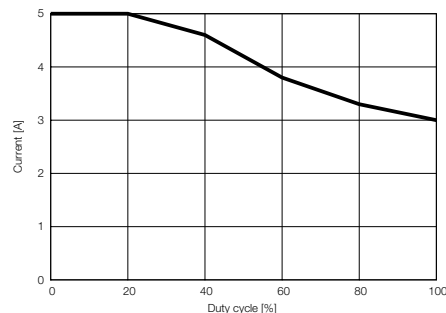
Connection diagram



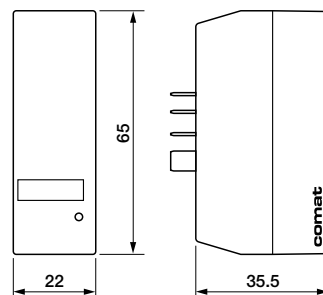
Function diagramm



Output current vs. duty cycle



Dimensions [mm]



Technical approvals, conformities

