

COMAT AG | Bernstrasse 4 | CH-3076 Worb | Switzerland Phone +41 (0)31 838 55 77 | Fax +41 (0)31 838 55 99 info@comat.ch | www.comat.ch | www.releco.com

Comat Motor Controller CMC15, CMC16

- **1** Features
- Power supply DC 12...24 V
- Analogue control inputs 0 ... 10 V or 4 ... 20 mA
- Motor current 5 A continuously, temporary 20 A
- Adjustable start and break ramps
- Status and error displayed by LED
- Short-circuit-proof
- Wear free



2 General description

The CMC15 and the CMC16 are control devices for DC motor operation. The Motor speed is set by corresponding signals at the analogue inputs. To adjust the acceleration and deceleration ramp two potentiometers are used. Up to two motors can be operated independently of each other. Mechanical shocks and high current peaks are prevented; the lifetime of the whole system is increased.

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

Technical specification subject to change without notice.

3 Order designation

Comat Motor Controller analogue 0 10 V	CMC15/DC12-24V
Comat Motor Controller analogue 4 20 mA	CMC16/DC12-24V

4 Connecting diagram

CMC15/DC12-24V



CMC16/DC12-24V





Terminal	CMC15/DC12-24V	CMC16/DC12-24V	
11	Analogue Input 1 (0 10 V)	Analogue Input 1 (4 20 mA)	
12	Analogue Input 2 (0 10 V)	Analogue Input 2 (4 20 mA)	
GND	Ground of control signals		
Q1	Output 1		
Q2	Output 2		
+, -	Power supply		

5 Function description

The CMC15 and the CMC16 can be used to operate one or two DC motors simultaneously. In case of one motor operation an analogue signal at 11 or 12 is used to set the speed and the direction of rotation. For two motor operation 11 is used to control the motor connected to Q1 and 12 controls the motor connected to Q2. The acceleration and deceleration ramp can be set independently between 0 ... 2 s using two potentiometers. 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 Operation mode with acceleration and deceleration ramp¹

Ramp time t > 0 s



Triggering input I1 the voltage at output Q1 will be ramped up linearly during the preset time by the potentiometer. The motor is accelerated to speed set by signal at I1.

If input I1 is switched off (or signal is 0 V / 4 mA) the voltage at output Q1 is shut down linearly to zero during the preset time. The motor is decelerated to a halt.

Triggering input I2 the voltage at output Q2 will be ramped up linearly during the preset time by the potentiometer. The motor is accelerated to speed set by signal at I2.

If input I2 is switched off (or signal is 0 V / 4 mA) the voltage at output Q2 is shut down linearly to zero during the preset time. The motor is decelerated to a halt.

Q2

LED IN2

¹ The acceleration and deceleration ramp can also be set by analogue signal from a master controller. Please refer to potentiometer settings and adjust if necessary.



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6 Specifications

6.1 General data

6.1.1 Mechanical data

Housing Outside dimension (W x H x D): Fastening Connection Ingress protection degree Case material Weight

6.1.2 Ambient conditions

Storage temperature range Operating temperature range Relative humidity

6.1.3 Life cycle Expected life time (MTTF)

6.2 Electrical data

6.2.1 Power supply +, -

Nominal voltage	1224 V DC
Admissible voltage range	828 V DC
Max. current consumption without load	10 mA
Max. power consumption without load at 12 V	120 mW
Max. power consumption without load at 24 V	240 mW

6.2.2 Analogue inputs I1, I2

Type Nominal range Resolution Input impedance

6.2.3 Outputs Q1, Q2

Nominal voltage Output Nominal current Inrush current Switching power at 24 V DC-5

6.3 Time response

6.3.1 Ramps ²	
Start ramp	0 2 s
Breaking ramp	0 2 s

System DIN 14 x 90 x 63 mm DIN Rail TS35 Screw terminal 2.5 mm² IP20 Aluminum 80 g

-40 °C ... +85 °C -25 °C ... +60 °C 10 % ... +95 % (non condensing)

100 000 h (at 25 °C)

CMC15/DC12/24V 0 ... 10 V DC 8 Bit 55 kΩ

12 ... 24 V DC

20 A / 3 s max.

5 A

120 W

MOSFET H bridge

CMC16/DC12-24V 4 ... 20 mA 8 Bit 190 Ω

² Time information corresponding to a jump over the full analogue input range (0 to 10 V or 4 to 20 mA and conversely).



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GND

7 Application



7.1 Function display

Element Functions one load		Functions two loads	
Poti LT	Ramp time acceleration 0 2 s	Ramp time acceleration 0 2 s	
Poti t	Ramp time deceleration 0 2 s	Ramp time deceleration 0 2 s	
LED IN1	Signal at analogue input I1, motor in motion e.g. forward	Signal at analogue input I1, motor 1 is on	
LED IN2	Signal at analogue input I2, motor in motion e.g. backward	Signal at analogue input I2, motor 2 is on	
LED Err (Error)	Error detected, see chapter 7.2 Error display	Error detected, see chapter 7.2 Error display	

7.2 Error display

LED Err (red)	Status	Troubleshooting
Not illuminated	 Normal operation.	
Illuminated at acceleration	 Output current too high (> 10 A).	Reduce the load, extend the acceleration ramp.
Illuminated at deceleration	 Voltage temporary too high (> 28 V).	Extend the deceleration ramp, use a bigger power supply unit.
Blinking	Output stage overheated, voltage to high for more than 5 s (>28 V).	Cool down (> 10 s), switch off inputs, reduce the load, reduce the voltage.



7.3 Security advice



If the voltage is higher than 28 V, the outputs Q1 and Q2 are automatically switched on to protect the output stages!



8 Dimension



9 Standards

Interference immunity

Interference emission

Safety

Conformities, identifications

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) EN 61000-6-3:2007 EN 55022:2006 Class B EN 60730-1:2000 CE

10 Revision history

Version	Revision date	Responsible	Realized modifications
55082-027-57-001	27.09.2013	Mi, Cp	Version 1