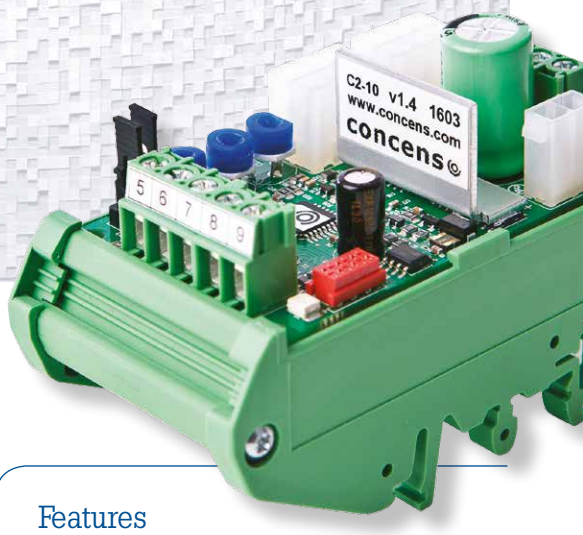
GB

DATA SHEET

C2-10

Control and protection of electric actuators

concens
- excellent electric actuators



C2-10 is developed for controlled ON-OFF driving and direction change of the Concens actuators. C2-10 has advanced current limit features. It limits the actuator current in start-up, braking and jam-situations and in that way protects the motor and the mechanics. C2-10 also has a fault in- and output which indicates error/over-current status and can be used to stop the actuator (for example if an emergency-stop switch is used).

The start and stop ramp times are individually adjustable to suit each application. In other words the motor voltage is controlled to give a preferred smooth start and stop. When the C2-10 controller is without power, the motor is dynamically braked with so called short-circuit braking, i.e. the motor poles are connected together. The reverse and forward inputs can be set to work with negative or positive voltage by moving a jumper.

C2-10 has a 'trip' feature that cuts the motor voltage if the current limit value is exceeded (after trip delay of 2ms). After trip the motor can only be started in the opposite direction. Additionally the C2-10 provides 'kick-start' which means 100ms at full speed (100%PWM). Current limit during kick-start is up to 35A.

If the actuator is stopped without going into trip mode, then the C2-10 controller will allow 50% higher current from start and until 500ms after ending start ramp (see timing figure).

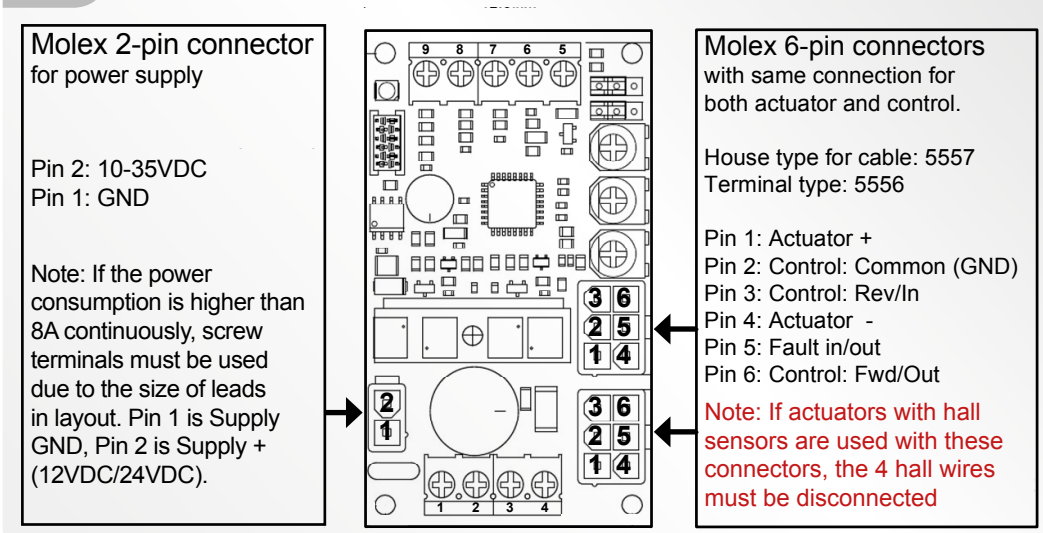
Features

- Adjustable start ramp
- Adjustable stop ramp
- Adjustable current limit
- Continuous-mode, impulse-mode
- High momentary load capacity
- Easy interfacing to PLC etc.
- Connectors and terminal
- DIN-rail fittable
- Status LED

Technical Data

Supply	10-35 VDC (filtered max ripple <30%@full load)
Over voltage protection	40 V
Idle current	Approx. 15 mA
Driving current	10 A continuous, 16 A with duty cycle 50% Max 16 A on duty 2 min
Current limit	0,5... 16 A
Current trip delay	20 ms
Start delay	5 ms
Voltage loss	0,5 V (Im = 4A)
Operating frequency	2000 hz
Ramps	0,1 ... 2,5 s
Digital inputs	'High' @ Uin 4 V → supply voltage, 'Low' @ Uin 0 V → 1 V
Operating temp.	(Ta) -20 ... +70 °C

FIG. 1 WIRING FOR C2-10



General

LED signals: Fast blink: Current trip
Four blinks: Overvoltage
Solid light: Overtemp

Current limit during start ramp and 500ms thereafter is current limit plus 50%.

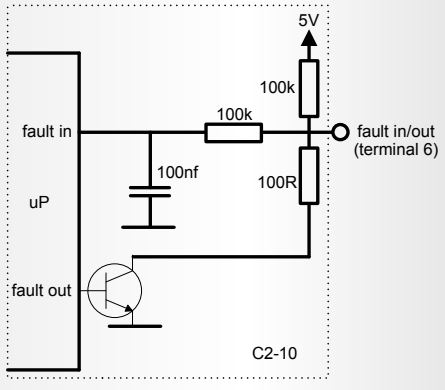
After trip the motor can only be started in the opposite direction. Additionally the C2-10 after trip provides 'kick-start', which means 100ms at full speed (100%PWM). Current limit during kick-start is up to 35A.

The fault terminal is both input and output (see fig. 2). During normal operation the signal is pulled high to 5 V on the C2-10 board in series with a 100k resistor. When a fault occurs the fault terminal changes to low voltage (GND via 100R resistor).

Screw Terminals

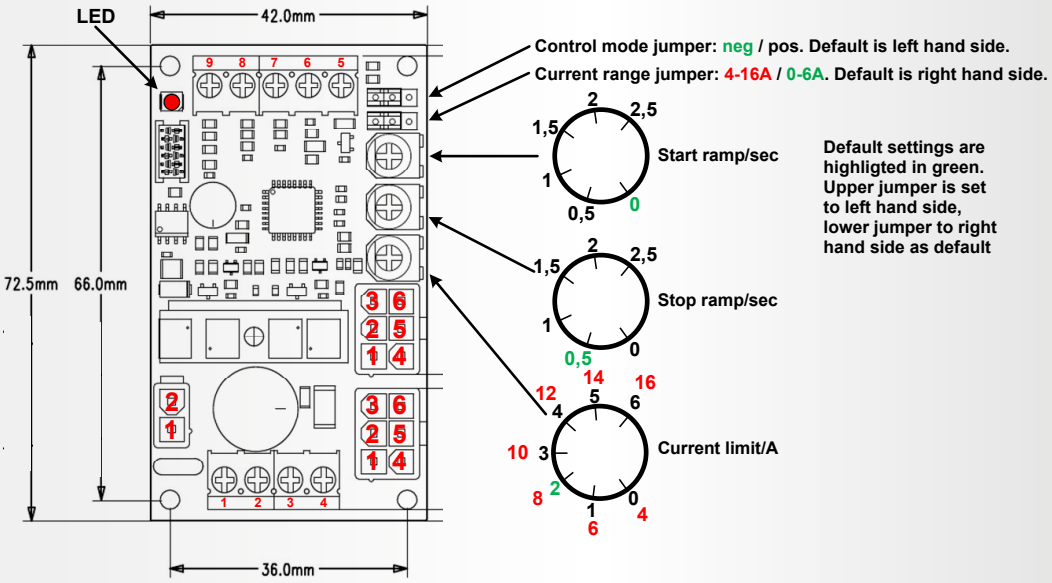
1 Supply GND
2 Supply + (10-35 VDC) fuse required
3 Actuator –
4 Actuator +
5 +5 V output for control-use max. 10 mA load
6 Fault in- and output
7 Reverse (Rev/In) signal input (0,5 mA)
8 Forward (Fwd/Out) signal input (0,5mA)
7+8 Used to activate the actuator reverse and forward. Please refer to description of 'Control mode' on page 3
9 GND for control-use (not to be used as supply input)

FIG. 2 CIRCUIT DIAGRAM



C2-10

FIG.3 SETTINGS AND MECHANICAL DIMENSIONS



Control mode

When jumper is put in mode 'neg' (left hand side) then a negative (GND) signal is put on terminal 7 and 8 to run motor.

When using 'neg' mode, then terminal 9 can be used as the negative supply.

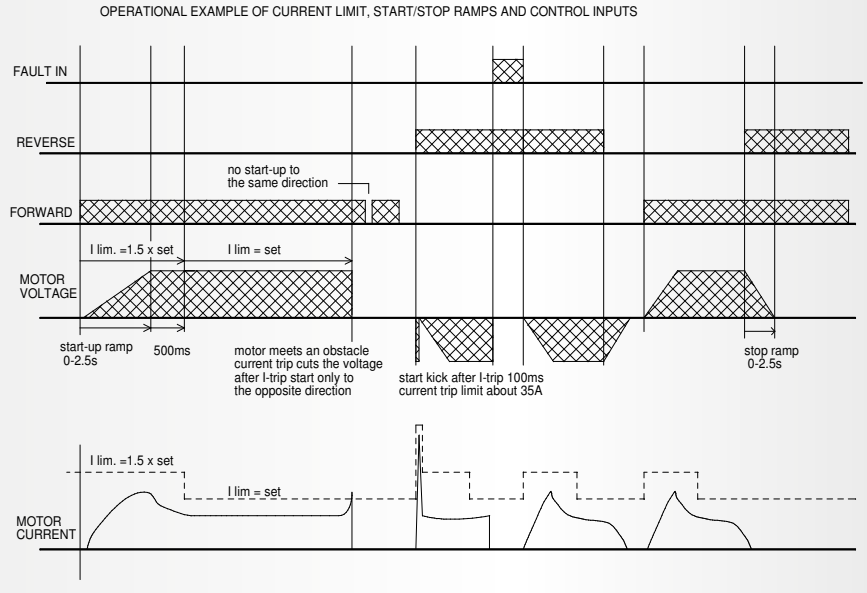
When jumper is put in mode 'pos' (jumper in right side) then a positive (> 4 V) signal is put on terminal 7 and 8 to run motor.

When using 'pos' mode, then terminal 5 can be used as the positive supply.

NOTE: When using the connectors for remote control, then the jumper MUST be in 'neg' mode (left side).

Input current for reverse & forward control is 0.5mA.

FIG. 4 TIMING DIAGRAM



C2-10

C2-10

C2-10-PCB-00-0000-00
(board alone)
73 x 43 x 25 mm (L x W x H)

C2-10-DIN-00-0000-00
(DIN rail version)
90 x 46 x 56 mm (L x W x H)

C2-10-BOX-00-0000-00
(box version)
102 x 73 x 47 mm (L x W x H)

C2-10 Part number combination

C 2 - 1 0 - P C B - 0 0 - 0 0 0 0 - 0 0

Type ID	**00 = All standard** *XX = Special*
Configuration	**0000 = Std. Unconfigured** **0001 = 2A sealed (Con35 24V)** **0002 = 4A sealed (Con35 12V)** **0003 = 8A sealed (Con50 24V)** **0004 = 16A sealed (Con50 12V)** **xxxx = Special configuration**
For future use	**00 = Std.**
Option	**PCB = Board only** **DIN = DIN rail version** **BOX = BOX version**
Type	**10 = C2-10**
Product series	**C2 = C2 system**

Warnings and recommendations

- If C2-10 goes into "trip" (overcurrent), it is only possible to run actuator in opposite direction.
- Please adjust the max. current to be 10% higher than maximum current during running the actuator. This gives the best conditions for long motor and actuator mechanical and electrical lifetime.
- It is very important to ensure that the power supply for the controller is capable of supplying sufficient current – otherwise the controller and the actuator may be damaged.
- Doublecheck correct polarity of power supply. If wrong connected, the C2-10 will be damaged.
- Attention! Driver has no fuse in it. Use external fuse according to application (2 → 16A slow).
- Concens does not have any responsibility over the possible errors in this data sheet.
- Specifications are to be changed without notice.

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