

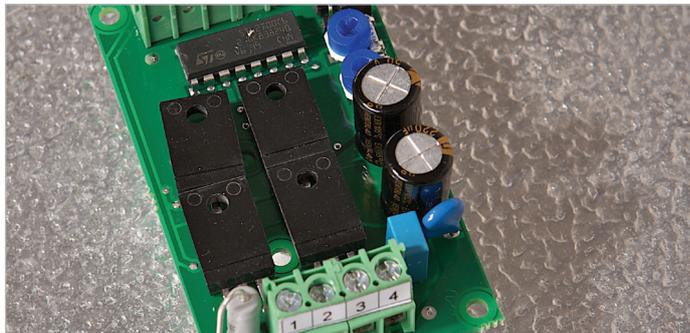


User Manual

C2-04

Control and protection of linear actuator con35

Version 1.2 - September 2011



C2-04

INTRODUCTION

C2-04 is developed for controlled ON-OFF driving and direction change of the con35 actuator. C2-04 has advanced current limit features. It limits the motor current in start-up and jam-situations and in that way protects the motor and mechanics. C2-04 also has an error output indicating error/over current status.

The acceleration ramp time for start-up is adjustable to suit each application. In other words the motor voltage is slowly raised to give a smooth start-up. When the control is off, the motor is dynamically braked with so called short-circuit braking, i.e. the motor poles are connected together. The reverse and forward commands can be set with positive and negative control.

The freewheel command sets motor run free. Freewheel overrides forward and backwards commands.

The current limitation is double acting. Firstly, there is a continuous and adjustable current limit, which decreases the motor voltage if the current exceeds the adjusted value. Secondly, there is settable trip feature that cuts the motor voltage if the current limit value is exceeded (after trip delay 2 ms). After trip the motor can only be started in the opposite direction. Additionally the C2-04 doubles the adjusted current value for 0.3 seconds during start-up to ensure sufficient power to overcome the start-up friction.

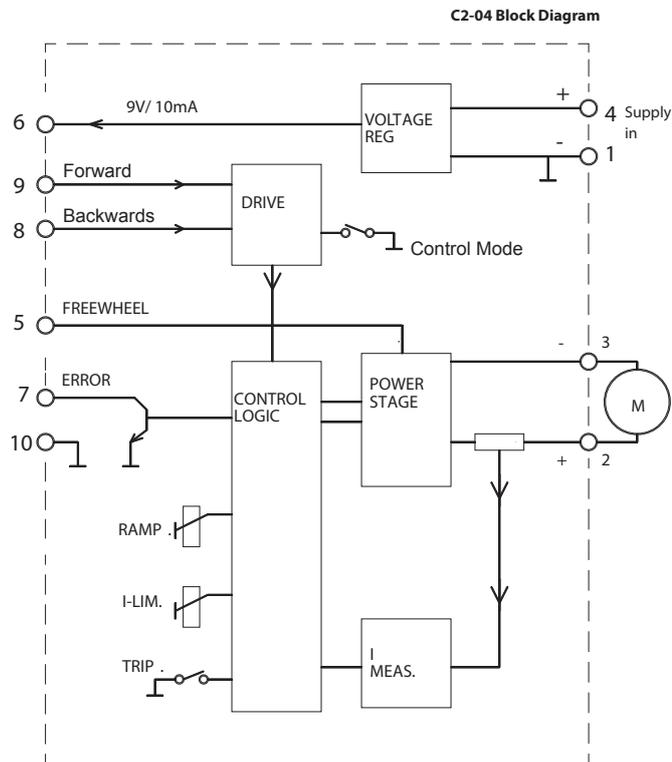
FEATURES

- Soft start-up
- Adjustable acceleration ramp
- Trip or continuous current limit
- Adjustable current limit
- Two control modes
- Freewheel option
- Dynamic braking
- High momentary load capacity
- High efficiency
- Easy interfacing
- Rail base fittable

TECHNICAL DATA

Supply	12-32 VDC (filtered, max. ripple <30% @ full load)
Over voltage protection	40 V
Idle current	Approx. 30 mA
Driving current	2.7 A continuous
	4.0 A 50/50%
Current limit	0.5 ... 7 A
	1.0 ... 14 A during start-up
Current trip delay	2 ms
Start delay	5 ms
Stop delay	5 ms
Direction change time	20 ms
Voltage loss	0.5 V (I _m = 4 A)
Operating frequency	500 Hz
Ramp	0.1 - 1 s
Digital inputs	"off" @ U _m 4-30 V or open
	"on" @ U _m 0-1 V
Error output	Max. 30 V 50 mA
Operating temp. (Ta)	-20 ... +70 °C
Dimensions:	
Board	73 x 43 x 25 mm (L x W x H)
C2-04DIN (DIN version)	90 x 46 x 56 mm (L x W x H)
C2-04BOX (box version)	102 x 73 x 47 mm (L x W x H)
Weight	Approx. 40 g (Board alone)

Check for updates on www.concens.com



General

Pin 1: Supply GND

Pin 2: Actuator +

Pin 3: Actuator -

Pin 4: Supply + (12-32VDC)

Pin 5: Freewheel

When this pin is pulled high, the motor runs free, i.e. as if it was electrically disconnected. This signal overwrites pin 8 and 9.

Pin 6: 9V output; max. 10 mA.

Can be used as source for inputs (pins 5, 8 and 9).

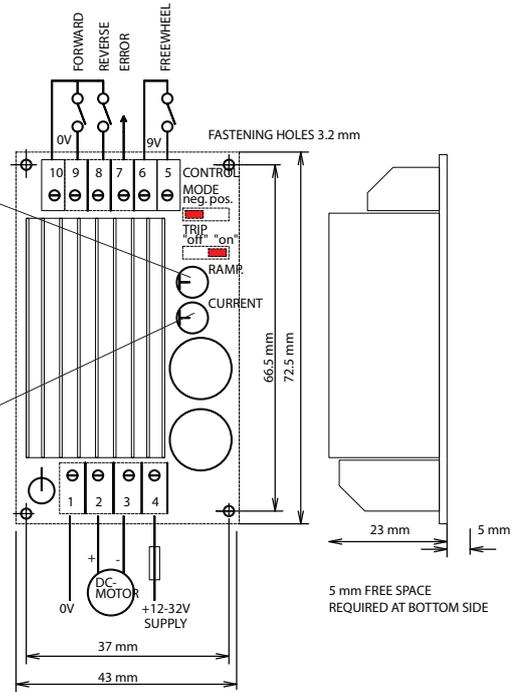
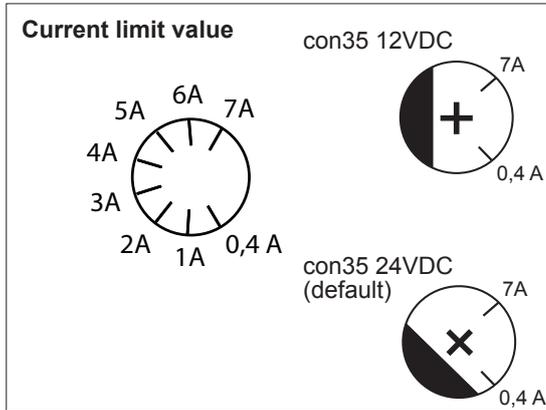
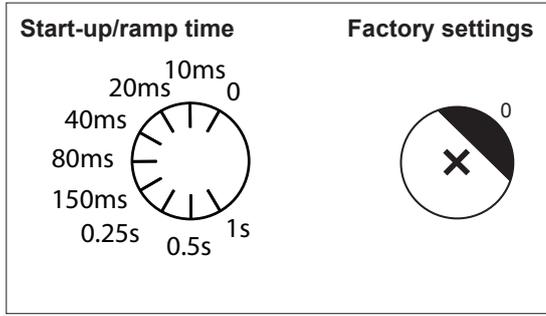
Pin 7: Error

This pin is pulled low when the current limit function is activated. This is an open collector output, max. 50 mA. External pull-up (10 K Ohm) may be required.

Pin 8/9: Backward/Forward

These pins are used to activate actuator backwards and forward. Please refer to description of "Control Mode" on page 3.

Pin 10: GND



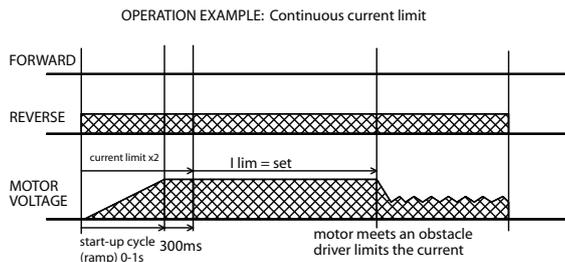
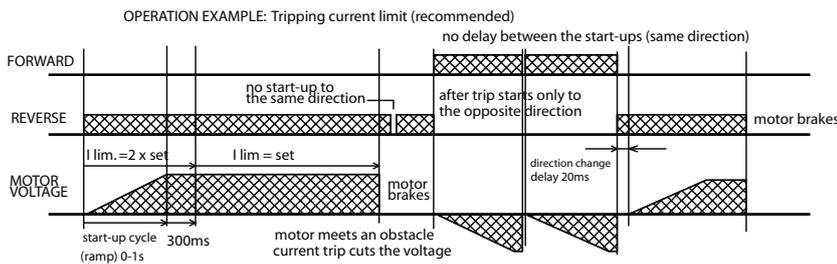
Control mode

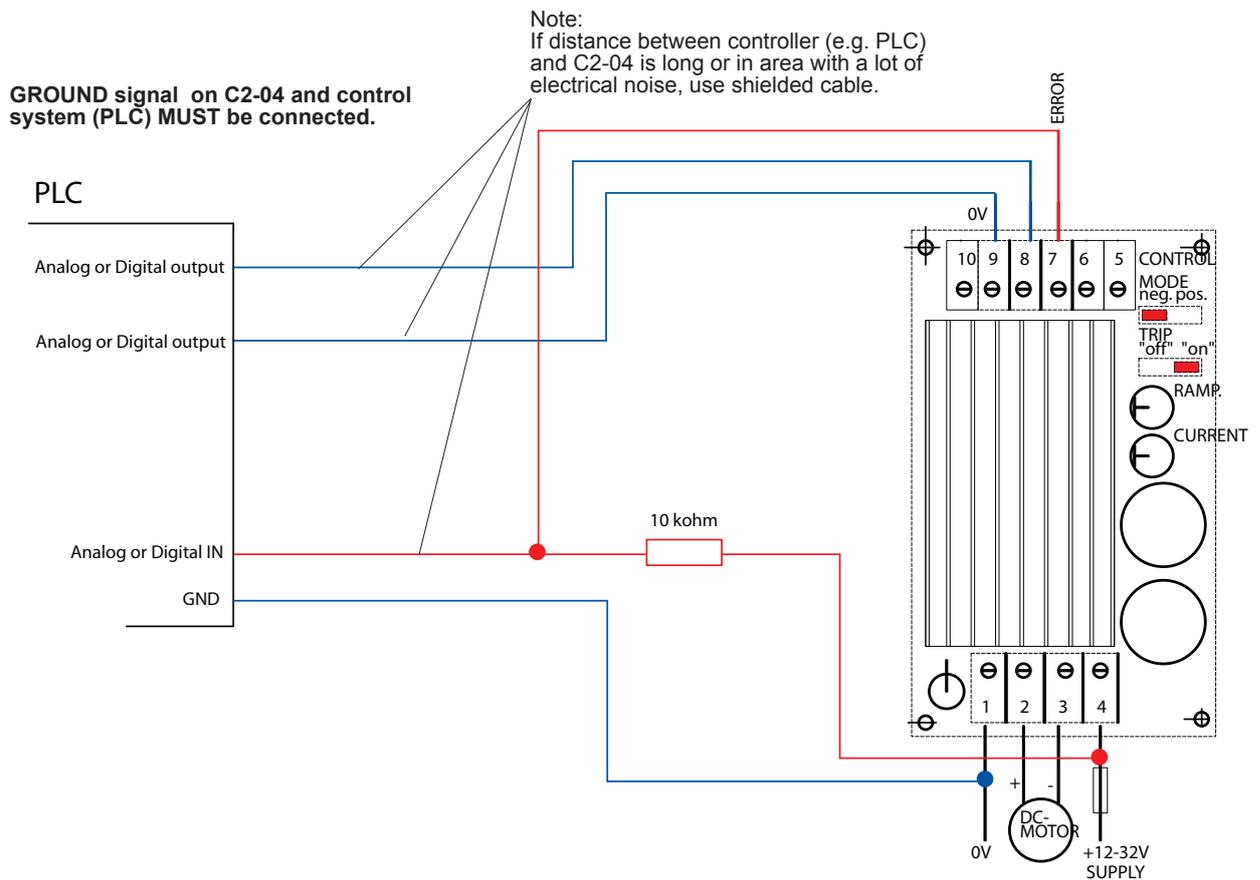
When put in mode “neg” is when a negativ (ground) signal is put on pin 8 and 9 to run motor.
 When using “neg” mode, then pin 10 can be used as the negative supply.
 When put in mode “pos” is when a positive (+)signal is put on pin 8 and 9 to run motor “backward” and “forward”.
 When using “pos” mode, then pin 6 can be used as the positive supply.
 Current for pin 8+9 is <math>< 1\text{ mA}</math> when active.

Current limit mode (TRIP)

On = tripping limit (recommended, default)
 Off = continuous limit

Please refer to figures below.





Warnings and recommendations

- If C2-04 goes into “overcurrent” mode, it is only possible to run motor in opposite direction
- Please adjust the max. current level to be 10% higher than maximum current during running the actuator. This gives best conditions for long motor and actuator mechanical lifetime.
- It is very important to ensure that the power supply for the controller is capable of supplying sufficient current - otherwise the controller and/or the actuator may be damaged.
- Doublecheck correct polarity of power supply.
If wrong connected, the C2-04 will be damaged.
- Attention!
Driver has no fuse in it.
Use external fuse according to application (1-4A).