

## RACO ELECTRIC CYLINDER

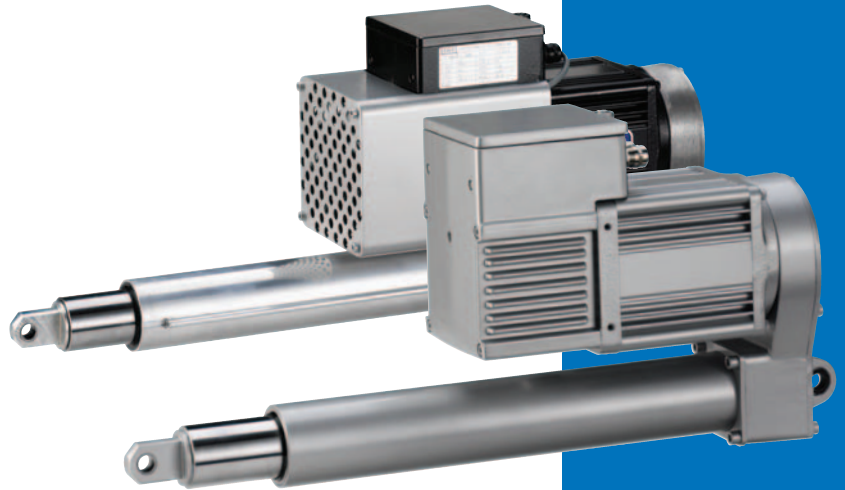
### INTELLIGENT POSITION AND CONTROL CYLINDER

#### The mechatronic actuator for powerful thrust movements in push and pull applications

For dynamic handling and automation processes, RACO offers a cost effective position and control actuator whereby the mechanical actuation unit (push / pull) is combined with an intelligent positioning motor.

The compact design in conjunction with a high power density, position accuracy and high duty cycle are the distinguished features of the intelligent position and control actuator. Due to its features and versatility the positioning actuator can be used for a wide range of positioning applications in the entire arena of the automation technology field.

The positioning and control cylinder has been designed for operation as a decentralized controlled actuator and incorporates, in addition to a frequency converter, a position sensor and position control. The resolution of the encoder is 512 pulses per revolution on the motor shaft and more than suitable for most positioning applications. Plug-and-move technology, in conjunction with the supplied windows configuration tool, ensures that the microprocessor of the electric linear actuator can be easily parameterized so that it virtually achieves the functions of a servomotor. The parameters supplied by the client can be readily works adjusted for rapid commissioning and realization of simple control circuits (open & closed loop). The positioning and control cylinder fulfils the requisite EU guidelines.



The position and control actuator includes in its standard version the following components:

- Thrust unit: Industrial designed powerful screw with maintenance free long life lubrication.
- RACO Positioning motor  
Asynchronous alternate current motor with thermal contact and frequency converter, Pulse encoder with position electronic:  
1-phase (internal converter  
3 x 230 V / 2-150 Hz)

The parameter setting for ramp function, speed or acceleration control and slow down is realized by:

- 2 analog input channels  
(continuous position and speed)
- 4 digital control input channels via optocoupler, programmable  
(up to 16 positions by PLC)
- 3 digital control output channels via optocoupler, programmable  
(motor start, position feedback, hazard diagnose)



## INTELLIGENT POSITION AND CONTROL CYLINDER

### COMPACT SERIES (TYPE 6) PERFORMANCE

#### PERFORMANCE RANGE OF THE INTELLIGENT POSITION AND CONTROL CYLINDER

RACO electric cylinder actuators with positioning motor are available as type T6E4 with trapezoidal thread drive and K6E4 with ball screw drive from the COMPACT series. Actuation forces of up to 7.5 kN at a motor power of 0.5 kW can be implemented with these actuators. An internal potential-free power source enables direct connection of contact probes, switches or relays with the inputs and outputs without requiring an external power supply unit.

The unit provides, as a hardware interface, four digital input signals, with the capability to select up to 16 discrete setpoint positions, each with an absolute resolution of 32 bit. Each of these positions can be approached at a given speed or a speed that is variable by way of the analogue input. Acceleration and deceleration ramps are separately defined for in and out movements of the push / pull unit and for reversing operation. Moreover, there is an additional input for hardware

release and drive switch-off. The required position is adjusted as a setpoint for continuous control by way of the analogue input (4..20 mA, 0..5V or 0..10V). The achieved actual position is kept constant by internal position control (variance adjustment), even by variable loads.

The required function of the inputs (e.g. positioning, controller release, reference travel) can be selected from a menu with pre-defined operating modes.

Information on the current operating status of the positioning drive can be called at any time by way of the three digital outputs. In addition to such information as "Drive travels to set position" / "Position reached", an error protocol can be read out in the event of faults so that it is possible to return to operating mode in a short time period.

The delivery includes a basic setting of the parameter values or a customized setting for the hardware controls via inputs and outputs, so that after electrical connection operations can be

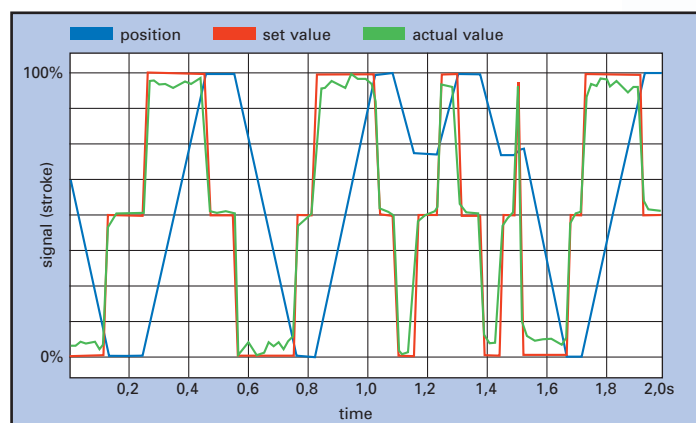
carried out without any great commissioning requirement. All parameters and program functions are specified via the built-in RS 232 interface from a laptop or a PC and can be changed at any time. The required configuration program is also supplied with the delivery. All values are stored in an E(E)PROM in the drive. This ensures that in case of a power failure the operation can be continued independent of the PC.

Pre-selected parameter sets are available for standard functions. The user can enter or change all functions and parameter values manually, and quickly adjust and optimize the actuators behavior in any given systems application.

An optional Profibus DP interface is available. It enables online monitoring functionality of all actual position motor system parameters and as well downloading of new setpoints for speed, position, acceleration, deceleration, torque, etc.

Multiple position motors can be connected to the same bus for synchronous actuator movements.

#### Example for programming



#### Screen of the configuration program



## INTELLIGENT POSITION AND CONTROL CYLINDER

### COMPACT SERIES (TYPE 6) TECHNICAL DATA / OPTIONS

**Position Motor:** The intelligent RACO position motor consists of a three phase asynchronous motor with an integrated variable frequency drive, a rotor angular encoder coupled with the position control feed back system and the configurable application software.

Power Supply: 1 x 230 V AC, 50 / 60 Hz  
Nominal Power: 0,5 kW;  $I_N = 3,5$  A; Thermal protection  
Protection class: IP 54, Filter acc. EMC-directive



#### Abstract out of the performance data:

Type	Force Range dependent upon speed	Speed Range adjustable up to	Order Code
<b>T6E4</b> (trapezoidal thread / ACME screw)	2500 N	70 mm/s	T6E4-1:1+stroke*
	1500 N	100 mm/s	
	1000 N	130 mm/s	
	5000 N	25 mm/s	T6E4-2:1+stroke*
	4000 N	50 mm/s	
	3000 N	60 mm/s	
2000 N	80 mm/s		
<b>K6E4</b> (ball screw)	4000 N	100 mm/s	K6E4-1:1+stroke*
	2500 N	150 mm/s	
	1500 N	230 mm/s	
	7500 N	5 mm/s	K6E4-2:1+stroke*
	5000 N	60 mm/s	
	4000 N	100 mm/s	
	3000 N	125 mm/s	

\*please indicate preferred stroke (100-600 mm)

#### Options:

- 1 Proximity switch;  
reference run; hard coded zero  
point for the position control
- 2 Proximity switches  
for end positions in frequency  
mode
- Cooling Fan; 230V AC;  
Recommended for operations  
with 100% duty cycle under  
full load
- Holding Brake type "L";  
24V DC, 1A.  
Recommended for ball screw  
actuators, hanging or stored  
energy loads and or vibration.
- 24V DC aux. power connection,  
to prevent loss of position if  
230V motor power is  
interrupted.
- Quick motor terminal plug  
connection for power and  
control
- Profibus DP Interface  
Up and down load of all system  
parameters including position,  
speed, torque, acceleration. and  
deceleration time.
- External DB9 connector for  
Profibus DP interface
- Special sealed terminal box  
with pre-manufactured cable  
harness

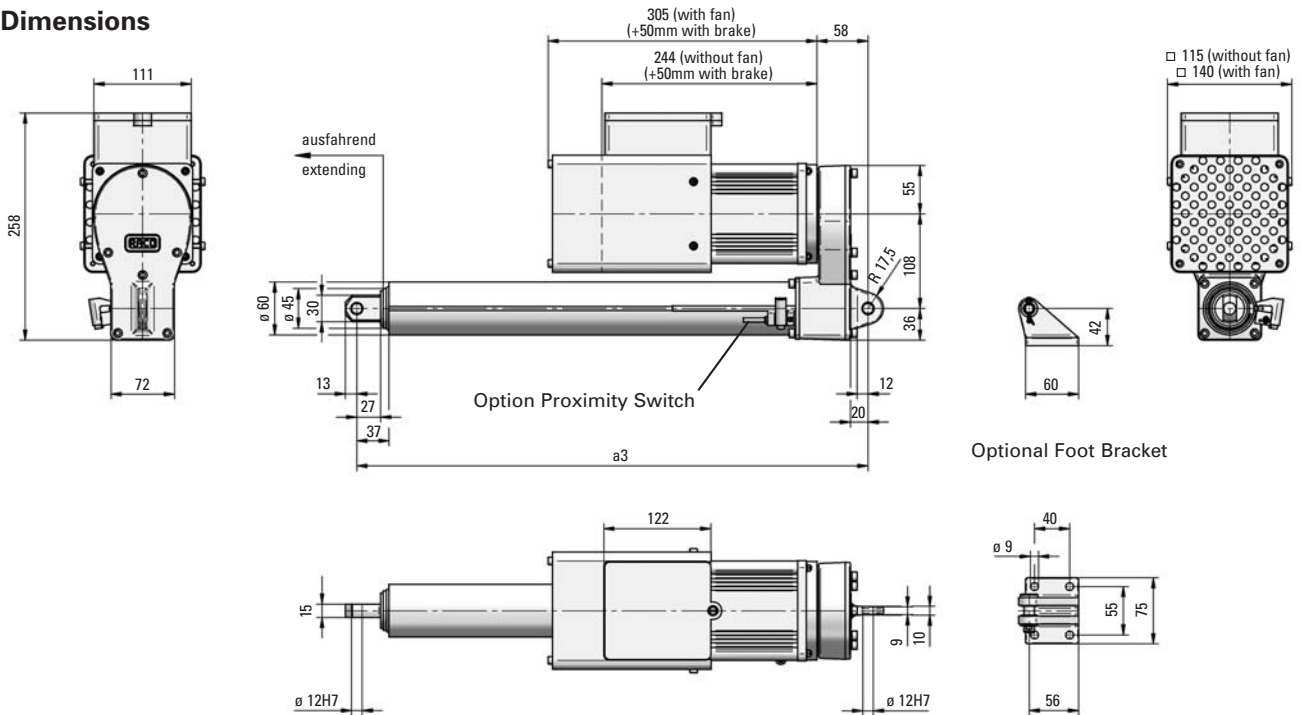
Depending on customer's requirements the position motor can also be used with the heavy industrial type actuators from our modular system program. RACO has solutions to offer – talk to one of our in house application engineers or our sales representatives.

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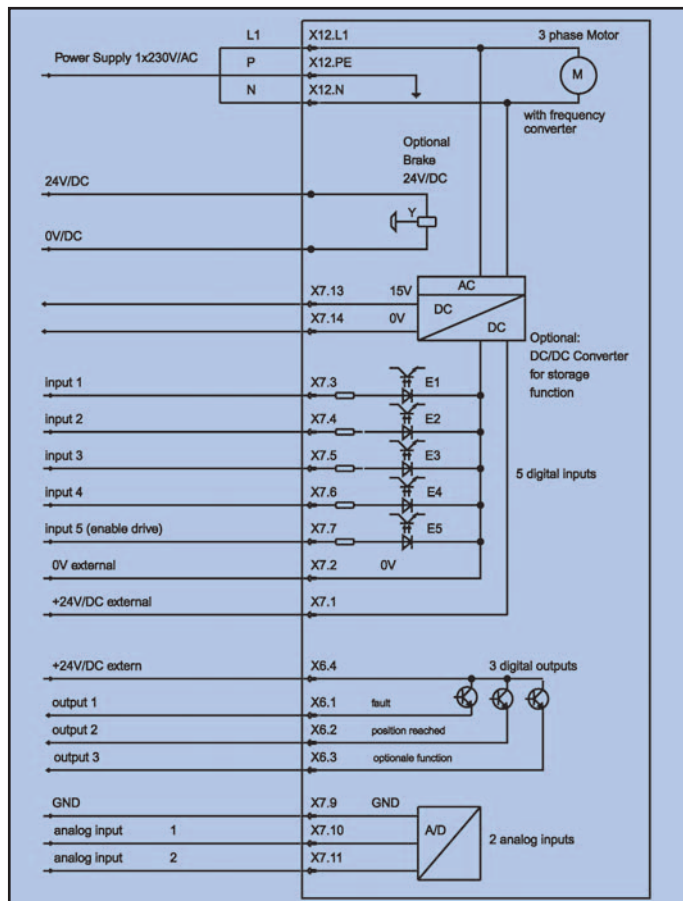
RACO Schwelm

## COMPACT SERIES (TYPE 6) MAIN DIMENSIONS / INTERFACE DIAGRAM

### Main Dimensions



### Interface diagram



### Dimensions and weights

Stroke (mm)	Dimension a3 (mm)	Weight (kg)
100	280	12
200	380	13
300	480	14
400	580	15
500	680	16
600	780	17

Our in house application engineers will assist you with your application. Call us.

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