Series P40
Compact Position Controller for Guillotine Shear Applications

- Positioning of backgauge, gap and angle
- Manual inching, single or program operation
- 16 freely configurable inputs and outputs
- Programm memory with 500 blocks
- LCD display with four menu languages
- Optionally with 12 bit analog output (selectively PID or unregulated)
- Material depending voltage output
- Simple and intuitive handling
- Integrated diagnosis mode
- Easy panel installation
General:
The compact positioning controller P40-002 was designed for simple positioning applications on guillotine shears. The focus is on the easy, convenient and fast input of a target value, optionally a number of pieces as well as a cutting angle (auxiliary axis) or a cutting gap (auxiliary axis). The actual value, target value and quantity are displayed on the control panel via an easy-to-read LCD display. The target value as well as the desired quantity can be entered via the keypad and positioning can be started and stopped via front start button.

The cutting angle or cutting gap can be displayed and positioned via the second encoder input. This encoder input can optionally be designed for analog measuring systems (see "Drive signals for positioning" below).

Program Memory:
In addition to manual inching and single operation, the P40-002 controller has a program mode that can be activated directly by the program key on the front panel. The program memory is designed for a maximum of 500 blocks.

Standard Functions:

- Adjustable positioning output signals (3 different speeds)
- Visualization of the actual and the programmed position
- Absolute or incremental measurement positioning
- Reference value and gauging
- mm/inch - switchover
- Impulse factor and multi edge counter
- Tolerance window
- Software end limit monitoring
- Loop operation
- Program memory with up to 500 blocks
- Tool compensation
- Encoder monitoring
- Batch counter
- Manual inching mode
- Stroke control
- 20 offsets
- Retract function
- Actual position memory

Guillotine Shear Application:

- Positioning of the backgauge axis
- Cutting gap / cutting angle control
- Material table for the auxiliary axes cutting angle and cutting gap
- Metal shear specific parameters e.g. knife length, cutting time, knife lowering time

Signal Inputs:
Depending on the encoder or measuring system used, the inputs for 1 or 2 axes can be configured individually. Conventional square wave inputs with HTL or differential TTL characteristics are available. When using analog measuring systems for the auxiliary axes cutting angle and cutting gap, the controller can also be equipped with 1 or 2 analog inputs. Combinations of digital and analog inputs are also possible. However, the restrictions listed in the type code should be taken into account.

Drive Signals for Positioning:
Three different versions of output signals are available for positioning:

1. Switch-off positioning with up to 3 speeds via digital outputs.
   The assignment and logic (active HIGH/LOW) can be parametrized.
2. Optionally via unregulated 12 bit analog output (±10 V)
3. Optionally via regulated 12 bit PID analog output (±10 V)

(order codes see type designation)

Digital I/Os
For diverse control commands, the P40-002 controller is equipped with 16 digital PNP inputs and outputs whose pin assignment and switching logic are freely configurable via parameters.
**Technical Data:**

### Mechanical Data:
- **Housing**: panel housing
- **Housing material**: front plate: aluminium, housing: galvanized steel sheet
- **Front plate dimensions**: W x H = 144 x 144 mm
- **Panel cut out**: W x H = 138 x 138 mm
- **Keyboard**: fail, short stroke keys
- **Installation depth**: 37 mm (without connectors), 75 mm (with connectors)

### Electrical Data:
- **Display**: LCD dot matrix 120 x 80 pixels with white background lighting
- **Hardware**: 32 bit microcontroller with 1 MByte Flash and 56 KByte RAM
- **Program memory**: up to 500 blocks (more on request)
- **System accuracy**: ± 1 increment
- **Power supply voltage**: 24 VDC +10 / -20 %
- **Current consumption**: max. 150 mA (unloaded); permitted tot. current incl. self-consumption: 1 A
- **Encoder supply voltage**: 24 VDC or 5 VDC
- **Load by measuring system**: max. 130 mA
- **Input signals (encoder)**: HTL, TTL, analog (order dependent)
- **Signal channels**: A, B, Z resp. A, A’, B, B’, Z, Z’ or analog 0 ... 3.3 V (order designation)
- **External inputs**: 16 x digital PNP inputs with freely programmable assignment and logic
- **Input current / pin**: max. 10 mA
- **Pulse time for inputs**: min. 300 ms
- **Max. input frequency**: 100 kHz (higher on request)
- **Analog inputs**: optional 1 or 2 analog inputs (12 bit) at 3.3 VDC sensor supply
- **Output signals**: 16 digital PNP outputs with freely programmable assignment and logic (active high/low)
- **Output current**: max. 150 mA per output / 500 mA total current across all outputs; the outputs are durable short circuit proof (no multiple short circuits)
- **Frewheel clutch / outputs**: for inductive loads integrated (clamping voltage at the output max. −45 V)
- **Analog outputs**: optional: ± 10 V PID or ± 10 V unregulated (each 12 bit)
- **Connections**: industry standard connectors (3.81 mm grid, lockable) and additional RJ45 sockets (depending on version)
- **Power down memory**: E²Prom (service life: 1.000.000 switching on/off cycles or 40 years)
- **Further options**: B = only 8 instead of 16 I/Os

### Environmental Conditions:
- **Operating temperature**: 0 ... +45 °C
- **Storage temperature**: -20 ... +50 °C
- **Humidity**: max. 80 %, non-condensing
- **Protection class (front)**: IP43 (installed state)
- **Protection class (rear)**: IP00

### Type Designation:
- **P40-002** - Compact Position Controller for Guillotine Shear Applications

### Order example:
- **P40-002** - special version for guillotine shears

### Restrictions:
1. not for axis 1 (only for auxiliary axes)
2. not available, when analog measuring systems are used (D = 4 or 5)
3. not available in combination with an analog output

### Further Options:
- **B = 8 digital inputs / 8 digital outputs**

### Environmental Conditions:
- **Operating temperature**: 0 ... +45 °C
- **Storage temperature**: -20 ... +50 °C
- **Humidity**: max. 80 %, non-condensing
- **Protection class (front)**: IP43 (installed state)
- **Protection class (rear)**: IP00

### Type Designation:
- **P40-002** - Compact Position Controller for Guillotine Shear Applications

### Order example:
- **P40-002** - special version for guillotine shears with 24 VDC power supply, 1 HTL input for encoder channels (A, B, Z.), 2 analog inputs for auxiliary axes (angle and gap), 1 regulated PID output for positioning the first axis, digital PNP transistor outputs for positioning the second axis and connections by optional screw terminals.

### Your order:
- **P40-002** - special version for guillotine shears with 24 VDC power supply, 1 HTL input for encoder channels (A, B, Z.), 2 analog inputs for auxiliary axes (angle and gap), 1 regulated PID output for positioning the first axis, digital PNP transistor outputs for positioning the second axis and connections by optional screw terminals.
**P40-002 Accessories:**

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<th>Order Designation</th>
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<tr>
<td>NG13</td>
<td>Power pack for AC-supply (primary: 115/230 VAC, secondary: 24 VDC/600 mA)</td>
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<tr>
<td>RP8</td>
<td>Relay card with 8 changeover relays (28 VDC/250 VAC / 12 A)</td>
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<tr>
<td>P40 Interface Cable</td>
<td>Interface cable for PC connection (with RJ45 plug and female 9-pin SUB-D)</td>
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