

# TOTAL MACHINE CONTROLLER 4th GENERATION (TMC-4)

Flexibility in blow molding machine control



Machine builders require higher levels of reproducibility, consistent wall thickness and process acceleration to increase productivity. To fulfill these requirements, the most important sequences in blow molding need closed-loop control. A simple and flexible design for easy handling and integration is the key to improving commissioning time and reducing downtime.

The Moog Total Machine Controller (TMC-4) is an intelligent machine controller, providing system control features for wall thickness, blow pin positioning, mold closing, carriage movement and temperature. It consists of field-proven hardware with state-of-the-art software technology.

The TMC-4 is tailored to the operation of high performance blow molding machines with standard features including target control for all axes to ensure exact performance of each movement (e.g. two freely definable axes and up to 16 heating zones). In addition the TMC-4 offers numerous additional functions and optional features to meet specific customer requirements.



## ADVANTAGES

- Provides constant monitoring and closed-loop control of operations to ensure that all parts are to specification
- Enables smooth production process and consistently high machine output due to closed-loop control
  - All relevant production data is visible on your screen for easy monitoring and adjustment
  - User-friendly and flexible terminal for operators to easily adjust parameters during production reduces machine downtime
- Ensures flexibility due to a compact design for easily integrating into the control panel of existing systems
- Features a easy-to-use design with a vast number of industry-specific control options

## INDUSTRY APPLICATIONS

- Plastic packaging
- Containers
- Technical parts
- Automotive parts



## KEY FEATURES

- Controlling of up to 3 movements, generally mold closing, blow pin and carriage movement
- Up to 2 freely definable axes, generally assigned to wall-thickness, ejection speed of accumulator head and blow pressure control
- Up to 16 heating zones, each can be operated as a 2 or 3-point controller or as a pure measuring zone, the temperature sensor is freely selectable
- Monitoring and supervision of 8 analog values from -10 to +10 V, via screen bar graph, as absolute value and supervised via 2 comparator values
- Up to 128 process timers and customized count values can be displayed
- 4 extruder controls
- 128 preselector switches for product dependent machine sequences
- Production data: display, set and transfer to remote system
- System state display: all signals transferred via Profibus to and from the machine sequences controller
- Alarm: up to 8 pages, each with 32 alarm messages can be displayed. Alarm icon on each page

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## AXIS MOTION CONTROL

- Cam group: each axis includes 7 movement elements with speed and position and 8 comparator switches that can be easily set depending on actual position.
- PID controller: the control parameters can be set for each direction variable. A dead-band setting for each direction is also available.

## WALL THICKNESS CONTROL

- 400-point parison profile
- Interpolation
- Parison markings
- Comparator signals
- Weight control

## TEMPERATURE CONTROL

- Self-optimization control process by means of fuzzy logic algorithms
- Individual current to each heating band. Four integrated week timer switches can be used to switch the temperatures or for other functions

## OPTIONAL FUNCTIONS

- Motion-controlled positioning of up to 18 axes
- Upgrade to a maximum of 12 wall thickness axes
- Expansion to up to 64 heating zones
- Additional monitoring and supervision of up to 16 analog values
- Language selection: English, French, German, Italian and Spanish

This technical data is based on current available information and is subject to change at any time by Moog. Specifications for specific systems or applications may vary.

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