

Concentrated Control Technology Know-How for the SIMATIC Platform

VIPA FM355 / R355 4/8-Channel Temperature Control Modules for the SIEMENS S7-300 and the VIPA System 300V

By Michael Roick, product manager for controllers and control systems at GOSSEN METRAWATT GMBH in Nürnberg, Germany





Production processes are no longer perceived as individual sub-processes, but rather as integral constituents of an overall process. Thanks to integration of VIPA FM355 / R355 4 and 8-channel temperature control modules into the SIMATIC platform, users now have access to concentrated control technology know-how for the SIEMENS S7-300 compact modular automation system and the VIPA System 300V.

Continuous communication amongst all automation components is assured by the backplane bus.

The high performance 355Config configuration tool can be imported and exported to and from S7 projects in the SIMATIC manager. Productivity is thus increased for project implementation, and engineering and life-cycle costs are reduced as a result. Beyond this, expenses for initial start-up, maintenance and service are also reduced. Cyclically occurring values for online visualization, error diagnosis and configuration are available via the MPI (VIPA MP2I) interface, Ethernet TCP/IP, PROFIBUS-DP or the CANopen protocol.

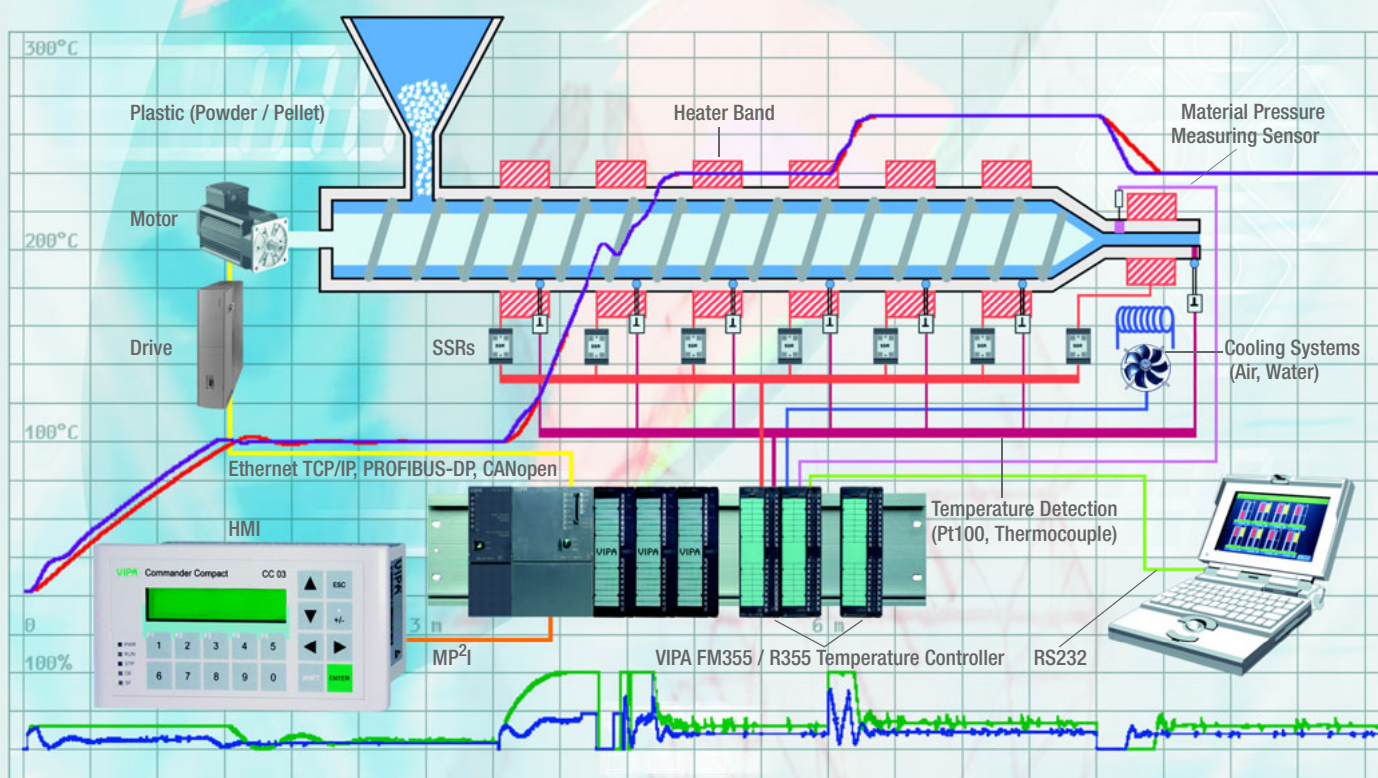
VIPA FM355 / R355 4/8-Channel Temperature Control Module

The autonomous VIPA FM355 / R355 temperature controllers can be very quickly configured, and can be adapted to control systems by means of self-tuning. Outstanding control performance is achieved by means of GOSSEN METRAWATT's own dead-beat PDPI control algorithm. The temperature controllers are offered in a variety of variants, amongst others with and without actuator output, thus allowing for actuator activation at considerable distances. In addition to the standardized functions, the following have been integrated as well: a data logger for all actual values and setpoints, an alarm history for error status entries with time stamp, and mapping (a test tool which checks for correct heater and sensor wiring).

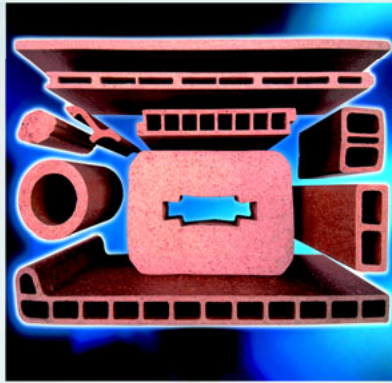
A booster circuit, synchronous heating via all controller modules, and heating current monitoring with only a single summation current transformer via up to 24 control channels are also available for use with hot-runner tools.

Applications include multi-channel temperature controllers for rubber and plastics processing (injection molding, extrusion, blow molding, hot-runner technology), semiconductor manufacturing processes, industrial and laboratory ovens, textile and packaging machines, climatic test cabinets, refrigerator and heater manufacturing, pharmaceuticals, chemicals, process engineering, food processing industry, wood and paper industries (fiber stock extrusion), glass and ceramics industry, temperature control devices and other thermal processes.

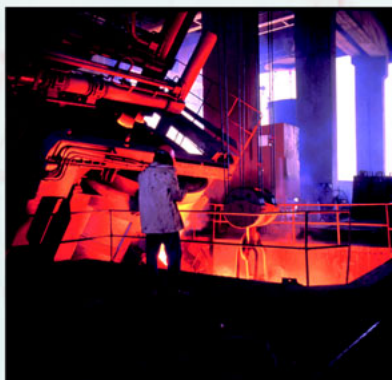
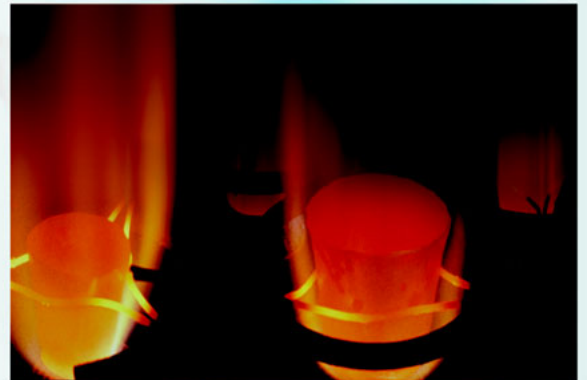
The specially developed control algorithm for compensation of non-linear water evaporation characteristics allows for water cooled extruder zone applications.



VIPA FM355 / R355 in use with an extruder with typical start-up of a hot-runner tool

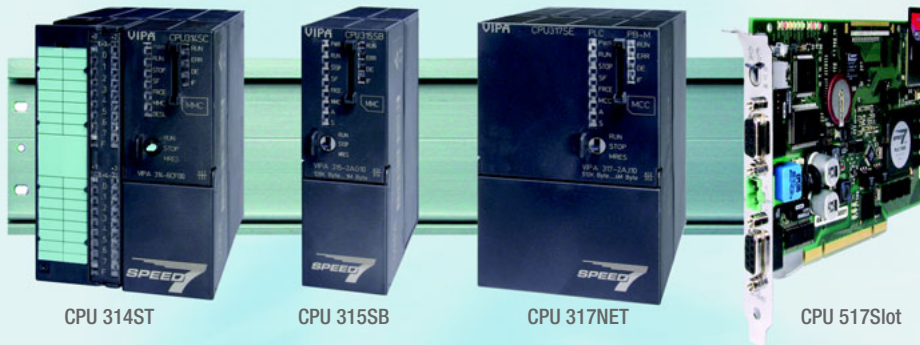


- Compatible with SIEMENS S7-300 and VIPA System 300V with backplane bus
- 355Config software tool for complete configuration and parameter settings, import and export to and from S7 projects in the SIMATIC manager and VIPA's WinPLC7
- Online visualization of cyclically occurring data including, amongst others, actual values, control variables, heating current, alarms ..., as well as configuration of process quantities including, amongst others, setpoints, delay times, ramps ... and error diagnosis via MPI interface (VIPA MP²I), Ethernet TCP/IP, PROFIBUS-DP or CANopen protocol
- Service – The controller module can be easily replaced worldwide.
 - ☐ Storage of the parameter set in the CPU
 - ☐ Comparison of the parameter set ID during start-up and parameter set updating
- Extremely short sampling cycle – 100 ms for all 8 channels
- PDPI control without overshooting
- Control parameters adaptation can be started at any time for each channel
- Measurement inputs – thermocouple, Pt100, direct current, direct voltage
- Binary I/Os – with short-circuit detection, freely assignable to controller states, functions and channels
- Data logger – 3600 samplings for each channel including actual values and setpoints
- Alarm history – acquisition of 100 channel or device error status entries with time stamp, as well as output errors
- Hot runner control with start-up and booster circuit, as well as assignment to groups for control zones for synchronous heating, synchronous heating via all controller modules
- Heating current monitoring for all channels whose current is fed through the single or multi-phase summation current transformer
- Water cooling control – takes non-linear cooling effect caused by evaporation into consideration
- Cascade, differential and switching control, and much more

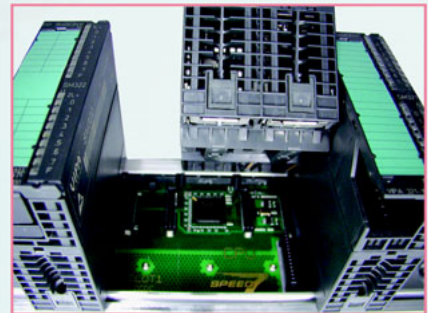


SPEED7 CPUs from VIPA – programmable with STEP7 from SIEMENS.

VIPA System 300V modules have the same pin configuration and are functionally compatible with the SIEMENS S7-300, and can thus be interchanged as desired.



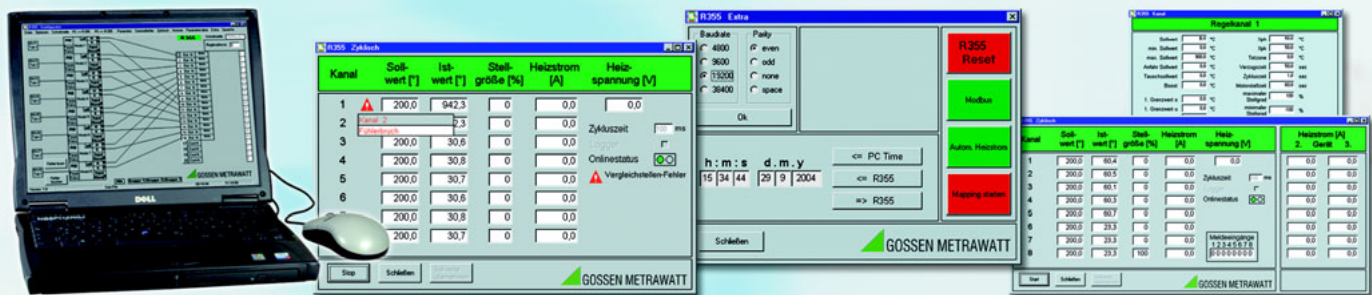
- Processing and cycle times with up to 50,000 commands per ms
- Ethernet and MPI interfaces are standard equipment, and the PROFIBUS-DP Master is optionally available
- MMC module for storing programs and data
- MCC module for expanding RAM to as much as 16 megabytes



The SPEED7 CPU is connected to a standard rail, and the high-speed CPU is plugged onto the SPEED-Bus. VIPA and SIEMENS modules can be quickly and conveniently connected to the standard bus.

355Config Configuration Tool

The controller modules can be fully configured with this software tool, and parameter settings can be selected.



Order Information:

4-Channel Temperature Control Module

Order Number	Measurement Inputs	Binary I/Os
VIPA FM355-3SD00/R355A	Current / voltage	None
VIPA FM355-3SD10/R355B	Thermocouple/Pt100	None
VIPA FM355-4SD00/R355E	Current / voltage	8
VIPA FM355-4SD10/R355F	Thermocouple / Pt100	8

8-Channel Temperature Control Module

Order Number	Measurement Inputs	Binary I/Os
VIPA FM355-3SF00/R355C	Current / voltage	None
VIPA FM355-3SF10/R355D	Thermocouple/Pt100	None
VIPA FM355-4SF00/R355G	Current / voltage	24
VIPA FM355-4SF10/R355H	Thermocouple / Pt100	24

VIPA and System 300V are registered trade marks of VIPA Gesellschaft für Visualisierung und Prozessautomatisierung mbH.
SIMATIC, STEP and S7-300 are registered trade marks of SIEMENS AG.

VIPA
Gesellschaft für Visualisierung
und Prozessautomatisierung mbH

Ohmstrasse 4
91074 Herzogenaurach, Germany
Phone +49 (0)9132 744-0
Fax +49 (0)9132 744-174
E-Mail: info@vipa.de
www.vipa.de

GOSSEN METRAWATT GMBH

Thomas-Mann-Str. 16-20
90471 Nürnberg, Germany
Phone +49 (0)911 8602-111
Fax +49 (0)911 8602-777
E-Mail: info@gossenmetrawatt.com
www.gossenmetrawatt.com