SPI Commands Supported by the Conair Thermolator®

The SPI commands supported by Conair Thermolator® mold temperature controllers are listed in the following tables.

The standard required commands and three optional commands are listed in the SPI Command Pairs table, along with the Select and Poll command pairs in hexadecimal format. Select commands set or change Thermolator functions. Poll commands retrieve information from the Thermolator.

SPI Command Pairs
Mold temperature controllers — **Device ID: hex 20**

Commands	Select	Poll
Echo - Select stores 4 bytes of information at the Thermolator; Poll retrieves it.	0x20 0x21	0x20 0x20
Setpoint Process Temperature - Sets and retrieves the process temperature setpoint.	0x20 0x31	0x20 0x30
Alarm, High Temperature Deviation* - Sets the alarm band temperature; retrieves setpoint + alarm band value.	0x20 0x33	0x20 0x32
Alarm, Low Temperature Deviation* - Sets the alarm band temperature; retrieves setpoint + alarm band value.	0x20 0x35	0x20 0x34
Mode, Machine - Start/stops the Thermolator; acknowledges alarms; retrieves run status	0x20 0x49	0x20 0x48
Version - Retrieves 4 bytes of SPI version information.		0x20 0x22
Process Status - Retrieves run status and alarm conditions.		0x20 0x40
Status, Machine 1 - Retrieves run status and alarm conditions.		0x20 0x42
Status, Machine 2 - Retrieves run status and alarm conditions.		0x20 0x44
Temperature, from Process - Retrieves the actual temperature of fluid returning to the Thermolator.		0x20 0x72

*** NOTE: Both High and Low Temperature Deviation commands set the same variable. Use only one of these commands to avoid problems.**

See the tables on the following pages for the SPI status words and BIT positions for Process Status, Machine 1 Status and Machine 2 status.

For more information on the SPI protocol, you can obtain the SPI Communication Protocol Manual by contacting:

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Machinery Division
1275 K Street, NW, Suite 400
Washington, D.C. 20005
(202) 371-5200 Fax: (202) 371-1022

SPI STATUS WORDS

Status, Process

Poll: 0x20 0x40

SPI STATUS WORD	Open	Open	Reserved	Reserved	Reserved	Reserved	Alarm, Low flow	Reserved	Alarm, Low pressure condition	Alarm, High pressure condition	Alarm, Low temperature deviation	Alarm, High temperature deviation	Alarm, Machine	Alarm, Process	Alarm, System	Processing
Word BIT position	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
EEprom error														SET	SET	*
A/D converter error														SET	SET	*
CJC Error														SET	SET	*
RAM hardware														SET	SET	*
ROM checksum														SET	SET	*
Probe Failure													SET		SET	*
E/M Hi temp safety																*
Prog. Hi temp safety																*
Output monitor failure													SET		SET	*
Low water pressure									SET				SET		SET	*
High deviation alarm												SET		SET	SET	*
Low deviation alarm											SET			SET	SET	*
Prog. Lo temp safety																*
Pump overload													SET		SET	*
Low water level													SET		SET	*
Test Mode																*
Phase error																*

NOTES:

* The SPI I/O list defines the Processing bit as being cleared if the unit is not processing; otherwise it is SET.

Elsewhere on the chart:

- If a bit is not shown to be SET, it is cleared.
- The System Alarm bit is SET if an alarm is present. It is the logical OR of Process alarm and Machine alarm.
- Processing, System Alarm, Process Alarm and Machine Alarm bits are repeated for Process Status, Machine 1 Status and Machine 2 Status.

SPI Status Words

Status, Machine 1
Poll: 0x20 0x42

SPI STATUS WORD	Open	Alarm, Phase	Alarm, Low current	Alarm, High current	Alarm, Low volts	Alarm, High volts	Reserved	Reserved	Alarm, Low pressure safety limit	Alarm, High pressure safety limit	Alarm, Low temperature safety limit	Alarm, High temperature safety limit	Alarm, Machine	Alarm, Process	Alarm, System	Processing
Word BIT position	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
EEprom error														SET	SET	*
A/D converter error														SET	SET	*
CJC Error														SET	SET	*
RAM hardware														SET	SET	*
ROM checksum														SET	SET	*
Probe Failure																*
E/M Hi temp safety												SET	SET		SET	*
Prog. Hi temp safety												SET		SET	SET	*
Output monitor failure													SET		SET	*
Low water pressure									SET				SET		SET	*
High deviation alarm																*
Low deviation alarm																*
Prog. Lo temp safety											SET			SET	SET	*
Pump overload													SET		SET	*
Low water flow													SET		SET	*
Low water level													SET		SET	*
Test Mode																*
Phase error		SET											SET		SET	*

NOTES:

* The SPI I/O list defines the Processing bit as being cleared if the unit is not processing; otherwise it is SET.

Elsewhere on the chart:

- If a bit is not shown to be SET, it is cleared.
- The System Alarm bit is SET if an alarm is present. It is the logical OR of Process alarm and Machine alarm.
- Processing, System Alarm, Process Alarm and Machine Alarm bits are repeated for Process Status, Machine 1 Status and Machine 2 Status.

SPI Status Words

Status, Machine 2

Poll: 0x20 0x44

SPI STATUS WORD	Open	Open	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Fault, CAL	Fault, Sensor	Alarm, Machine	Alarm, Process	Alarm, System	Processing
Word BIT position	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
EEprom error														SET	SET	*
A/D converter error														SET	SET	*
CJC Error														SET	SET	*
RAM hardware														SET	SET	*
ROM checksum														SET	SET	*
Probe Failure												SET		SET	SET	*
E/M Hi temp safety																*
Prog. Hi temp safety																*
Output monitor failure													SET		SET	*
Low water pressure																*
High deviation alarm																*
Low deviation alarm																*
Prog. Lo temp safety																*
Pump overload													SET		SET	*
Low water level													SET		SET	*
Test Mode																*
Phase error																*

NOTES:

* The SPI I/O list defines the Processing bit as being cleared if the unit is not processing; otherwise it is SET.

Elsewhere on the chart:

- If a bit is not shown to be SET, it is cleared.
- The System Alarm bit is SET if an alarm is present. It is the logical OR of Process alarm and Machine alarm.
- Processing, System Alarm, Process Alarm and Machine Alarm bits are repeated for Process Status, Machine 1 Status and Machine 2 Status.