



MELT PRESSURE TRANSDUCERS & TRANSMITTERS

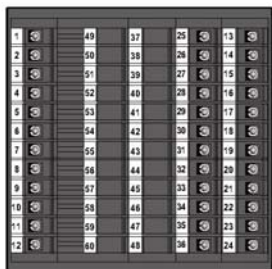
300 Industrial Drive, Grand Island, NY 14072 USA
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Product Specification Sheet DIGITAL PRESSURE CONTROLLER Model 1290

With standard strain gauge input & a 24VDC transmitter power supply, the 1290 series controller is ideal for controlling melt pressure. Featuring high speed sampling & control at 0.025 seconds (40Hz), these controllers provide stable control for improved quality of extruded products.

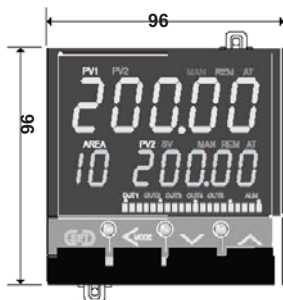


Rear Terminal
1290



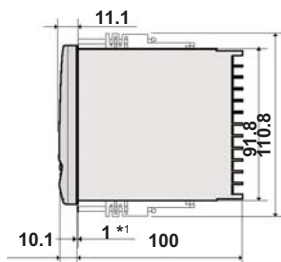
Use the solderless terminal appropriate to the screw size.
Screw size:M3X6

External Dimensions
1290



SPECIFICATIONS:

- Pressure control application controls main motor RPM so that the pressure at the nozzle can be constant.
- Dual loop control with a single instrument. The first loop is assigned to a strain gauge input and the second loop to a temperature input (T/C, RTD, & mV/V/mA).
- Communication function can be selected from serial communication (RS-232C, RS-422A, RS-485) and opennetwork (Devicenet, Profibus).
- Easy zero and span adjustments are available from the front panel. The span adjustment is accomplished by setting the sensor rated output value (gain setting).
- Peak Hold/Bottom Hold's maximum and minimum measured value is constantly stored in memory.
- A maximum of two measured inputs and five event inputs can be specified.
- A maximum of five outputs can be specified, and various output functions can be allocated in output logic operation.
- Infrared communication with PDA optional.



*1 IP65 waterproof/dustproof protection is molded into case & can be added in the field.

No	Description
1	Power Supply
2	Power Supply
3	Output 5 (OUT 5) *
4	Output 4 (OUT 4) *
7	Output 3 (OUT 3) *
8	Output 3 (OUT 3) *
9	Output 2 (OUT 2) *
10	Output 2 (OUT 2) *
11	Output 1 (OUT 1)
12	Output 1 (OUT 1)

No	Description
25	VP *
26	RxD/TxD-P
27	RxD/TxD-N
28	DGND
29	V-(4)
30	COM *
31	Event input 1 to 4
32	Event input 1 to 4
33	Event input 1 to 4
34	Event input 1 to 4
35	Event input 5 *
36	Event input 5 *

No	Description
13	Not used
14	CAL+ Calibration input +
15	CAL- Calibration input -
16	SHD Shield
17	EXC+ Sensor supply voltage +
18	EXC- Sensor supply voltage -
19	Non-isolated type remote input (A)
20	Non-isolated type remote input (3)
21	Temperature Voltage/Current input (1) Thermocouple (2) RTD (3 wire) (3) Voltage/Current
22	Not used
23	SIG+ Sensor signal input +
24	SIG- Sensor signal input -

*Functions (A) to (C) and types (1) to (3) must be specified at the time of ordering.

GP:50 reserves the right to make product improvements and amendments to the product specifications stated throughout this brochure without prior notification. Please contact the factory on all critical dimensions and specifications for verification.



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SPECIFICATIONS

Input	
Number of inputs	2 points (IN1 to IN2) <ul style="list-style-type: none"> Isolated between each channel 2nd input (IN2) can be used as a remote input Specify the number of inputs at the time of ordering
Input	<p>a) Input 1 (IN1): Strain gauge type pressure sensor</p> <ul style="list-style-type: none"> Bridge impressed volt. :8VDC \pm3%, 80ppm/$^{\circ}$C, 30mA(MAX) <p>b) Input 2 (IN2): Temperature input, Voltage/Current input</p> <ul style="list-style-type: none"> Universal input within group <ol style="list-style-type: none"> Low voltage input group Thermocouple: K, J, E, T, R, S, B, N (JIS/IEC) PLII (NBS), W5Re/W26Re (ASTM) RTD: Pt100 (JIS/IEC), JPt100 (JIS) 3 wire system Low voltage: 0 to 1VDC, 0 to 100mV DC, 0 to 10mVDC Current: 4 to 20mA DC, 0 to 20mA DC (Input impedance: 50W) High voltage group High volt. : 0 to 5VDC, 1 to 5VDC, 0 to 10VDC
Sampling time	0.025 sec. <ul style="list-style-type: none"> Common to 1ch/2ch
Zero point adjustment	-5.0 to +5.0mV (Pressure sensor input)
Gain setting	0.500 to 4.000mV/V (Pressure sensor input)
Influence of external resistance	0.25 V/ (Thermocouple input)
Influence of lead resistance	0.01 $^{\circ}$ C/W (RTD input) <ul style="list-style-type: none"> Maximum 10W per wire
Input break action	Pressure sensor input: Up-scale/Down-scale (Selectable) Thermocouple input: Up-scale/Down-scale (Selectable) RTD input: Up-scale,Low volt. input: Up-scale/Down-scale (Selectable). High voltage input: Value around 0V Current input: Value around 0mA
Input short action	Down-scale (RTD input)
Input digital filter	0.01 to 10.00 sec. (OFF when 0 is set.)
PV bias	-span to +span
PV ratio	0.500 to 1.500
Square root extraction	$PV = \sqrt{\text{Input value} \times \text{PV ratio} + \text{PV bias}}$ Low level cut off: 0.00 to 25.00% of span
Non-isolated remote setpoint input (optional)	
Input	<p>a) 0 to 1V DC, 0 to 100mV DC, 0 to 10mVDC</p> <p>b) 0 to 5V DC, 1 to 5V DC, 0 to 10VDC</p> <p>c) 4 to 20mA DC, 0 to 20mA DC</p> <ul style="list-style-type: none"> Please specify a) to c) at the time of ordering Not available when a 2-loop type is selected.
Sampling time	0.075 sec.
Accuracy	0.1% of span
Event input (Optional)	
Number of inputs	Up to 5 points
Input Rating	Non-voltage contact input
Functions	<p>a) Memory area selection</p> <p>b) RUN/STOP</p> <p>c) Remote/Local</p> <p>d) Auto/Manual) Hold reset</p> <p>f) Interlock reset</p> <p>g) CH1/CH2 MV value (Motor revolution) up/down</p> <p>h) CH1/CH2 MV value (Motor revolution) reset</p>
• See Event input logic selection functional allocation table	
Memory area	
Number of area	16 sets
Setting items	<p>a) Set value (SV),</p> <p>b) Event 1 to 4,</p> <p>c) Proportional band,</p> <p>d) Integral time</p> <p>e) Derivative time</p> <p>f) Control response</p> <p>g) Setting change rate limiter (High/Low)</p> <p>h) Soak time :0 min 0.00 sec to 9 min 59.99 sec or 0 hr 0 min 00 sec to 9 hr 59 min 59 sec(selectable)</p> <p>i) Linking area number: OFF, 1 to 16</p>

Control	
Number of controls	Up to 2 points
Control method	Brilliant PID control (with autotuning) <ul style="list-style-type: none"> Direct action/reverse action selectable
Setting range	<p>a) Proportional band: Temperature input, 0 to input span($^{\circ}$C, $^{\circ}$F) Voltage</p> <ul style="list-style-type: none"> Current input, 0.0 to 1000.0% of input span <p>b) Integral time : 0.00 to 360.00 sec or 0.0 to 3600.0 sec (selectable)</p> <p>c) Derivative time : 0.00 to 360.00 sec or 0.0 to 3600.0 sec (selectable)</p> <p>d) Control response : Slow, Medium, Fast</p> <p>e) Output limiter -5.0 to +105.0% (High/Low individual setting)</p> <p>f) Output change rate limiter : 0.0 to 100.0% /sec (Up/down individual setting)</p> <p>d) Proportional cycle : 0.1 to 100.0 sec</p>
Other functions	<p>a) PV transfer function: This is a function to set the PV to the SV when the operation mode has been changed from a Manual to an Auto mode to suppress rapid change in output.</p> <p>b) Manual output transfer function at input abnormality When the input exceeds the input abnormality decision point, the output reached at that time is maintained.</p> <p>c) MV transfer function In this function, an output value is stored when the operation mode is changed from MAN to AUTO mode, and when the mode changes from AUTO to MAN via digital input, the stored output value is retrieved.</p>
Output	
Main Output	<p>a) Number of outputs : Up to 3 points (OUT1 to OUT3)</p> <ul style="list-style-type: none"> OUT3 is isolated from other outputs (Not isolated between OUT1-OUT2). Outputs are isolated for relay output and SSR output. Isolated between input-output and output-power supply. OUT2 and OUT3 are optional. <p>b) Output function: OUT1, 2: Control output OUT3: Event output or analog retransmission output (Option)</p> <p>c) Output type</p> <ol style="list-style-type: none"> Relay contact output, form a contact, 250V AC 3A (resistive load) <ul style="list-style-type: none"> Electric life : 300,000 cycles or more (resistive load) Voltage pulse output DC 0/12V (Load resistance : more than 600W) Current output 4 to 20mA DC, 0 to 20mA DC (Load resistance : less than 600W) Continuous voltage output 0 to 5V DC, 1 to 5V DC, 0 to 10VDC (Load resistance : more than 1kW) SSR (Triac) output, (Rated current : 0.4A) <ul style="list-style-type: none"> Please specify 1) to 5) at the time of ordering
Sub Output (Option)	<p>a) Number of outputs: Up to 2 points (OUT4 to OUT5)</p> <p>b) Output function: Event output (Option)</p> <p>c) Output type: Relay contact output, Form a contact, 250V AC 1A (resistive load) <ul style="list-style-type: none"> Electric life : 300,000 cycles or more (resistive load) </p>
Sensor power Supply output (Option)	<p>24V DC \pm5% (Max.24mA)</p> <ul style="list-style-type: none"> Output from OUT3. When sensor power supply output is specified, OUT4 and OUT5 can not be added.
Event (alarm) output (Optional)	
Number of event Outputs	Up to 4 points (Event 1 to 4) <ul style="list-style-type: none"> Assignable to main output (OUT3) or aux.output (OUT4 to 5).
Event Types	Deviation high, Deviation low, Deviation high/low, Band, Process high, Process low, Set value high, Set value low, LBA <ul style="list-style-type: none"> LBA is assignable to event outputs 3 and 4.
Setting Range	<p>a) Deviation alarm:Event setting -input to +input span Event action differential gap : 0 to input span</p> <p>b) Process alarm/Set value Event setting: Same as input range Event action differential gap : 0 to input span</p> <p>c) LBA time setting: 0 to 7200 sec. (LBA is OFF when 0 is set) LBD dead band setting: 0 to input span</p> <ul style="list-style-type: none"> Each channel is independently settable w/ the2 channel.
Other Functions	<p>a) HOLD action (Valid for deviation/band/PV alarms only)</p> <p>b) Selection of event action for input abnormality.</p> <ul style="list-style-type: none"> Delay timer function is available depending on selection of output logic function.



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SPECIFICATIONS

Communications (Optional)	
Communication method	Based on RS-485/RS-422A/RS-232C, PROFIBUS, DeviceNet • Please specify at the time of ordering.
Protocol	a) ANSI X3.28 sub-category 2.5 A4 (RKC standard) b) MODBUS • Selectable
Communication speed	2400, 9600S, 19200, 38400 bps (selectable)
Bit configuration	a) RKC standard/ANSI protocol Start bit : 1, Data bit : 7 or 8 Parity bit : 1 (odd or even) or none. Stop bit : 1 or 2 b) MODBUS protocol Start bit : 1, Data bit : 8 (binary or byte data) Parity bit : 1 (odd or even) or none. Stop bit : 1 or 2 (Fixed to 1 bit for parity 1) • Selectable
Maximum Connection	31 units
Performance	
Measuring accuracy (See input code table)	• Cold junction temperature error : $\pm 1.0^{\circ}\text{C} (\pm 1.8^{\circ}\text{F})$ [at $23^{\circ}\text{C} \pm 2^{\circ}\text{C} (73.4^{\circ}\text{F} \pm 3.6^{\circ}\text{F})$], Within $\pm 1.5^{\circ}\text{C} (\pm 2.7^{\circ}\text{F})$ [Between 0 and 50°C (14 to 122°F)]
Insulation resistance	More than 500V DC 20MW between measured terminals and ground More than 500V DC 20MW between power terminals & ground More than 500V DC 20MW between measured terminals and power terminals
Dielectric voltage	More than 1000V AC 1 minute between measured terminals and ground More than 1500V AC 1 minute between power terminals and ground More than 2300V AC 1 minute between measured terminals and power terminals

INPUT ACCURACY TABLE

INPUT TYPE	MEASURING ACCURACY	RESOLUTION
Strain gauge type input	$\pm(0.1\%$ of Span)	1, 0.1, 0.01, 0.001 (Selectable)
K, J, T, E, PLII	Less than $-100^{\circ}\text{C} (-148^{\circ}\text{F})$: $\pm 1.0^{\circ}\text{C} (\pm 1.8^{\circ}\text{F})$ * -100 to $500^{\circ}\text{C} (-148$ to $932^{\circ}\text{F})$: $\pm 0.5^{\circ}\text{C} (\pm 0.9^{\circ}\text{F})$ More than $500^{\circ}\text{C} (932^{\circ}\text{F})$: $\pm(0.1\%$ of Reading+ 1digit)	1°C, 0.1°C 1°F, 0.1°F (Selectable)
N, S, R, W5Re/W26Re	Less than $-100^{\circ}\text{C} (-148^{\circ}\text{F})$: $\pm 2.0^{\circ}\text{C} (\pm 3.6^{\circ}\text{F})$ * -100 to $1000^{\circ}\text{C} (-58$ to $1832^{\circ}\text{F})$: $\pm 1.0^{\circ}\text{C} (\pm 1.8^{\circ}\text{F})$ More than $1000^{\circ}\text{C} (1832^{\circ}\text{F})$: $\pm(0.1\%$ of Reading+ 1digit)	
B	Less than $400^{\circ}\text{C} (752^{\circ}\text{F})$: $\pm 70.0^{\circ}\text{C} (\pm 126^{\circ}\text{F})$ * 400 to $1000^{\circ}\text{C} (752$ to $1832^{\circ}\text{F})$: $\pm 1.0^{\circ}\text{C} (\pm 1.8^{\circ}\text{F})$ More than $1000^{\circ}\text{C} (1832^{\circ}\text{F})$: $\pm(0.1\%$ of Reading+ 1digit)	
Pt100, JPt100	Less than $200^{\circ}\text{C} (\pm 392^{\circ}\text{F})$: $\pm 0.2^{\circ}\text{C} (\pm 0.4^{\circ}\text{F})$ More than $200^{\circ}\text{C} (\pm 392^{\circ}\text{F})$: $\pm(0.1\%$ of Reading+ 1digit)	1°C, 0.1°C, 0.01°C, 1°F, 0.1°F, 0.01°F, (Selectable)
DC voltage, DC current	$\pm(0.1\%$ of Span)	1, 0.1, 0.01, 0.001, 0.0001 (Programmable)

* Cold junction temperature compensation error : $\pm 1.0^{\circ}\text{C} (\pm 1.8^{\circ}\text{F})$ [at $23^{\circ}\text{C} \pm 2^{\circ}\text{C} (73.4^{\circ}\text{F} \pm 3.6^{\circ}\text{F})$]
Within $\pm 1.5^{\circ}\text{C} (\pm 2.7^{\circ}\text{F})$ [Between 0 and 50°C (14 to 122°F)]

Analog retransmission output (Optional)	
Number of outputs	Up to 3 points • Functions are assignable to OUT1 to OUT3.
Output function	Measured value (PV), Setting value (SV) Manipulated value (MV), Deviation value (DEV)
Scaling range	a) Measured value (PV): Same as input range b) Setting value (SV): Same as input range c) Manipulated value (MV): -5.0 to 105.0% d) Deviation value (DEV): -span to +span (PV-SV)
Infrared Port Communication (Standard)	
Infrared Port Support OS CPU	IrDA Standard Windows Pocket PC 2002 Strong RAM PXA250 (X scale) will be available soon. 20 to 30cm (depending on the environmental conditions)
Communication distance	(depending on the environmental conditions)
General Specifications	
Supply voltage	a) 90 to 264V AC [including supply voltage variation] (50/60Hz) [Rating: 100-240V AC] b) 24V AC $\pm 10\%$ [including supply voltage variation] (50/60Hz) [Rating 24V AC] c) 24V DC $\pm 10\%$ [including supply voltage variation] [Rating 24V DC]
Power consumption	a) 100-240V AC type HA930: 20.4VA (240V), 17.5VA (100V) HA430: 22.5VA (240V), 16.5VA (100V) b) 24V DC/AC types HA930: 16.0VA (24V AC), 470mA (24V DC) HA430: 15.0VA (24V AC), 430mA (24V DC)
Power failure	A power failure of 20msec or less will not affect the control action. If power failure of more than 20msec occurs, controller will restart. HOT start (1,2) or COLD start (selectable).
Memory backup	Backed up by non-volatile memory. (Data retaining period : Approx.10 years, Number of writing : Approx.100,000 times, • Depending on storage and operating conditions.
Operating environment	-10 to 50°C (14 to 122°F) 5 to 95%RH (No condensing) Absolute sensitivity: Max. W.C 29g/m3 dry air 101.3kPa
Weight	HA930 : 460g / HA430 : 360g
External dimensions	See external dimensions
Operating environment	Free from corrosive & flammable gas & dust. Free from external noise, vibration, shock & exposure to direct sunlight.

• Event output logic selection allocation table

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5
A	CH1 control output	Event 3,4 (Energized)	Event 2 (Energized)	Event 1 (Energized)	FAIL (De-energized)
B	CH1 control output	Event 3,4 (De-energized)	Event 2 (De-energized)	Event 1 (De-energized)	FAIL (De-energized)
C	CH1 control output	CH2 control output	Event 4 (Energized)	Event 3 (Energized)	Event 1,2 (Energized)
D	CH1 control output	CH2 control output	Event 4 (De-energized)	Event 3 (De-energized)	Event 1,2 (De-energized)
E	CH1 control output	CH2 control output	Event 3,4 (Energized)	Event 2 (Energized)	Event 1 (Energized)
F	CH1 control output	CH2 control output	Event 3,4 (De-energized)	Event 2 (De-energized)	Event 1 (De-energized)
G	CH1 control output	Event 4 (Energized)	Event 3 (Energized)	Event 2 (Energized)	Event 1 (Energized)

* An output logic becomes OR output when two or more output functions are assigned to one output.

* When three analog outputs are selected, the analog outputs are automatically assigned to OUT1 through OUT3 and it has priority over the output logic selection.



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	DI1	DI2	DI3	DI4	DI5
A	Memory area selection (1 to 16)				Area set
B	Memory area selection (1 to 8)			Area set	Run/Stop
C	Memory area selection (1 to 8)			Area set	Remote/Local
D	Memory area selection (1 to 8)			Area set	Remote/Local
E	Memory area selection (1 to 8)			Area set	Peak/Bottom hold reset
F	Memory area selection (1 to 8)			Event 2 (De-energized)	Interlock release
G	Memory area selection (1 to 4)		Area set	Run/Stop	Auto/Manual
H	Memory area selection (1 to 4)		Area set	Run/Stop	Remote/Local
I	Memory area selection (1 to 4)		Area set	Remote/Local	Auto/Manual
J	Memory area selection (1 to 4)		Area set	Peak/Bottom hold reset	Interlock release
K	Auto/Manual	Run/Stop	Remote/Local	Peak/Bottom hold reset	Interlock release
L	Auto/Manual	CH1 manual output down	CH1 manual output up	CH1 manual output 0% reset	Run/Stop
M	Auto/Manual	CH2 manual output down	CH2 manual output up	CH2 manual output 0% reset	Run/Stop

Compliance with Standards

CE Mark, UL Recognized, CSA Certified, C-Tick mark
• Event input logic selection functional allocation table

Use the following codes to identify desired item.
Example: 1290 - H 0 - M N - 3 * N N - 1 1 - A / Y

1290 - - - * - - / Y
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

1. INPUT 1 TYPE

H: Pressure sensor CZ-100P, CZ-200P (RKC product)
X: Pressure sensor CZ-GP100 (RKC product)

2. INPUT 2 TYPE

0: None

K: K thermocouple

J: J thermocouple

T: T thermocouple

S: S thermocouple

R: R thermocouple

A: PLII thermocouple

N: N thermocouple

E: E thermocouple

B: B thermocouple

W: W5Re/W26Re

D: RTD (3-wire) [Factory set value: Pt100]

3: Voltage (low) input group (0 to 10 mV, 0 to 100 mV, 0 to 1 V) [Factory set value: 0 to 1 V]

6: Voltage (high) input group (0 to 5 V, 1 to 5 V, 0 to 10 V) [Factory set value: 1 to 5 V]

8: Current input group (0 to 20 mA, 4 to 20 mA) [Factory set value: 4 to 20 mA]

Non-isolated type (for remote input)

G: Voltage (low) input group (0 to 10 mV, 0 to 100 mV, 0 to 1 V) [Factory set value: 0 to 1 V]

V: Voltage (high) input group (0 to 5 V, 1 to 5 V, 0 to 10 V) [Factory set value: 1 to 5 V]

Y: Current input group (0 to 20 mA, 4 to 20 mA) [Factory set value: 4 to 20 mA]

3. OUTPUT 1 (OUT1)

N: None

T: Triac output

6: Voltage output (1 to 5 V DC)

M: Relay contact output

4: Voltage output (0 to 5 V DC)

7: Current output (0 to 20 mA DC)

V: Voltage pulse output

5: Voltage output (0 to 10 V DC)

8: Current output (4 to 20 mA DC)

4. OUTPUT 2 (OUT2)

N: None

T: Triac output

6: Voltage output (1 to 5 V DC)

M: Relay contact output

4: Voltage output (0 to 5 V DC)

7: Current output (0 to 20 mA DC)

V: Voltage pulse output

5: Voltage output (0 to 10 V DC)

8: Current output (4 to 20 mA DC)

5. POWER SUPPLY VOLTAGE

3: 24 V AC/DC

4: 100 to 240 V AC

6. OUTPUT 3 (OUT3)

N: None

T: Triac output

6: Voltage output (1 to 5 V DC)

M: Relay contact output

4: Voltage output (0 to 5 V DC)

7: Current output (0 to 20 mA DC)

V: Voltage pulse output

5: Voltage output (0 to 10 V DC)

8: Current output (4 to 20 mA DC)

P: Sensor power supply (OUT4 and OUT5 code becomes "N")

7. OUTPUT 4 (OUT4) / OUTPUT 5 (OUT5)

N: None

1: OUT4 (Relay contact output), OUT5 (No output)

2: OUT4 (Relay contact output), OUT5 (Relay contact output)

8. EVENT INPUT (OPTION)

N: None

1: Event input [Dry contact input (5 points): for memory area transfer, operation mode transfers, etc.]

9. COMMUNICATION (OPTION)

N: None

5: RS-485 (RKC communication) **8:** RS-232C (Modbus)

1: RS-232C (RKC communication) **6:** RS-485 (Modbus)

A: DeviceNet

4: RS-422A (RKC communication) **7:** RS-422A (Modbus)

B: PROFIBUS

10. CASE COLOR

N: White

A: Black

11. INSTRUMENT VERSION

Y: Version symbol