

MODEL 921G, 922G

1/4 and 1/8 DIN Microprocessor-Based Controllers

FEATURES

AUTO-TUNE

On demand AUTO-TUNE automatically adjusts PID parameters to optimize control even in the most demanding applications.

OVERSHOOT SUPPRESSION

Using a fuzzy logic algorithm, the “Super Control” overshoot suppression function eliminates initial overshoot as well as overshoot due to process upsets and setpoint changes.

DUAL DIGITAL DISPLAYS

Setpoint and process variables uses easy to read, four-digit, red LED displays. The 921G display has a large .79 in. height. Displays also indicates menu parameters, symbols, and error codes.

ALARMS

Up to three relays can be configured for 13 alarm functions. If the heat/cool option is selected, only two relays are available.

SET POINT RAMP

Allows setpoint changes without upsetting or “bumping” the process. Ramp slope is configurable.

MULTIPLE PID SETPOINTS

Configurable for up to four setpoints, each with its own PID values, or a single setpoint with zoned PID values.

UNIVERSAL POWER SUPPLY

90 to 264 Vac, 50/60 Hz.

AUTO/MANUAL

Manual operation, for either the heat or cool outputs, can be selected to fix the output at any value between 0-100%. Balanceless, bumpless transfer.

PROTECTION

Internal power fuse for extra protection

SECURITY

Operator entered values are password protected against unauthorized adjustment.

LOOP POWER SUPPLY

DC power supply for powering two wire transmitters.

RETRANSMITTED OUTPUT

Analog retransmission of either the process variable, setpoint or control output.

Note: Either loop power supply or retransmitted output is available, but not both.

SENSOR FAILURE

An open sensor causes the controller output to shift to a preselected value.

HEAT/COOL CONTROL (OPTION)

For applications requiring heating and cooling functions. Proportioning and overlap features are standard.

SINGLE OR THREE PHASE HEATER BREAK ALARM (OPTION)

Monitors the load via an external current transformer and signals when the current falls below a preset value.

COMMUNICATIONS (OPTION)

An RS-485 interface permits connection to PCs, graphics panel, PLCs or other 921G/922G controllers.

AGENCY APPROVALS

UL recognized, CSA certified

CE MARK

CE compliant

WARRANTY

3 years

SPECIFICATIONS

INPUT TYPE, MEASUREMENT RANGE AND MEASUREMENT ACCURACY

Input	Range ° F	Range ° C	Accuracy
Thermocouple K	-300 to 2500° F	-200 to 1370° C	At or above 32° F: ±0.1% ±1 digit of FS Below 32° F: ±0.1% ±1 digit of FS
	0 to 2300° F	-199.9 to 999.9° C	
	-199.9 to 999.9° F	-199.9 to 500.0° C	
J	-300 to 2300° F	-199.9 to 999.9° C	At or above 752° F: ±0.15% ±1 digit of FS Below 752° F: ±5% ±1 digit of FS
T	-300 to 750° F	-199.9 to 400.0° C	
	-199.0 to 750° F	0.0 to 400.0° C	
B	32 to 3300° F	0 to 1800° C	±0.15% ±1 digit of FS
S	32 to 3100° F	0 to 1700° C	
R	32 to 3100° F	0 to 1700° C	±0.2% ±1 digit of FS
N	-300 to 2400° F	-200 to 1300° C	
E L (DIN)	-300 to 1800° F	-199.9 to 999.9° C	At or above 32° F: ±0.1% ±1 digit of FS Below 32° F: ±0.1% ±1 digit of FS
	-300 to 1300° F	-199.9 to 900.0° C	
U (DIN)	-300 to 750° F	-199.9 to 400.0° C	At or above 1472° F: ±0.5% ±1 digit of FS Below 1472° F: not guaranteed
	-199.9 to 750° F	0.0 to 400.0° C	
W (DIN) Platinel 2	32 to 4200° F	0 to 2300° C	±0.2% ±1 digit of FS
	32 to 2500° F	0 to 1390° C	
PR20-40	32 to 3400° F	0 to 1900° C	±0.1% ±1 digit of FS
W97Re3-W75Re25	32 to 3600° F	0 to 2000° C	
RTD JPt100	-199.9 to 999.9° F	-199.9 to 500.0° C	±0.1% ±1 digit of FS
	-199.9 to 300.0° F	-150.0 to 150.0° C	
Pt100	-300 to 1180° F	-199.9 to 640.0° C	±0.2% ±1 digit of FS
	-199.9 to 999.9° F	-199.9 to 500.0° C	
	-199.0 to 300.0° F	-150.0 to 150.0° C	
DC Voltage -10.00 to 20.00mV 0.0 to 100.0mV 0.400 to 2.000V 1.000 to 5.000V 0.000 to 2.000V 0.00 to 10.00V	Display range: -1999 to 9999		±0.1% ±1 digit of FS

ADDITIONAL INPUT SPECIFICATIONS

Input sampling period:

250 ms

Input resistance:

1MΩ or more for TC/mV

Approximately 1MΩ for DC voltage

Allowable signal source resistance

TC/mV: less than 250Ω

DC voltage: less than 2kΩ

Allowable RTD wire resistance:

150Ω/wire; 10Ω/wire with -199.9 to 300.0°F range

Allowable input Voltage:

TC, mV, RTD: ±10V

DC voltage: ±20V

Noise rejection ratio:

Normal mode: 40 dB, 50/60 Hz

Common mode: 120 dB, 50/60 Hz

Cold junction compensation error:

±1.8°F (59 to 95°F)

±2.7°F (32 to 59°F, 95 to 122°F)

Applicable standards:

JIS, IEC, or DIN for TC and RTD

Sensor burnout:

Upscale or downscale. When maximum value is reached, output will revert to a preselected value.

OUTPUTS

Control Output

Relay	5A, 250Vac, 30Vdc, resistive, SPDT
Voltage pulse	On voltage: 12Vdc or less Off voltage: 0.1 Vdc or less Load resistance: 600Ω or less
Current	4 to 20 mA Load resistance: 600Ω or less Output accuracy: ±0.3% of span

Alarm output

Relay	1A, 250Vac, 30Vdc, SPST, resistive, normally open contacts
-------	--

Retransmitted PV

Signal	4 to 20mA
Load resistance	600Ω or less
Accuracy	±0.3% of span

CONTROL MODES

Primary setpoint	On-off, PID continuous, PID time-proportioning, heat/cool
Primary set point may have up to four different PID settings based upon PV value	
Alarm	On-off
Manual mode	0-100%

CONTROL ADJUSTMENTS

Proportional band	0.1 to 999.9%
Integral time	Off, 1 to 6000 seconds
Derivative time	Off, 1 to 6000 seconds
Manual reset	-5.0 to 105.0% of output
On-off hysteresis	0.0 to 100.0% of range (0.1 to 0.5% for heat/cool control)
Cycle time	1-1000 sec
Heat/cool deadband	-100.0 to 50.0%
Anti-reset windup	50.0 to 200.0%
Setpoint ramp slope	Off, 0.0 to 100.0%/hour or min
Control action	Selectable: direct or reverse; for heat/cool control it's fixed: heat output is reverse, cool output is direct
Sensor burnout preset output	-5.0 to 105.0% of output for heat control; 0.0 to 105.0% output for cool control. (If heat/cool is used, the heat preset value is 0.0 to 105.0%)
Output limits	High limit: up to 105.0% of output Low limit: down to -5.0% of output

POWER SUPPLY

Universal supply	100 to 240 Vac ±10%, 50/60 Hz
Power consumption	20 VA, 6.0 W maximum
Memory backup	Non-volatile memory

ALARMS

Types:

PV high limit and PV low limit, deviation high limit and deviation low limit, deviation high/low limit, setpoint high limit, setpoint low limit, output high limit, output low limit, heater break, sensor ground, self-diagnosis, and FAIL

Number of alarm outputs:

Three; if heat/cool control is selected, only two alarm points are available

Settings ranges:

PV/setpoint: -100.0 to 100.0% of instrument range
Deviation: -100.0 to 100.0% of instrument range
Output: -5.0 to 105.0% of output value
Alarm hysteresis: 0.0 to 100.0% of instrument range

Heater break alarm:

Setting range	0.0 to 50.0A
Setting accuracy	±5% of span ±1 digit
Detection resolution	0.5A
Time for alarm to activate	0.2 seconds, min

Sensor ground alarm:

Input burnout, A/D conversion error, thermocouple reference junction compensation error.

FAIL output:

Software and/or hardware failure. When in FAIL, the control output, retransmitted output and alarm output become 0% or OFF.

DISPLAY

PV display	4 digit, 7 segment red LED
Setpoint display	4 digit, 7 segment red LED
Character height	921G 922G
PV	0.79" .55"
Setpoint	0.37" .43"

Status indicators	3 alarm LED lamps: AL1, AL2, AL3 3 setpoint # indicator LED lamps: SP2, SP3, SP4 (SP1 is default) MAN operation mode LED lamp
-------------------	---

TRANSMITTER LOOP POWER SUPPLY

Supply voltage	15Vdc
Max supply current	21mA

SYSTEM CALIBRATION

Bias addition	-100.0 to 100.0% of range
---------------	---------------------------

INPUT FILTER

Time constant	Off, 1 to 120 seconds
---------------	-----------------------

COMMUNICATION INTERFACE SPECIFICATIONS

Protocol	Computer link or ladder communication
Standards	EIA RS485
Max. # of units	31
Max. distance	3,900 feet
Scheme	Two-wire half duplex or four-wire half-duplex, start-stop synchronization, non-procedural
Speed	600, 1200, 2400, 4800, 9600 bps

ENVIRONMENTAL SPECIFICATIONS

Normal operating conditions	
Ambient Temperature	32 to 122°F, operating -13 to 158°F storage
Humidity (noncondensing)	20 to 90% RH, operating 5 to 95% RH, storage
Magnetic field	400 AT/m or less

CONSTRUCTION AND INSTALLATION

Case	ABS resin and polycarbonate, black
Front panel	Drip proof (IP65 compatible) NEMA 4X
Weight	Approximately 1.54 lb.
Mounting	Flush panel mounting
Mounting attitude	Up to 30° above the horizontal. No downward tilting allowed

AGENCY APPROVALS

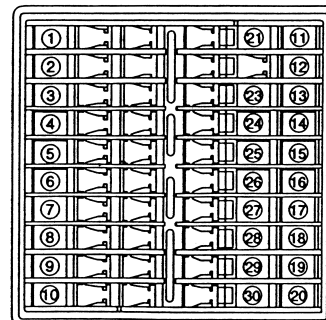
UL recognized	FILE #E155520(M)
CSA certified	FILE #074868
CE Compliant	Designed to comply with EN55011, Class A Group 1 (Emission) and EN50082-2, 1995 (Immunity) specifications.

TERMINAL DIAGRAM

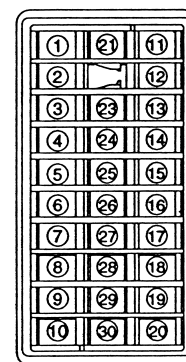
TERMINAL NUMBERS

Terminal number	Signal Description
1	Control output or heating side control output (relay contact) NC
2	Control output or heating side control output (relay contact) NC
3	Control output or heating side control output (relay contact) Common
4	Alarm contact output 3 or cooling side control output, relay output
5	Alarm contact output 2, relay output
6	Alarm contact output 1, relay output
7	Alarm contact output Common
8	Power Supply L
9	Power Supply N
10	Ground
11	PV input terminal A(RTD)
12	PV input terminal +(TC, mV, V) b(RTD)
13	PV input terminal -(TC, mV, V) B(RTD)
14	Transmission output or sensor power supply/cooling side control output (current/voltage pulse) +
15	Transmission output or sensor power supply/cooling side control output (current/voltage pulse) -
16	Control output or heating side control output (current/voltage pulse) +
17	Control output or heating side control output (current/voltage pulse) -
18	External contact input 2
19	External contact input 1
20	External contact input common (input terminals 18 and 19)
21	Reserved (not yet used)
22	Reserved (not yet used)
23	RS485 communication SDB(+)
24	RS485 communication SDA(-)
25	RS485 communication RDB(+)
26	RS485 communication RDA(-)
27	RS485 communication SG
28	Heater disconnection detector CT2
29	Heater disconnection detector CT1
30	Heater disconnection detector common

Terminal diagram

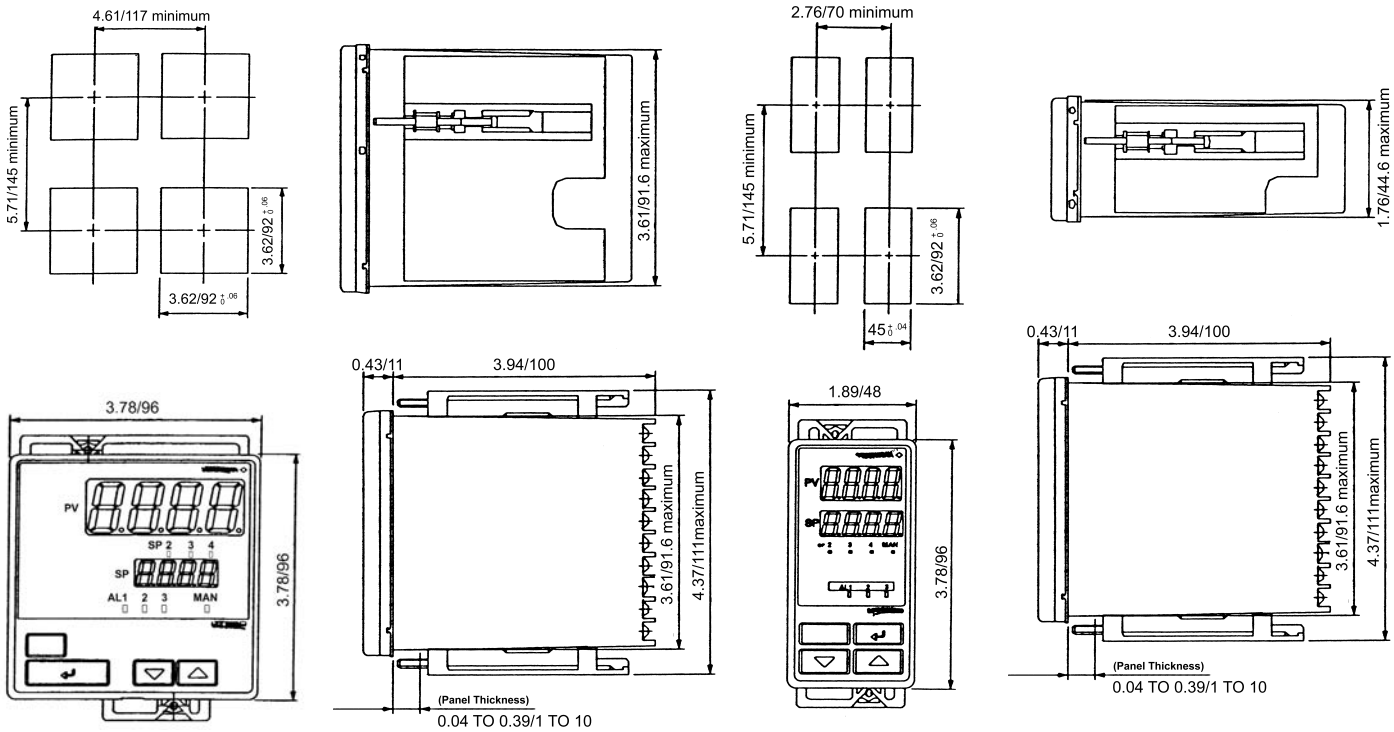


1/4 DIN



1/8 DIN

OUTLINE DIMENSIONS AND PANEL CUTOUT/SPACING



HOW TO ORDER

Use chart below to determine catalog number.

92 - X G 1 2 X 2 X - 1 0 0

MODEL

- 1 - 1/4 DIN controller
- 2 - 1/8 DIN controller

CONTROLLER TYPE^{1,2}

- 1 - Heat
- 2 - Heat/Cool

OPTIONS

- 0 - none
- 2 - RS485 Communications and heater break
- 3 - Heater break

¹If Heat/cool option is chosen, the cool output will be either current or voltage pulse. Neither the PV retransmission nor loop power supply feature is available.

²If Heat/Cool option is chosen, only two alarms are available.



KIDDE-FENWAL, INC.
400 MAIN STREET, ASHLAND, MA 01721
TEL: (508) 881-2000 FAX: (508) 881-6729
www.fenwalcontrols.com

The literature is provided for informational purposes only. KIDDE-FENWAL, INC. assumes no responsibility for the products suitability for a particular application. The product must be properly applied to perform as described herein. If you need more information on this product, or if you have a question, contact KIDDE-FENWAL, INC., Ashland, MA 01721 (508) 881-2000.