C930-**C22**

C930-**C62**

C930-**C82**

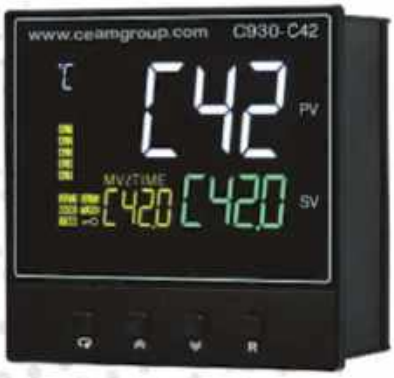
High Performance Process

& Temperature Controllers

C930-**C83**

C930-**C72**

C930-**C42**



C930-**R22**

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FEATURES

01. Multi Color LCD Display	02. High Accuracy 18 Bit A-D Input and 15 Bit D-A Output
03. 200 msec Sampling Rate	04. Universal Inputs of Thermocouple, RTD, mA, VDC
05. Fuzzy + PID Control and Auto-Tuning	06. Soft-Start Function
07. Possibility of both RS485 & Analog Retransmission	08. Ramp & Soak Profiler
09. CT Inputs for Heater-Break Detection	10. Bumpless Transfer
11. Remote Setpoint and Up to 6 Event Inputs	12. Bidirectional Menu Navigation
13. Lockout Protection	14. Approvals: UL, cUL, CE, RoHS, REACH, WEEE

MODEL SPECIFICATIONS


C930-**C22**


C930-**C62**


C930-**C82**


C930-**C83**


C930-**C72**


C930-**C42**


C930-**R22**

Power Supply	90 to 250 VAC, 47–63 Hz; 11 to 40 VDC / 20 to 28 VAC, 47–63 Hz
Power Consumption	C930 - C22/R22: 8VA, 4W maximum, C930 - C62: 10VA, 5W maximum, C930 - C72/C82/C83/C42: 12VA, 6W maximum

Signal Input	C930-C22	C930-C62	C930-C82	C930-C83	C930-C72	C930-C42	C930-R22
Type	Termocouple (J, K, T, E, B, R, S, N, L, U, P, C, D), ETD (Pt100 (DIN), P100 (JIS)), Current (mA), Voltage (V, mV)						
Resolution	18 Bits						
Sampling Rate	5 Times / Second (200 msec)						
Maximum Rating	-2 VDC minimum, 12 VDC maximum						

Input Characteristics	Type	Range	Accuracy @ 25℃	Input Impedance
	J	-120 ℃ to 1,000.0 ℃ (-184 ℉ to 1,832 ℉)	± 2℃	2.2 MΩ
	K	-200 ℃ to 1,370.0 ℃ (-328 ℉ to 2,498 ℉)	± 2℃	2.2 MΩ
	T	-250 ℃ to 400.0 ℃ (-418 ℉ to 752 ℉)	± 2℃	2.2 MΩ
	E	-100 ℃ to 900.0 ℃ (-148 ℉ to 1,652 ℉)	± 2℃	2.2 MΩ
	B	0 ℃ to 1,820.0 ℃ (32 ℉ to 3,308 ℉)	± 2℃ (200℃ to 1,800 ℃)	2.2 MΩ
	R	0 ℃ to 1,767.8 ℃ (32 ℉ to 3,214 ℉)	± 2℃	2.2 MΩ
	S	0 ℃ to 1,767.8 ℃ (32 ℉ to 3,214 ℉)	± 2℃	2.2 MΩ
	N	-250 ℃ to 1,300.0 ℃ (-418 ℉ to 2,372 ℉)	± 2℃	2.2 MΩ
	L	-200 ℃ to 900.0 ℃ (-328 ℉ to 1,652 ℉)	± 2℃	2.2 MΩ
	U	-200 ℃ to 600.0 ℃ (-328 ℉ to 1,112 ℉)	± 2℃	2.2 MΩ
	P	0 ℃ to 1,395.0 ℃ (32 ℉ to 2,543 ℉)	± 2℃	2.2 MΩ
	C	0 ℃ to 2,300.0 ℃ (32 ℉ to 4,172 ℉)	± 2℃	2.2 MΩ
	D	0 ℃ to 2,300.0 ℃ (32 ℉ to 4,172 ℉)	± 2℃	2.2 MΩ
	PT100 (DIN)	-200 ℃ to 850.0 ℃ (-328 ℉ to 1,562 ℉)	± 0.4℃	1.3 KΩ
	PT100 (JIS)	-200 ℃ to 600.0 ℃ (-328 ℉ to 1,112 ℉)	± 0.4℃	1.3 KΩ
	mA	-3 mA to 27 mA	±0.05 %	2.5 Ω
	V	-1.3 VDC to 11.5VDC	± 0.05 %	1.5 MΩ
	mV	0 to 50 mV	± 0.05 %	2.2 MΩ

Temperature Effects	1.5 μV /℃ for all inputs except mA input, 3.0 μV /℃ for mA
Sensor Lead Resistance Effects	Thermocouple：0.2 μV / Ω; 3- wire RTD：2.6℃ / Ω of **Difference of Resistance of two leads** 2- wire RTD：2.6 ℃ / Ω of Sum of Resistance of two leads
Burn-out Current	200 nA
Common Mode Rejection Ratio (CMRR)	120 dB
Normal Mode Rejection Ratio (NMRR)	55 dB
Sensor Break Detection	Sensor open for Thermocouple and RTD inputs, sensor short for RTD input, below 1 mA for 4 – 20 mA input, below 0.25 VDC for 1 – 5 VDC input, not available for other inputs
Sensor Break Responding Time	Within 4 seconds for Thermocouple and RTD inputs, 0.1 second for 4 – 20 mA and 1 – 5 VDC inputs

| MODEL |


C930-**C22**


C930-**C62**


C930-**C82**


C930-**C83**


C930-**C72**


C930-**C42**


C930-**R22**

Remote Set Point Input	C930-C22	C930-C62	C930-C82	C930-C83	C930-C72	C930-C42	C930-R22
Type	Linear Current, Linear Voltage						
Range	-3 mA to 27 mA, -1.3 VDC to 11.5 VDC						
Accuracy	± 0.05 %						
Remote Set Point Option	Not Available	Not Available	Available	Available	Available	Available	Not Available
Input Impedance	Current：2.5 Ω, Voltage：1.5 MΩ						
Resolution	18 Bits						
Sampling Rate	1.66 Times / Second						
Maximum Rating	280 mA maximum for Current Input, 12 VDC maximum for Voltage Input						
Temperature **Effect**	± 1.5 μV /℃ for Voltage Input, ± 3.0 μV /℃ for Current Input						
Sensor Break Detection	Below 1 mA for 4 – 20 mA input, below 0.25 VDC for 1 – 5 VDC input, not available for other inputs						
Sensor Break Responding Time	0.1 Seconds						
Event Input							
Number of Event Input	1	2	6	6	2	6	2
Logic Low	-10 VDC minimum, 0.8 VDC maximum						
Logic High	2 VDC minimum, 10 VDC maximum						
Function	Refer to user manual						
CT Input							
CT Type	CT98-1						
Accuracy	± 5 % of Full Scale Reading, ± 1 digit maximum						
Input Impedance	294 Ω						
Measurement Range	0 to 50 A VAC						
Output of CT	0 to 5 VDC						
CT Mounting	Screw Mounting						
Sampling Rate	1 Time / Second						
Output 1 / Output 2							
Type	Relay, Pulsed Voltage, Linear Voltage and Linear Current						
Relay Rating	2 A, 240 V AC, 200,000 Life Cycles for Resistive Load						
Pulsed Voltage	Source Voltage 5 VDC, Current Limiting Resistance 66 Ω						
Linear Output Resolution	15 Bits						
Linear Output Regulation	0.02 % for full load change						
Linear Output Settling Time	0.1 Second (Stable to 99.9 %)						
Linear Output Ranges	0 - 22.2mA (0 - 20mA / 4 - 20mA), 0 - 5.55VDC (0 - 5VDC, 1 - 5VDC), 0 - 11VDC (0 - 10VDC)						
Isolation Breakdown Voltage	1,000 V AC						
Temperature **Effect**	± 0.01% of Span / ℃						
Load Capacity of Linear Output	Linear Current：500 Ω maximum, Linear Voltage：10 KΩ minimum						
Alarm							
Relay Type	Form A						
Maximum Rating	2 A, 240 V AC, 200,000 Life Cycles for Resistive Load						
Alarm Function	Dwell Timer, Deviation Low, Deviation High, Deviation Band Low, Deviation Band High, Process High, Process Low, Range Low, Range High, Range High Low, Heater Break, Heater Short, Profile End, Profile Holdback						
Alarm Mode	Latching, Holding, Normal, Latching / Holding, Set Point Holding						
Dwell Timer	0.1 to 4,553.6 Minutes						
Data Communication							
Interface	RS-485						
Protocol	Modbus RTU (Slave Mode)						
Address	1 to 247						
Baud Rate	2.8 KBPS to 115.2 KBPS						
Parity Bit	None, Even or Odd						
Stop Bit	1 or 2 Bits						
Data Length	7 or 8 Bits						
Communication Buffer	160 Bytes						
Analog Retransmission							
Output Signal	4 – 20 mA, 0 – 20 mA, 0 – 10 VDC						
Resolution	15 Bits						
Accuracy	± 0.05 % of Span ± 0.0025% ℃						
Load Resistance	0 to 500 Ω for Current Output, 10 KΩ minimum for Voltage Output						
Output Regulation	0.01 % for full load change						
Output Setting Time	0.1 Second (Stable to 99.9 %)						
Isolation Breakdown	1,000 VAC minimum						
Integral Linearity Error	±0.005 % of Span						

Link C930 on Sensorstore

SCOPRI

| MODEL |


C930-**C22**


C930-**C62**


C930-**C82**


C930-**C83**


C930-**C72**


C930-**C42**


C930-**R22**

Analog Retransmission	C930-C22	C930-C62	C930-C82	C930-C83	C930-C72	C930-C42	C930-R22
Temperature **Effect**	±0.0025 % of Span / °C						
Saturation Low	0 mA or 0 VDC						
Saturation High	22.2 mA or 5.55 VDC,11.1 VDC minimum						
Linear Output Range	0 – 22.2mA (0 – 20mA / 4 – 20mA), 0 – 5.55VDC (0 – 5VDC / 1 – 5VDC), 0 – 11.1VDC (0 – 10VDC)						
User Interface							
Keypad	4 Keys						
Display Type	4 Digit LCD Display						
Number of Display	2	2	3	3	3	3	2
Upper Display Size	0.4” (10 mm)	0.58” (15 mm)	0.7” (17.7 mm)	0.7” (17.7 mm)	0.58” (15 mm)	0.98” (25 mm)	0.31” (8 mm)
Lower Display Size	0.19” (4.8 mm)	0.3” (7.8 mm)	0.4” (11.2 mm)	0.4” (11.2 mm)	0.32” (8.3 mm)	0.55” (14 mm)	0.25” (6.5 mm)
Programming Port							
Interface	Micro USB						
PC Communication Function	Parameter Configuration and Firmware Upgrade						
Control Mode							
Output 1	Reverse (Heating) or Direct (Cooling) Action						
Output 2	PID cooling control, Cooling P band 50 ~ 300 % of PB, Dead band -36.0 ~ 36.0 % of PB						
ON-OFF	0.1~50.0℃(0.1~ 90.0℉) hysteresis control (P band = 0)						
P or PD	0 –100.0 % **offset** adjustment						
PID	Fuzzy logic modified Proportional band 0.1~500.0℃(0.1~900.0℉), Integral time 0 3,600 Seconds, Derivative time z-360 .0 Seconds						
Cycle Time	0.1 to 90.0 Seconds						
Manual Control	Heat (MV1) and Cool (MV2)						
Auto-tuning	Cold Start and Warm Start						
Failure Mode	Auto transfer to manual mode while sensor break or A –D Converter dam age						
Ramping Control	0~500.0℃ (0~900.0℉) / Minute or 0~500.0℃ (0~900.0℉) / Hour Ramp Rate						
Digital Filter							
Function	First Order						
Time Constant	0, 0.2, 0.5, 1, 2, 5, 10, 20, 30, 60 Seconds Programmable						
Profiler							
Availability	No	No	Option	Option	Option	Option	No
No of Programs	N / A	N / A	4 / 2 / 1	4 / 2 / 1	4 / 2 / 1	4 / 2 / 1	N / A
Number of Segments / Program	N / A	N / A	4 / 8 / 16	4 / 8 / 16	4 / 8 / 16	4 / 8 / 16	N / A

Environmental and Physical Specifications							
Operating Temperature	-10℃ to 50℃						
Storage Temperature	-40℃ to 60℃						
Humidity	0 to 90 % RH (Non - Condensing)						
Altitude	2,000 Meters maximum						
Pollution	Degree II						
Insulation Resistance	20 MΩ minimum (@ 500 VDC)						
Dielectric Strength	2,000 V AC, 50 / 60 Hz for 1 Minute						
Vibration Resistance	10 to 55 Hz, 10 m / s^2 for 2 Hours						
Shock Resistance	200 m / s^2 (20 g)						
Molding	Flame Retardant Polycarbonate						
Mounting	Panel	Panel	Panel	Panel	Panel	Panel	DIN Rail
DIN Size	1/32	1/16	1/8	1/8	9/64	1/4	
Dimensions (W* H* D) (mm)	48* 24* 92	48* 48*59	48* 96* 59	96* 48* 59	72* 72* 59	96* 96* 59	22.5* 96* 83
Depth Behind Panel (mm)	84	50	50	50	50	50	-
Cut Out Dimensions (mm)	45* 22.2	45* 45	45* 92	92* 45	68* 68	92* 92	-
Weight (grams)	120	160	220	220	190	290	160
Approval Standards							
Safety	UL61010-1, CSA 22.2 No.61010-1-12, EN61010-1 (IEC1010-1), RoHS, REACH						
Protective Class	IP50 for panel, IP20 for terminals and housing, all indoor use						
EMC	EN61326						

ORDERING CODE

C930-**C22**

C930-**R22**

POWER IMPUT

4 : 90 to 250VAC , 47 – 63Hz

5 : 11 to 40VDC / 20 to 28VAC, 47– 63Hz

OUTPUT 1

1 : Form A Relay

2 : SSRD, 5 V D C /30mA

3 : Isolated 4 – 20 mA / 0 – 20 mA (OM98-3)

5 : Isolated 0 – 10 VDC (OM98-5)

C : SSRD, 14 VDC / 40 mA (OM94-7)

OUTPUT 2 / ALARM 1

0 : None

1 : Form A Relay

2 : SSRD, 5 VDC / 30 mA

3 : Isolated 4 – 20 mA / 0 – 20 mA (OM98-3)

5 : Isolated 0 – 10 VDC (OM98-5)

C : SSRD, 14 VDC / 40 mA (OM94-7)

OPTION 1

0 : None

1 : RS-485

2 : 1 Event Input (EI1)

3 : 1 CT Input (CT1)

OPTION 2

0 : None

1 : Retransmit 4 – 20mA / 0– 20mA (OM98-3)

2 : Retransmit 0 – 10VDC (OM98-5)

3 : Alarm 2 (Form A relay)

4 : 1 Event Input (EI2 only for C930 - R22)

5 : 1 CT Input (CT2 only for C930 - R22)

ACCESSORIES FOR ALL MODELS

OM94-7 = 14 VDC / 40 mA SSR Drive Module

OM98-3 = Isolated 4 – 20 mA / 0 – 20 mA Analog Output Module

OM98-5 = Isolated 0 – 10 VDC Analog Output Module

CM98-3 = Isolated 4 – 20 mA / 0 – 20 mA Retransmission Module for all models except C930 - C22 & C930 - R22

CM98-5 = Isolated 0 – 10 VDC Retransmission Module for all models except C930 - C22 & C930 - R22

CT98-1 = Current Transformer 0-50A

PA98-1 = USB Programming Adaptor

CC98-1 = Programming Port Cable (1.5 M)

CEAM-BCSET= Configuration Software

RELATED PRODUCTS

D9019 = Ceam Din Rail RS485 to Ethernet Gateway Network

C930-C62 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

POWER IMPUT

4 : 90 to 250VAC , 47 – 63Hz

5 : 11 to 40VDC / 20 to 28VAC, 47– 63Hz

OUTPUT 1

1 : Form A Relay

2 : SSRD, 5 V D C /30mA

3 : Isolated 4 – 20 mA / 0 – 20 mA (OM98-3)

5 : Isolated 0 – 10 VDC (OM98-5)

C : SSRD, 14 VDC / 40 mA (OM94-7)

OUTPUT 2 / ALARM 1

0 : None

1 : Form A Relay

2 : SSRD, 5 VDC / 30 mA

3 : Isolated 4 – 20 mA / 0 – 20 mA (OM98-3)

5 : Isolated 0 – 10 VDC (OM98-5)

C : SSRD, 14 VDC / 40 mA (OM94-7)

ALARM 2

0 : None

1 : Form A Relay

OPTION 1

0 : None

1 : RS - 485

OPTION 2

0 : None

1 : 2 Event Inputs

2 : 1 Event Input and 1 CT Input

3 : 2 CT Inputs

OPTION 3

0 : None

1 : Retransmit 4 – 20 mA / 0 – 20 mA (CM98-3)

2 : Retransmit 0 – 10 VDC (CM98-5)

3 : Alarm 3 (Form A Relay)

OPTION 4

0 : None

1 : Terminal Cover

C930-**C82**

C930-**C83**

C930-**C72**

C930-**C42**

POWER IMPUT

4 : 90 to 250VAC , 47 – 63Hz

5 : 11 to 40VDC / 20 to 28VAC, 47– 63Hz

OUTPUT 1

1 : Form A Relay

2 : SSRD, 5 V D C /30mA

3 : Isolated 4 – 20 mA / 0 – 20 mA (OM98-3)

5 : Isolated 0 – 10 VDC (OM98-5)

C : SSRD, 14 VDC / 40 mA (OM94-7)

OUTPUT 2 / ALARM 1

0 : None

1 : Form A Relay

2 : SSRD, 5 VDC / 30 mA

3 : Isolated 4 – 20 mA / 0 – 20 mA (OM98-3)

5 : Isolated 0 – 10 VDC (OM98-5)

C : SSRD, 14 VDC / 40 mA (OM94-7)

ALARM 2 TO 3

0 : None

1 : Form A Relay on Alarm 2

2 : Form A Relay on Alarm 2 to 3

EVENT INPUTS

0 : None

1 : 6 Event Inputs (2 Event Inputs for C930 - C72)

OPTION 1

0 : None

1 : RS - 485 and Remote Setpoint

OPTION 2

0 : None

1 : 1 CT Input and Remote Setpoint

2 : 2 CT Input and Remote Setpoint

OPTION 3

0 : None

1 : Retransmit 4 – 20 mA / 0 – 20 mA (CM98-3) and Remote Setpoint

2 : Retransmit 0 – 10 V (CM98-5) and Remote Setpoint

3 : Alarm 4 (Form A Relay) and Remote Setpoint

4 : Alarm 4 (Form A Relay), Retransmit 4-20 mA / 0-20mA (CM98-3) and Remote Setpoint(Unavailable for C930 - C72)

5 : Alarm 4 (Form A Relay), Retransmit 0-10VDC (CM98-5) and Remote Setpoint(Unavailable for C930 - C72)

OPTION 4

0 : None

1 : Terminal Cover

2 : Ramp & Soak Profiler

3 : Terminal cover and Ramp & Soak Profiler

CEAM®
Group

CEAM CONTROL EQUIPMENT SRL

Headquarter: Via Val D'Orme 291 - 50053 Empoli (FI) Italy
Branch Office: Via Cruto - 10045 Piossasco (To) Italy
Tel. (+39) 0571 924181 - Fax (+39) 0571 924505
Corporate Email: info@ceamgroup.it
www.ceamgroup.com - www.sensorstore.it

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