

Customer Toolbox for 24/7 Real Time Information and Support

This secure site enables you access to track order status, accounts receivable, pricing, invoicing, sales tools, online literature orders, training resources and much more. Register Today.

<http://toolbox.InvensysControls.com>

Enhanced Websites and Tools

Visit www.InvensysControls.com for complete product information and the industry's most complete and up-to-date cross reference tool.

i n v e n s i s TM

Controls

Commercial Refrigeration Catalog



PARAGON[®]

RANGO[®]

eliwellTM



Table of Contents:

Introduction	3
Eliwell EWPlus	4
Paragon Defrost Controls	6
Ranco Temperature Controls	9
Ranco Pressure Controls	13

The brands you trust, the products that perform.



PARAGON®

For over 100 years, contractors have trusted Paragon to offer quality defrost control solutions. For maximum versatility, Paragon now delivers multi-voltage defrost controls that are engineered to accommodate a variety of systems and standards. They perform with a level of reliability that outlasts virtually all the competition.

RANCO®

Ranco is a recognized market leader in pressure and temperature controls. From fast-food restaurants to supermarkets to convenience stores and vending machines, Ranco products deliver the dependability and the maximum accuracy you demand.

eliwell™

For unbeatable quality and reliability, professionals have turned to Eliwell for over 25 years. Eliwell provides a full array of products that offer maximum control and confidence in a wide range of refrigeration applications.



Electronic Refrigeration Control Kit

EWPlus Series

The Eliwell™ **EWPlus** Electronic Refrigeration Control Kit offers versatility and high performance for your refrigeration cabinet needs. The **EWPlus** family of controls are easy to use and provide full cabinet control.

Easy to Select

- Four universal models to cover all applications

Easy to Use

- Simple and intuitive menus for rapid learning
- Display features large digits and colorful icons for at-a-glance operating status monitoring
- Simplified installation with high quality screw connectors and slide-in clips for easy mounting

Easy to Configure

- USB Unicard for fast programming

Quality Features

- High duty compressor contact output up to 1Hp at 120V AC, or 2Hp at 230V AC
- Full cabinet control with up to 3 relay contacts, 2 temperature probes and 1 digital input
- Compressor short cycle protection
- Defrost management
- Door switch control
- Full alarm management



Suggested Applications

Self-Contained Refrigeration Units such as:

- Upright cooler/freezer
- Display cases
- Bottle cooler
- Chest freezers

Remote Refrigeration Cases such as:

- Reach-in multi-deck displays
- Deli island
- Glass door
- Bakery cases

Warming Holding Units such as:

- Hot tables
- Hot plates
- Warming cabinets

Condensing Refrigeration Units / Chillers



Recognized Component

Ordering Information for 115V AC models		Ordering Information for 230V AC models	
Model Numbers	Part Numbers	Model Numbers	Part Numbers
EWPlus 902	EW11YI0XB4A04	EWPlus 902	EW11YI0XB4B04
EWPlus 961	EW17YI0XB4A04	EWPlus 961	EW17YI0XB4B04
EWPlus 971	EW29YI0XC4A04	EWPlus 971	EW29YI0XC4B04
EWPlus 974	EW2EYI0XC4A04	EWPlus 974	EWZEYI0XC4B04



EWPlus Series Technical Data	
Features	Description
Applications	EWPlus 902 - Medium temperature cooler/cases; warm temperature holding cases EWPlus 961 - Medium temperature cooler/cases; warm temperature holding cases EWPlus 971 - Medium temperature cooler/cases EWPlus 974 - Low temperature freezer
Relays	EWPlus 902 - 1 Relay - Compressor EWPlus 961 - 1 Relay - Compressor EWPlus 971 - 2 Relays - Compressor and defrost or alarm EWPlus 974 - 3 Relays - Compressor, defrost, and fan or alarm
Power Supply	115V AC or 230V AC (+10% / -10%) 50/60 Hz
Analog Inputs	1 NTC probe (EWPlus 902/961) 2 NTC probes (EWPlus 971/974)
Digital Input	1 dry contact
Digital Outputs	120V AC 240V AC
	EWPlus 902 -1 SPDT 8(4)A 1 SPDT 8(4)A
	EWPlus 961 -1 SPST 16 FLA 96 LRA 1 SPST 12 FLA 72 LRA
	EWPlus 971 -1 SPDT 8(4)A 1 SPDT 8(4)A 1 SPST 16 FLA 96 LRA 1 SPST 12 FLA 72 LRA
	EWPlus 974 -1 SPDT 8(4)A 1 SPDT 8(4)A 1 SPST 16 FLA 96 LRA 1 SPST 12 FLA 72 LRA 1 SPST 3A 1.4 FLA 7.5 LRA 1 SPST 3A 1.4 FLA 7.5 LRA LRA
Defrost	EWPlus 902 - Off cycle EWPlus 961 - Off cycle EWPlus 971 - Off cycle, electric or hot gas EWPlus 974 - Off cycle, electric or hot gas
Dimensions	Control - Front 2-15/16" x 1-1/4" (74x32mm), depth 2-15/16" (59mm) Probe Tip - 1/4" diameter and 9/16" length (5mm diameter and 15mm length) Probe Length - 9'10" (3m)
Mounting	Panel mounting with 2-13/16" x 1-1/8" (71x29mm)
Display	3 digits and + or - symbol
Icons	8 color icons
Display Range	NTC: -50°C to +110°C (-58°F to +230°F)

USB Unicard

Applications

The new USB Unicard is a memory device for rapid parameter configuration and duplication, specifically designed for controls in the EWPlus family.

By downloading the DeviceManager software from the secure area of the www.eliwell.com website, you can read and write parameter lists on the UNICARD without having to use other interfaces or licenses.



USB Unicard Specifications	
Part Numbers	Description
CCA0BHT00UU00	USB/TTL Unicard

Commercial Defrost Controls

9000 Series

The Paragon 9045-00 and 9145-00 Universal Defrost Timers (UDT) are the only multi-voltage defrost timers engineered to refrigeration standards!

Paragon UDT models are certified to UL873 standards for temperature-indicating and regulating equipment, as refrigeration controllers with switches rated to 30,000 cycles. Competitive offerings are certified to UL917 standards for safety for clock-operated switches with switches rated to 6,000 cycles. At four defrosts per day, the Paragon UDT switches last 16 years longer!

This control offers a real-time clock and 100 hours of power loss protection for both time and defrost schedule. To accommodate the applications your customers need, mechanism-only models are available to fit in the standard Paragon enclosures.

Features

- Real-time clock
- Initiate 15 minute manual defrost
- System status indicators
- Lighted display shows defrost start time and duration
- 100 hours of power loss protection for both time and defrost schedule
- Mechanism-only versions designed to fit in standard Paragon enclosures
- Certified to UL873 standard for temperature-indicating and regulating equipment, as refrigeration controllers
- Withstands the most rigorous refrigeration applications
- Wires directly to 120V AC, 208V AC or 230V AC power sources without jumpers or switches
- Easy programming, easy set-up, set time, set defrost start and defrost end

System Status Indicators

Initiate 15 Minute Manual Defrost

Lighted display shows defrost start time and duration

Easy Set-Up
Set Time
Set Defrost Start
Set Defrost End

Direct Connect
Line Voltage –
120/208-240V AC



Input Power

120/208-240V AC, 60 Hz (+10, -15%)

Operating Voltage

102V AC min. to 132 max. @ 60 Hz

176.8V AC min. to 264V AC max. @ 60 Hz

Note: No user-required adjustments to switch between the high and low voltage.



Listed Product

Models 9045-00 and 9145-00



Recognized Component

Models 9045-00M and 9145-00M

9145 Terminal Data*							
Terminal	A	B	C	D	E	F	G
Relay Contact	SPDT NC Contact	SPDT NO Contact	SPDT Common Contact	SPST NO Contact	SPST Common Contact	L2/N Power in to timer	Defrost Termination Device Input L2/N side
Relay Rating	15 A resistive @120V to 240V AC 1/4 HP @ 120V AC, 1/2 HP @ 208V to 240V AC	30 A resistive @ 120V to 240V AC 1 HP @ 120V AC 2 HP @ 208V to 240V AC			30 A resistive @ 120V to 240V AC 1 HP @ 120V AC, 2 HP @ 208V to 240V AC		
Device Connections	Fan (Typical) Compressor (Optional)	Defrost Device (Typical)	L1 Power to Timer and to Defrost Termination Device		Compressor (Typical) Fan (Optional)		Defrost Termination Switch

* 9145 is a general purpose defrost timer and can be used for both Time Initiate/Time Terminate and Time Initiate/Temperature, Pressure Terminate

9045 Terminal Data							
Terminal	A	B	C	D	E	F	G
Relay Contact	SPST #1 NC Contact	SPST #1 Common Contact	L1 Power in to Timer	SPST #2 No Contact	SPST #2 Common Contact	L2/N Power in to timer	No Connection
Relay Rating	30 A resistive @ 120V to 240V AC 1 HP @ 120V AC, 2 HP @ 208V to 240V AC				30 A resistive @ 120V to 240V AC 1 HP @ 120V AC, 2 HP @ 208V to 240V AC		
Device Connections	Compressor (Typical)				Defrost Device (Typical)		Defrost Termination Switch

9000 Series Specifications	
Part Numbers	Description
9145-00	Time Initiate/Temperature, Pressure Terminate Defrost Timer with Metal Enclosure
9145-00M	Time Initiate/Temperature, Pressure Terminate Defrost Timer - Mechanism Only
9045-00	Time Initiate/Time Terminate Defrost Timer with Metal Enclosure
9045-00M	Time Initiate/Time Terminate Defrost Timer - Mechanism Only

Commercial Defrost Controls

8000 Series

Designed for commercial freezers and refrigerators, Paragon commercial defrost controls provide automatic defrost capability. They accommodate various types of defrost systems including electric defrost heaters, hot gas, and compressor off cycle.

Features

Time initiated, temperature or pressure terminated

- High-amp switch contacts, 40 amps, 2 HP
- Positive slider bar switch design, assures positive electrical contact and wipes the contact surface of contaminants
- Designed for defrost termination using an external temperature or pressure device
- Safety back-up - mechanical time driven defrost termination
- Heavy-duty synchronous design drive motor
- Choice of three contact arrangements
- Adjustable frequency of defrost initiation from 1 to 6 cycles per day with a minimum of 4 hours between successive operations
- Adjustable back-up defrost termination from 4 to 110 minutes in 2 minute increments
- Enclosure construction of heavy-duty steel with knockouts on the bottom, back and sides. Hasp and staple for padlock is part of the enclosure

Time initiated, time terminated

- High-amp switch contacts, 40 amps, 2 HP
- Positive slider bar switch design, assures positive electrical contact and wipes the contact surface of contaminants
- Choice of three contact arrangements



- Heavy-duty synchronous design drive motor
- Adjustable frequency of defrost initiation from 1 to 6 cycles per day with a minimum of 4 hours between successive operations
- Adjustable defrost cycle from 4 to 110 minutes in 2 minute increments
- Accuracy of defrost duration is +/- 2 minutes
- Enclosure construction of heavy-duty steel with knockouts on the bottom, back and sides. Hasp and staple for padlock is part of the enclosure

Applications

- Defrost controls for commercial freezers and refrigerators

8000 Series Specifications

Part Numbers		Time Initiated, Time Terminated	Time Initiated, Temperature or Pressure Terminated
120V AC	208/240V AC		
8041-00	8041-20	•	
8045-00	8045-20	•	
8047-00	8047-20	•	
8141-00	8141-20		•
8143-00	8143-20		•
8145-00	8145-20		•

UL LISTED US Listed Product cUL US Certified Product

Electronic Temperature Controls

Electronic Temperature Control (ETC)

These controls offer a full-featured electronic replacement for electrical-mechanical temperature controls used in many commercial refrigeration applications. With its wide temperature range, one and two stage capability, selectable heating/cooling modes and multi-voltage input, the ETC is designed to provide application flexibility. Models available include 120/208-240V AC and 24V AC.

Features

- Wide temperature range (-30°F to 220°F)
- Wide differential adjustment (1°F to 30°F)
- LCD read-out for sensor temperature, control settings, and relay status
- High amp output relay (FLA 16 amps @ 120V and 8 amps @ 208/240V AC) single stage
- EEPROM memory retains control settings during power outages
- Keypad lockout to prevent end-user alteration of settings
- Extendable 8 feet lead with sensor up to 400 feet using 18 or 22-gauge thermostat wire
- Easy 4-step set-up
- Heavy-duty relay 1 HP rated
- Selectable °F or °C heating/cooling modes
- Single and two stage models
- NEMA 1 case and cover
- NEMA 4X models available

Applications

- Walk-in and reach-in refrigerators
- Milk coolers
- Refrigerated display cases
- Staging heating/cooling



Relay Electrical Ratings

Single Stage Models			Two Stage Models	
120V	208/240V	NO Contact	120V	208/240V
16A	8A	Full-load amps	9.8A	4.9A
96A	48A	Locked rotor amps	58.8A	29.4A
15A	8A	Resistive amps	9.8A	4.9A
1 HP	1 HP	Horsepower	1/2 HP	1/2 HP
120V	208/240V	NO Contact	120V	208/240V
5.8A	2.9A	Full-load amps	5.8A	2.9A
34.8A	17.4A	Locked rotor amps	34.8A	17.4A
5.8A	2.9A	Resistive amps	5.8A	2.9A
1/4 HP	1/4 HP	Horsepower	1/4 HP	1/4 HP

ETC Series Specifications

Part Numbers	Voltage	Stage
ETC-111000-000	120/208/240V AC	1
ETC-112000-000	24V AC	1
ETC-211000-000	120/208/240V AC	2
ETC-212000-000	24V AC	2

US Listed Product US Certified Product

Temperature Controls

O Control Series

Ranco O Series Temperature Controls offer a wide selection of controls customized to allow users exact adjustments within manufacturers' limits. The Ranco O series features heavy-duty plated steel frames, non-conductive covers with front-located captive cover screws, raised screw terminals for fully accessible wiring, and large easy-to-read scales.

Specifications

Ranco O Series Temperature Controls require seven revolutions of adjusting screws to span the complete operating range for maximum adjustment accuracy.

Ranges

Temperature ranges shown in the selection chart are tailored to specific applications. The standard 3° to 20°F adjustable differential allows controls to be used both for air sensing at the narrow differential settings, and evaporator coil sensing at wider differential settings. The 2°F fixed differential controls are used for close control on air-sensing applications or bulb well sensing in chillers.

The 7° to 55°F differential is provided for coil sensing on wide temperature difference coils in medium temperature applications. Manual reset controls are provided for freeze protection on coils and chillers.



**O10-1409
with Capillary**



**O10-1418
with Air Coil**

UL LISTED **us** Listed Product **RAI** **us** Certified Product

O10 Series Specifications

Part Numbers	Range (°F)	Differential (°F)	Switch	Capillary Length
Extra Low				
O10-1000	-55 to 0	3 to 20	SPST - Opens Low	72"
O10-1419	-35 to 15			72" *
O10-1433				
Low				
O10-1072	-15 to 40	3 to 20	SPST - Opens Low	Air Coil
O10-1408				72" *
Medium				
O10-1416	0 to 55	3 to 20	SPST - Opens Low	72"
O10-1418				Air Coil
O10-1409		72" *		
O10-1010		7 to 55		48"
O10-1473		72" *		
O10-1490	2 Fixed			
High				
O10-1802	25 to 75	3 to 20	SPST - Opens Low	Air Coil
O10-1410				72" *
O10-1491				2 Fixed

* with remote bulb

O16 Series Specifications

Part Numbers	Range (°F)	Differential (°F)	Switch	Capillary Length
Low				
O16-588	-15 to 40	1.5 Fixed	SPDT	72"
Medium				
O16-601	22.5 to 47.5	2.5 Fixed	SPDT	36" *
O16-111	0 to 55	3 to 20		72"
O16-104				72" *
O16-264		Manual Reset		96"
O16-263		72" *		

* with remote bulb

Temperature Controls

A Control Series

Ranco A Series Temperature Controls are designed to switch electrical components of refrigeration systems in response to sensed temperatures.

Features

- Laser-welded stainless steel bellows
- Fixed or adjustable temperature settings
- High-amperage contacts
- Pneumatic action provided by vapor-filled capillary or capillary with bulb sensing elements
- Constant ON or OFF positions available
- Choice of mounting brackets, adjustment ranges and cams, and slotted or flatted shafts
- Standard 1/4" quick-connect terminals with optional screw terminals



Operation

Ranco temperature controls utilize high quality, laser-welded, bellows type sensing elements that provide precise input to the control mechanism. This input, in the form of linear movement or force, is translated to electrical switch action through a set of mechanical levers and springs. The result is an accurate and reliable thermostat capable of switching high amperage circuits at an affordable price.

ULUS Certified Product

A22 and A30 Series Specifications											
Model Numbers	Switch	Temp. Range °F	Adj. Range °F	Differential		Sensing Element Style	Voltage	AC Full Load Amps	AC Locked Rotor Amps	Pilot Duty (V AC)	Resistive Load Amps
				Max. °F	Max. °F						
A22	SPDT/SPST	0 to 100	5 to 30	4.5	25	Capillary only or with bulb	120	20	80	500	25
							240	20	80	500	25
							277	16	60	500	-
							24	-	-	240	-
A30	SPST	0 to 100	5 to 30	5	25	Capillary only or with bulb	120	20	80	240	-
							240	20	60	240	-
							277	16	60	240	16

For specific part number selection, visit www.uni-line.com and select refrigeration.

Temperature Controls

K Control Series

Ranco K Controls are used all over the globe to control the temperature in commercial and domestic refrigeration, air conditioning and heating applications. Typical uses include refrigerators, freezers, bottle and liquid coolers, and refrigerator display cases.

Features

- Compact size
- Standard mounting configurations
- Wide range of capillary lengths (from 12 inches (300mm) to 10 feet (3m))
- Different forms or bulbs available
- Temperature ranges from -40°F to 194°F (-40°C to 90°C)

 **US Certified Product**



RC Control Series

RC Temperature Controls are designed to control temperatures in commercial and domestic refrigeration applications. There are two basic models available with either a constant differential (rotation of the dial shaft changes both the cut-in and cut-out temperatures an equal amount), or a constant cut-in (rotation of the dial shaft changes only the cut-out, colder setting).

Features

- Snap action switch
- Compatible with compressors up to ½ HP
- 120V and 240V AC models available
- Different capillary lengths available, standard 26 inches (660.4 mm)

K Control Series Specifications

General Application	K22	K36	K50	K52	K54	K55	K56	K57	K58	K59	K60	K61
Thermostat with SPDT exchange contact	•											•
Thermostat with cycling ON-OFF switch		•	•		•	•	•	•	•		•	
Thermostat with two sensors				•								
Thermostat with signal operation					•		•		•			
Thermostat with auxiliary OFF							•	•		•		•
Thermostat with quick freezing button									•			
Thermostat with constant connection										•		•
Thermostat with defrost button											•	

RC Control Series Specifications

General Application	RC1	RC2	RC4	RC5	RC6	RC9	RC0
Refrigerator, constant differential	•						
Refrigerator, constant cut-in, variable differential		•					
Beverage and water cooler			•				
Freezer				•			
Absorption electric refrigerator					•		
Refrigerator, constant cut-in, switch for heater wire						•	
Push to defrost							•

For specific part number selection, visit www.uni-line.com and select refrigeration.

Pressure Controls

Low Pressure O Series

Features

- Controls available for most refrigerant types
- High-amp rated switch (SPST) design (O10-1402/O10-1483)
- Super Cap® capillary vibration protection system
- Non-conductive front cover with captive screw
- Adjustable differential and range
- Easy-to-read scale plate
- Vibration cone (absorbs and reduces vibration away from brazed joint)
- Low mass copper alloy capillary tube (reduces capillary stress caused by equipment vibration)

NOTE:

The O16-624 has the range and differential required to cover all the refrigerants shown in the below matrix provided the full load amps do not exceed 17 amps.



 **US Listed Product**  **US Certified Product**

Low Pressure O Series Specifications			
Part Numbers	O10-1402	O10-1483	O16-624
Range	(12") to 50 PSIG	(10") to 100 PSIG	(12") to 80 PSIG
Differential	5 to 35 PSI	10 to 40 PSI	5 to 38 PSI
Capillary Connections	36" with Flare Nut	36" with Flare Nut	36" with Flare Nut
Lowest Events	20V AC	20V AC	20V AC
Ratings	SPST	SPST	SPST
Switch Action	Opens Low	Opens Low	Opens Low
Full Loaded Amps @ 120/240V AC	24 amps	24 amps	17 amps
Locked Rotor Amps @ 120/240V AC	144 amps	144 amps	102 amps
Pilot Duty Rating @ 120/240V AC	720 VA	720 VA	720 VA

Pressure Controls

Dual Function

Ranco dual pressure controls combine the functions of a single high-pressure limit control and a single low-pressure control in one unit with a single pole, single throw (SPST) switch.

Features

- Convertible feature allows selection of manual or reset function when operating at high pressure (O12-4833/O12-4834)
- A wide range of high-pressure manual or automatic reset controls can be replaced with either the O12-4833 or O12-4834 models
- A high-pressure limit is combined with suction pressure sensing to provide temperature control and/or pumpdown
- High-limit adjustment screw
- Low-pressure differential and range adjusting screws
- Selector screw for manual or automatic
- Reset button
- Low-pressure scale plate
- High-impact plastic cover with center mount screw
- High-pressure scale plate
- Super Cap® capillary protection system
- Color-coded for easy identification of pressure line
- High-side capillary flare nut (silver)
- Low-side capillary flare nut (brass)



 Listed Product  Certified Product

Dual Function Specifications			
Part Numbers	O12-4833	O12-4834	O12-1594
Low Pressure Range	(12") to 50 PSIG	(10") to 100 PSIG	(10") to 100 PSIG
Differential	5 to 35 PSI	10 to 40 PSI	Fixed to 10 PSI
High Pressure Range	150 to 450 PSIG	150 to 450 PSIG	150 to 450 PSIG
Differential	Fixed @ 70 PSI drop	Fixed @ 70 PSI drop	Fixed @ 70 PSI drop
Reset, Low	-	-	Manual
Reset, High	Automatic or Manual	Automatic or Manual	Manual
Capillary Connections	48" with Flare Nut	48" with Flare Nut	36" with Flare Nut
Switch Ratings	SPST	SPST	SPST
Full load amps	120/240V AC, 24 amps	120/240V AC, 24 amps	120/240V AC, 24 amps
Locked rotor amps	120/240V AC, 144 amps	120/240V AC, 144 amps	120/240V AC, 144 amps
Pilot duty volt amps	120/240V AC, 720 VA	120/240V AC, 720 VA	120/240V AC, 720 VA

Pressure Controls

Fan Cycle Head

These components control the starting and stopping of the condenser fan motor to maintain the system head pressure. During periods of low ambient temperature (below 50°F refrigeration and 60°F air conditioning), the surrounding air can cause heat from the condenser to be removed too rapidly causing the system pressure to become unstable. The fan cycle head pressure control corrects the system instability by cycling the condenser fan based on system pressure. With Ranco Pressure controls, you can resolve issues related to short cycling of the compressor, low refrigerant flow and evaporator frosting.

Features

- Affordable solution for controlling head pressure
- Model O10-2054 offers high amp contacts, handling most load requirements
- Model O16-108 offers SPDT design, ideal for:
 - Fan cycling control
 - High-limit control with alarm (unused terminal can be wired to an alarm to signal a high-pressure cut-out)



Listed Product **UL US Certified Product**

Fan Cycle Fan Specifications		
Part Numbers	O10-2054	O16-108
Range	100 to 400 PSIG	100 to 400 PSIG
Differential	40 to 150 PSI	40 to 150 PSI
Capillary	36" with Flare nut	36" with Flare nut
Switch Ratings	SPST	SPDT
Full load amps	120/240V AC, 24 amps	120/240V AC, 17 amps
Locked rotor amps	120/240V AC, 144 amps	120/240V AC, 102 amps
Pilot duty volt amps	120/240V AC, 720 amps	120/240V AC, 720 amps
High amp switch	Direct load	