General Installation Guide

Central Processing Unit 1000
Version 1.35

ECO-1000

HBX Control Systems Inc.

Table of Contents

Table of Contents

Comfort
Control
Innovation

GETTING STARTED

This manual will help with the installation, parameter setting, troubleshooting and general maintenance requirements for the Controller. To guarantee the safe and reliable operation of this Control, you must first read this manual in detail and take particular note to any and all warnings or caution directives prior to connecting to AC power.

Only suitably qualified individuals with formal training in electrical and HVAC controls should attempt the installation of this equipment. Incorrect wiring and installation will affect the warranty provided with this unit. Wiring must be completed in accordance with the codes and practices applicable to the jurisdiction for the actual installation.

The HBX ECO-1000 is a microprocessor based controller and as such is not to be regarded as a safety (limit) control. Please consult and install the heating or cooling appliance in accordance with the manufacturer's recommendations.

SAFETY SYMBOLS:

Extreme Hazard -
This action poses a serious threat that could result in personal injury or death, as well as permanent damage to the equipment. Proceed with caution.

Moderate Hazard -
This action may cause personal injury or have adverse effects on the installation process if handled incorrectly.

Disconnect Power Source -
The presence of low voltage(24VAC) or high voltage(120VAC) could result in personal injury or permanent damage to components or equipment.

Point of Interest -
This point clarifies pertinent information, or brings your attention to an action that may have adverse effects on the installation process.

RECEIVING, UNPACKING, INSPECTION AND STORAGE

This ECO-1000 has gone through rigorous quality control tests at the factory before shipment. After receipt and before installation perform the following checks:

Receipt
After receiving, inspect the unit for any possible physical damage that may have occurred during transportation.

Inspection
After unpacking the unit make sure the box contains:

- ECO-1000 Controller
- 1 Remote Outdoor Temperature Sensor
- 2 Universal Temperature Sensors
- 1 Terminal Screwdriver
- 2 Cable Ties

Make sure the part number on the unit corresponds to the part number on the original box.

Storage
The ECO-1000 should be kept in its original shipping carton prior to installation. In order to retain the warranty coverage it should be stored properly:

- Store in a clean dry place
- Store within an ambient temperature range of +10ºC to +40ºC
- If possible, store in an air-conditioned environment where the relative humidity is less than 95%
- Do not store in places where the unit may come into contact with corrosive gases or liquids
- Do not store in an area or upon an unstable surface where it may become damaged due to falling

GENERAL TECHNICAL DATA

Input Voltage:
120 VAC, ± 10% 60Hz

3 x Optically Isolated Inputs:
20 - 240 VAC

3 x Thermistor Inputs:
Heat pump/System Sensors/Outdoor

3 x Pump Output Relays:
120VAC 10A

2 x Auxiliary Output relays:
240VAC 10A

Standard Communications:
RS-232

Real Time Clock Battery:
Lithium-Ion

Microprocessor:
16Bit, 20MHz

Languages:
English

Graphic Display:
128 x 64 pixels (55mm x 28mm viewable area)

Weight:
0.95 KG (2.1 lbs)

Dimensions:
190mm W x 170mm H x 70mm D

ETL Listings:
Meets CSA C22.2 No. 24

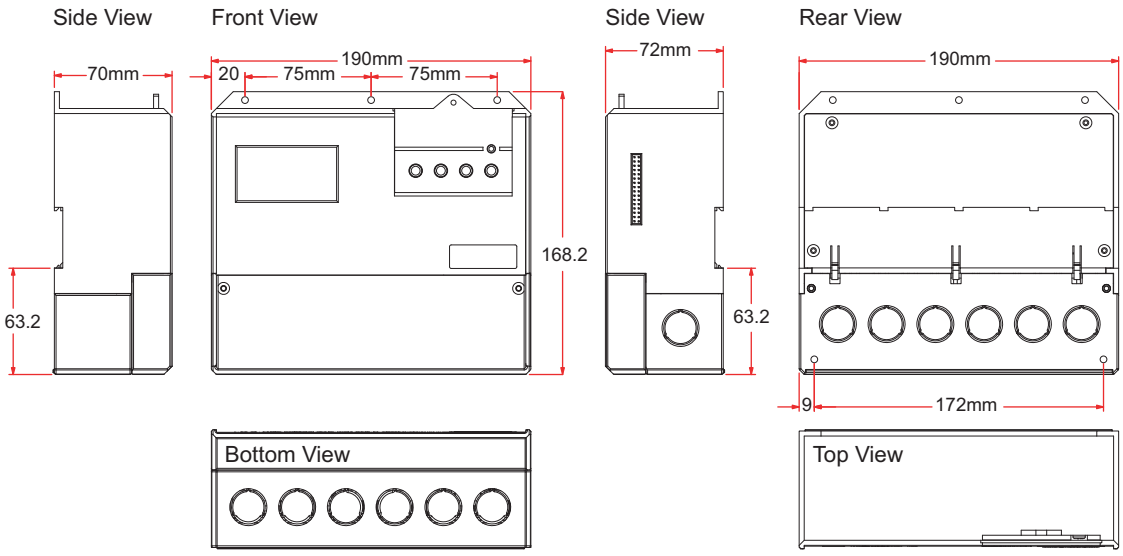
Meets UL Standard 873
ETL Control No. 3068143

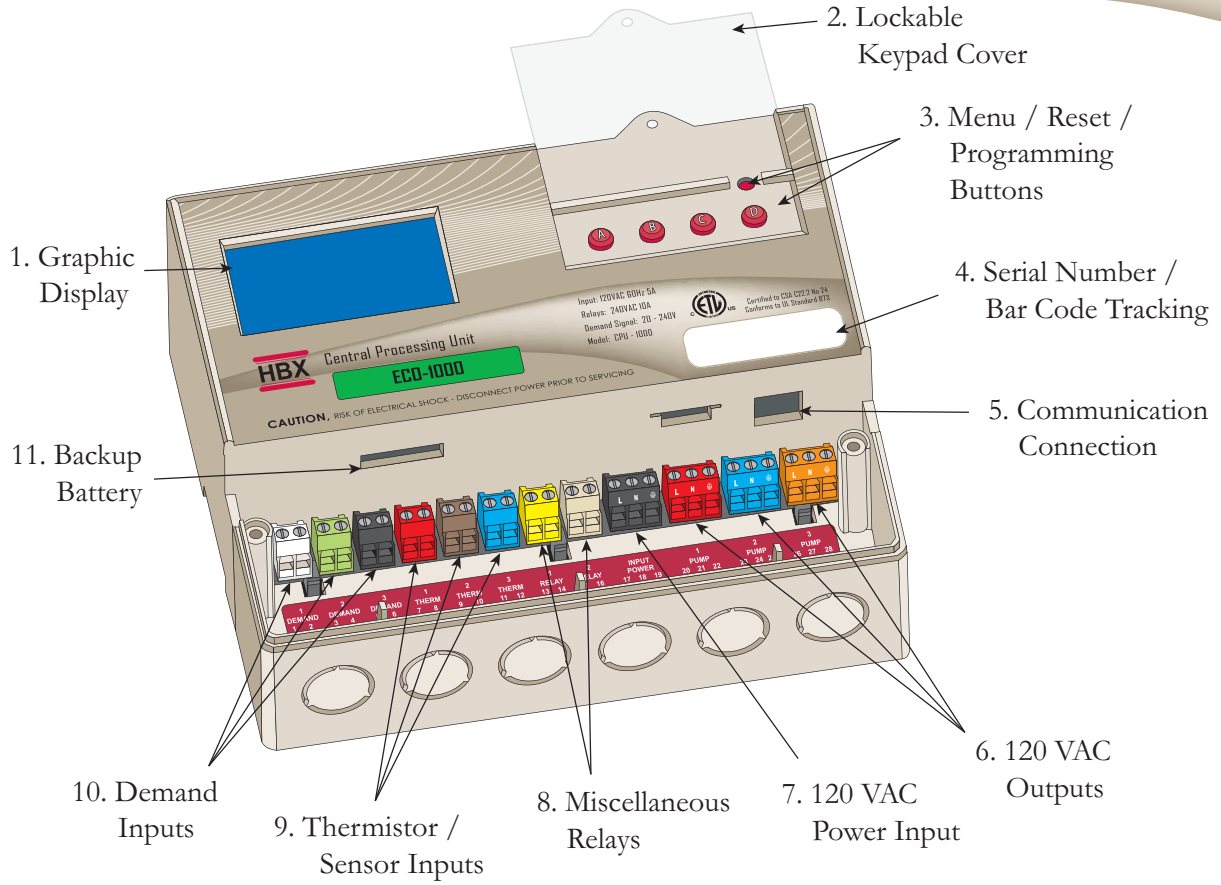
Storage:
+10°C to +40°C

All I/O (inputs and outputs) are both colour coded and keyed indexed for non-interchangeability

NAMEPLATE INFORMATION:

The exterior label contains specific information unique to your HBX HVAC Control and identifies some of the basic features. The label displays the serial number which will match the serial number on your actual Control, the lot number, the bar code and the products ETL number.





MAIN PARTS AND LABELS

Viewing from top left and moving right in a clockwise direction:

1. Back-Lit Graphic Display:
The display is one of the key features of the Controller. Depending upon which mode of operation is selected, you will be able to view most common system values simultaneously. It will also serve as a visual indicator when in the programming mode.

2. Lockable Keypad Cover:
Once your system has been programmed and optimized there should be little or no reason for further changes. The Controller has been designed with the ability to physically "hard-lock" the keypad to prevent tampering with the settings. See page 39 for further instructions.

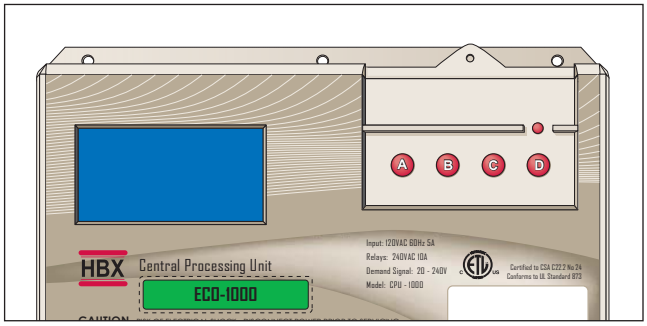
3. Menu and Programming Buttons:
These buttons will be used to set up the Controller during commissioning and for toggling between displays or troubleshooting at a later date if necessary.

A. Moves screen or value down

B. Moves screen or value up

C. Enters a value, parameter, or setting, toggles Y/N

D. Return to last screen and access programming mode



• Reset- Protected from being accidentally pushed

4. Serial Number and Bar Code:
This label will identify the entire factory ordered options and the date of manufacture. It can also be used for re-ordering and will be required in the event of factory service assistance or warranty claim.

5. Communication Connection:
The standard communications port (RS-232) is found immediately below the bar code label. Optional communications software needs to be purchased to enable a connection. Please consult factory or dealer.

Only a CAB-0100 can be inserted into this connection without causing damage.

6. 120 VAC Outputs:
There are three separate (3-wire) 120VAC output power terminals.

7. 120 VAC Power Input:
There is one (3-wire) terminal block for incoming 120VAC power.

8. Miscellaneous Relays (Dry Contacts):
There are two (2-wire) miscellaneous/auxiliary relay terminal blocks. These can be used to wire a variety of miscellaneous devices up to 10Amps.

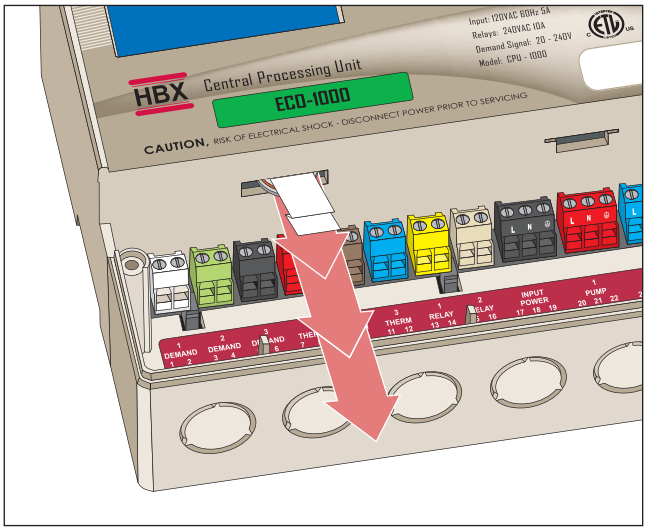
9. Thermistor/Sensor Inputs:
There are three (2-wire) sensor/thermistor inputs.

Under no circumstance should power be applied to these terminals! Permanent damage to the Controllers circuitry may result.

10. Demand Inputs:
There are three (2-wire) "demand" control inputs. Control signals between 20-240VAC are designed to trigger a variety of commands within the Controller, for example run a heating or cooling demand.

11. Backup Battery:
The lithium-ion battery is purely a back-up supply for the real time clock and will keep the clock refreshed during a power interruption to the Control.

Prior to installation, please remove the protective paper strip to activate the back-up battery as shown below.



INSTALLATION & WIRING

The ECO-1000 is designed to be wall mounted, DIN rail mounted, or installed inside a separate electrical enclosure. The unit should be mounted inside and be protected from falling water and high humidity conditions. With all the covers in place it is designed to protect any individual from accidental electrical shock.

The Controller has a built in 5Amp fast acting fuse to protect the circuitry on the Printed Circuit Board (PCB). The unit is designed to power up to 3 pumps and 2 auxiliary relays of 10Amps each. As such, an upstream customer supplied fuse or circuit breaker rated at a maximum of 30 amps must be in circuit. It is the installers responsibility to provide either a 3 pin (3ft max) grounded plug and cable, or the unit must be wired directly to a breaker and terminated inside the control box (terminals 17, 18 & 19).

All power wiring must be with a minimum of 18AWG wire.

Low power wiring ---------- insulated 18AWG (min.) wire to a max of 500ft.

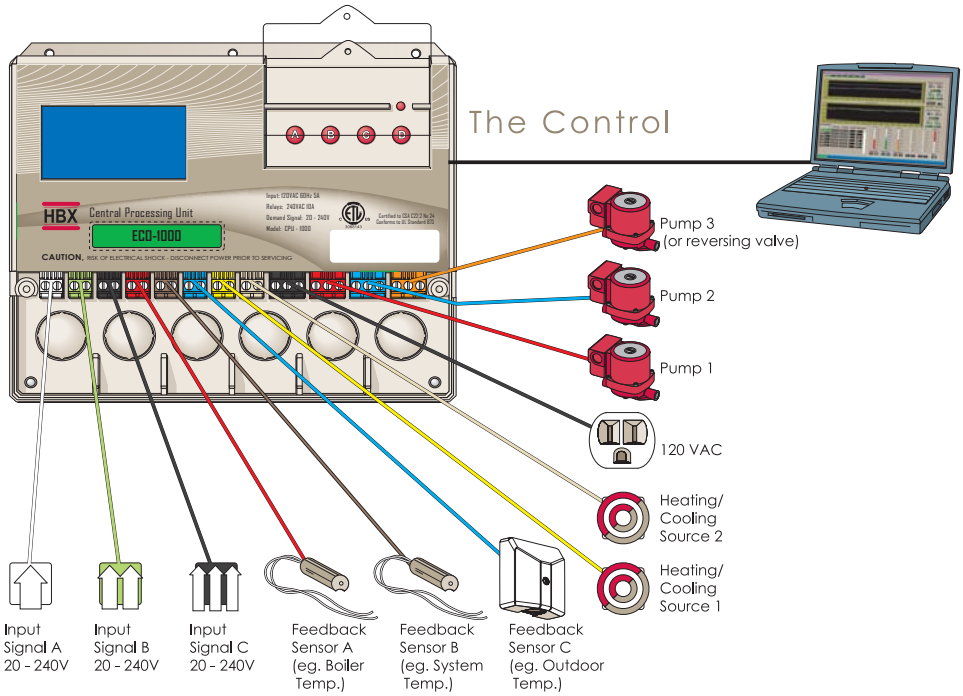
Thermistor wiring ---------- insulated 18AWG (min.) wire to a max of 500ft.

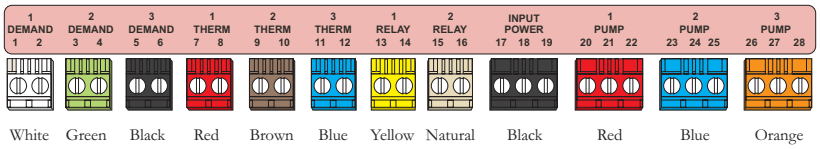
It is recommended to use 18AWG Single Stranded Wire. It is also recommended to run signal and power wiring in separate conduit.

Only suitably qualified individuals with formal training in electrical and HVAC controls should attempt the installation of this equipment. Incorrect wiring and installation will affect the warranty provided with this unit. Wiring must be completed in accordance with the codes and practices applicable to the jurisdiction for the actual installation.

TROUBLESHOOTING & FAULT CODES

Display does not come on	Check power connection at terminals 17,18,19. If no power (120VAC) present then trace power back to source. Cycle Power to Control.
No heat demand	Check that you have at least 20VAC being supplied to the heat demand trigger. E.g. power to terminals 1&2 for a heat demand to follow the outdoor reset curve. Power to terminals 3&4 for a Hi temp heat demand and power to terminals 5&6 are for a DHW demand.
Buttons don't respond or can't go into Programming Mode	Hold down buttons C and D to unlock the buttons. Hold until display says BUTTONS UNLOCKED. For details refer to page 36.
Parameters set in control do not seem to be taking effect	Manually Reset Control by using a small blunt tool and gently press the reset button.
Heat pumps not staging on	Make sure in the heat pump options that you have selected the appropriate amount of stages for the system.
Lack of Heat or no response to a heat demand	Control may be in Warm Weather Shut Down mode, see "System Status" display. Is the acronym "WWSD" visible? If yes, check in "Change Designs" menu under WWSD, factory default is 75ºF. Adjust accordingly to your own design parameters. **Remember to check and install your Outside temperature sensor away from direct sun or potential heat sources etc.**





White (1-2) Demand 1: 2-wire control input 20-240VAC

Green (3-4) Demand 2: 2-wire control input 20-240VAC

Black (5-6) Demand 3: 2-wire control input 20-240VAC

Red (7-8) Therm 1: 2-wire thermistor Eg. tank sensor

Brown (9-10) Therm 2: 2-wire thermistor Eg. GND sensor

Blue (11-12) Therm 3: 2-wire thermistor Eg. outdoor sensor

Yellow (13-14) Relay 1: misc. auxiliary 10Amps

Natural (15-16) Relay 2: misc. auxiliary 10Amps.

Black (17-19) Input Power: 3-wire This is the main input power supply connection. 17 is line, 18 is neutral and 19 is earth ground.

Red (20-22) Pump 1: 3-wire 120VAC output power to pump or fan number 1. 20 is line, 21 is neutral and 22 is earth ground.

Blue (23-25) Pump 2: 3-wire 120VAC output power to pump or fan number 2. 23 is line, 24 is neutral and 25 is earth ground.

Orange (26-28) Pump 3: 3-wire 120VAC output power to pump or fan number 3. 26 is line, 27 is neutral and 28 is earth ground. For Geothermal applications this terminal is used for controlling reversing valves.

Terminals 7-12 must not be subjected to any external power source

SUMMARY OF PARAMETERS

Description	Options	Range	Factory Default
Main View Screen(s)	View: • Tank Temp	(-40-225) °C or °F	°F
	• GND Loop/Cold Tank	(-40-225) °C or °F	°F
	• System Temp	(-40-225) °C or °F	°F
	• Outdoor/Return	(Open) °C or °F	°F
	• Setpoint (if sensor connected)	(Open) °C or °F	°F
	• Actual vs. Target Temps	°C or °F	°F
	• Min/Max's values for each sensor		°F
	• Time and Date	°C or °F	
	• Setpoints		Off
	• Setbacks	24 hr clock	
	• Separate Demands	up to 3	
	• WWSD	up to 3	75 °F
	• 3 pumps run condition	up to 3	
	• Cycle Count	0°F to 100°F	
	• Temperature Range	On/Off	°F
	• Geothermal Control*		
	• Solar Control*	0-65535 Cycles	
	* Depending on control type selected	°C or °F	
Control Options	• Display Options		
	• Always HD?	Y/N	N
	• Always CD?	Y/N	N
	• Use Room Thermistor	Y/N	N
	• Min's and Max's	Up to 6 sensors c/w reset	
	• Testing	Up to 17 relays (w/ Exp. Modules) Plus 5 x PWM	
	• Stage Run Times	Up to 14	
	• Use Zone Module	Y/N	N

Summary of Parameters

Comfort Control Innovation

Description	Options	Range	Factory Default
Heat Pump Options & Geothermal Controls	• Staging Options		
	• 2 Stage HP	Y/N	N
	• Fixed First	Y/N	N
	• Fixed Last	Y/N	N
	• Lo/Lo-Hi/Hi	Y/N	N
	• Heat pump Differential	Auto/40/30/20/10	Auto
	• Min Heat Pump On-time	1-20 Mins	1 Mins
	• Max Heat Pump Off-time	1 - 254 Sec	60 Sec
	• # of Stages (14 w/Modules)	1 to 2	Single Stage
	• Pump Options	Y/N	
	• 1 Pump/Heat Pump	Y/N	N (off)
	• Pump Sequencer	Y/N	N (off)
	• Rotate Heat Pumps	Y/N	Y
	• Pumps Always On?	Y/N	N
	• Post Purge	1 - 240 Sec	1 Sec
	• Rotate Time/Normal	Y/N	Y
	• Use Flow Proof?*	Y/N	N
Change Design (Applicable Only to Geothermal Applications)	• Design System Temp	0°F to 225°F	135°F
	• Design Room Temp	-50°F to 100°F	70°F
	• Design Outside Temp	-50°F to 100°F	-10°F
	• Min System Temp	0°F to 150°F	75°F
	• WWSD	0°F to 100°F	75°F
Solar Controls	• Tank Settings		
	• # of Control Tanks	1-4	1 Tank
	• Start Temp	1-225°F	70°F
	• Step Temp	1-225°F	10°F
	• Min (Backup) Temp	1-225°F	70°F
	• Backup Off Temp	1-225°F	70°F
	• Max (Dump) Temp	1-225°F	190°F

Description	Options	Range	Factory Default
	• Solar Settings		
	• Min Solar	1-225°F	100°F
	• Max Solar	1-225°F	200°F
	• Solar Pump 2 On Temp	50-220°F	50°F
	• Min Solar Pump On Time	1-20 Mins	2 Mins
	• Differential	Auto-225°F	4°F
Setpoint Options	• Setpoint 1 o Setpoint Temp o Heating o Cool Interlock o Differential o Lag Time o Setpoint Demand	Off/1°F to 225°F Heat/Cool Y/N 2°F to 100°F 0S to 600S No/Hot/Cold	
	• Setpoint 2 and 3	As Above	
Setback Options	• Use Setbacks	Y/N	N
	• Set Setbacks o Start Time 1 o End Time 1 o Start Time 2 o End Time 2 o Start Time 3 o End Time 3	 0:00 – 24:00 0:00 – 24:00 0:00 – 24:00 0:00 – 24:00 0:00 – 24:00 0:00 – 24:00	
	• Solar/Tank Graph	Target vs. Actual	
	• Tank/Heat Pump Graph	Target vs. Actual	

ACCESSORIES AND OPTIONS

The ECO-1000 Main Control has been designed to incorporate simple integrated expansion and zone modules to provide and accommodate even the most sophisticated control package. As can be seen from the graphic below, each expansion module has a side ported 32-Pin input /output connection.

When connected using the HBX 32-Pin male to male adapter, each module can be joined together (daisy chain style) and will butt together with virtually no side clearance. Due to the 32-pin adapter plug no external cross wiring is necessary.

A maximum of 6 Expansion Modules (EXP-0100 and EXP-0300) can be connected in series. (This does not apply to the ZON-0500)

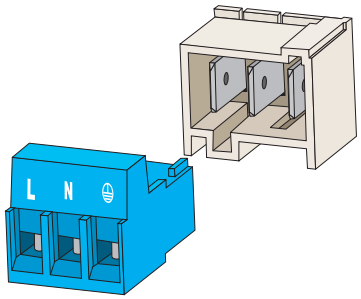
1) Additional Sensors:
- Universal Sensors part number 029-0022
- Indoor/Outdoor Sensors part number OUT-0100

2) Connectors
- 32-Pin Adapter Plug part number 033-0037

KEY/COLOUR CODED CONNECTORS

To simplify the installation, the Control has been designed to utilize dedicated terminal plugs. Each terminal has non-interchangeable male and female mating parts.

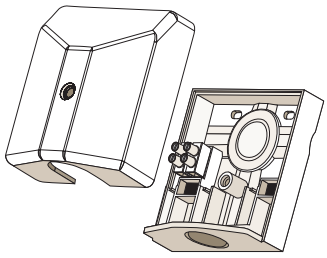
In addition each plug is colour coded as well as being keyed/ indexed. There are a combination of two and three wire plugs.



INDOOR/OUTDOOR SENSOR

The HBX remote (Indoor/Outdoor) Temperature Sensor has 2 x 20mm knock out holes, 1 from the underside and 1 from the rear. The HBX housing can accommodate up to four (4) 10K ohm thermistors.

Outside sensors should be placed on the north facing wall of the heated building to avoid any solar heating effect. The sensor should also be located away from other non-ambient heat sources such as exhaust fans, heat generating air conditioners or refrigeration units.



TYPICAL DESIGN OUTSIDE TEMPERATURES IN NORTH AMERICA

The statistical data presented above is taken as excerpts from the 1989 ASHRAE Handbook Fundamentals, Chapter 24. It is intended as sample design temperatures for winter conditions, in numerous locations. HBX has made every effort to provide accurate data but reserves all rights against misprints or typographical errors.

City	Temp	City	Temp	City	Temp	City	Temp
Canadian Cities	**°F**	Fort Smith, AR	17	Baltimore, MD	3	Oklahoma City, OK	13
Edmonton, AB	-25	Little Rock, AR	20	Cumberland, MD	10	Tulsa, OK	13
Calgary, AB	-23	Los Angeles, CA	43	Boston, MA	9	Baker, OR	6
Fort Nelson, BC	-40	San Fransisco, CA	38	Greenfield, MA	-2	Portland, OR	23
Vancouver, BC	19	Boulder, CO	8	Detroit, MI	6	Allentown, PA	9
Churchill, MB	-39	Denver, CO	1	Traverse City, MI	1	Philadelphia, PA	14
Winnipeg, MB	-27	Bridgeport, CT	9	Fergus Falls, MN	-17	Newport, RI	9
Fredericton, NB	-11	Hartford, CT	7	Minnesota, MN	-12	Providence, RI	9
Moncton, NB	-8	Dover, DE	15	Clarksdale, MS	19	Charleston, SC	28
Goose Bay, NL	-24	Wilmington, DE	14	Jackson, MS	25	Georgetown, SC	26
St. John's, NL	7	Andrews, DC	14	Hannibal, MO	8	Aberdeen, SD	-15
Inuvik, NT	-53	Washington, DC	17	St. Louis, MO	6	Rapid City, SD	-7
Yellowknife, NT	-46	Miami, FL	48	Billings, MT	-10	Chattanooga, TN	18
Halifax, NS	5	Gainesville, FL	31	Kalispel, MT	-7	Memphis, TN	18
Yarmouth, NS	9	Atlanta, GA	22	Hastings, NE	-3	Amarillo, TX	11
Ottawa, ON	-13	Savannah, GA	27	Omaha, NE	-3	Dallas, TX	22
Toronto, ON	-1	Boise, ID	10	Las Vegas, NV	28	Logan, UT	2
Charlottetown, PE	-4	Coeur D'Alene, ID	-1	Reno, NV	11	Salt Lake City, UT	8
Montreal, PQ	-10	Aurora, IL	-1	Berlin, NH	-9	Barre, VT	-11
Quebec City, PQ	-14	Chicago, IL	-4	Laconia, NH	-5	Rutland, VT	-8
Regina, SK	-29	Bloomington, IN	5	Newark, NJ	14	Charlottesville, VA	18
Saskatoon, SK	-31	Indianapolis, IN	2	Phillipsburg, NJ	6	Norfolk, VA	22
Whitehorse, YT	-43	Cedar Rapids, IA	-5	Alberquerque, NM	16	Seattle, WA	26
		Des Moines, IA	-5	Los Alamos, NM	9	Yakima, WA	5
American Cities	**°F**	Dodge City, KS	5	Buffalo, NY	6	Beckley, WV	4
Birmingham, AL	21	Wichita, KS	7	New York, NY	15	Huntington, WV	10
Huntsville, AL	16	Lexington, KY	8	Charlotte, NC	22	Ashland, WI	-16
Anchorage, AK	-18	Louisville, KY	10	Jacksonville, NC	24	Milwaukee, WI	-4
Fairbanks, AK	-47	Baton Rouge, LA	29	Bismark, ND	-19	Cheyenne, WY	-1
Phoenix, AZ	34	New Orleans, LA	33	Fargo, ND	-18	Newcastle, WY	-12
Tucson, AZ	32	Augusta, ME	-3	Cincinnati, OH	6		
		Lewiston, ME	-2	Toledo, OH	1		

TEMPERATURE CONVERSION / RESISTANCE TABLE FOR HBX 029-0022, 029-0032 & OUT-0100 10K TEMPERATURE SENSORS

Celsius	Fahrenheit	Ohms	Celsius	Fahrenheit	Ohms	Celsius	Fahrenheit	Ohms
-30	-22	177,000	15	59	15,714	60	140	2,488
-29	-20.2	166,342	16	60.8	15,000	61	141.8	2,400
-28	-18.4	156,404	17	62.6	14,323	62	143.6	2,315
-27	-16.6	147,134	18	64.4	13,681	63	145.4	2,235
-26	-14.8	138,482	19	66.2	13,071	64	147.2	2,157
-25	-13	130,402	20	68	12,493	65	149	2,083
-24	-11.2	122,807	21	69.8	11,942	66	150.8	2,011
-23	-9.4	115,710	22	71.6	11,418	67	152.6	1,943
-22	-7.6	109,075	23	73.4	10,921	68	154.4	1,876
-21	-5.8	102,868	24	75.2	10,449	69	156.2	1,813
-20	-4	97,060	**25**	**77**	**10,000**	70	158	1,752
-19	-2.2	91,588	26	78.8	9,571	71	159.8	1,693
-18	-0.4	86,463	27	80.6	9,164	72	161.6	1,637
-17	1.4	81,662	28	82.4	8,776	73	163.4	1,582
-16	3.2	77,162	29	84.2	8,407	74	165.2	1,530
-15	5	72,940	30	86	8,056	75	167	1,480
-14	6.8	68,957	31	87.8	7,720	76	168.8	1,431
-13	8.6	65,219	32	89.6	7,401	77	170.6	1,385
-12	10.4	61,711	33	91.4	7,096	78	172.4	1,340
-11	12.2	58,415	34	93.2	6,806	79	174.2	1,297
-10	14	55,319	35	95	6,530	80	176	1,255
-9	15.8	52,392	36	96.8	6,266	81	177.8	1,215
-8	17.6	49,640	37	98.6	6,014	82	179.6	1,177
-7	19.4	47,052	38	100.4	5,774	83	181.4	1,140
-6	21.2	44,617	39	102.2	5,546	84	183.2	1,104
-5	23	42,324	40	104	5,327	85	185	1,070
-4	24.8	40,153	41	105.8	5,117	86	186.8	1,037
-3	26.6	38,109	42	107.6	4,918	87	188.6	1,005
-2	28.4	36,182	43	109.4	4,727	88	190.4	974
-1	30.2	34,367	44	111.2	4,544	89	192.2	944
0	32	32,654	45	113	4,370	90	194	915
1	33.8	31,030	46	114.8	4,203	91	195.8	889
2	35.6	29,498	47	116.6	4,042	92	197.6	861
3	37.4	28,052	48	118.4	3,889	93	199.4	836
4	39.2	26,686	49	120.2	3,743	94	201.2	811
5	41	25,396	50	122	3,603	95	203	787
6	42.8	24,171	51	123.8	3,469	96	204.8	764
7	44.6	23,013	52	125.6	3,340	97	206.6	742
8	46.4	21,913	53	127.4	3,217	98	208.4	721
9	48.2	20,883	54	129.2	3,099	99	210.2	700
10	50	19,903	55	131	2,986	100	212	680
11	51.8	18,972	56	132.8	2,787	101	213.8	661
12	53.6	18,090	57	134.6	2,774	102	215.6	643
13	55.4	17,255	58	136.4	2,675	103	217.4	626
14	57.2	16,464	59	138.2	2,579	104	219.2	609

Limited Warranty
HBX Controls warrants each of its products to be free from defects in workmanship and materials under normal use and service for a period of 24 months from date of manufacture or 12 months from date of purchase from an HBX Authorized Dealer, if within the above documented period after date of manufacture.

If the product proves to be defective within the applicable warranty period, HBX on its sole discretion will repair or replace said product. Replacement product may be new or refurbished of equivalent or better specifications, relative to the defective product. Replacement product need not be of identical design or model. Any repair or replacement product pursuant to this warranty shall be warranted for not less than 90 days from date of such repair, irrespective of any earlier expiration of original warranty period. When HBX provides replacement, the defective product becomes the property of HBX Controls.

Warranty Service, within the applicable warranty period, may be obtained by contacting your nearest HBX Controls office via the original Authorized Agent and requesting a Return Material Authorization Number (RMA #). Proof of purchase in the form a dated invoice/receipt must be provided to expedite the issuance of a Factory RMA.

After an RMA number has been issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit. The RMA number must be visible on the outside of the package and a copy included inside the package. The package must be mailed or otherwise shipped back to HBX with all costs of mailing/shipping/insurance prepaid by the warranty claimant.

Any package/s returned to HBX without an approved and visible RMA number will be rejected and shipped back to purchaser at purchaser's expense. HBX reserves the right, if deemed necessary, to charge a reasonable levy for costs incurred, additional to mailing or shipping costs.

Limitation of Warranties.
If the HBX product does not operate as warranted above the purchasers sole remedy shall be, at HBX's option, repair or replacement. The foregoing warranties and remedies are exclusive and in lieu of all other warranties, expressed or implied, either in fact or by operation of law, statutory or otherwise, including warranties of merchantability and fitness for a particular purpose/application. HBX neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale, installation maintenance or use of HBX Controls products.

HBX shall not be liable under this warranty; if its testing and examination discloses that the alleged defect in the product does not exist or was caused by the purchasers or third persons misuse, neglect, improper installation or testing, unauthorized attempts to repair or any other cause beyond the range of intended use, or by accident, fire, lightning or other hazard.

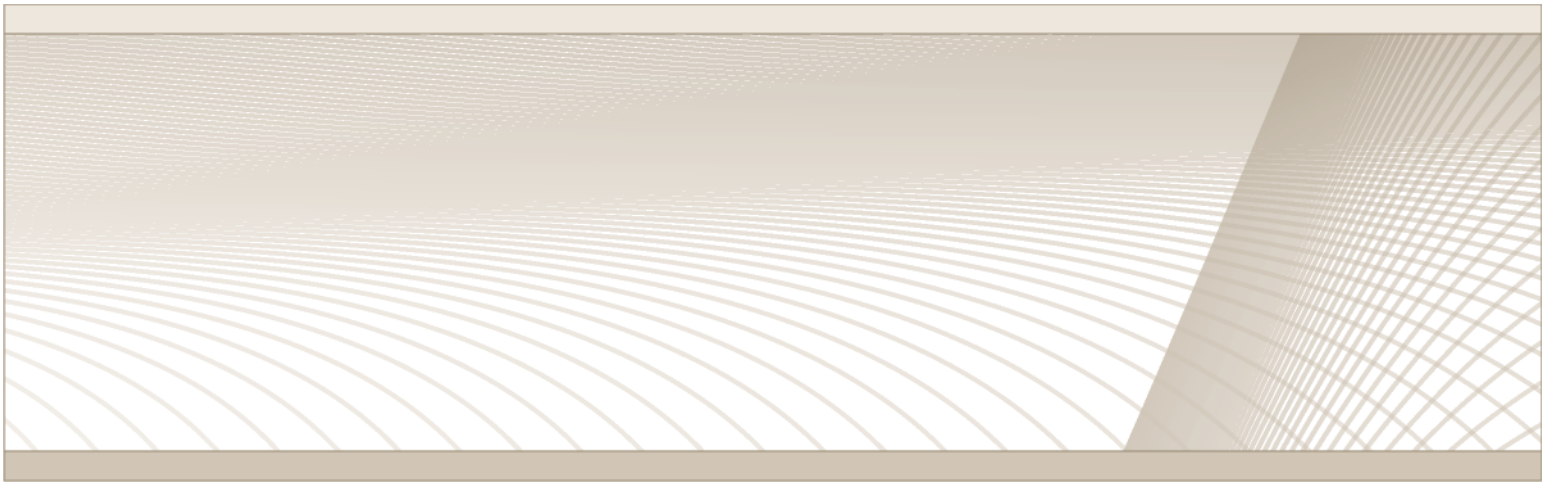
Limitation of Liability.
In no event will HBX be liable for any damages, including loss of data, loss of profits, costs of cover or other incidental, consequential or indirect damages arising out of the installation, maintenance, commissioning, performance, failure or interruption of an HBX product, however caused and on any theory of liability. This limitation will apply even if HBX has been advised of the possibility of such damage.

Local Law.
This limited warranty statement gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state in the United States, from Province to Province in Canada and from Country to Country elsewhere in the world.

To the extent this Limited Warranty Statement is inconsistent with local law, this statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this statement may not apply to the purchaser. For example, some states in the United States, as well as some governments outside the United States (including Canadian Provinces), may: Preclude the disclaimers and limitations in this statement from limiting the statutory rights of a consumer (e.g. United Kingdom); Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations; or Grant the purchaser additional warranty rights which the manufacturer cannot disclaim, or not allow limitations on the duration of implied warranties.

Phone: +1 (403) 720-0029 Fax: +1 (403) 720-0054
Email: info@hbxcontrols.com Web: www.hbxcontrols.com

v1.33



HBX Control Systems Inc.
4516 - 112th Avenue SE
Calgary, AB Canada T2C 2K2