

FRIGID-X™ PANEL COOLER

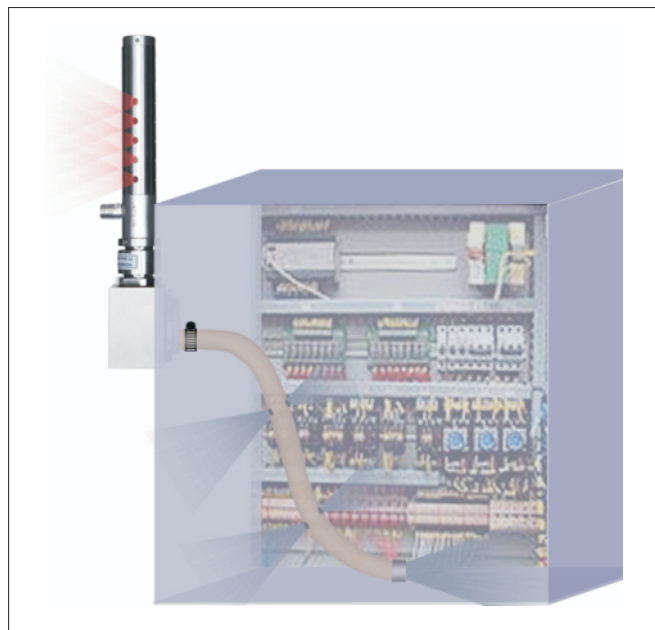


Prevent downtime due to overheating electric and electronic control panels and cabinets.

FRIGID-X™ Panel Coolers maintain NEMA Type 12 (IP 52), NEMA Type 3R (IP 14) and Patented* NEMA Type 4-4X (IP 66) integrity and are ULC Listed.

WHAT ARE THEY - REASONS TO USE

Frigid-X™ Panel Cooler and Cabinet Enclosure Cooler for electronic control panels provide a low cost method of both purging and cooling electrical and electronic control panels by using a stainless steel vortex tube to create cold air from ordinary compressed air. Unlike many competitors - all of our coolers are stainless steel, not just the vortex tube, for longer life and flexible use. Frigid-X™ Panel Coolers are compact and can be installed in minutes through a standard electrical knockout. There are virtually no moving parts. Cabinet Enclosure Cooler - Frigid-X™ series are ideal for all NEMA Type 12 (IP 52), NEMA Type 3R (IP 14) and Patented* NEMA Type 4-4X (IP 66) rated panels.



FRIGID-X™ PANEL COOLER ADVANTAGES :

- ▶ No moving parts.
- ▶ Quiet
- ▶ Eliminate fans and blowers and filters
- ▶ Low in cost compared to most others
- ▶ Superior design and performance
- ▶ Maintenance free operation
- ▶ Made of durable stainless steel and metal parts - no cheap plastic parts
- ▶ Cooling capacities to 2800 BTU/Hr per unit.
- ▶ Maintain NEMA 12, NEMA 3R and Patented* NEMA 4-4X integrity (IP 52, IP 14 and IP 66)
- ▶ Control and stabilize the temperature and humidity Inside the enclosure
- ▶ No CFC's or HCFC's
- ▶ Mount in a standard electrical knockout
- ▶ Eliminate circuit drift, nuisance tripping and dirt Contamination
- ▶ Provide wash down protection (Patented*NEMA 4-4X (IP 66))

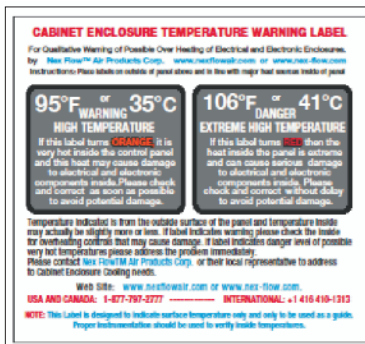
WHY THE FRIGID-X™ PANEL COOLER OVER OTHERS :

All Metal Parts, Stainless Steel Body, Quiet, Tests Show Frigid-X™ Panel Cooler Constantly Quieter Than Competition! Our Standard units are good in ambient temperatures up to 150° F (67° C). High temperatures units are available to 200° F (93° C) and higher. Non Hazardous purge units are also available where constant flow is required to purge a control panel but maintain on-off operation to conserve energy. Contact Nex Flow™ or your local representative for details.

FRIGID-X™ PANEL COOLER APPLICATIONS :

- ▶ Programmable controllers
- ▶ System Control Cabinets
- ▶ CCTV Cameras
- ▶ Motor Control Centers
- ▶ Relay Panels
- ▶ CNC Machine controls
- ▶ Computer Panels
- ▶ Laser Housing enclosure cooling
- ▶ Electronic scale cooling
- ▶ Modular Control Centers
- ▶ Food Service Equipment Controls

*US patent number 8,616,010. Other countries: Patented or Patent Pending.

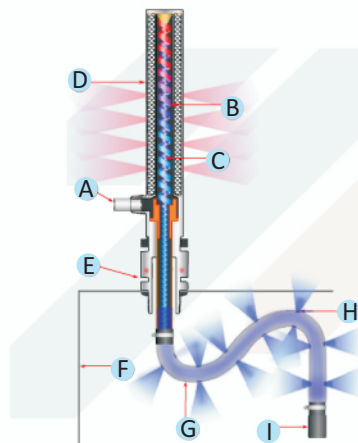


With every Panel Cooler you receive a Free Panel Cooler Temperature Warning Indicator Sticker. It will provide a dual qualitative warning level and danger level if the temperature inside your control cabinet is too high. Use on any control panels you wish to monitor. Extra stickers may be purchased from NexFlow - Part Number 69600.

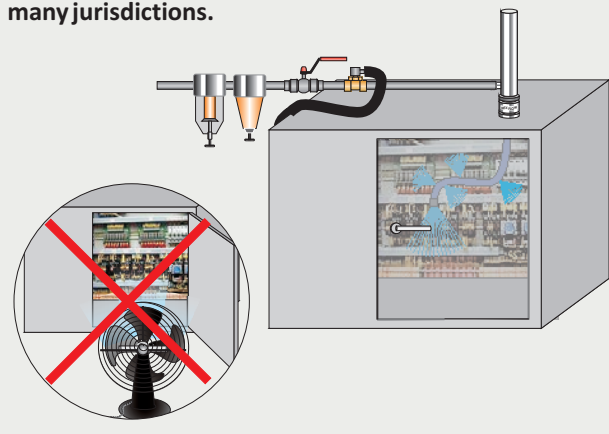


FRIGID-X™ PANEL COOLER SYSTEM - HOW IT WORKS

Compressed air enters at point (A) into the vortex tube component of the panel cooler. The vortex tube splits the compressed air into a hot (B) and cold (C) stream of air. The hot air from the vortex tube is vented to the atmosphere at point (D) after being muffled to reduce noise. Hot air displaced from inside the control panel or cabinet is exhausted through point (E). Cold air enters into the panel (F) via the cold distribution hose (G). Holes (H) are punched into the hose kit to deliver the cold air inside the panel where required. A muffler (I) further reduces the noise level of the exhausting air.



Leaving a control panel door open to let a fan blow dirty hot air on to the control is hazardous and even illegal in many jurisdictions.



FRIGID-X™ PANEL COOLER SELECTION

Nex Flow™ Frigid-X™ Panel Coolers are available with thermostat control (on-off units) or continuous operation. Continuous systems are best when constant cooling and/or a positive purge of the panel is required. On-off control saves air by activating the unit when the internal temperature approaches a critical level. The adjustable thermostat is factory set at 95 degrees F (35 degrees C). They are best used in applications where heat may fluctuate as in variable speed drives and where a continuous purge is not required. ALL OF OUR UNITS ARE STAINLESS STEEL for long life and flexible environments.

If a constant positive pressure is required with on-off control (Non-hazardous Purge Units) a special solenoid valve can be supplied to allow a small amount of air flow into the control panel when in the closed position. High temperature units for ambient in excess of 150° F (67° C) to 200° F (93° C) and higher are available.

When you find control panel doors open it is a sure sign that you need Frigid-X™ Panel Cooler. Open doors are not only dangerous but also creates dirt buildup on electronics shortening their life.

FRIGID-X™ PANEL COOLER SYSTEMS VERSES OTHER OPTIONS

- ▶ Heat Pipes and air to air heat Exchangers cannot cool below ambient limiting cooling effect. Filters require Monitoring and change to prevent failure.
- ▶ Water cooled heat Exchangers use water which is not compatible with electrics. In addition scale buildup can cause reduced effectiveness over time and downtime for descaling.
- ▶ Refrigerant CFC or HCFC Heat Exchangers are more costly with higher installation cost and lower life expectancy Installation requires a floor drain for condensate. Machine vibration can cause loss of refrigerant and component failure. Average replacement cost of a compressor can be High. Filters require monitoring and change to prevent failure.
- ▶ Frigid-X™ Panel Cooler is low cost, with NEMA Type 12 (IP 52), NEMA Type 3R(IP 14) and Patented* NEMA Type 4-4X (IP 66) Models available. They are compact, easy and fast to install. Thermostatic control minimizes air use to only when needed

Frigid-X™ Panel Coolers are approved by Underwriters Laboratory (UL Component Recognized) to meet USA and Canadian Standards, and meet CE Regulations and necessary international standards.



*US patent number 8,616,010. Other countries: Patented or Patent Pending.

FRIGID-X PANEL COOLER SYSTEMS SPECIFICATIONS

TYPE	MODEL	CAPACITY BTU/hr (Watts)*	Thermo- stat Control	Sound Level dBA
NEMA TYPE 12 (IP 52)	61004A	290 (85)	Not included	64
NEMA TYPE 12 (IP 52)	61008A	580 (170)	Not included	66
NEMA TYPE 12 (IP 52)	61015A	1100 (322)	Not included	72
NEMA TYPE 12 (IP 52)	61025A	1800 (527)	Not included	73
NEMA TYPE 12 (IP 52)	61030A	2100 (615)	Not included	74
NEMA TYPE 12 (IP 52)	61040A	2900 (849)	Not included	76
NEMA TYPE 12 (IP 52)	63004A	290 (85)	Included	64
NEMA TYPE 12 (IP 52)	63008A	580(170)	Included	66
NEMA TYPE 12 (IP 52)	63015A	1100 (322)	Included	72
NEMA TYPE 12 (IP 52)	63025A	1800 (527)	Included	73
NEMA TYPE 12 (IP 52)	63030A	2100 (615)	Included	74
NEMA TYPE 12 (IP 52)	63040A	2900 (849)	Included	76
NEMA TYPE 3R (IP 14)	61004R	290 (85)	Not included	64
NEMA TYPE 3R (IP 14)	61008R	580(170)	Not included	66
NEMA TYPE 3R (IP 14)	61015R	1100 (322)	Not included	72
NEMA TYPE 3R (IP 14)	61025R	1800 (527)	Not included	73
NEMA TYPE 3R (IP 14)	61030R	2100 (615)	Not included	74
NEMA TYPE 3R (IP 14)	61040R	2900 (849)	Not included	76
NEMA TYPE 3R (IP 14)	63004R	290 (85)	Included	64
NEMA TYPE 3R (IP 14)	63008R	580(170)	Included	66
NEMA TYPE 3R (IP 14)	63015R	1100 (322)	Included	72
NEMA TYPE 3R (IP 14)	63025R	1800 (527)	Included	73
NEMA TYPE 3R (IP 14)	63030R	2100 (615)	Included	74
NEMA TYPE 3R (IP 14)	63040R	2900 (849)	Included	76
Patented*NEMA TYPE 4-4X (IP 66)	61104X	290 (85)	Not included	64
Patented*NEMA TYPE 4-4X (IP 66)	61108X	580(170)	Not included	66
Patented*NEMA TYPE 4-4X (IP 66)	61115X	1100 (322)	Not included	72
Patented*NEMA TYPE 4-4X (IP 66)	61125X	1800 (527)	Not included	73
Patented*NEMA TYPE 4-4X (IP 66)	61130X	2100 (615)	Not included	74
Patented*NEMA TYPE 4-4X (IP 66)	61140X	2900 (849)	Not included	76
Patented*NEMA TYPE 4-4X (IP 66)	63104X	290 (85)	Included	64
Patented*NEMA TYPE 4-4X (IP 66)	63108X	580(170)	Included	66
Patented*NEMA TYPE 4-4X (IP 66)	63115X	1100 (322)	Included	72
Patented*NEMA TYPE 4-4X (IP 66)	63125X	1800 (527)	Included	73
Patented*NEMA TYPE 4-4X (IP 66)	63130X	2100 (615)	Included	74
Patented*NEMA TYPE 4-4X (IP 66)	63140X	2900 (849)	Included	76

* A) The BTU/hr (wattage) is calculated with air at 100 PSIG (6.9 Bar) and 70°F (21°C)

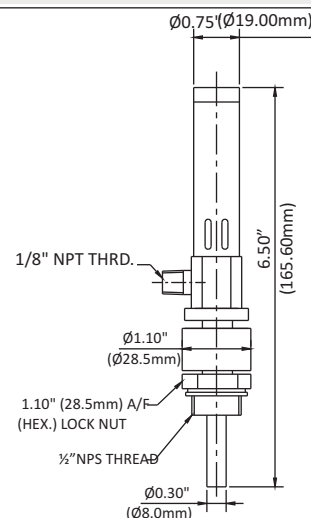
B) For temperatures of compressed air between 90°F (32°C) to 100°F (38°C) de-rate the cooling effect by 20% at 100°F (38°C) & above de-rate by 30%

RATINGS EXPLANATION

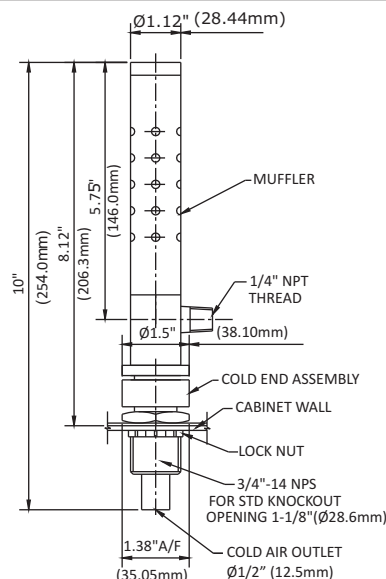
NEMA TYPE 12 (IP 52) Frigid-X™ Panel Cooler is dust tight and oil tight and used in general industrial environments.

Patented* NEMA TYPE 4-4X (IP 66) Frigid-X™ Panel Cooler is dust, oil-tight, spray resistant and used in environments where there are liquids and for food service and corrosive environments.

NEMA TYPE 3R (IP 14) Frigid-X™ Panel Cooler is used in outdoor service.



MINI PANEL COOLER Models 60004 to 63008X



FRIGID-X™ PANEL COOLER Models 60015 to 63115X

FRIGID-X™ HOT AND COLD MUFFLING KITS

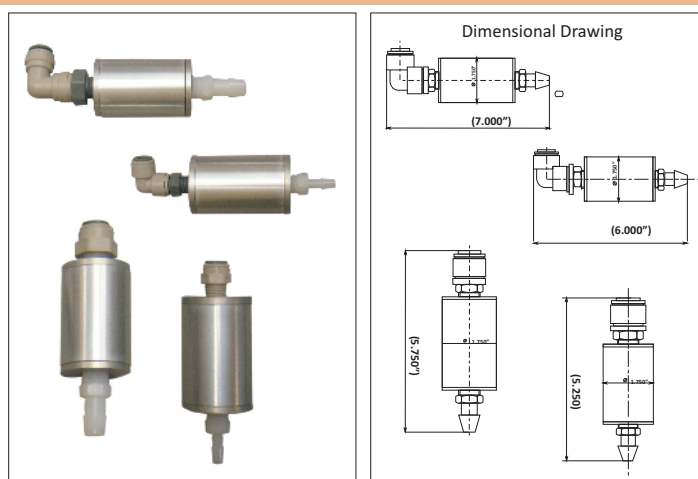
Achieve additional noise level reduction utilizing the Frigid-X™ Hot end and Cold End Muffling Kits Combined dbA of up to 8 Decibels

COLD END MUFFLING KIT

The Cold End Muffling Kit consists of a silencer and all necessary fittings to connect to the Panel Cooler at the cold air outlet inside the electrical control panel. Depending on the capacity of the specific Panel Cooler, the dBA reduction offered by the Cold End Muffling Kit is 5 to 6 dBA. Easy to install. Can be installed with the silencer vertical or horizontal depending on the space.

PART NO	DESCRIPTION
69501	Cold End Muffler Kit for 60015A to 63140X
69503	Cold End Muffler Kit for 60004A to 63108X

Cold End Muffler kits for Models for Models 60015A to 63140X (Large Size) and 60004A to 63108X Panel Coolers (Small size)



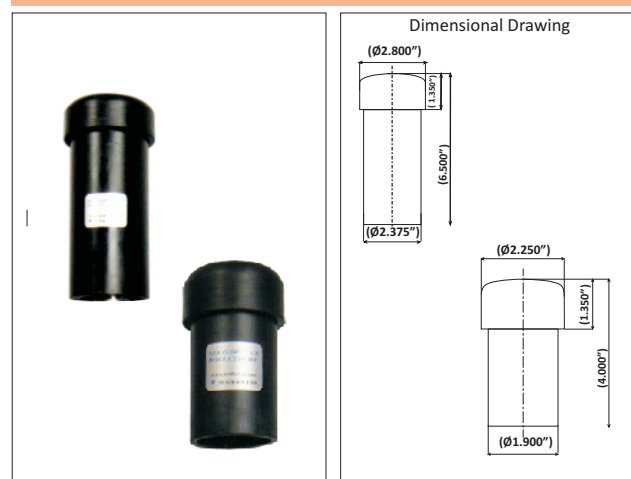
PART NO	DESCRIPTION
69505	Cold End and Hot End Combination Muffler Kit for 60015A to 63140X
69506	Cold End and Hot End Combination Muffler Kit for 60004A to 63108X

HOT END MUFFLING KIT & HEAT GUARD

The Hot End Muffling Kit consists of an ABS Plastic sleeve with silencing material fitted over the hot end of the Panel Cooler, outside of the control panel. The dBA reduction offered by the Hot End Muffling Kit is 2 dBA. Easy to install just fit over the top of the Panel Cooler. In addition to noise reduction it offers additional protection from the hot end of the Panel Cooler.

PART NO	DESCRIPTION
69502	Hot End Muffler Kit for 60015A to 63140X
69504	Cold End Muffler Kit for 60004A to 63108X

Hot End Muffler kits for Models for Models 60015A to 63140X (Large Size) and 60004A to 63108X Panel Coolers (Small size)



SMART N CLEVER™
MORE THAN INTELLIGENT

SILENT X-STREAM™ FRIGID-X™ PANEL COOLER



Prevent Downtime due to overheating electric and electronic control panels and cabinets with Frigid-X™ Panel Coolers combined with the Hot and Cold End Muffling Kits for Quiet Operation Maintain NEMA Type 12 (IP 52), NEMA Type 3R (IP 14) and Patented* NEMA Type 4-4x (IP 66) Integrity - ULC Listed

WHAT ARE THEY - REASONS TO USE COMBINED WITH THE HOT AND COLD END MUFFLING KITS, THE SILENT X-STREAM™ PANEL COOLER CAN REDUCE NOISE LEVELS TO 64 dBA OR MORE.

Frigid-X™ Panel Cooler and Cabinet Enclosure Cooler for electronic control panels provide a low cost method of both purging and cooling electrical and electronic control panels by using a stainless steel vortex tube to create cold air from ordinary compressed air. Unlike many competitors - all of our coolers are stainless steel, not just the vortex tube, for longer life and flexible use. Frigid-X™ Panel Coolers are compact and can be installed in minutes through a standard electrical knockout. There are virtually no moving parts. Cabinet Enclosure Cooler - Frigid-X™ series are ideal for all NEMA Type 12 (IP 52), NEMA Type 3R (IP 14) and Patented* NEMA Type 4-4X (IP 56) rated panels.

SILENT X-STREAM™ FRIGID-X™ PANEL COOLER ADVANTAGES :

- ▶ No moving parts.
- ▶ Put Extra Quiet
- ▶ Eliminate fans and blowers and filters
- ▶ Low in cost compared to most others
- ▶ Superior design and performance
- ▶ Maintenance free operation
- ▶ Made of durable stainless steel and metal arts -no cheap plastic parts
- ▶ Cooling capacities to 2800 BTU/Hr per unit.
- ▶ Maintain NEMA 12, NEMA 3R and Patented* NEMA 4-4X integrity (IP 52, IP 14 and IP 66)
- ▶ Control and stabilize the temperature and humidity Inside the enclosure
- ▶ No CFC's or HCFC's
- ▶ Mount in a standard electrical knockout
- ▶ Eliminate circuit drift, nuisance tripping and dirt Contamination
- ▶ Provide wash down protection (Patented* NEMA 4-4X (IP 66))



WHY THE SILENT X-STREAM™ FRIGID-X™ PANEL COOLER OVER OTHERS:

The Panel Cooler itself is All Metal Parts, Stainless Steel Body, Extra Silenced using the Hot End Muffling Kt of ABS Plastic and Silencing material and a Cold End Silencer inside the Electrical Panel. Our Silent X-Stream units are good in ambient temperatures to 150 degrees F (67 degrees C.) Non-Hazardous purge units are also available where constant flow is required to purge a control panel but maintain on-off operation to conserve energy. Contact Nex Flow™ or your local representative for details.

SILENT X-STREAM™ FRIGID-X™ PANEL COOLER APPLICATIONS:

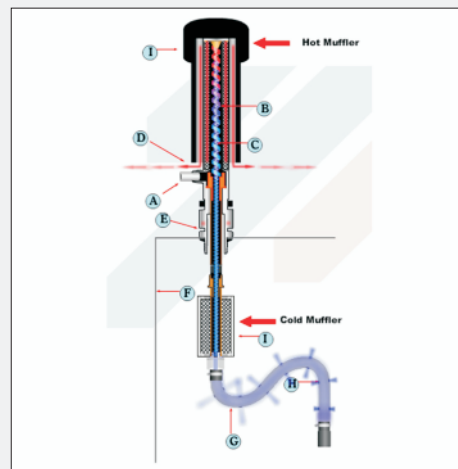
- ▶ Computer Rooms
- ▶ Environments where Cooler Panels are in close proximity to Personnel
- ▶ When General Noise Reduction is Desired or Necessary

*US patent number 8,616,010. Other countries: Patented or Patent Pending.

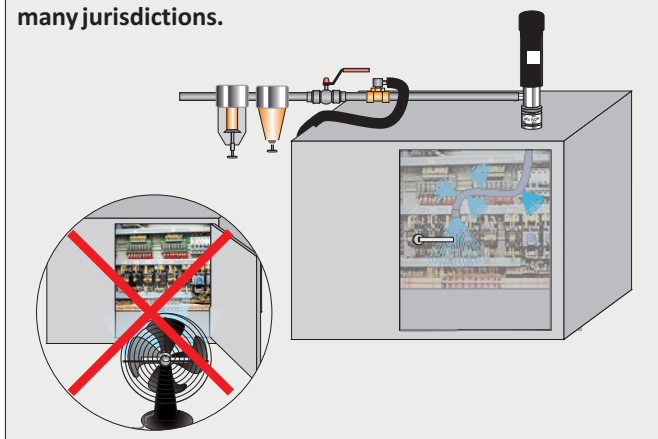


SILENT X-STREAM™ FRIGID-X™ PANEL COOLER SYSTEM - HOW IT WORKS

Compressed air enters at point (A) into the vortex tube component of the Panel Cooler. The vortex tube splits the compressed air into a hot (B) and cold (C) stream of air. The hot air from the vortex tube is vented out of the metal sleeve and down the hot end muffler and out at (D) after additional muffling. Hot air displaced from the inside of the control panel is exhausted through point (E). Cold Air enters into the panel (F) via the Cold End Muffler and hose distribution kit (G). Holes (H) are punched into the hose kit to deliver the cold air inside the panel where required. A muffler (I) further reduces the noise level of the exhausting air.



Leaving a control panel door open to let a fan blow dirty hot air on to the control is hazardous and even illegal in many jurisdictions.



When you find control panel doors open it is a sure sign that you need Frigid-X™ Panel Cooler. Open doors are not only dangerous but also creates dirt buildup on electronics shortening their life.

SILENT X-STREAM™ FRIGID-X™ PANEL COOLER

- ▶ Heat Pipes and air to air heat Exchangers cannot cool below ambient limiting cooling effect. Filters require Monitoring and change to prevent failure.
- ▶ Water cooled heat Exchangers use water which is not compatible with electrics. In addition scale buildup can cause reduced effectiveness over time and downtime for descaling.
- ▶ Refrigerant CFC or HCFC Heat Exchangers are more costly with higher installation cost and lower life expectancy. Installation requires a floor drain for condensate. Machine vibration can cause loss of refrigerant and component failure. Average replacement cost of a compressor can be High. Filters require monitoring and change to prevent failure.
- ▶ Frigid-X™ Panel Cooler is low cost, with NEMA Type 12 (IP 52), NEMA Type 3R (IP 14) and Patented* NEMA Type 4-4X (IP 66) Models available. They are compact, easy and fast to install. Thermostatic control minimizes air use to only when needed

SILENT X-STREAM™ FRIGID-X™ PANEL COOLER

Nex Flow™ Frigid-X™ Panel Coolers are available with thermostat control (on-off units) or continuous operation. Continuous systems are best when constant cooling and/or a positive purge of the panel is required. On-off control saves air by activating the unit when the internal temperature approaches a critical level. The adjustable thermostat is factory set at 95 degrees F (35 degrees C). They are best used in applications where heat may fluctuate as in variable speed drives and where a continuous purge is not required. ALL OF OUR UNITS ARE STAINLESS STEEL for long life and flexible environments.

If a constant positive pressure is required with on-off control (Non-hazardous Purge Units) a special solenoid valve can be supplied to allow a small amount of air flow into the control panel when in the closed position. High temperature units for ambient in excess of 150° F (67° C) to 200° F (93° C) and higher are available.

Frigid-X™ Panel Coolers are approved by Underwriters Laboratory (ULC Component Recognized) to meet USA and Canadian Standards, and meet CE Regulations and necessary international standards.



*US patent number 8,616,010. Other countries: Patented or Patent Pending.

SILENT X-STREAM™ FRIGID-X™ PANEL COOLER SYSTEMS SPECIFICATIONS

TYPE	MODEL	CAPACITY BTU/hr (Watts)*	Thermo- stat Control	Sound Level dBA
NEMA TYPE 12 (IP 52)	61004A-X	290 (85)	Not included	64
NEMA TYPE 12 (IP 52)	61008A-X	580 (170)	Not included	66
NEMA TYPE 12 (IP 52)	61015A-X	1100 (322)	Not included	72
NEMA TYPE 12 (IP 52)	61025A-X	1800 (527)	Not included	73
NEMA TYPE 12 (IP 52)	61030A-X	2100 (615)	Not included	74
NEMA TYPE 12 (IP 52)	61040A-X	2900 (849)	Not included	76
NEMA TYPE 12 (IP 52)	63004A-X	290 (85)	Included	64
NEMA TYPE 12 (IP 52)	63008A-X	580(170)	Included	66
NEMA TYPE 12 (IP 52)	63015A-X	1100 (322)	Included	72
NEMA TYPE 12 (IP 52)	63025A-X	1800 (527)	Included	73
NEMA TYPE 12 (IP 52)	63030A-X	2100 (615)	Included	74
NEMA TYPE 12 (IP 52)	63040A-X	2900 (849)	Included	76
NEMA TYPE 3R (IP 14)	61004R-X	290 (85)	Not included	64
NEMA TYPE 3R (IP 14)	61008R-X	580(170)	Not included	66
NEMA TYPE 3R (IP 14)	61015R-X	1100 (322)	Not included	72
NEMA TYPE 3R (IP 14)	61025R-X	1800 (527)	Not included	73
NEMA TYPE 3R (IP 14)	61030R-X	2100 (615)	Not included	74
NEMA TYPE 3R (IP 14)	61040R-X	2900 (849)	Not included	76
NEMA TYPE 3R (IP 14)	63004R-X	290 (85)	Included	64
NEMA TYPE 3R (IP 14)	63008R-X	580(170)	Included	66
NEMA TYPE 3R (IP 14)	63015R-X	1100 (322)	Included	72
NEMA TYPE 3R (IP 14)	63025R-X	1800 (527)	Included	73
NEMA TYPE 3R (IP 14)	63030R-X	2100 (615)	Included	74
NEMA TYPE 3R (IP 14)	63040R-X	2900 (849)	Included	76
Patented*NEMA TYPE 4-4X (IP 66)	61104X-X	290 (85)	Not included	64
Patented*NEMA TYPE 4-4X (IP 66)	61108X-X	580(170)	Not included	66
Patented*NEMA TYPE 4-4X (IP 66)	61115X-X	1100 (322)	Not included	72
Patented*NEMA TYPE 4-4X (IP 66)	61125X-X	1800 (527)	Not included	73
Patented*NEMA TYPE 4-4X (IP 66)	61130X-X	2100 (615)	Not included	74
Patented*NEMA TYPE 4-4X (IP 66)	61140X-X	2900 (849)	Not included	76
Patented*NEMA TYPE 4-4X (IP 66)	63104X-X	290 (85)	Included	64
Patented*NEMA TYPE 4-4X (IP 66)	63108X-X	580(170)	Included	66
Patented*NEMA TYPE 4-4X (IP 66)	63115X-X	1100 (322)	Included	72
Patented*NEMA TYPE 4-4X (IP 66)	63125X-X	1800 (527)	Included	73
Patented*NEMA TYPE 4-4X (IP 66)	63130X-X	2100 (615)	Included	74
Patented*NEMA TYPE 4-4X (IP 66)	63140X-X	2900 (849)	Included	76

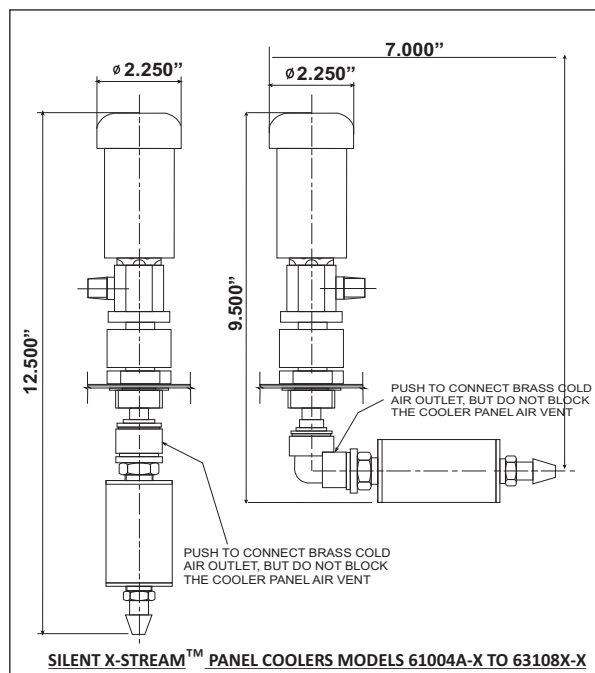
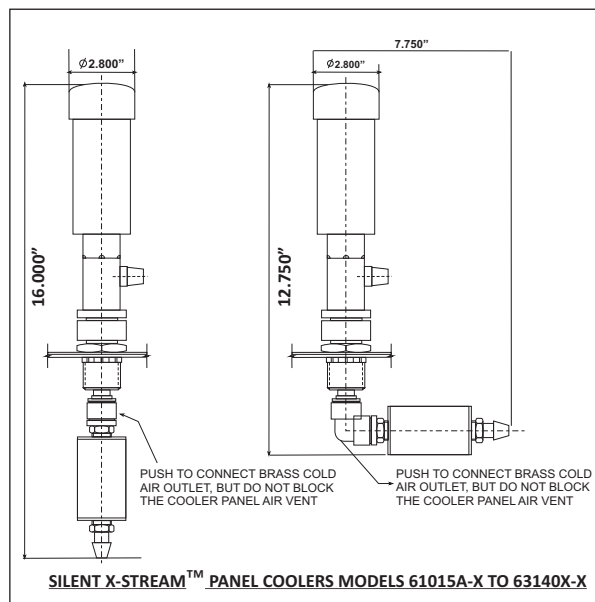
*US patent number 8,616,010. Other countries: Patented or Patent Pending.

RATINGS EXPLANATION

NEMA TYPE 12 (IP 52) Frigid-X™ Panel Cooler is dust tight and oil tight and used in general industrial environments.

Patented* NEMA TYPE 4-4X (IP 66) Frigid-X™ Panel Cooler is dust, oil-tight, spray resistant and used in environments where there are liquids and for food service and corrosive environments.

NEMA TYPE 3R (IP 14) Frigid-X™ Panel Cooler is used in outdoor service.



* A) The BTU/hr (wattage) is calculated with air at 100 PSIG (6.9 Bar) and 70°F (21°C)

B) For temperatures of compressed air between 90°F (32°C) to 100°F (38°C) de-rate the cooling effect by 20% at 100°F (38°C) & above de-rate by 30%



FRIGID-X™ PANEL COOLER



17

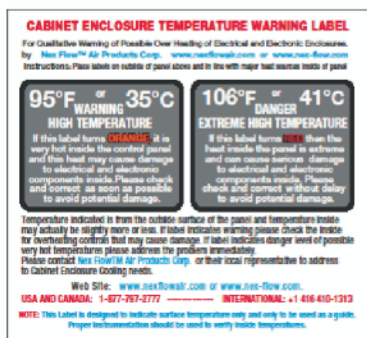
THE NEW ELC ELECTRONIC CONTROL DIGITAL THERMOSTAT

The ELC (Electronic Control Digital Thermostat) is a way for precise control of one or two New Flow™ Frigid-X Panel Coolers. Far more accurate and elegant than using a standard thermostat and with flexible use.

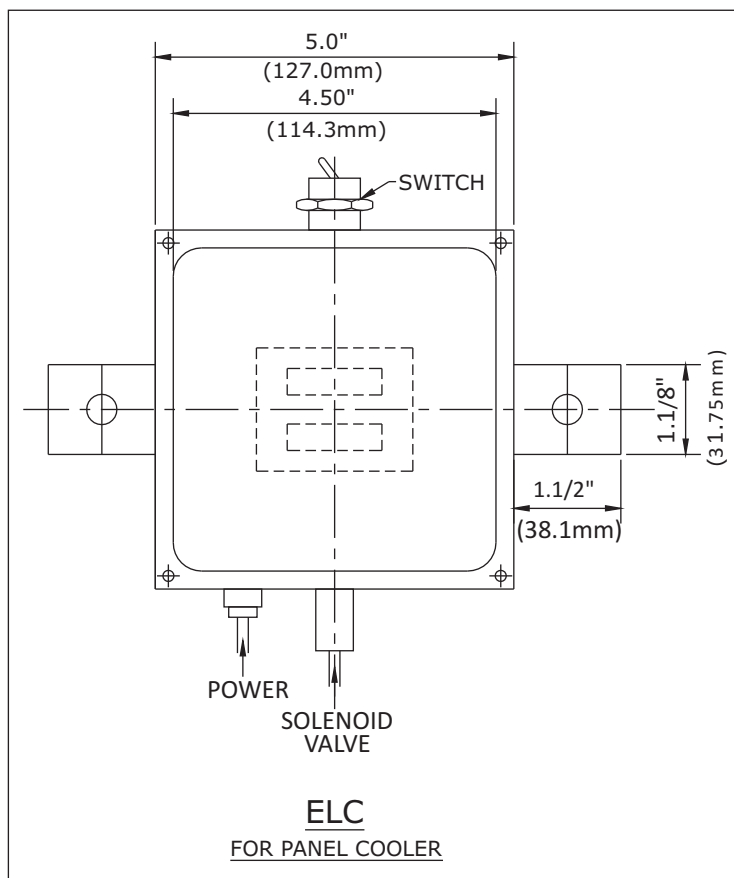
SPECIFICATIONS:

- ▶ **Supply voltage** : AC 120-240V
- ▶ **Sampling rate** : 4/ sec (almost double that of our nearest competitor)
- ▶ **Accuracy** : 0.2% of full scale (under 10% of a degree)
- ▶ **3 Outputs** : 2 Relay outputs and one with PID, 1 SSR output with PID to control external SSR
- ▶ -50°C to + 150°C measuring range
- ▶ It has two Alarm settings for the two output relays so you can set two different temperatures to control two separate solenoids for two separate coolers (and can be used to control anything else electrical)
- ▶ Auto tune mode for quick set ups
- ▶ Patented* NEMA Type 4-4X Enclosure (ABS/PC), ULC approved- it is accepted anywhere in the world Lexan door: U94-V-0
- ▶ Standard unit comes with one solenoid valve, but it can operate two units and also complete additional tasks.
- ▶ Fahrenheit or Centigrade and easily switchable back and forth
- ▶ It can be used in conjunction with the new PLCFC Optimization system for special applications such as cooling parts on a conveyor or in a tunnel, to control cooling and to index movement of the parts being conveyed (See Section A).

ELC Electronic Control Digital Thermostat



With every Panel Cooler you receive a Free Panel Cooler Temperature Warning Indicator Sticker. It will provide a dual qualitative warning level and danger level if the temperature inside your control cabinet is too high. Use on any control panels you wish to monitor. Extra stickers may be purchased from NexFlow - Part Number 69600.



*US patent number 8,616,010. Other countries: Patented or Patent Pending.

CALCULATING HEAT LOAD IN YOUR ELECTRICAL/ELECTRONIC PANEL ENCLOSURE:

Useful terms and conversions :

- ▶ 1 BTU/hr = 0.293 watts ▶ 1 horsepower = 2544 BTU/hr ▶ 1 Square Foot = 0.0929 square meters
- ▶ 1 BTU/hr - 0.000393 horsepower ▶ 1 Watt = 0.00134 horsepower ▶ 1 Square Meter = 10.76 square foot
- ▶ 1 Watt = 3.415 BTU/hr

Typical fan capacity :

- ▶ 4" fan: 100 CFM (2832 LPM) ▶ 8" fan: 340 CFM (9628 LPM)
- ▶ 6" fan: 220 CFM (6230 LPM) ▶ 10" fan: 550 CFM (15574 LPM)

Total heat load consists of the heat transfer from outside your panel and from the heat dissipated inside the control unit.

BTU/hr cooling effect from fan $1.08 \times (\text{temp. inside panel in } ^\circ\text{F} - \text{temp. outside panel in degrees F}) \times \text{CFM}$

Watts cooling effect from fan: $0.16 \times (\text{temp. inside panel in } ^\circ\text{C} - \text{temp. outside panel in degrees C}) \times \text{LPM}$

CALCULATING BTU/hr OR Watts:

1. Determine the heat generated inside the enclosure. Approximations may be necessary. For example, if you know the power generated inside the unit, assume 10% of the energy is dissipated as heat.
2. For heat transfer from the outside, calculate the area exposed to the atmosphere except for the bottom of the control panel.
3. Choose the internal temperature you wish to have, and choose the temperature difference between it and the maximum external temperature expected.
4. From the conversion table that follows, determine the BTU/hr per square foot (or watts per square meter) for the temperature difference.
5. Multiply the panel surface area times the BTU/hr per square foot (or watts per square meter) to get the external heat transfer in BTU/hr or in watts.
6. Sum the internal and external heat loads calculated.
7. If you do not know the power used in the enclosure but you can measure temperatures, then measure the temperature difference between the outside at current temperature, and the present internal cabinet temperature.
8. Note size and number of any external fans. Provide this information to Nex Flow™ to assist in sizing the appropriate cooling system.

Temperature Difference In $^{\circ}\text{F}$	BTU/hr/sq. Ft.	Temperature Difference In $^{\circ}\text{C}$	Watts/sq. meter
5	1.5	3	5.2
10	3.3	6	11.3
15	5.1	9	17.6
20	7.1	12	24.4
25	9.1	15	31.4
30	11.3	18	39.5
35	13.8	21	47.7
40	16.2	24	55.6



Example :

The control panel has two frequency drives totaling 10 horsepower and one module rated at 100 watts. The maximum outside temperature expected is 105°F or 40.5°C. The area of the control panel exposed sides, except for the top is 42 square feet or 3.9 square meters. We want the internal temperature to be 95°F or 35°C.

Total internal power is 10 hp x 746 watts/hp - 7460 plus 100 watts = 7560 watts.

Assume 10% forms heat = an internal heat load of 756 watts

Total internal power is 10 hp x 2544 BTU/hp = 25440 BTU/hr plus 100 watts x 3.415 BTU/hr/Watt = 25782 BTU/hr

Assume 10% forms heat = an internal heat load of 2578 BTU/hr

External heat load: The temperature difference between the desired temperature and the outside is 10°F or 5.5°C. Using the conversions (and interpolating where necessary) we multiply the area by the conversion factor:

42 sq. ft x 3.3 - 139 BTU/hr or 3.9 sq. m x 10.3 = 40 Watts

Total Heat Load: 756 + 40 - 796 watts or 2578 + 139 - 2717 BTU/hr

You would use a Model 61040 for constant operation or a Model 63040 for one-off control. (Rated at 2900 BTU/hr or 849 Watts).

Copy and FAX to +1-877-797-2660 international FAX: +1-416-410-1806

NAME: _____
 COMPANY: _____
 TELEPHONE: _____
 FAX: _____ EMAIL: _____

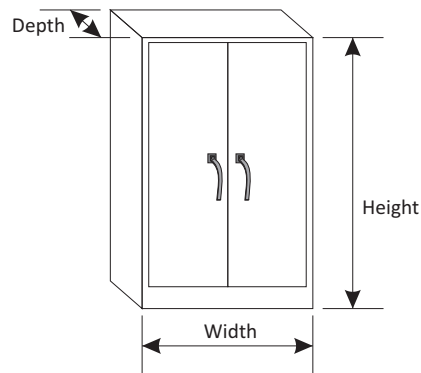
HEIGHT: _____ Inches or mm
 WIDTH: _____ Inches or mm
 DEPTH: _____ Inches or mm

EXTERNAL TEMPERATURE NOW: _____ F or C
 MAX. EXTERNAL TEMPERATURE EXPECTED: _____ F or C
 CURRENT INTERNAL TEMPERATURE: _____ F or C
 MAXIMUM INTERNAL TEMPERATURE DESIRED: _____ F or C

RATING: ____ NEMA 12 (IP 52) ____ NEMA 4-4X (IP 66) ____ NEMA 3R(IP 14) ____ OTHER (Specify) _____

Check if applicable: ____ Free Standing ____ Wall Mounted
 ____ Vented to allow outside air to circulate inside
 ____ Not vented so outside air does not circulate inside
 ____ Has External fans ____ How many? ____ Size of fan or SCFM/SLPM ea

Please complete and FAX and an application engineer will respond within 24 hours



ACCESSORIES :

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
69004	Cold Air Distribution Kit for all all sizes except 580 BTU/hr capacity and smaller	90044	NEMA Type 12 (IP 52) Solenoid Valve and Thermostat Kit (240V, 50 / 60 hz)
69005	Cold Air Distribution Kit for 580 BTU/hr capacity and smaller	90016	NEMA Type 4-4X (IP 66) and NEMA Type 3R (IP 12) Solenoid Valve and Thermostat Kit (120 V, 50 / 60 hz)
90004	Filter with auto drain, 43 SCFM (1359 SLPM), 1/4 " NPT	90045	NEMA Type 4-4X (IP 66) and NEMA Type 3R (IP 12) Solenoid Valve and Thermostat Kit (240 V, 50 / 60 hz)
90005	Oil Removal Filter, 3/4 " NPT for all sizes, 37 SCFM (1048 SLPM), 3/8 " NPT	90017	Thermostat only
90008	Pressure Regulator c/w gauge, 50 SCFM (1416 SLPM), 1/4" NPT	90038	Electronic Temperature Control, (120V, 50 / 60 hz), 1/4 " NPT
90015	NEMA Type 12 (IP 52) Solenoid Valve and Thermostat Kit (120V, 50 / 60 hz)	90039	Electronic Temperature Control, (240V, 50 / 60 hz), 1/4 " NPT
69600	Panel Cooler Temperature Warning Indicator Stickers		

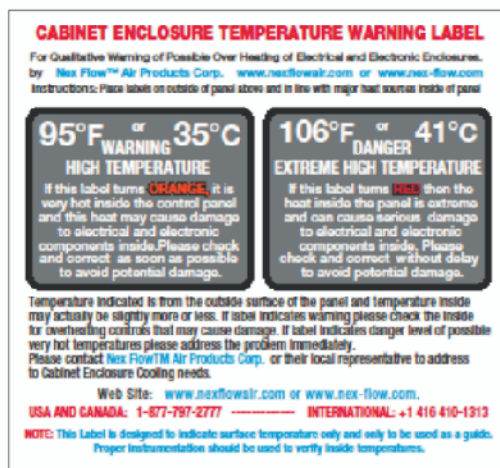
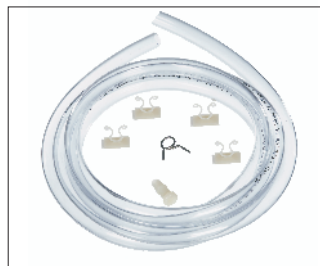
IMPORTANCE OF FILTRATION, HOSE DISTRIBUTION KIT, SEALING & MOUNTING

All Nex Flow™ Frigid-X™ Panel Cooler systems are supplied with a 5 micron filter c/w automatic float type drain and a hose distribution kit. The hose kit comes complete with a length of flexible vinyl clear tube which is used to direct the cold air to hot spots in the enclosure and to circulate the cold air. Clamps to hold the tubing and a silencing muffler, also supplied, are supplied along with adhesive backed clips to hold the tubing in place. The hose kit and muffler further reduce noise levels but also act as an emergency trap for moisture should the filter fail or any reason, protecting your enclosure controls. The filter protects against moisture and in fact stops all moisture from entering the control panel. The air entering the panel goes from high pressure to near atmospheric conditions and will stabilize at 45% relative humidity. For this reason, Nex Flow™ Frigid-X™ Panel Cooler systems are usable for humidity control as well as cooling - truly an "air conditioner". If there is a potential for oil in the air lines our Model 90005 oil removal filter (to 0.3 micron) is recommended. Nex Flow™ Frigid-X™ Panel Coolers should be mounted on the top or side (using our side mount kits) but near the top as much as possible. All panel coolers should be mounted vertical as well.

HOSE DISTRIBUTION KIT for Medium Size Panel Coolers Models 60015A to 63140X



HOSE DISTRIBUTION KIT for Small Size Panel Coolers Models 60004A to 63108X

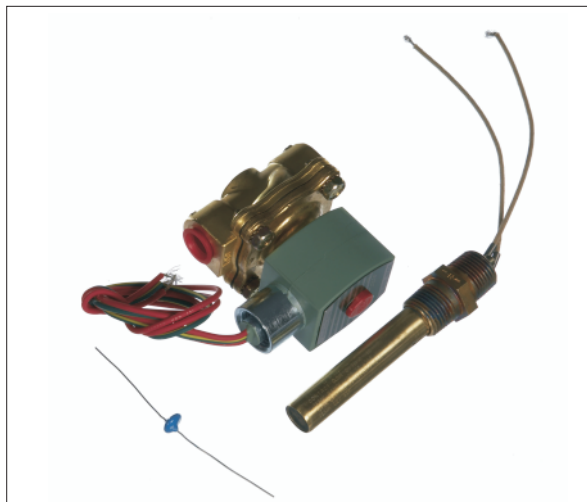


With every Panel Cooler you receive a Free Panel Cooler Temperature Warning Indicator Sticker. It will provide a dual qualitative warning level and danger level if the temperature inside your control cabinet is too high. Use on any control panels you wish to monitor. Extra stickers may be purchased from NexFlow - Part Number 69600.

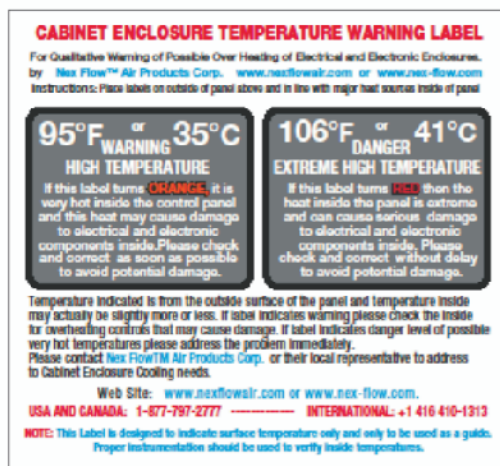


SOLENOID VALVE AND THERMOSTAT

Nex Flow™ Frigid-X™ Panel Cooler systems are available with a standard 2-way normally closed solenoid valve and thermostat kit Model 90015 (120V) or Model 90016 (230V). This limits the flow of air only when required. The thermostat is factory set at 95 degrees F (35 C) and will normally hold +/- 2 degrees F (1 C) inside the enclosure. It is rated 24V-240V, 50/60 hz. UL recognized and CSA approved.



Thermostat and Solenoid Valve Kit : The kit comes complete with a solenoid valve, thermostat and a resistor. The resistor is included should you encounter rapid temperature fluctuations in the control panel causing the solenoid to cycle on and off too quickly (chattering). The resistor is installed (if needed) across the leads of the thermostat and prevents chattering by dampening the thermo switch sensitivity.



With every Panel Cooler you receive a Free Panel Cooler Temperature Warning Indicator Sticker. It will provide a dual qualitative warning level and danger level if the temperature inside your control cabinet is too high. Use on any control panels you wish to monitor. Extra stickers may be purchased from NexFlow - Part Number 69600.



Continuous cooling system with cooler, filter with auto drain and hose distribute Kit.

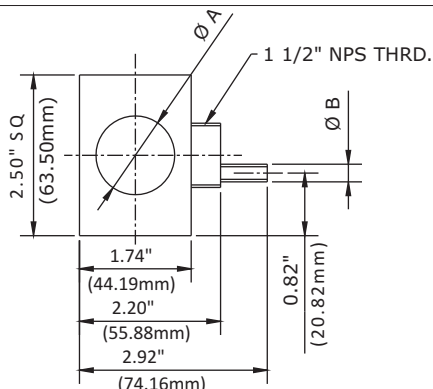


ON-OFF PANEL COOLING SYSTEM with cooler, filter with auto drain and hose distribution kit, thermostat and solenoid valve.



FOR TIGHT SPACES - USE OUR SIDE MOUNT KITS

The Nex Flow™ Frigid-X™ Panel Cooler systems are normally mounted on the top of the enclosure but if space does not permit, you can utilize the Side Mount Kits. Made of stainless steel for NEMA 12(IP 52), NEMA 3R(IP 14) or Patented* NEMA 4-4X(IP 66) environments, they are designed for use with all **Frigid-X™ Panel Coolers**. Two sizes are available – one for coolers 8 SCFM and under capacity and the other for the larger size coolers. Slim design to minimize space even when mounted on the side of a panel.



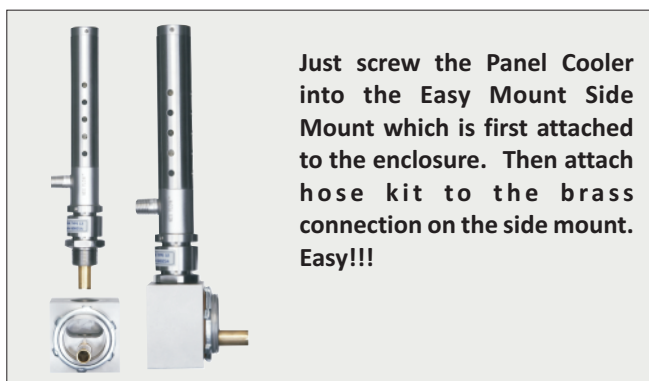
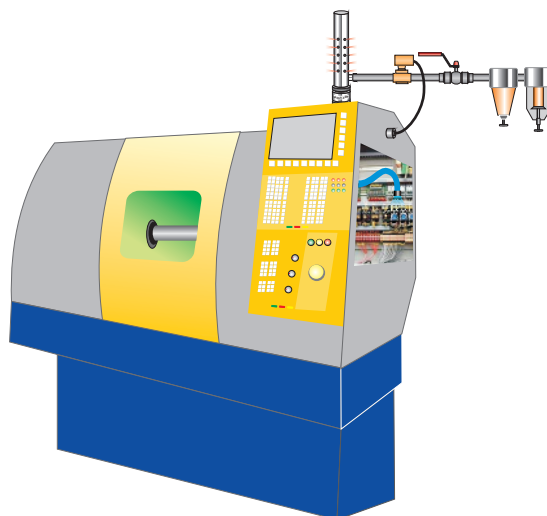
EASY MOUNT
PANEL COOLER
SIDE MOUNT

SIZE	Ø A	Ø B
Medium Cooler	3/4" NPS THRD.	0.50"(12.5mm)
Small Cooler	1/2" NPS THRD.	0.30"(8.0mm)



Easy Mount Side Mount are available for the small & medium size Panel Coolers to allow mounting to the side of an enclosure if space prevents mounting on the top. It is a “plug and play” system

On-Off type Panel Cooling system is installed on the Control Panel of a CNC machine. This system turns on only when temperature in panel exceeds the preset level. This system keeps the panel cool, purged and free of dust.



Just screw the Panel Cooler into the Easy Mount Side Mount which is first attached to the enclosure. Then attach hose kit to the brass connection on the side mount. Easy!!!

*US patent number 8,616,010. Other countries: Patented or Patent Pending.

PART NO.	DESCRIPTION
69100	Stainless steel easy mount side mount for all panel coolers models 60004A to 63018X
69200	Stainless steel easy mount side mount for all panel coolers models 60015A to 63140X



NEMA Type 12 (IP 52) Continuous Operation C/W Filter and Hose distribution kit

PART NO.	COOLING CAPACITY
61004A	290 BTU/hr (85 W)
61008A	580 BTU/hr (170 W)
61015A	1100 BTU/hr (322 W)
61025A	1800 BTU/hr (527 W)
61030A	2100 BTU/hr (615 W)
61040A	2900 BTU/hr (849 W)

NEMA Type 12 (IP 52) On-off Operation C/W Filter, Hose distribution kit, Solenoid Valve & Thermostat

PART NO.	COOLING CAPACITY
63004A	290 BTU/hr (85 W)
63008A	580 BTU/hr (170 W)
63015A	1100 BTU/hr (322 W)
63025A	1800 BTU/hr (527 W)
63030A	2100 BTU/hr (615 W)
63040A	2900 BTU/hr (849 W)

NEMA Type 12 (IP 52) Panel Cooler Only

PART NO.	COOLING CAPACITY
60004A	290 BTU/hr (85 W)
60008A	580 BTU/hr (170 W)
60015A	1100 BTU/hr (322 W)
60025A	1800 BTU/hr (527 W)
60030A	2100 BTU/hr (615 W)
60040A	2900 BTU/hr (849 W)

NEMA Type 3R (IP 14) Continuous Operation C/W Filter and Hose distribution kit

PART NO.	COOLING CAPACITY
61004R	290 BTU/hr (85 W)
61008R	580 BTU/hr (170 W)
61015R	1100 BTU/hr (322 W)
61025R	1800 BTU/hr (527 W)
61030R	2100 BTU/hr (615 W)
61040R	2900 BTU/hr (849 W)

NEMA Type 3R (IP 14) On-off Operation C/W Filter, Hose distribution kit, Solenoid Valve & Thermostat

PART NO.	COOLING CAPACITY
63004R	290 BTU/hr (85 W)
63008R	580 BTU/hr (170 W)
63015R	1100 BTU/hr (322 W)
63025R	1800 BTU/hr (527 W)
63030R	2100 BTU/hr (615 W)
63040R	2900 BTU/hr (849 W)

NEMA Type 3R (IP 14) Panel Cooler Only

PART NO.	COOLING CAPACITY
60004R	290 BTU/hr (85 W)
60008R	580 BTU/hr (170 W)
60015R	1100 BTU/hr (322 W)
60025R	1800 BTU/hr (527 W)
60030R	2100 BTU/hr (615 W)
60040R	2900 BTU/hr (849 W)

NEMA Type 4-4X (IP 66) Continuous Operation C/W Filter and Hose distribution kit

PART NO.	COOLING CAPACITY
61104X	290 BTU/hr (85 W)
61108X	580 BTU/hr (170 W)
61115X	1100 BTU/hr (322 W)
61125X	1800 BTU/hr (527 W)
61130X	2100 BTU/hr (615 W)
61140X	2900 BTU/hr (849 W)

NEMA Type 4-4X (IP 66) On-off Operation C/W Filter, hose distribution kit, Solenoid Valve & Thermostat

PART NO.	COOLING CAPACITY
63104X	290 BTU/hr (85 W)
63108X	580 BTU/hr (170 W)
63115X	1100 BTU/hr (322 W)
63125X	1800 BTU/hr (527 W)
63130X	2100 BTU/hr (615 W)
63140X	2900 BTU/hr (849 W)

Patented* NEMA Type 4-4X (IP 66) Panel Cooler Only

PART NO.	COOLING CAPACITY
60104X	290 BTU/hr (85 W)
60108X	580 BTU/hr (170 W)
60115X	1100 BTU/hr (322 W)
60125X	1800 BTU/hr (527 W)
60130X	2100 BTU/hr (615 W)
60140X	2900 BTU/hr (849 W)



UPGRADE TO ELECTRONIC CONTROL (ELC)

Just add ELC to the Thermostatic Control part number and specify voltage (120 V or 240 V)

*US patent number 8,616,010. Other countries: Patented or Patent Pending.

NEMA Type 12 (IP 52) Continuous Operation C/W Filter and Hose distribution kit

PART NO.	COOLING CAPACITY
61004A-X	290 BTU/hr (85 W)
61008A-X	580 BTU/hr (170 W)
61015A-X	1100 BTU/hr (322 W)
61025A-X	1800 BTU/hr (527 W)
61030A-X	2100 BTU/hr (615 W)
61040A-X	2900 BTU/hr (849 W)

NEMA Type 12 (IP 52) On-off Operation C/W Filter, Hose distribution kit, Solenoid Valve & Thermostat

PART NO.	COOLING CAPACITY
63004A-X	290 BTU/hr (85 W)
63008A-X	580 BTU/hr (170 W)
63015A-X	1100 BTU/hr (322 W)
63025A-X	1800 BTU/hr (527 W)
63030A-X	2100 BTU/hr (615 W)
63040A-X	2900 BTU/hr (849 W)

NEMA Type 12 (IP 52) Panel Cooler Only

PART NO.	COOLING CAPACITY
60004A-X	290 BTU/hr (85 W)
60008A-X	580 BTU/hr (170 W)
60015A-X	1100 BTU/hr (322 W)
60025A-X	1800 BTU/hr (527 W)
60030A-X	2100 BTU/hr (615 W)
60040A-X	2900 BTU/hr (849 W)

NEMA Type 3R (IP 14) Continuous Operation C/W Filter and Hose distribution kit

PART NO.	COOLING CAPACITY
61004R-X	290 BTU/hr (85 W)
61008R-X	580 BTU/hr (170 W)
61015R-X	1100 BTU/hr (322 W)
61025R-X	1800 BTU/hr (527 W)
61030R-X	2100 BTU/hr (615 W)
61040R-X	2900 BTU/hr (849 W)

NEMA Type 3R (IP 14) On-off Operation C/W Filter, Hose distribution kit, Solenoid Valve & Thermostat

PART NO.	COOLING CAPACITY
63004R-X	290 BTU/hr (85 W)
63008R-X	580 BTU/hr (170 W)
63015R-X	1100 BTU/hr (322 W)
63025R-X	1800 BTU/hr (527 W)
63030R-X	2100 BTU/hr (615 W)
63040R-X	2900 BTU/hr (849 W)

NEMA Type 3R (IP 14) Panel Cooler Only

PART NO.	COOLING CAPACITY
60004R-X	290 BTU/hr (85 W)
60008R-X	580 BTU/hr (170 W)
60015R-X	1100 BTU/hr (322 W)
60025R-X	1800 BTU/hr (527 W)
60030R-X	2100 BTU/hr (615 W)
60040R-X	2900 BTU/hr (849 W)

NEMA Type 4-4X (IP 66) Continuous Operation C/W Filter and Hose distribution kit

PART NO.	COOLING CAPACITY
61104X-X	290 BTU/hr (85 W)
61108X-X	580 BTU/hr (170 W)
61115X-X	1100 BTU/hr (322 W)
61125X-X	1800 BTU/hr (527 W)
61130X-X	2100 BTU/hr (615 W)
61140X-X	2900 BTU/hr (849 W)

NEMA Type 4-4X (IP 66) On-off Operation C/W Filter, hose distribution kit, Solenoid Valve & Thermostat

PART NO.	COOLING CAPACITY
63104X-X	290 BTU/hr (85 W)
63108X-X	580 BTU/hr (170 W)
63115X-X	1100 BTU/hr (322 W)
63125X-X	1800 BTU/hr (527 W)
63130X-X	2100 BTU/hr (615 W)
63140X-X	2900 BTU/hr (849 W)

Patented* NEMA Type 4-4X (IP 66) Panel Cooler Only

PART NO.	COOLING CAPACITY
60104X-X	290 BTU/hr (85 W)
60108X-X	580 BTU/hr (170 W)
60115X-X	1100 BTU/hr (322 W)
60125X-X	1800 BTU/hr (527 W)
60130X-X	2100 BTU/hr (615 W)
60140X-X	2900 BTU/hr (849 W)



UPGRADE TO ELECTRONIC CONTROL (ELC)

Just add ELC to the Thermostatic Control part number and specify voltage (120 V or 240 V)

*US patent number 8,616,010. Other countries: Patented or Patent Pending.



FRIGID-X™ Patented* NEMA 4-4X-316L (IP-66) 316L STAINLESS STEEL PANEL COOLER

All of the other Nex Flow™ FRIGID-X™ Panel Coolers are 303/304 stainless. The Patented NEMA 4-4X-316L (IP-66) FRIGID-X™ Panel Cooler is 316L stainless steel for all exposed areas, ideal for pharmaceutical grade applications and extreme corrosive environments where 303/304 stainless steel material is not adequate.

An Optional 316 stainless steel solenoid valve and thermostat kit is available for on-off control. Compressed air filtration is a must and is the responsibility of the customer in these special environments.

Patented* NEMA TYPE 4-4X-316L (IP-66) PANEL COOLER ONLY

Patented* NEMA TYPE 4-4X-316L (IP-66) PANEL COOLER PLUS HOSE DISTRIBUTION KIT

MODEL	COOLING CAPACITY	SOUND LEVEL	MODEL	COOLING CAPACITY	SOUND LEVEL
60115X-316L	1100 BTU/hr (322 W)	72 dBA	60115XD-316L	1100 BTU/hr (322 W)	72 dBA
60125X-316L	1800 BTU/hr (527 W)	73 dBA	60125XD-316L	1800 BTU/hr (527 W)	73 dBA
60130X-316L	2100 BTU/hr (615 W)	74 dBA	60130XD-316L	2100 BTU/hr (615 W)	74 dBA
60140X-316L	2900 BTU/hr (849 W)	76 dBA	60140XD-316L	2900 BTU/hr (849 W)	76 dBA

OPTIONAL THERMOSTAT AND 316 STAINLESS SOLENOID VALVE FOR ON OFF CONTROL!

ACCESSORIES:

MODEL	DESCRIPTION
69004	Cold Air Distribution Kit for all sizes of 316 Stainless Panel Coolers
90018-316	NEMA 4-4X 316 Stainless Steel Solenoid Valve – 110V
90024-316	NEMA 4-4X 316 Stainless Steel Solenoid Valve – 220V
90017	Thermostat Only
90045-316	NEMA 4-4X 316 Stainless Steel Solenoid, 110V plus thermostat kit
90016-316	NEMA 4-4X 316 Stainless Steel Solenoid, 220V plus thermostat kit



FRIGID-X™ Patented* NEMA 4-4X-316L (IP-66) 316L STAINLESS STEEL PANEL COOLER WITH HOSE KIT

FRIGID-X™ Patented* NEMA 4-4X-316L (IP-66) 316L STAINLESS STEEL PANEL COOLER MOUNTED ON ELECTRICAL CONTROL PANEL

