



Shield Air Solutions, Inc.

Precision HVAC for Global Applications



ISO9001:2008 registered





Quality on time. Quality with C.A.R.E.

Custom Designed Systems

After the Sale Technical Support

Rapid Response to Inquiries

Exceptional Communication

Quick Reference Guide: Please use this guide to quickly find the equipment you need

Series	Brand										Page #														
	BWM (Ultima)	BTB	BAR	BS	BCC	BAR13	BPU	BVU	BVR	VPAX	WMP	WM	WCP	WC	PAC	S	MS-M	MC	R	Mod	PVX	WFX	ISFX160	MSFX	
Configuration																									
Redundant Wall Mounted	11								31																
Wall Mounted Combination (AC+Pressurization)	11	15							31	32		40													
Wall Mounted	15										36		44												
Package			19			25									48				62						
Split System				23													49	50	62						
Cabinet Cooler					24													54							
Performance																									
Small Enclosure (nominal cooling ≤ 3 tons)					24	25													50	54	58				
Refrigeration																					62				
Ventilation only																									
Ventilation (Pressurization)								26														63			
Ventilation (Ventilation)																							64		
Ventilation (Circulation)																								65	
Ventilation (Circulation)																									66
Ventilation (Accessory)																									



SHIELD AIR SOLUTIONS, INC.
 3708 GREENHOUSE ROAD • HOUSTON, TEXAS 77084
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- HVAC and Pressurization Design Form** 61-65



Shield Air Solutions, Incorporated (Shield Air / SAS)

Shield Air Solutions, Inc. was formed in 2011 by uniting two of the industry's most well-known brands (The Birdwell Company and Marc Climatic Controls), thus creating a leading, global supplier of environmental control equipment. Between these two brands, Shield Air Solutions has more than 85 years of collective experience and expertise in providing industrial grade and hazardous duty solutions in industries spanning six continents and four oceans and functioning in a variety of extreme operating conditions.

Utilizing one of the most comprehensive product lines in the industry, Shield Air successfully applies its products across a multitude of applications including petroleum and petro-chemical processing, power and water treatment plants, pulp and paper, agriculture, mining, medicine, aerospace, and more. As we move forward, Shield Air will continue to deliver best-in-class products and services to our customers, provide an unmatched capability to meet and exceed customer needs, and maintain an industry leading position for years to come.

Over the years, Shield Air has proven its dedication to meeting customer and regulatory requirements in an ongoing commitment to continue increasing customer satisfaction by enacting processes to ensure every piece of equipment we manufacture is produced with the highest level of accuracy, quality, and care. It is because of this unrelenting dedication and processes that Shield Air Solutions has been awarded registration with Intertek Laboratories for compliance to ISO 9001:2008 standards.



Markets and Industries Served

Birdwell and Marc Climate are registered, approved vendors for many oil & gas companies and EPCs.

International Markets

United States
Canada
Mexico and other Central American countries
Brazil and other South American countries
Africa
Saudi Arabia, United Arab Emeritus, and Other Middle Eastern countries
India
Russia
China
Southeast Asia

Industries

Oil and gas
Pulp and paper
Aerospace
Chemical processing
Waste and sewage processing
Fertilizer
Coal processing
Grain Mill
Military



Single Source Manufacturing & Supply



Through its partnerships with various suppliers and contractors the world over, Shield Air Solutions has the capability to function as a single source solution for design, manufacturing, and supply of environmental control systems, equipment, and accessories in industrial and hazardous (classified) applications.

ENGINEERING AND TECHNICAL SALES :

- System design and equipment selection consulting

SUPPORT:

- Contractor coordination for installation and servicing
- International partnerships for faster response times and better communication
- Coordination with third party, regulatory groups (notified bodies) for certification of non-standard equipment

ACCESSORIES:

- Fresh air stack (shipped loose for field supporting)
- Free standing fresh air stack
- Indoor duct supply and design
- Control panels produced by our own, UL508-A compliant, panel shop

MANUFACTURING:

- 54,000 sq ft manufacturing facility to handle a wide variety of project sizes and scopes
- Fabrication shop featuring two, industrial, CNC lasers, and a modern break press
- Large, modern paint booth facilitating coil, component, and cabinet surface coating
 - Authorized as the sole provider of Corrotect® coil coatings in the US with certified application personnel
 - Corrotect® coil coatings are proven to withstand 10,000 hours of ASTM salt spray test, B117



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Services

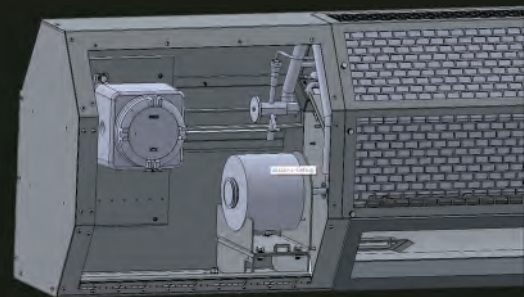
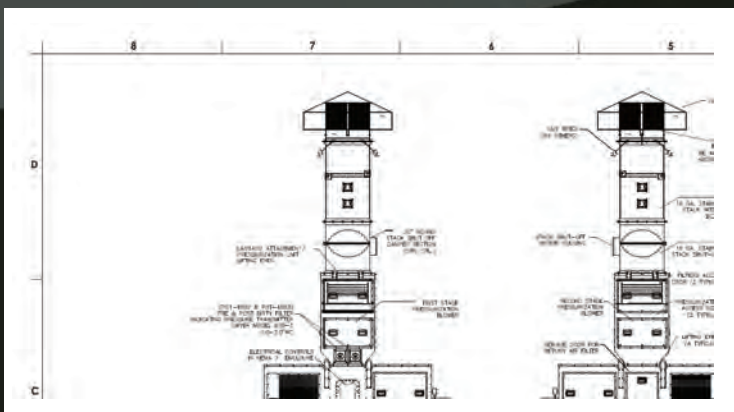
- Technical specification preparation support
- Environmental control system design consultation
 - Heat load calculation
 - Psychometric analysis
 - Fan performance analysis
- CAD based equipment drawings for every project
- 3D equipment design modeling
- New product development



With our Design Engineering department, we provide valuable technical support to our customer base during various stages of projects. From technical specification preparation, to full environmental control system design consultation, even including mid-project change support; our engineering team performs various calculations to ensure accurate and reliable performance in the field.

In addition to our consulting capabilities, we provide equipment submittal packages for every project ensuring customer needs are met and satisfied. These equipment drawings are CAD based, ensuring accuracy and long life of the files. Our new equipment is also 3D modeled in detail by our designers allowing us to incorporate new developments and serviceability to meet market demands.

In an effort to remain on the forefront of the industry, we are continually working to develop and improve our current offerings with new technologies including compressor developments, new coil coatings, remote monitoring systems, and more! As an example: we were fortunate enough to receive feedback regarding the design of our mini-split systems and as a result, we have been able to develop a more robust design solution which better suits the industrial locations where these systems are being used AND better fits with our product reputations. With similar developments and others, we plan to maintain our position as the most comprehensive environmental control system manufacturer for years to come.



Technical Services & Parts Departments



BIRDWELL



The Shield Air experience does not end with the shipment of your equipment. We also have Technical Services and Parts departments to support your needs after the sale.

Technical Services Department

Factory Service / Technical Support / Warranty

- SAT and FAT observation, coordination, and operation
- Contractor installation and start-up support
- On-site and over-the-phone trouble shooting guidance and support
- Certified and fully credentialed factory technicians
- Support/installation/maintenance for our manufactured products by factory certified technicians

Parts Department

Replacement and Spare Parts

- Factory authorized and OEM approved replacement parts*
- Same day shipping of inventory items
- Responsive, knowledgeable, and friendly staff

*Required to maintain warranty and system certifications



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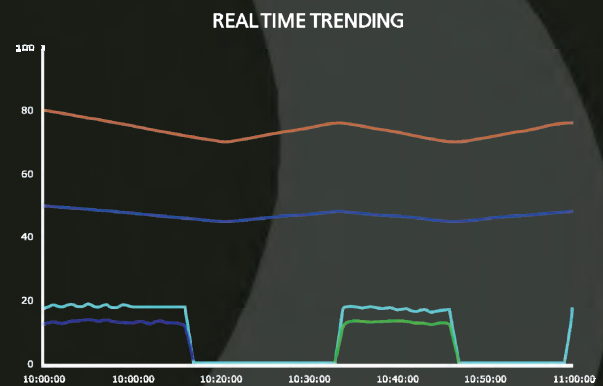
SmartOne® (Patent Pending)

Intelligent Monitoring System

Add-on package for intelligent monitoring and logging of performance and health of environmental control equipment

FEATURES:

- Factory certified for use in the following locations:
 - General purpose (non-hazardous)
 - Class I, Division 2, Groups B/C/D, T3 (200°C/392°F)
- Single or 3 phase operation in 60 or 50 Hz environments
- Discrete and analog sensing methods integrated to PLC
- Performance monitoring, logging, and alarming by PLC
- Output to local HMI or remote SCADA system
- Built-in, step-by-step trouble shooting and repair guide for alarms
- Preventive maintenance notifications
- Built-in alarms based on set point violations
- Real-time trending
- Historical trending
- Data logging for trend analysis



MONITORED CONDITIONS:

- Indoor temperature and relative humidity
- Total system cooling/heating capacity delivered to room
- Heater current draw
- Input voltage
- Room air pressure
- Ventilation air flow and/or air change rate
- Supply and return air flow
- Fresh air filter pressure drop to indicate possible dirty, blocked, or missing filter
- Refrigerant system monitoring with alarms for iced/blocked/dirty coil, or refrigerant leak.
- Motor and compressor current draw, cycling, and runtime
- System trouble

APPLICATIONS:

- Shield Air (Birdwell and Marc Climatic) environmental control systems in remote locations and/or critical applications

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The Birdwell Company

(Birdwell)

Our Birdwell product line represents Shield Air's engineered environmental control equipment, custom built for performance from heavy duty, corrosion resistant materials for hazardous and industrial applications. The Birdwell Company was originally established in 1959 as a commercial air conditioning installation and service contracting company and quickly transitioned into manufacturing reliable, custom HVAC equipment for the prominent oil and gas industry in Houston, Texas. Since that time, our Birdwell products have been manufactured for use by many major oil, gas, chemical, and refining companies worldwide. The robust design (including corrosion resistance, safety, and reliability) has proven itself in a wide range of additional applications to oil and gas including: pulp and paper mills, large power and equipment buildings, steel mills, computer rooms, U.S. armed forces field use, and numerous others.

Many of our Birdwell products (with few exceptions) are certified by OSHA accredited, Nationally Recognized Testing Laboratory (NRTL), Intertek Laboratories for compliance to US and Canadian standards and bare the cETLus mark of conformity. This certification ensures safe operation of the equipment in its designed application.



BWM Series



ULTIMA, Wall Mount Systems



The ULTIMAte environmental control systems. Single package, 100% redundant, wall mounted, & purpose-built for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- *Certified by Intertek® (bearing the ETL mark) for compliance to applicable codes and standards
- 100% redundant operation
- Corrosion resistant coatings for refrigerant coils and tubing
- Built-in, controls throat for operational control of system
- Built-in system and environment alarm contacts
- Dual PLC control with touchscreens for ease of use
- Spark resistant fan and blower construction
- Totally Enclosed, Fan-Cooled (TEFC) motors
- EPA approved, HFC type refrigerants
- All welded/bolted construction, type 304, stainless steel cabinet and chassis
- Fully serviceable from access panels and external grilles

OPTIONS:

- Integral Siemens LOGO! PLC in lieu of touchscreen PLC
- Redundant, nominal cooling from dual 4 tons to dual 30 tons
- Electric heat (limited by temperature code and system size)
- All welded/bolted construction, type 316, stainless steel cabinet and chassis for added corrosion protection in offshore applications
- Three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Protective, component coatings for prolonged life in corrosive environments
- NFPA 496, Type Z package for automatic control of positive pressure and purge air flow for the space
- Advanced, chemical filtration packages
- Blast/fire damper accommodations for hazard prone applications
- Low/High ambient packages for operation in extreme environments

APPLICATIONS:

- Offshore environmental control
- Control rooms, driller's cabins, Living quarters, and other manned applications
- MCC, RIE, power, and various other buildings



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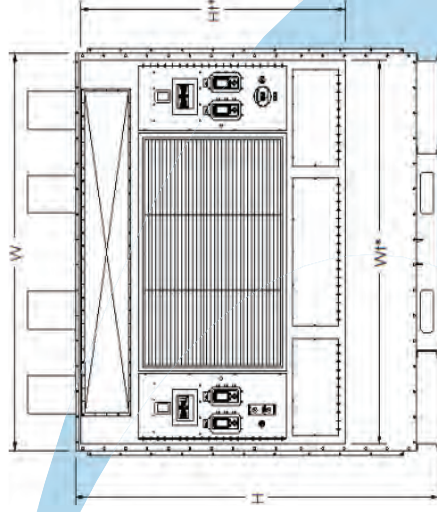
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BWM Series Ultima, Wall Mount Systems

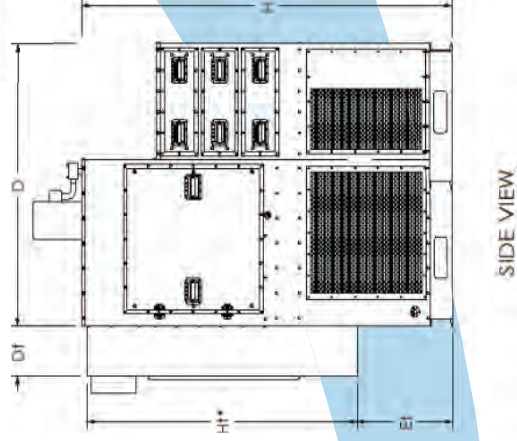
Cabinet Dimensions

Cabinet Size	H	W	D	Unit throat *Add 1/2" for cutouts		
				Ht*	Wt*	Et
B	78	84	54	58	80	24 1/2
	1981	2134	1372	1473	2032	622
C	93 3/8	94	68	72 1/2	91	25 3/8
	2372	2388	1727	1842	2311	645
D	93 3/8	140	68	72 1/2	137	25 3/8
	2372	3556	1727	1842	3480	645
E	108 1/2	192 2/3	68 1/4	72 1/2	188 1/2	40 3/8
	2756	4894	1733	1842	4788	1026

Std. Dt is 12" (may vary for wall thickness)



INDOOR FACE VIEW



SIDE VIEW

BTB Series



Wall Mount Systems

BIRDWELL

Single package, wall mounted, environmental control systems, purpose-built for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- *Certified by Intertek (bearing the ETL mark) for compliance to applicable codes and standards
- Corrosion resistant coatings for refrigerant coils and tubing
- Built-in, controls throat for operational control of system
- Spark resistant fan and blower construction
- Totally Enclosed, Fan-Cooled (TEFC) motors
- EPA approved, HFC type refrigerants
- All welded/bolted construction, type 304, stainless steel cabinet and chassis
- Fully serviceable from access panels and external grilles

OPTIONS:

- Remote, operating panel for multiple unit functionality
- Total, nominal cooling from 1 to 30 tons
- Electric heat (limited by temperature code and system size)
- All welded/bolted construction, type 316, stainless steel cabinet and chassis for added corrosion protection in offshore applications
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Protective, component coatings for prolonged life in corrosive environments
- Ventilation packages to maintain specified air changes
- NFPA 496 packages for automatic control of Types X, Y, or Z positive pressure and purge air flow for the space
- Advanced, chemical filtration packages
- Low/High ambient packages for operation in extreme environments
- Sound attenuator for supply air noise control in manned applications
- Water cooled condenser configurations also available

APPLICATIONS:

- Offshore environmental control
- Analyzer buildings
- Control rooms, driller's cabins, Living quarters, and other manned applications
- MCC, RIE, power, and various other buildings



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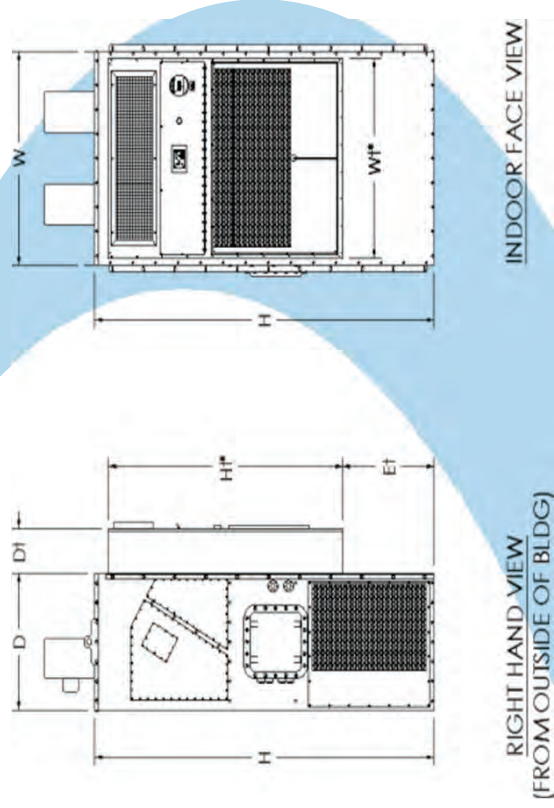
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Cabinet Dimensions

Cabinet Size	H	W	D	Unit throat <small>*Add 1/2" for cutouts</small>		
				Ht*	Wt*	Et
A	51 3/4	22 3/8	22	32	19 3/8	18 1/2
	1314	568	559	813	492	470
B	64 1/2	32 3/8	22 1/2	52	29 7/8	11
	1638	822	572	1321	759	279
C	64 1/2	37 7/8	22 1/2	52	34 7/8	11
	1638	962	572	1321	886	279
D	73 1/2	42	30	60	39	12
	1867	1067	762	1524	991	305
E	87	47	30	60	44	23 1/2
	2210	1194	762	1524	1118	597
F	90	64 3/4	44	68	61 3/4	20 1/2
	2286	1645	1118	1727	1568	521
G	90	74	44	68	70	20 3/4
	2286	1880	1118	1727	1778	527
H	100	85 1/4	95 1/2	92 1/2	76	6 1/8
	2540	2165	2426	2350	1930	156

Std. Dt is 6" to 10" (may vary for wall thickness)



BAR Series



Package Systems

The BIRDWELL logo is displayed in white, bold, uppercase letters on a dark blue rectangular background.

Single package, roof or pad mounted, environmental control systems, purpose-built for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- *Certified by Intertek (bearing the ETL mark) for compliance to applicable codes and standards
- Corrosion resistant coatings for refrigerant coils and tubing
- Down flow supply and return
- Spark resistant fan and blower construction
- Totally enclosed, fan cooled (TEFC) motors
- EPA approved, HFC type refrigerants
- All welded/bolted construction, type 304, stainless steel cabinet and chassis

OPTIONS:

- Remote, operating panel for wall installation and operational control of system
- Total, nominal cooling from 2 to 40 tons
- Electric heat (limited by temperature code and system size)
- Single, multi-staged, or redundant circuit operation
- End/side supply/return
- All welded/bolted construction, type 316, stainless steel cabinet and chassis for added corrosion protection in offshore applications
- Single or three phase operation in 60 or 50 Hz environments
- Configurable for operation in various non-hazardous and hazardous rated locations
- Protective, component coatings for prolonged life in corrosive environments
- Ventilation packages to maintain specified air changes
- NFPA 496 packages for automatic control of Types X, Y, or Z positive pressure and purge air flow for the space
- Advanced, chemical filtration packages
- Low/High ambient packages for operation in extreme environments
- Portable configurations for temporary applications

APPLICATIONS:

- Offshore environmental control
- Analyzer buildings
- Control rooms/driller's cabins, Living quarters, and other manned applications
- MCC, RIE, power, and various other buildings



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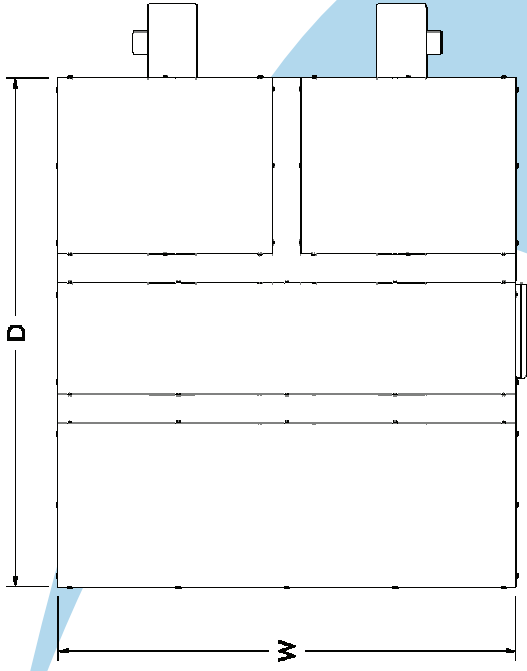
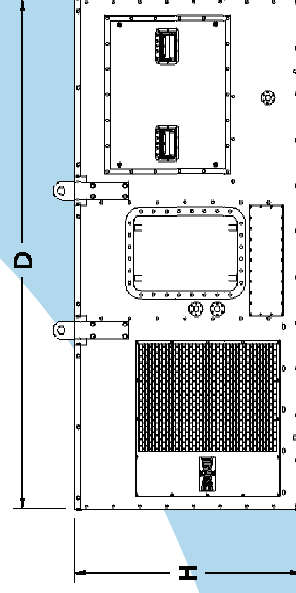
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Cabinet Dimensions

Cabinet Size	H	W	D
A	42	28	90
	1067	711	2286
B	42	42	90
	1067	1067	2286
C	42	60	90
	1067	1524	2286
D	42	84	90
	1067	2134	2286
E	46	90	114
	1168	2286	2896
F	69	146	124
	1753	3708	3150

**TOP VIEW****SIDE VIEW**

BS Series

Split Systems



Split type air conditioning and heating systems, custom-built for use in industrial and/or hazardous (classified) applications

INCLUDES:

- BCU series condenser units
- BAU series evaporator units

STANDARD FEATURES:

- Factory certified for compliance to applicable codes and standards
- Corrosion resistant coatings for refrigerant coils and tubing
- Thermostat shipped loose for wall installation
- Spark resistant fan and blower construction
- Totally Enclosed, Fan-Cooled (TEFC) motors
- EPA approved, HFC type refrigerants
- All welded/bolted construction, type 304, stainless steel cabinet and chassis



OPTIONS:

- Total, nominal cooling from 1 to 20 ton
- Electric heat (limited by temperature code and system size)
- All welded/bolted construction, type 316, stainless steel cabinet and chassis for added corrosion protection in offshore applications
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations.
- Protective, component coatings for prolonged life in corrosive environments
- Low/High ambient packages available for operation in extreme environments

APPLICATIONS:

- Offshore environmental control
- Split hazard locations
 - E.g.: Class I, Division 2 indoor; non-hazardous outdoor
- Blast/fire rated buildings
- Control rooms, driller's cabins, Living quarters, and other manned applications



BCC Series

Cabinet Coolers



Mini wall mount cabinet coolers, custom-built for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- Factory certified for compliance to applicable codes and standards
- Corrosion resistant coatings for refrigerant coils and tubing
- Built-in, operational controls for easy temperature control
- Spark resistant fan and blower construction
- Totally Enclosed, Fan-Cooled (TEFC) motors
- EPA approved, HFC type refrigerants
- All welded/bolted construction, type 304, stainless steel cabinet and chassis

OPTIONS:

- Total, nominal cooling of 6 or 12 MBH
- All welded/bolted construction, type 316, stainless steel cabinet and chassis for added corrosion protection in offshore applications
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Protective, component coatings for prolonged life in corrosive environments
- Low/High ambient packages available for operation in extreme environments

APPLICATIONS:

- Offshore environmental control
- Analyzer cabinets, control cabinets, and other small equipment enclosures



BAR13 Series



Driller's Cabin Coolers



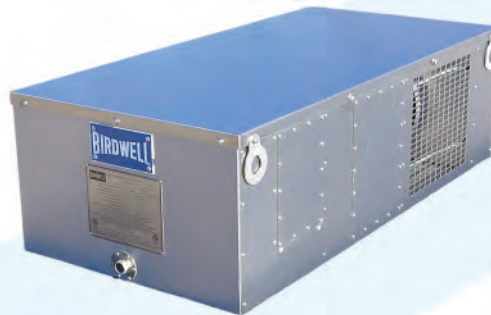
Single package, roof mounted, Driller's Cabin Cooler for use in hazardous (classified) applications

FEATURES:

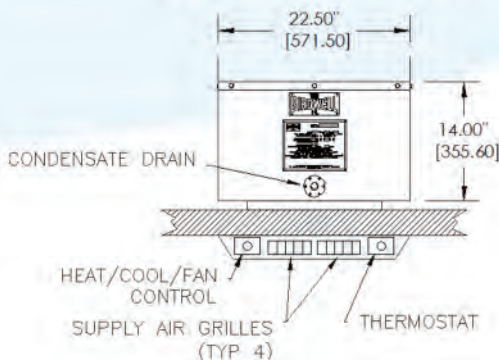
- Certified by Intertek® (bearing the ETL mark) for compliance to applicable codes and standards
- Outdoor section suitable for Class I, Division 1, groups C/D hazardous (classified) area
- Indoor section suitable for non-hazardous area
- Corrosion resistant coatings for refrigerant coils and tubing
- Total, nominal cooling of 13,500 Btuh at standard ARI
- Optional, 1.6 kW electric heater
- 115 volts AC, single phase, 60 Hz power requirements
- Down flow supply and return
- Ceiling mounted supply/return air grille with built-in thermostat and fan control
- Spark resistant fan and blower construction
- EPA approved, HFC type refrigerants
- All welded/bolted construction, type 316, stainless steel cabinet and chassis
- Optional, protective, component coatings for prolonged life in corrosive environments
- Partially built to stock for shorter lead times.

APPLICATIONS:

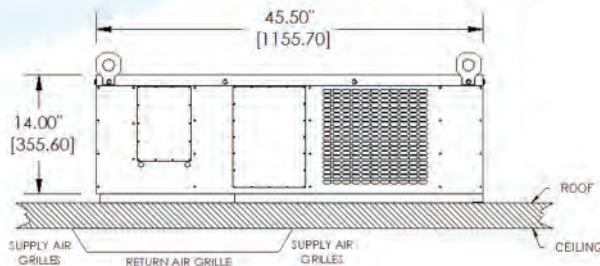
- Specially designed for Driller Cabins
- Applicable to other small, personnel enclosures



FRONT VIEW



SIDE VIEW



BAR13	Refrigerant	Unit Weight (lbs)	Unit Weight (kg)	Nominal Cooling ¹ (Btu/hr)	Electric Heat (kW) @ GP*	Operating Temp Code	CFM	ESP ("w.c.)	Volts-Phase-Hertz	MCA ² (Amps)	MOP ² (Amps)	Field Wire Size ² (AWG)
BAR13-OD11	R-410a	270	120	13,500	1.6	T2B [500°F]	400	0.20	115-1-60	21.53	30	10

*GP, aka General Purpose, indicates that the indicated section is suited for use in non-hazardous atmospheres.
¹ Unit refrigeration performance is based on standard ARI conditions: 80° F Dry Bulb/ 67° F Wet Bulb return air temperature and 95° F outside air temperature.
² Minimum Circuit Ampacity (MCA), Maximum Overcurrent Protection (MOP), and Field Wire Size have been calculated without the use or inclusion of electric heat.



Ventilation Equipment

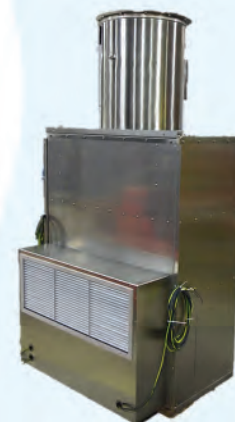


Birdwell Ventilation Equipment, custom-built for use in industrial and/or hazardous (classified) applications

BPU SERIES:

Birdwell Pressurization Units, purpose-built for use in industrial and/or hazardous (classified) applications

- Factory certified for compliance to applicable codes and standards
- Positive pressure and purge control to satisfy NFPA 496 requirements for the space
- Remotely controlled by system panel
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- All welded/bolted, type 304 or 316, stainless steel construction
- Optional, protective, component coatings for prolonged life in corrosive environments
- Single, multi-staged or redundant operation
- Low/High ambient packages available for operation in extreme environments



BVU SERIES:

Birdwell Ventilation Units, purpose-built for use in industrial and/or hazardous (classified) applications

- Factory certified for compliance to applicable codes and standards
 - 300 or 500 CFM wall mount configurations
 - 1400 CFM roof mounted configuration
 - Remotely controlled by system panel
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
 - All welded/bolted, type 304 or 316, stainless steel construction
- Optional, protective, component coatings for prolonged life in corrosive environments
 - Low/High ambient packages available for operation in extreme environments



BVR UNITS:

Birdwell Ventilation Regulator for barometric relief of ventilated enclosures

- All welded/bolted, type 316, stainless steel construction
- Mechanical, barometric relief from 30 to 125 CFM or 30 to 250 CFM
- Built-in flashing for mounting to building wall



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Marc Climatic Controls, Incorporated

(Marc Climatic Controls / Marc Climatic / Marc / MCC)

Originally founded in 1978 as Marc Climatic Controls, Inc. the Marc product line represents Shield Air's pre-engineered environmental control equipment, modified for use in a variety of hazardous and industrial applications. Innovation and flexibility allow our Marc products to be applied across a variety of projects the world over. These products are installed and operated globally in refineries, petrochemical plants, offshore oil and gas facilities and similar industries worldwide; applications range from large buildings such as switchgear buildings and motor control centers to smaller buildings and enclosures such as control rooms and analyzer shelters.

Many of our Marc products (with few exceptions) are certified by OSHA accredited, Nationally Recognized Testing Laboratory (NRTL), CSA Group for compliance to US and Canadian standards and bare the cCSAus mark of conformity. This certification ensures safe operation of the equipment in its designed application

VPAX Series



Redundant Wall Mount Systems



Redundant, wall or pad mounted, combination AC and Pressurization systems for use in hazardous (classified) applications

STANDARD FEATURES:

- Factory certified for compliance to applicable codes and standards
- Spark resistant fan and blower construction
- EPA approved, HFC type refrigerants
- Single cut-out requirement for building wall
- 100% redundancy via individual, removable HVAC units mounted onto single skid
- Supply and return air registers for ductless air handling
- Through-the-wall controls section for indoor access to operating controls
- Built-in, automatic controls and equipment to manage safe air and maintain positive pressure and purge air flow to meet NFPA 496, Type X, Y, or Z requirements for the space
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Redundant, nominal cooling from dual 4 tons to dual 25 tons
- Electric heat (limited by temperature code and system size)
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Type 304 or 316, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motors
- Advanced, chemical filtration packages
- Fresh air stack with bird screen and rain cap
- Supply duct connection and optional ductwork for building interior
- Low/High ambient packages for operation in extreme environments

APPLICATIONS:

- Environmental control
- Control rooms, Living quarters, plant office buildings, break rooms, and other manned applications.
- MCC, RIE, DCS, LER, power, and switchgear buildings

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WMP Series

Large Capacity Wall Mount Combination Systems



Large capacity, single package, wall mounted, combination AC and Pressurization systems for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- Factory certified for compliance to applicable codes and standards
- Spark resistant fan and blower construction
- EPA approved, HFC type refrigerants
- Single cut-out requirement for building wall
- Supply and return air registers for ductless air handling
- Through-the-wall controls section for indoor access to operating controls
- Built-in, automatic controls and equipment to manage safe air and maintain positive pressure and purge air flow to meet NFPA 496, Type X, Y, or Z requirements for the space
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Total, nominal cooling from 7.5 to 25 tons
- Electric heat (limited by temperature code and system size)
- Three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Type 304 or 316, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motors
- Advanced, chemical filtration packages
- Low/High ambient packages for operation in extreme environments

APPLICATIONS:

- Environmental control
- Control rooms, Living quarters, plant office buildings, break rooms, and other manned applications.
- MCC, RIE, DCS, LER, power, and switchgear buildings



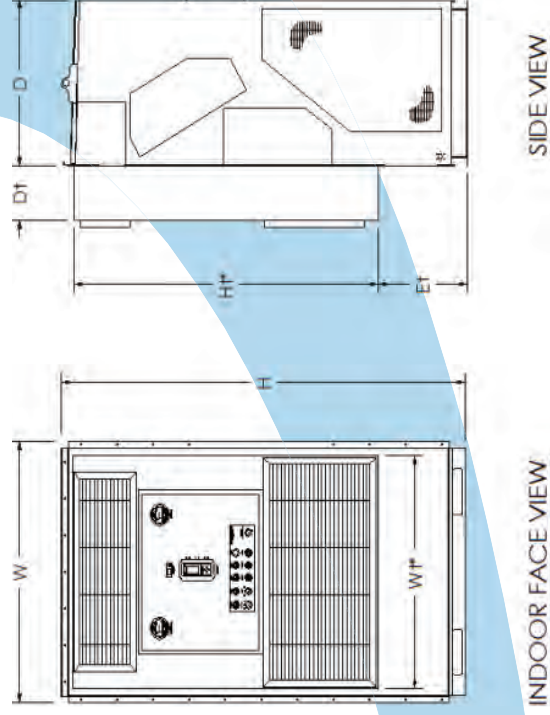


WMP Series, Large Capacity Wall Mount Combination Systems

Cabinet Dimensions

Cabinet Size	H	W	D	Unit throat <small>*Add 1/2" for cutouts</small>		
				Ht*	Wt*	Et
M	96 3/4	54 1/8	36	73	51	21
	mm	2457	1375	914	1854	533
L	102	80	42	85 1/8	64 3/4	14
	mm	2591	2032	1067	1645	356

Std. Dt is 12" (may vary for wall thickness)



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WM Series

Large Capacity Wall Mount Units



Large capacity, single package, wall mounted AC units for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- Factory certified for compliance to applicable codes and standards
- Spark resistant fan and blower construction
- EPA approved, HFC type refrigerants
- Fully insulated evaporator section for quiet operation
- Supply and return air registers for ductless air handling
- Built-in thermostat
- Side and bottom mounting angles furnished
- High and low refrigerant pressure switches
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Total, nominal cooling from 7.5 to 25 tons
- Electric heat (limited by temperature code and system size)
- Three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Type 304 or 316, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motors
- Ventilation packages to maintain specified air changes
- Low/High ambient packages for operation in extreme environments

APPLICATIONS:

- Analyzer buildings
- Gas chromatograph buildings
- Control rooms, Living quarters, plant office buildings, break rooms, and other manned applications
- MCC, RIE, DCS, LER, power, and switchgear buildings

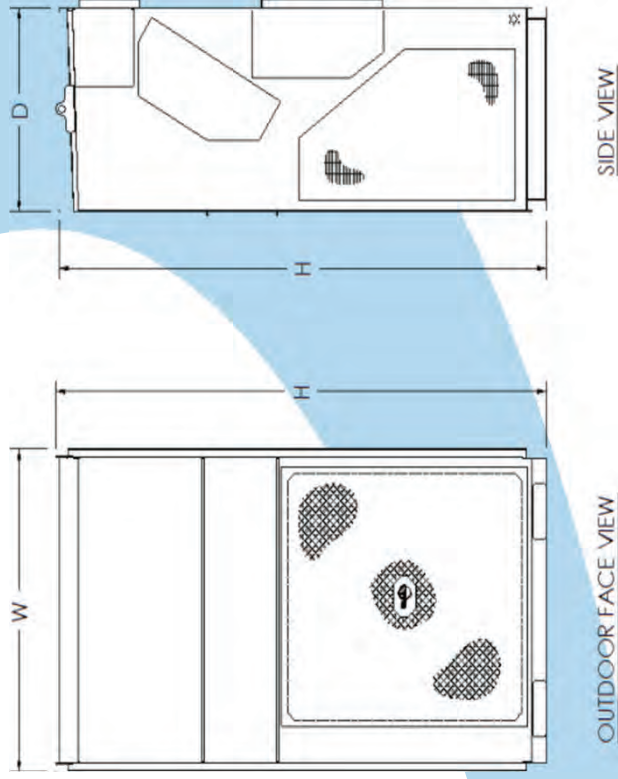




WM Series, Large Capacity Wall Mount Units

Cabinet Dimensions

Cabinet Size	H	W	D
M	in	54 1/8	36
	mm	1375	914
L	in	80	42
	mm	2032	1067



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WCP Series



Wall Mount Combination Systems



Single package, wall mounted, combination AC and Pressurization systems for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Spark resistant fan and blower construction
- EPA approved, HFC type, R-410a refrigerant
- Single cut-out requirement for building wall
- Supply and return air registers for ductless air handling
- Through-the-wall controls section for indoor access to operating controls
- Built-in, automatic controls and equipment to manage safe air and maintain positive pressure and purge air flow to meet NFPA 496, Type X, Y, or Z requirements for the space
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Total, nominal cooling from 1.5 to 6 tons
- Electric heat (limited by temperature code and system size)
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Type 316, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motors
- Advanced, chemical filtration packages
- Low/High ambient packages for operation in extreme environments

APPLICATIONS:

- Environmental control
- Control rooms, Living quarters, plant office buildings, break rooms, and other manned applications.
- MCC, RIE, DCS, LER, power, and switchgear buildings



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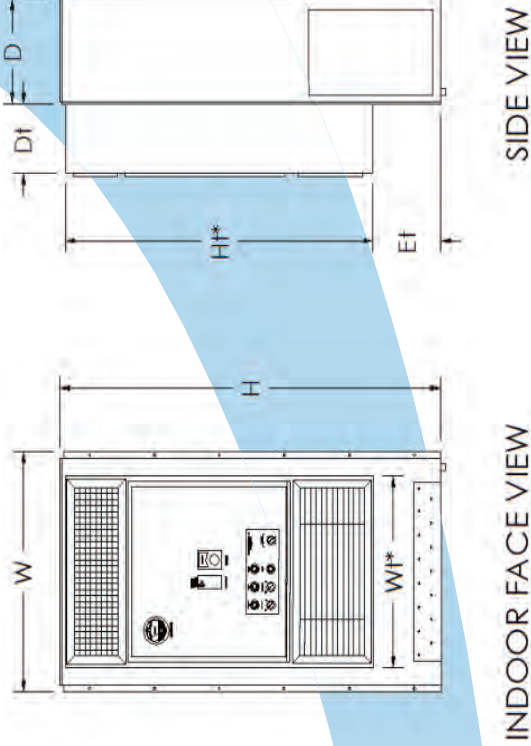


WCP Series Wall Mount Units

Cabinet Dimensions

Cabinet Size	H	W	D	Unit throat		
				Ht*	Wt*	Et
B	70 4/7	33 2/7	17 1/8	57	24	12 1/2
	1792	846	435	1448	610	318
C	70 4/7	38 1/5	17 1/8	57	32	12 1/2
	1792	970	435	1448	813	318
D	84 7/8	42	22 3/7	61	34	22 7/8
	2156	1069	570	1549	864	581

Std. Dt is 12" (may vary for wall thickness)



WC Series

Wall Mount Units



Single package, wall mounted AC units for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Spark resistant fan and blower construction
- EPA approved, HFC type, R-410a refrigerant
- Fully insulated evaporator section for quiet operation
- Supply and return air registers for ductless air handling
- Built-in thermostat
- Side and bottom mounting angles furnished
- High and low refrigerant pressure switches
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Total, nominal cooling from 1 to 6 tons
- Heat pump operation also available [WARNING: heat pump systems are not suited for heating operation in ambient temperatures lower than 45°F (7°C)]
- Steam heating coil with connections
- Electric heat (limited by temperature code and system size)
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Type 316, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motors
- Ventilation packages to maintain specified air changes
- Low/High ambient packages for operation in extreme environments

APPLICATIONS:

- Analyzer buildings
- Gas chromatograph buildings
- Control rooms/cabins, Living quarters, plant office buildings, break rooms, and other manned applications
- MCC, RIE, DCS, LER, power, and switchgear buildings



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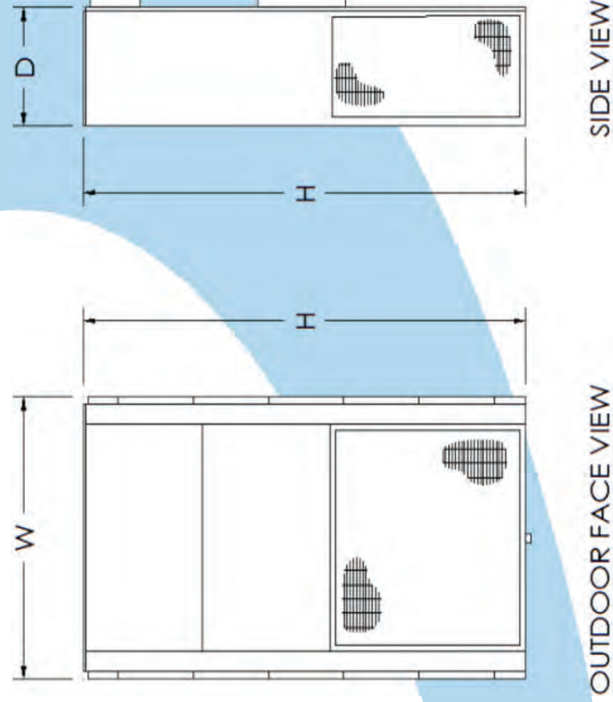
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WC Series Wall Mount Units

Cabinet Dimensions

Cabinet Size	H	W	D
A	in	32	14 5/8
	mm	813	371
B	in	32 7/8	17 1/8
	mm	835	435
C	in	40	17 1/8
	mm	1016	435
D	in	43 7/8	22 3/7
	mm	1114	570



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PAC Series

Package Units



Single package, roof or pad mounted, HVAC units for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Down flow supply and return
- Spark resistant fan and blower construction
- EPA approved, HFC type refrigerants
- Fully insulated evaporator section for quiet operation
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Remote, thermostat or operating panel shipped loose for wall installation
- Total, nominal cooling from 1.5 to 30 tons
- Steam heating coil with connections
- Electric heat (limited by temperature code and system size)
- End/side supply/return
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations.
- Type 304 or 316, stainless steel cabinet and chassis for added corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motors
- Ventilation packages to maintain specified air changes
- NFPA 496 packages for automatic control of Types X, Y, or Z positive pressure and purge air flow for the space
- Advanced, chemical filtration packages
- Low/High ambient packages for operation in extreme environments



APPLICATIONS:

- Analyzer buildings
- Control rooms, driller's cabins, Living quarters, and other manned applications.
- MCC, RIE, power, and various other buildings

S Series

Split Systems



Split type air conditioning and heating systems, custom-built for use in industrial and/or hazardous (classified) applications

INCLUDES:

- CLS series condenser units
- AAU series evaporator units

STANDARD FEATURES:

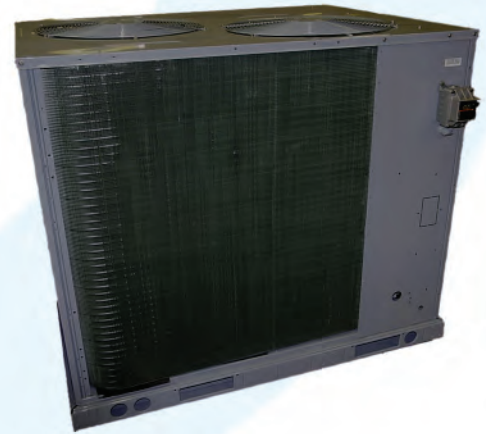
- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Spark resistant fan and blower construction
- Minimal building wall cut-out requirement
- EPA approved, HFC type refrigerants
- Air handler duct connections matching major AC manufacturers
- Condensing unit foot-prints matching major AC manufacturers
- Mechanical thermostat shipped loose for wall installation

OPTIONS:

- Total, nominal cooling from 1.5 to 20 tons
- Steam heating coil with connections
- Electric heat (limited by temperature code and system size)
- Single or three phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Type 316, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motors
- Electrical disconnects
- Digital thermostat (shipped loose) for general purpose applications
- Low/High ambient packages available for operation in extreme environments

APPLICATIONS:

- Split hazard locations
- E.g.: Class I, Division 2 indoor; non-hazardous outdoor
- Blast/fire rated buildings
- Control rooms/cabins, Living quarters, plant office buildings, and other manned applications
- MCC, RIE, DCS, power, and switchgear buildings



MS-M Series

Mini Split Systems



Ductless, mini-split air conditioner and heat pump systems manufactured to order for use in hazardous (classified) locations and industrial applications

INCLUDES:

- CMS-M series condenser units
- WAM-M series evaporator units

STANDARD FEATURES:

- *Certification in progress with Intertek® (to bear the ETL mark) for compliance to applicable codes and standards
- Ductless air handler with directional supply air diffuser grille
- 100% re-circulated indoor air
- Robust, stainless steel cabinet and chassis construction
- Minimal building wall cut-out requirement
- Spark resistant construction
- EPA approved, HFC type refrigerants
- Mechanical thermostat shipped loose for wall installation in the field
- Disposable, MERV 5 rated, washable return air filter
- Tool-less access to return air filter

OPTIONS:

- Nominal cooling up to 3 tons
- Single phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Electric heat for heating or de-humidification
- Low/High ambient packages available for operation in extreme environments
- Corrosion resistant coatings for refrigerant coils and tubing
- Protective, component coatings for operation in corrosive environments
- Digital thermostat (shipped loose) for general purpose applications
- Electrical disconnects

APPLICATIONS:

- Split hazard locations
 - E.g.: Class I, Division 2 indoor; non-hazardous outdoor
- Blast/fire rated buildings
- Control rooms/cabins, Living quarters, plant office buildings, and other manned applications





MS-M Series Mini-Split Systems

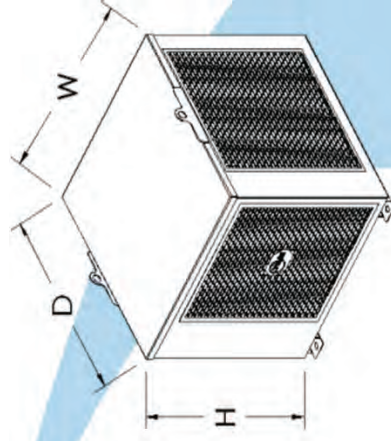
Cabinet Dimensions

CMS-M: Outdoor, Condensing Unit

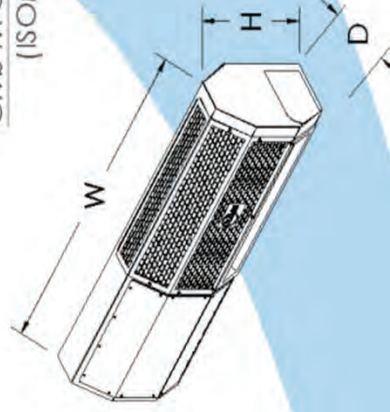
Cabinet Size	H	W	D	Required Clearance
in	30	32	1/4	32 1/4 36
mm	762	819	819	914

WAM-M: Indoor, Evaporator/ Ductless Air Handler

Cabinet Size	H	W	D	Liquid Line Size	Suction Line Size
SM	20	54	13	1/4	1/2
mm	508	1372	330	6	13
MM	20	63	13	3/8	3/4
mm	508	1600	330	10	19
LM	20	68	13	3/8	3/4
mm	508	1727	330	10	19



CMS-M CONDENSING UNIT
(ISOMETRIC VIEW)



WAM-M DUCTLESS AIR HANDLER
(ISOMETRIC VIEW)

MC Series



Cabinet Coolers



Mini wall mount, cabinet coolers for use in hazardous (classified) applications

STANDARD FEATURES:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Spark resistant fan and blower construction
- EPA approved, HFC type refrigerants
- Built-in thermostat
- High and low refrigerant pressure switches
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Total, nominal cooling up to 2 tons
- Single phase operation in 60 or 50 Hz applications
- Configurable for operation in various non-hazardous and hazardous rated locations
- NEMA 4X, Type 304, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments

APPLICATIONS:

- Analyzer cabinets, control cabinets, and other small equipment enclosures



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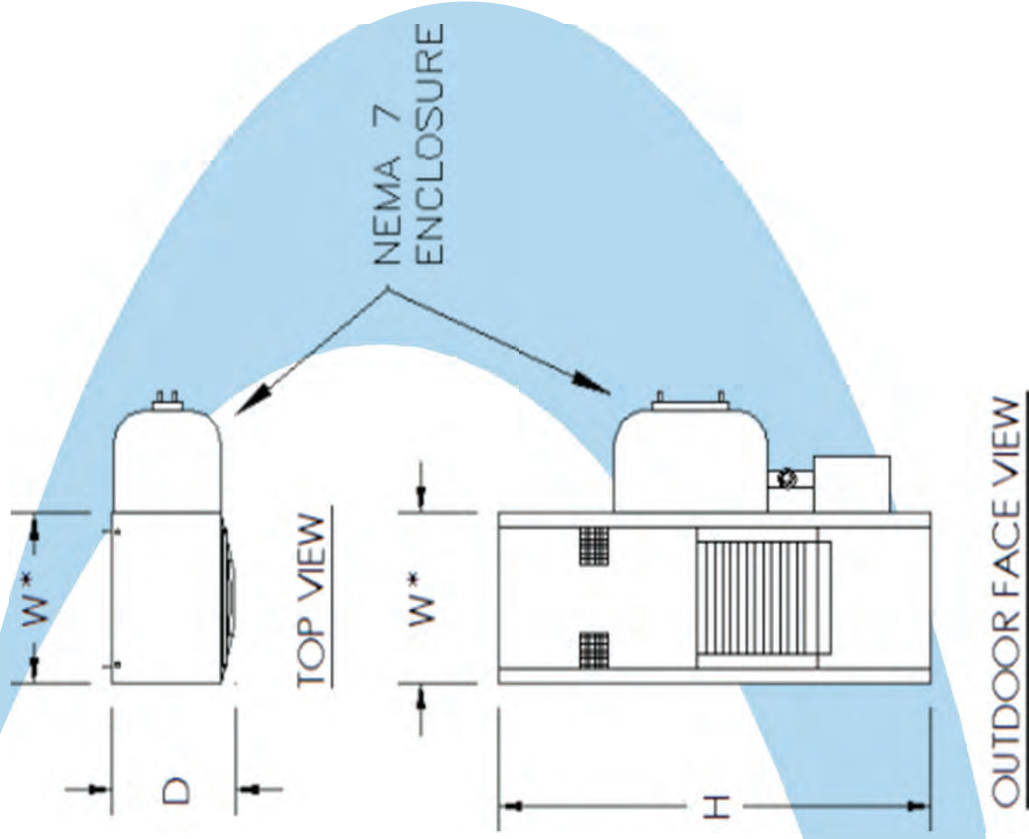


MC Series Cabinet Coolers

Cabinet Dimensions

Cabinet Size	H	W*	D
C23	in	10	9 4/7
	mm	584	243
C29	in	29 1/2	9 1/4
	mm	749	235
C43	in	43 1/3	11
	mm	1100	281
T53	in	52 6/7	13
	mm	1342	330
T62	in	61 2/3	20
	mm	1567	506

*Width does not include NEMA 7 enclosure.



R Series

Room Air Conditioners



Window unit air conditioners and heat pumps for use in hazardous (classified) locations and industrial applications

STANDARD FEATURES:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- 100% re-circulated indoor air
- Self-contained with integral controls
- Spark resistant construction
- EPA approved, HFC type refrigerants
- Tool-less access to return air filter
- Fully insulated supply plenum for quiet operation
- Protective coatings for prolonged life of cabinet and chassis



OPTIONS:

- Nominal cooling up to 3 tons
- Heat pump operation [WARNING: heat pump systems are not suited for heating operation in ambient temperatures lower than 45°F (7°C)]
- Steam heating coil with connections
- General purpose, electric heat for purged cabins
- Single phase operation in 60 or 50 Hz applications
- Available for operation in various non-hazardous and hazardous rated locations
- Type 304 or 316, stainless steel cabinet and chassis for corrosion protection
- Corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Protective, component coatings for prolonged life in corrosive environments
- Auto-changeover heat/cool thermostat for unattended, year-round comfort
- Low volume, fresh air intake (for barometric relief only)



APPLICATIONS:

- Storage sheds, Analyzer shelters
- Guard shacks, Operator cabins, portable offices, living quarters, and other small, manned enclosures & buildings

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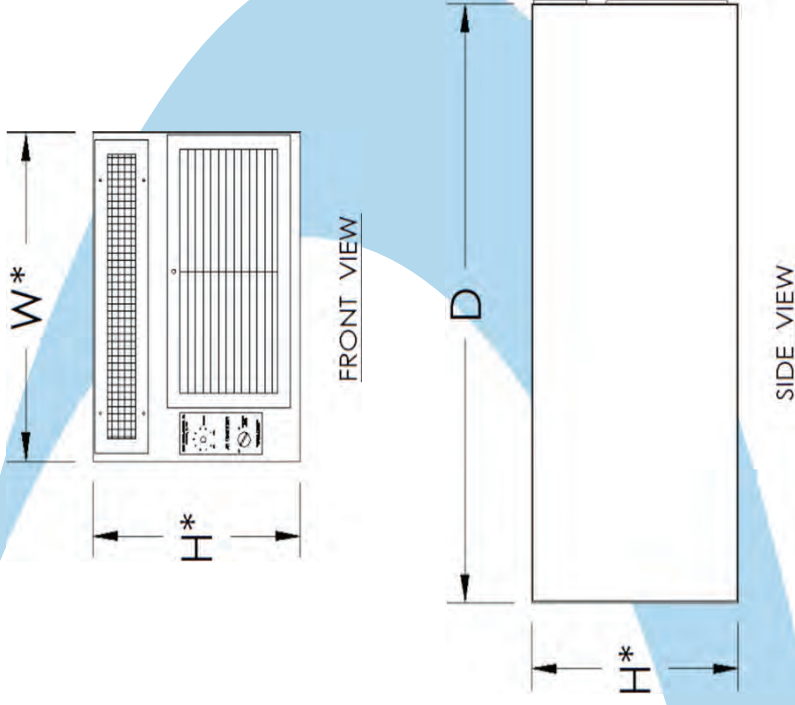
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R Series Window Units

Cabinet Dimensions

Cabinet Size	*Add 1/2" for wall cut-out		D	Minimum Ingress to Building	Maximum Wall Thickness
	H*	W*			
S	16	26	29	5 3/4	7 3/8
	mm	405	737	146	187
M	18	26	29	5 3/4	7 3/8
	mm	456	737	146	187
L	20 1/5	28	35 1/2	5 3/8	15 1/8
	mm	513	902	137	384
S1	28	26	44 1/2	5 3/4	6 3/4
	mm	711	1130	146	171
M1	18	26	44 1/2	5 3/4	6 3/4
	mm	457	1130	146	171
L1	20 1/4	28	51	5 3/8	10
	mm	514	1295	137	254



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Modifications



Customer supplied equipment modified for use in industrial and/or hazardous (classified) applications

FEATURES & OPTIONS:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Spark resistant fan / blower construction
- Appropriate modifications made with little to no impact on basic unit performance
- High and low refrigerant pressure switches added
- Standard, protective coatings for prolonged life of cabinet and chassis
- Available, type 304 or 316, stainless steel cabinet and chassis replacement for corrosion protection
- Available, corrosion resistant coatings for refrigerant coils and tubing (proven to withstand 10,000 hours of salt spray test)
- Available, protective, component coatings for prolonged life in corrosive environments
- Available motor replacement with Totally Enclosed, Fan-Cooled (TEFC) motors (based on application)
- Low/High ambient accommodations for operation in extreme environments
- System examples include:
 - Unit coolers/Refrigeration evaporators
 - Refrigeration condensing units
 - Package and split system units
 - Spot coolers
 - Chill water air handlers
 - Deep bed scrubbers



RESTRICTIONS:

- EC motors and electric heat (including defrost) cannot be modified to be used in hazardous locations
- Certain other restrictions may apply, please ask out Technical Sales team for more details



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PVX Series

Wall Mount Pressurization Units



Variable speed, pressurization units, purpose-built for use in industrial and/or hazardous (classified) applications

STANDARD FEATURES:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Spark resistant blower construction
- Angle flashing provided for wall mounting
- Automatic, variable speed, positive pressure and purge air flow control to satisfy NFPA 496 requirements for the space
- Self-contained with built-in, slide-out controls drawer for easy installation and servicing
- Protective coatings for prolonged life of cabinet and chassis

OPTIONS:

- Optional, remote, operating panel
- Single or three phase operation in 60 or 50 Hz applications
- Single, multi-staged or redundant operation
- Type 304 or 316, stainless steel cabinet and chassis for corrosion protection
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motor
- Low/High ambient accommodations for operation in extreme environments
- Electric heat (limited by temperature code and unit size)

APPLICATIONS:

- Retro-fitting applications with pre-existing AC equipment
- Laboratories in mild climates
- Auxiliary or emergency pressurization control



WFX Series

Wall Mount Fans



Wall mount fans, custom-built for use in hazardous (classified) applications

STANDARD FEATURES:

- *Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Spark resistant construction
- Angle flashing provided for wall mounting
- Standard, protective coatings for prolonged life of cabinet and chassis
- 350, 550, or 750 CFM wall mount configurations readily available

OPTIONS:

- Factory certified roof mount configuration
- Customizable air flows to meet customer specifications
- Configurable for operation in various non-hazardous and hazardous rated locations
- Single or three phase operation in 60 or 50 Hz applications
- Single, multi-staged or redundant operation
- Supply or exhaust configurations available
- Type 304 or 316, stainless steel cabinet and chassis for corrosion protection
- Protective, component coatings for prolonged life in corrosive environments
- Totally Enclosed, Fan-Cooled (TEFC) motor
- Low/High ambient accommodations for operation in extreme environments
- Operating switches
- Dry contacts for run status monitoring

APPLICATIONS:

- Sewage treatment plants
- Battery rooms
- Auxiliary or emergency ventilation



ISFX160

Circulation Equipment



Inline Duct Fan manufactured for use in Class I, Division 2, groups B/C/D hazardous (classified) locations with an operating temperature code of T3C (320°F/160°C)

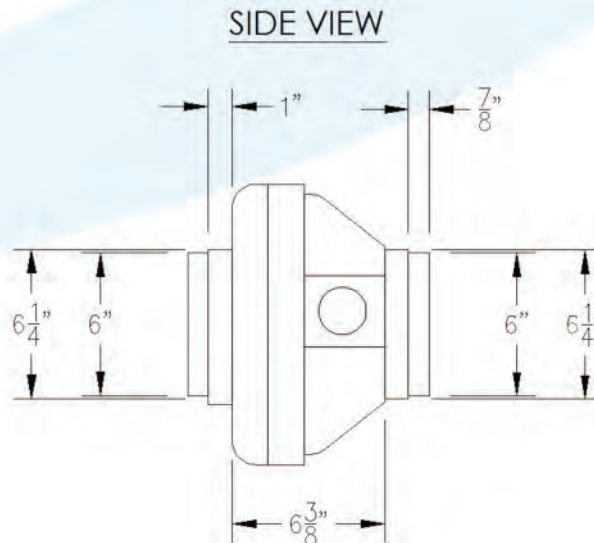
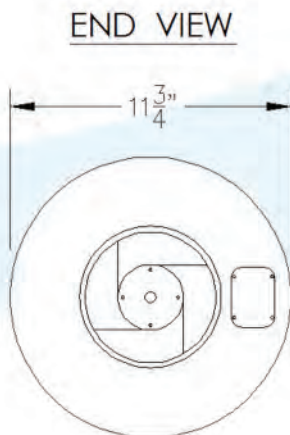
FEATURES:

- Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Suitable for indoor and outdoor use
- Mounting bracket furnished for indoor or outdoor installation
- 115 volts AC, single phase, 60 Hz power requirements
- Spark resistant construction
- ½" NPT conduit connection for easy power wiring
- Can be used with or without circular duct
- Functions as supply or exhaust fan
- Limited stock available for shorter lead time



APPLICATIONS:

- Small control cabinets
- Lavatory ventilation
- Sewage treatment plants



*Performance is based on ducted outlet.

CIRC	Unit Weight (lbs)	Unit Weight (kg)	Duct Size	Volts - Phase	Rated Watts	Max Amps	RPM	* Air Flow (CFM) at Static Pressure (IN W.C.)
ISFX160	20	9	6"	115-1	129	1.14	2750	0.0
								0.2
								0.4
								0.6
								0.8
								1.0
								1.5
								89

MSFX Series

Circulation Equipment



Muffin fans manufactured for use in Class I, Division 2, groups B/C/D hazardous (classified) locations with an operating temperature code of T3C (320°F/160°C)

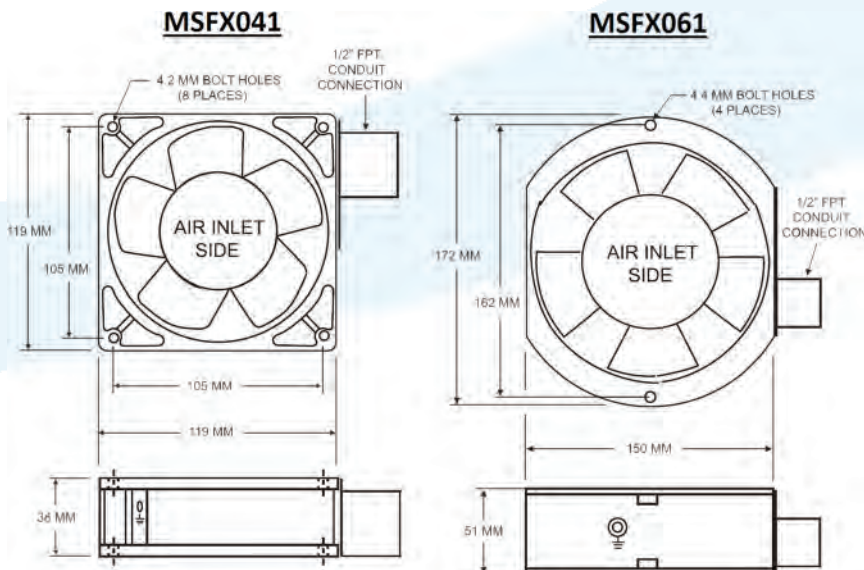
FEATURES:

- Certified by CSA (bearing the CSA mark) for compliance to applicable codes and standards
- Suitable for indoor use
- Single phase operation in 60 or 50 Hz applications
- Spark resistant construction
- ½" NPT conduit connection for easy power wiring
- Inlet grilles furnished for finger protection
- Functions as supply or exhaust fan
- Limited stock available for shorter lead time




APPLICATIONS:

- Small control cabinets
- Control panels



CIRC	Unit Weight (lbs)	Unit Weight (kg)	Nominal Dia	Phase - Hertz	Volts AC -	Rated Watts	Max Amps	RPM	CFM	ESP	Noise (Dba)
MSFX041-116	1.0	0.45	4.5"	120-1-60	17	0.18	3,000	105	0.28"	47	
MSFX041-115	1.0	0.45	4.5"	110-1-50	18	0.24	2,700	80	0.23"	42	
MSFX041-216	1.0	0.45	4.5"	240-1-60	17	0.11	3,000	105	0.28"	47	
MSFX041-215	1.0	0.45	4.5"	220-1-50	18	0.13	2,700	80	0.23"	42	
MSFX061-116	2.0	0.91	6"	120-1-60	35	0.45	3,100	235	0.79"	45	
MSFX061-115	2.0	0.91	6"	110-1-50	38	0.50	2,800	190	0.63"	50	

 Shield Air Solutions	HVAC and Pressurization Design Form			
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HVAC and Pressurization Design Form

TO: Shield Air Solutions
3708 Greenhouse Road
Houston, TX 77084

ATTN: Sales Department
PH: 281-944-4300
FX: 281-492-1036
sales@shieldair.com

FROM:


Company Name: _____ PH: _____
Contact Name: _____ FX: _____
Address: _____ REF: _____
City, State Zip: _____ Country: _____
Email: _____
Project Name (if available): _____

Electrical Area Classification (Exterior)

NEC:
___ Unclassified
___ Class I, Division __ 1 __ 2, Group(s) __ D __ C & D __ B, C & D
___ Class II, Division __ 1 __ 2, Group(s) __ G __ F & G __ E, F & G
___ Temperature Code ___
IEC/ATEX
___ Unclassified
___ Zone I, Group(s) __ IIA __ IIB __ IIB+H2 __ IIC
___ Zone II, Group(s) __ IIA __ IIB __ IIB+H2 __ IIC
___ Temperature Code ___

Electrical Area Classification (Interior)

NEC:
___ Unclassified (requires type Z purge in Division 2 and type X in Division 1 locations)
___ Class I, Division __ 1 __ 2, Group(s) __ D __ C & D __ B, C & D
___ Class II, Division __ 1 __ 2, Group(s) __ G __ F & G __ E, F & G
___ Temperature Code ___
IEC/ATEX:
___ Unclassified (requires type EX [pz] purge in Zone 2 and type EX [px] in Zone 1 locations)
___ Zone I, Group(s) __ IIA __ IIB __ IIB+H2 __ IIC
___ Zone II, Group(s) __ IIA __ IIB __ IIB+H2 __ IIC
___ Temperature Code ___

 Shield Air Solutions	HVAC and Pressurization Design Form			
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Internal Heat Loads

- Estimate Using Attached Drawing
- Lights _____ Watts, Equipment _____ Watts, Personnel (No.) _____
- Gas Chromatograph(s)
- Other Analyzers @ _____ Watts each
- Sections of Medium or High Voltage Switchgear
- Sections of Low Voltage Switchgear
- Sections of High Voltage MCC
- Sections of Low Voltage MCC
- Watts Miscellaneous Equipment

Power Requirements

- 460-3-60 208/230-3-60 208/230-1-60 115-1-60
- 380/415-3-50 220-3-50 220-1-50
- Other Voltage _____

Unit Construction

- Certification:
- Factory Third Party
- Cabinet:
- Painted Galvanized Steel T304 Stainless Steel T316 Stainless Steel
- Coils:
- Copper Tube / Aluminum Fins Copper Tube / Copper Fins Stainless Steel
 - Uncoated Coils Urethane Coated Coils Heresite Coated Coils
- Mounting:
- Roof Wall Pad Other
- Redundancy required: No Yes

Other Specifications:

HAZLOC REFERENCE SHEET

NFPA 70, NEC Article 500 to 504 & NFPA 496, Chapter 7

Class I • Division 1 • Groups B, C, D • T3
Type X pressuration

Class	Defines the type of hazard in the area	
I	Gasses, vapors, liquids	
II	Dusts	
III	Fibers & Flyings	
Division	Defines the presence of hazard over time	
1	Explosive environment regularly present	
2	Explosive environment not commonly present	
Groups	Defines the substance(s) that are hazardous	
A	Acetylene	GAS
B	Hydrogen (and similar)	
C	Ethylene	
D	Propane (and similar)	
E	Metal Dust	
F	Carbon	DUST
G	Flour, starch, grain, plastic, etc.	

Temperature Code

(maximum allowable surface temperature of equipment)

T-Code	°F	°C
T1	842	450
T2	572	300
T2A	536	280
T2B	500	260
T2C	446	230
T2D	419	215
T3	392	200
T3A	356	180
T3B	329	165
T3C	320	160
T4	275	135
T4A	248	120
T5	212	100
T6	185	85

(IEC Ex & ATEX only use the highlighted t-codes)

The ATEX Directive & the IEC Ex Standard

CE Ex II 2 G Ex _____ IIB+H2 T3 Gb

ATEX Only

CE	European Conformity	
Ex	Epsilon Making for Explosion Protected	
Equipment Group	I	Mines
	II	Not Mines
Equipment Category	1	Zone 0 & 20 (Explosive Environment CONSTANTLY present)
	2	Zone 1 & 21 (Explosive Environment REGULARY present)
	3	Zone 2 & 22 (Explosive Environment not commonly present)
Environment	G	Gas
	D	Dust
Ex	Explosion Protected	
Protection method(s) used	e	Increased Safety
	d	Flame-proof
	i(a,b,c)	Intrinsic Safety
	p(x,y,z)	Purged/pressurized (see below for more details)
Gas Group	IIC	Acetylene and Hydrogen (H2)
	IIB	Ethylene (and similar)
	IIA	Propane (and similar)
<- Temperature Code		
Equipment Protection Level (EPL)	Ga	For Zone 0
	Da	For Zone 20
	Gb	For Zone 1
	Db	For Zone 21
	Gc	For Zone 2
	Dc	For Zone 22
	Gas	Dust

Pressurization/Purge

NFPA-496 serves to "declassify" an enclosure. Requires a minimum of 0.1" wc positive pressure, and 60 ft/min purge air flow across openings.

TYPE	Surrounding Hazloc	Internal Environment After Purge
X	Division/Zone 1	General Purpose
Y	Division/Zone 1	Division/Zone 2
Z	Division/Zone 2	General Purpose

The information on this page has been correlated based on our many years of experience with hazardous locations (hazloc). It is not meant to be used for area definition and should not be used in lieu of authorized materials. For more detail of the codes, please refer to NFPA 70, NEC Article 500 to 504; NFPA 496, Chapter 7; the ATEX directive; & the IEC EX standards. Always remember to consult with local authorities before defining your area classification.



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