CELLAR PLUS CELLAR COOLER RANGE

ISSUE: 01.07.2020

CE

J&E Hall International

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Standard Product Configuration

Indoor

- Brewery specification 6 fins per inch evaporator coils
- Galvanised mild steel casing with polyester powder coating
- Electronic controller
- 3/4” BSP drain fitting on evaporator

Outdoor

- Housed condensing units
- Copeland scroll compressor
- Basic control box
- Adjustable LP/HP switch fitted
- Drier & sight glass fitted
- Acoustic insulation

General

- Single & Twin Evaporator systems
- Cellar temperatures down to +4°C
- Suitable for cooling beers, wines, flowers, fruit & vegetables etc.

Range

Single Evaporator Systems:

- Cellar Plus 70-S1/S3
- Cellar Plus 80-S1/S3

Twin Evaporator Systems:

- Cellar Plus 70-T1/T3
- Cellar Plus 80-T1/T3
- Cellar Plus 90-T1/T3

Specifications

System data

System	Nominal Capacity [1] (kW)	Outdoor Units				Indoor Units					System COP	Max. Pipe Run (m)
		Unit Model	Pipe Connections (Inlet/Outlet)	Air Flow (m3/h)	Noise Level[2] dB(A)	Unit Model	Pipe Connections (Inlet/Outlet)	Air Flow (m3/h)	Air Throw[3] (m)	Noise Level[2] (10m) dB(A)		
CellarPlus 70-S1/S3	6.90	BSCU-30-M1 BSCU-30-M3	3/8" & 3/4"	2765	34	1x JCC2-80E	1/2" & 3/4"	4070	10	50	2.21	50
CellarPlus 80-S1/S3	7.94	BSCU-35-M1 BSCU-35-M3	1/2" & 3/4"	3350	36	1x JCC2-80E	1/2" & 3/4"	4070	10	50	2.27	50
CellarPlus 70-T1/T3	7.17	BSCU-30-M1 BSCU-30-M3	3/8" & 3/4"	2765	34	2x JCC2-40E	1/2" & 5/8"	(2x) 2270	10	(2x) 48	2.14	50
CellarPlus 80-T1/T3	7.93	BSCU-35-M1 BSCU-35-M3	1/2" & 3/4"	3350	36	2x JCC2-50E	1/2" & 5/8"	(2x) 2680	10	(2x) 47	2.20	50
CellarPlus 90-T1/T3	9.19	BSCU-40-M1 BSCU-40-M3	1/2" & 7/8"	4250	41	2x JCC2-60E	1/2" & 3/4"	(2x) 2560	10	(2x) 47	2.25	50

(1) Nominal capacity stated at Troom 10ºC / 32ºC Ta with R448A/R449A refrigerant.
(2) Noise levels are measured in an anechoic chamber at nominal test conditions (Troom 10ºC / 32ºC Ta). Different conditions may produce different results.
(3) Air throws are based on a final velocity of 0.4 m/s.

Capacity data

System	Cooling capacities in kW (R448A/R449A)							
	Ta (^{0}C)	Troom (ºC)						
		4	6	8	10	12	14	16
CellarPlus 70-S1/S3	27	5.78	6.26	6.73	7.21	7.69	8.17	8.64
	32	5.53	5.99	6.44	**6.90**	7.35	7.81	8.26
	38	5.16	5.61	6.05	6.50	6.95	7.40	7.85
CellarPlus 80-S1/S3	27	6.81	7.27	7.73	8.18	8.64	9.10	9.55
	32	6.75	7.10	7.52	**7.94**	8.35	8.77	9.19
	38	6.71	7.01	7.32	7.62	7.93	8.23	8.53
CellarPlus 70-T1/T3	27	6.55	6.87	7.18	7.50	7.82	8.13	8.45
	32	6.27	6.57	6.87	**7.17**	7.47	7.78	8.08
	38	5.23	5.64	6.06	6.47	6.88	7.29	7.71
CellarPlus 80-T1/T3	27	6.70	7.19	7.68	8.17	8.67	9.16	9.65
	32	6.57	7.02	7.47	**7.93**	8.38	8.83	9.28
	38	6.62	6.94	7.26	7.57	7.89	8.20	8.52
CellarPlus 90-T1/T3	27	8.40	8.80	9.20	9.61	10.01	10.41	10.81
	32	8.01	8.40	8.80	**9.19**	9.59	9.98	10.38
	38	7.53	7.92	8.31	8.70	9.08	9.47	9.86

Specifications

Unit dimensions & weights

System	Outdoor Units				Indoor Units				
	Unit Model	W x D x H (mm)	Fixing Ctrs. (mm)	Weight (kgs)	Unit Model	W x D x H (mm)	Fixing Ctrs. Top (mm)	Fixing Ctrs. Rear (mm)	Weight (kgs)
CellarPlus 70-S1/S3	BSCU-30-M1	1108 x 478 x 649	703 x 448	77	1x JCC2-80E	1437 x 505 x 557	1173 x 324	1173 x 310	63
	BSCU-30-M3			76					
CellarPlus 80-S1/S3	BSCU-35-M1	1334 x 530 x 864	946 x 500	97	1x JCC2-80E	1437 x 505 x 557	1173 x 324	1173 x 310	63
	BSCU-35-M3			96					
CellarPlus 70-T1/T3	BSCU-30-M1	1108 x 478 x 649	703 x 448	77	2x JCC2-40E	865 x 505 x 489	745 x 122	745	(2x) 33
	BSCU-30-M3			76					
CellarPlus 80-T1/T3	BSCU-35-M1	1334 x 530 x 864	946 x 500	97	2x JCC2-50E	904 x 504 x 546	826 x 122	826	(2x) 36
	BSCU-35-M3			96					
CellarPlus 90-T1/T3	BSCU-40-M1	1351 x 530 x 864	946 x 500	107	2x JCC2-60E	904 x 504 x 546	826 x 122	826	(2x) 38
	BSCU-40-M3			107					

Electrical data & requirements

System	Outdoor Units							Indoor Units				
	Unit Model	Power Supply (V/ph/Hz)	Power (kW)	MCC (2) (A)	LRA (2) (A)	RRC (1) (A)	SFR (3) (A)	Unit Model	Power Supply (V/ph/Hz)	Power (kW)	RRC (1) (A)	SFR (3) (A)
CellarPlus 70-S1/S3	BSCU-30-M1	230/1/50	2.70	21.5	82.0	12.2	25	1x JCC2-80E	230/1/50	0.43	1.9	6
	BSCU-30-M3	400/3/50		10.3	40.0	5.1	16					
CellarPlus 80-S1/S3	BSCU-35-M1	230/1/50	3.08	25.0	97.0	14.0	32	1x JCC2-80E	230/1/50	0.43	1.9	6
	BSCU-35-M3	400/3/50		9.0	46.0	5.7	20					
CellarPlus 70-T1/T3	BSCU-30-M1	230/1/50	2.90	21.5	82.0	13.3	25	2x JCC2-40E	230/1/50	0.45	2.0	6
	BSCU-30-M3	400/3/50		10.3	40.0	5.4	16					
CellarPlus 80-T1/T3	BSCU-35-M1	230/1/50	3.17	25.0	97.0	14.3	32	2x JCC2-50E	230/1/50	0.44	2.0	6
	BSCU-35-M3	400/3/50		9.0	46.0	5.8	20					
CellarPlus 90-T1/T3	BSCU-40-M1	230/1/50	3.65	28.0	114.0	17.4	40	2x JCC2-60E	230/1/50	0.44	2.0	6
	BSCU-40-M3	400/3/50		11.0	50.0	6.8	20					

(1) Power consumption and Rated Run Current (RRC) shown at nominal test condition (Troom 10ºC / 32ºC Ta) with R448A/R449A refrigerant
(2) Maximum Continous Current (MCC) and Locked Rotor Amps (LRA) are for the unit compressor only.
(3) SFR ~ Suggested Fuse Rating (Motor Rated for Outdoor Unit)

Outdoor unit sound spectrums

Model	1/1 Octave Sound Pressure Levels @ 1 meter from front of the unit								Noise Levels (10m)
	Frequency								
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	A (dBA)	A (dBA)
BSCU-30-M1/M3	62.1	56.7	51.3	48.2	43.1	38.3	31.3	54.1	34
BSCU-35-M1/M3	63.5	62.7	53.1	48.6	43.9	38.8	32.4	56.3	36
BSCU-40-M1/M3	61.4	61.7	58.6	55.2	51.7	48.3	43.1	60.7	41

Health and Safety

Important Note:

Only a qualified refrigeration engineer, who is familiar with refrigeration systems and components including all controls, should perform the installation and start-up of the system. To avoid potential injury, use care when working around coil surfaces or sharp edges of metal cabinets. All piping and electrical wiring should be installed in accordance with all applicable codes, ordinances and local by-laws.

General information

Before Installation

- Ensure the units received are the correct models for the intended application.
- Ensure the refrigerant, voltage and MWP are all suitable for the proposed application.
- Check there is no damage to the units. Any damage should be advised to the supplier immediately.
- Check that the proposed equipment locations are suitable and provide adequate support for the weight of the units.

During Installation and subsequent maintenance

- Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations, and experienced with this type of equipment.
- If lifting equipment is required, ensure that it is suitable for purpose, certificated and that the operatives are qualified to use it.
- Safe working methods are identified and operatives have suitable PPE.
- Ensure the working area has adequate ventilation during brazing procedures.
- The units contain moving machinery and electrical power hazards, which may cause severe injury or death. Disconnect and shut off power before installation or service of the equipment.
- Refrigerant release into the atmosphere is illegal. Proper evacuation, recovery, handling and leak testing procedures must be observed at all times.
- Units must be earthed and no maintenance work should be attempted prior to disconnecting the electrical supply.
- The electrical covers and fan guards must remain fitted at all times.
- Use of the units outside of the design conditions and the application for which the units were intended may be unsafe and be detrimental to the units, regardless of short or long term operation.
- The units are not designed to withstand loads or stresses from other equipment or personnel. Such extraneous loads or stress may cause failure/leak/injury.

Installation

Quick Guide – Piping

Pipework:

Pipework sizing should be based on the total equivalent lengths, which includes equivalent lengths for bends, traps, risers etc. A guide to sizing is noted below:

System	Condensing Unit Model	Evaporator Models	TEV Model	Pipe Sizing: 10ºC Cellar R448A/R449A					
				10m		20m		30m	
				Liquid	Suction	Liquid	Suction	Liquid	Suction
CellarPlus 70-S1/S3	BSCU-30-M1/M3	1x JCC2-80E	1x TE2-03	3/8"	3/4"	3/8"	7/8"	3/8"	7/8"
CellarPlus 80-S1/S3	BSCU-35-M1/M3	1x JCC2-80E	1x TE2-04	1/2"	7/8"	1/2"	7/8"	1/2"	7/8"
CellarPlus 70-T1/T3	BSCU-30-M1/M3	2x JCC2-40E	2x TE2-02	**3/8"** (2x 3/8")	**3/4"** (2x 5/8")	**3/8"** (2x 3/8")	**7/8"** (2x 5/8")	**3/8"** (2x 3/8")	**7/8"** (2x 5/8")
CellarPlus 80-T1/T3	BSCU-35-M1/M3	2x JCC2-50E	2x TE2-02	**1/2"** (2x 3/8")	**7/8"** (2x 5/8")	**1/2"** (2x 3/8")	**7/8"** (2x 5/8")	**1/2"** (2x 3/8")	**7/8"** (2x 5/8")
CellarPlus 90-T1/T3	BSCU-40-M1/M3	2x JCC2-60E	2x TE2-02	**1/2"** (2x 3/8")	**7/8"** (2x 3/4")	**1/2"** (2x 3/8")	**7/8"** (2x 3/4")	**1/2"** (2x 3/8")	**1 1/8"** (2x 3/4")

- The pipe sizes indicated in **bold** are from condensing unit to ' T ' piece.
- The pipe sizes indicated in brackets are from the ' T ' piece to each evaporator.
- Pipework should be selected on the total equivalent length of run between all units.

Expansion Valves:

Suitably selected externally equalized expansion valves are required for each evaporator. Fitting of the valves should be carried out as follows:

- Carefully braze the TEV outlet to the 1/2" evaporator inlet pipe approximately 100mm from the distributor. Protect both the TEV and distributor from excessive heat using a wet cloth.
- Connect the liquid line to the 3/8" TEV inlet (preferably using a flare x solder adaptor). Ensure the correct size orifice is fitted into the valve inlet before assembly and tightening.
- Make an equalization connection between the TEV and the suction line as per the TEV instructions.
- Fit the valve phial sensor to the suction line as per the TEV instructions once all brazing has been completed.

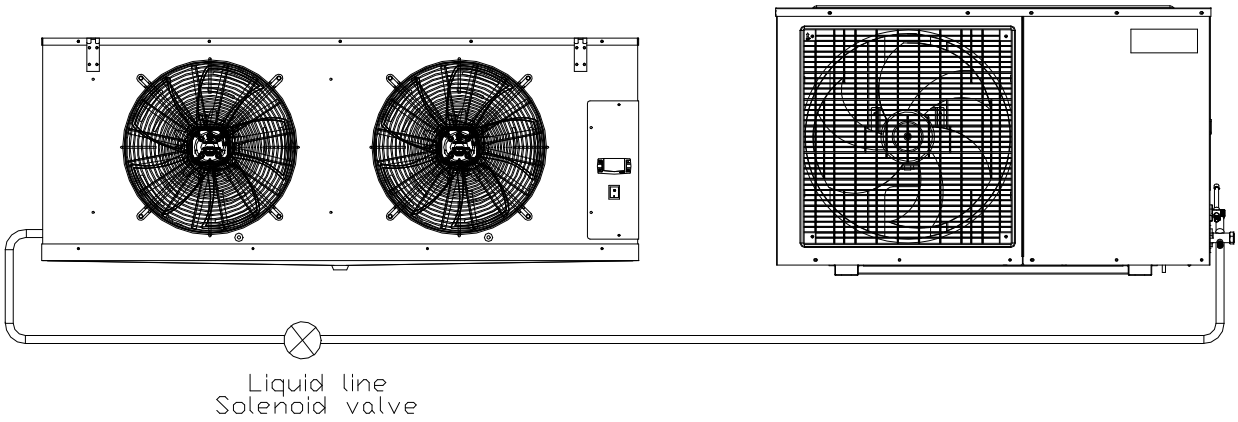
Solenoid Valve:

A suitably sized solenoid valve needs to be installed in the liquid line just before the TEV on single evaporator systems and just before the 'T' piece in the main liquid line on Twin Systems (as shown on page 8). The liquid line solenoid valve is not supplied in both Single and Twin system.

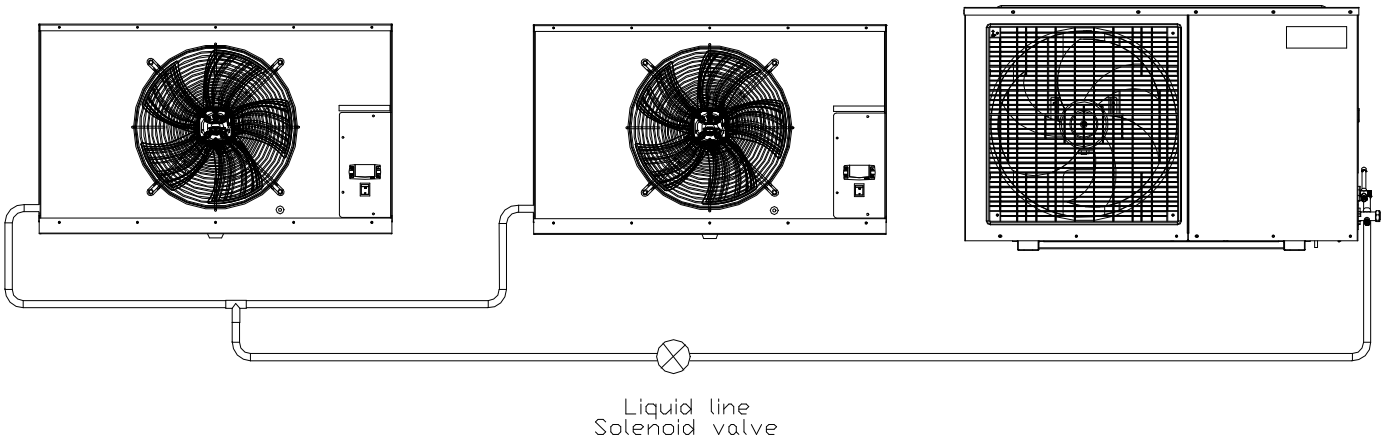
Installation

Quick Guide – Piping

Single System



Twin System



Installation

Quick Guide - Wiring

Evaporators:

The JCC indoor evaporators require a 6A single phase supply. For Twin Systems, both evaporators can be connected to a single mains supply. Separate mains supplies can be installed if required but it is desirable for them to be taken from the same supply phase. There are no mains isolators fitted to the evaporators.

On the Lead evaporator for Twin Systems, terminals P1 & P2 **must** be fitted with a link wire to disable the low-pressure switch fitted on the evaporator coil (see wiring diagram on page 27). The low-pressure switch fitted to the condensing unit once set up will control the pump down operation.

Lead/Lag Connection (Twin):

The JCC evaporators come pre-fitted with an electronic controller as standard. For the Twin Systems, one of the evaporators needs to be designated as the Lead Unit with the other being the Lag Unit. The Lead Unit controls the cellar temperature by operation of the liquid line solenoid valve. The Lag Unit has no control over system operation and will just provide cellar temperature indication. Please refer to wiring diagram on page 27.

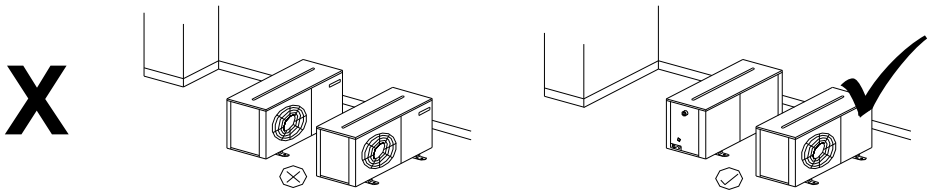
Condensing Unit:

The outdoor condensing unit requires either a single-phase supply or a three-phase supply depending on the unit model selected. A mains isolator is required as there is no isolator fitted to the condensing unit. Please refer to wiring diagrams on pages 28-29. There is no need for any interconnecting wiring between the indoor and outdoor units as the outdoor unit will operate in pump down mode via the low-pressure switch.

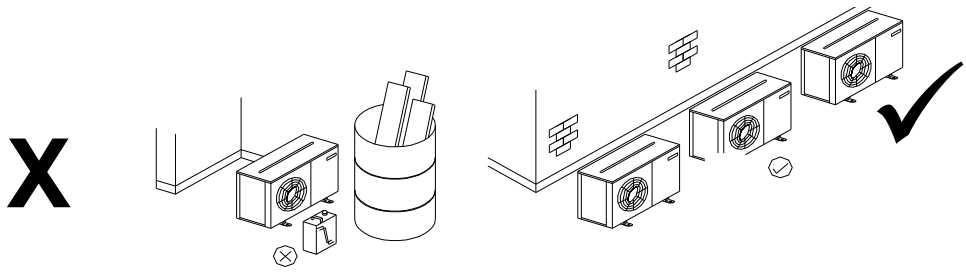
Installation

Unit location

- In order to achieve maximum cooling capacity, the installation location for the condensing unit should be carefully selected.
- Install the condensing unit in such a way so that hot air ejected by the condensing unit cannot be drawn in again (short circuit of hot discharge air). Allow sufficient space for maintenance around the unit.



- Ensure that there is no obstruction to air flow into or out of the unit. Remove obstacles which block air intake or discharge.



- The location must be well ventilated, so the unit can draw in and distribute plenty of air thus lowering the condensing temperature.
- To optimize the unit running conditions, the condenser coil must be cleaned at regular intervals.

The evaporators can be mounted directly to a wall or to the ceiling utilizing the fixing holes on the rear of the unit or on the top of the unit. No additional brackets are required. Position the evaporators where the optimum airflow can be achieved. Avoid locating in corners or in alcoves which may restrict airflows. A minimum 10mm rawlbolt type fixing is required with a large steel washer to bear the unit weight. **It is important to ensure that the wall/ceiling is able to withstand the unit weight and that all fixings are secure.**

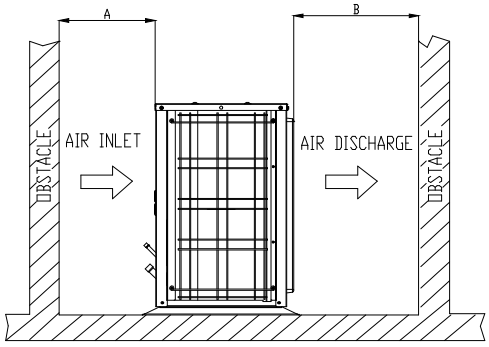
Both indoor and outdoor units must be level in all directions.

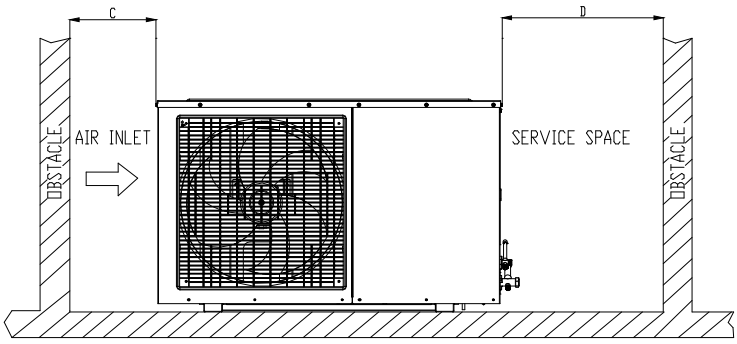
Installation

Installation clearances

- The installation location should allow sufficient space for air flow and maintenance around the units:

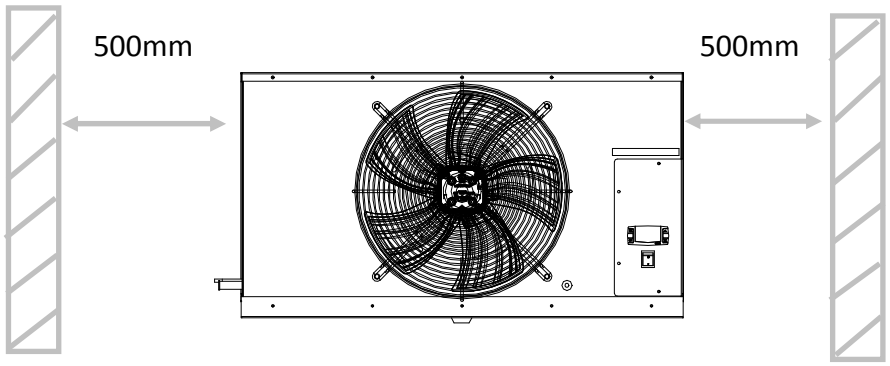
Outdoor

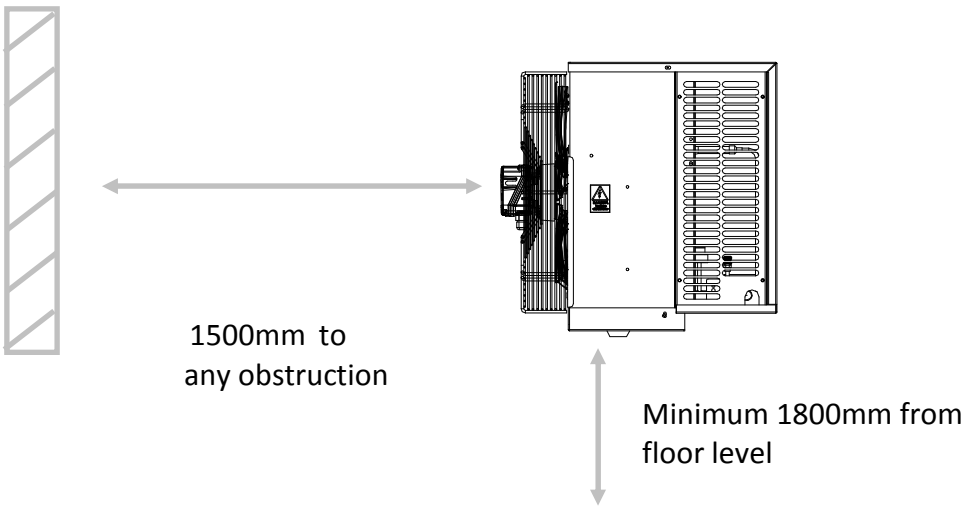




ALL MODELS	A	B	C	D
Minimum Distance	300 mm	1000 mm	300 mm	500 mm

Indoor





Installation

Field piping

Important Note:

The guidelines for pipe sizing and maximum lengths as shown on page 7 should be followed. All local codes of practice must be observed in the installation of refrigerant piping.

To ensure satisfactory operation and performance, the following points should be noted for field piping arrangements:

- Pipework routes must be as simple and as short as possible.
- Avoid low points on pipework where oil can accumulate.
- Use only clean, dehydrated refrigeration grade copper tube with long radius bends.
- When brazing use only silver alloy rods.
- Run braze without over filling to ensure there is no leakage into the tube.
- To prevent oxidization, blow oxygen free nitrogen through pipework when brazing.
- Protect the casing of the unit when brazing connections.
- Install insulation with a minimum wall thickness of 1/2” on all suction lines.
- Adequately support all pipe work at a maximum of 2 metre intervals.

Use of incorrect pipe sizes can affect system pressures/temperatures and gas velocity for proper oil return.

Important Note:

One of the main factors affecting equipment reliability and compressor service life is refrigeration circuit contamination. During installation, circuit contamination can be caused by:

- Brazing & Welding Oxides
- Filings & Particles from de-burring pipework
- Brazing Flux
- Moisture & Air

Installation

Pressure testing

Both the indoor and outdoor units have been pressure tested in the factory prior to dispatch and contain a holding charge of oxygen free nitrogen.

Important Note:

Do not open the service valves on the condensing unit until pressure testing procedures have been carried out.

Once the pipework installation is complete, it should be pressure tested prior to evacuation to test for leaks.
A pressure leak test should be carried out using oxygen free nitrogen (OFN). NEVER USE OXYGEN FOR PRESSURE TESTING SYSTEMS. A calibrated nitrogen pressure regulator must always be used. Before starting any pressure testing, ensure the area surrounding the system is safe, inform relevant personnel and fit warning signs indicating high pressure testing. Also, use correct PPE as required.

Listen for any possible leaks and check all joints with bubble spray. If any leaks are discovered, release pressure slowly from system until empty, repair leak and then restart pressure testing procedure. Never attempt to repair a leak on a pressurized system.
A strength test should also be incorporated according to local regulations.
Once testing has been completed satisfactorily, release the pressure from the system gradually and safely to external atmosphere.

Installation

Evacuation & Charging

Important Note:

Moisture prevents proper functioning of the compressor and the refrigeration system. Ensure that a good quality vacuum pump is used to pull a minimum vacuum of 250 microns (0.25 torr).

Once pressure testing has been completed, the system can now be evacuated to remove air and any moisture from the piping. This can be done as follows:

- Ensure any nitrogen charge is safely released from the system (including the condensing unit).
- Connect a gauge manifold to the schrader connections on the service valves on the condensing unit.
- Connect a vacuum pump and vacuum gauge to the system.
- Evacuate the system until vacuum is below 250 microns (0.25 torr).

Note: A triple evacuation procedure is recommended for all new systems or where moisture is suspected.

Once the system is isolated and the vacuum pump is switched off, any rise in pressure indicates that either there may be a leak in the system or moisture is still present. In this case, recheck the system for leaks, repair as necessary, and then restart the evacuation procedure. Once completed satisfactorily, the vacuum pump and vacuum gauge can be removed.

At this point, refrigerant charge can be added to the system as required. Refrigerant must be charged in the liquid phase into the liquid receiver/liquid line. Do not charge liquid refrigerant into the suction side of the system.

Installation

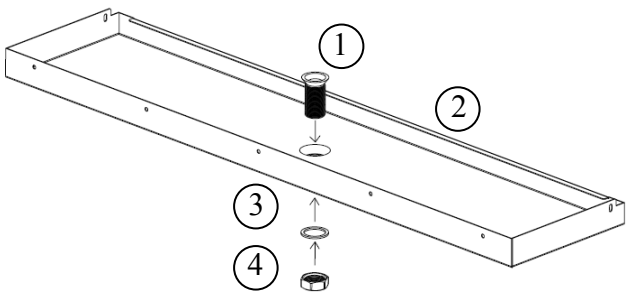
Drainage

Important Note:

The evaporator drain pan fitting is supplied loose and must be fitted on site. It is attached to the indoor unit fan guard with a cable tie. Correct fitting is vital to ensure leak – free operation. The lock nut on the drain fitting **must** be fitted the right way around; otherwise it will not tighten against the drip tray. One side of the nut has an angled recess – this must be facing towards the drip tray. The fitting does not require any sealant but a small amount of silicon sealant can be applied between the flared face of the fitting and the drip tray if so desired.

The drain fitting is aluminum alloy with a 3/4" BSP male thread. A locknut and an aluminium washer are supplied to secure to the drain pan. The locknut only requires hand tightening and then pinching up with a spanner. Do not over tighten or the threads may strip from the nut and also damage the tray. To fit the drain fitting, remove the drip tray (unscrew the seven screws that secure it), locate the fitting then refit the tray. The correct way to fit the drain fitting to the drain pan with aluminium washer and locknut can be seen in the diagram below.

A minimum suggested size of drain from the indoor unit is 20mm or 3/4". This can be either copper or plastic. Flexible hose is not recommended as it can easily kink causing a blockage and water to back up in the unit.



1 DRAIN FITTING
2 DRAIN PAN
3 ALUMINIUM WASHER
4 LOCKNUT

Installation

Electrical

Important Note:

The mains electrical supply to the indoor units must be via a suitably rated isolator and circuit breaker or fuse. There is no isolator fitted to the indoor units. The rocker switch on the front of the indoor units is for isolating the indoor fan and electronic controller only. The mains electrical supply to the outdoor unit must be via a suitably rated motor rated circuit breaker or fuse and requires termination at a suitably rated isolator. There is no isolator fitted to the outdoor units.

J & E Hall cellar systems require a 230V/1/50 supply to the indoor units and either a 230V/1/50 or a 400V/3/50 supply to the outdoor unit (depending on outdoor unit model chosen). They are not suitable for any other supply voltages (other than a deviation of +/- 10% of the above values) and are not suitable for 60 Hz supplies.

Cable type and sizing must be selected for the particular application and the electrical installation should conform to the current local standards.

- Cables to the indoor units should be routed through the 'U' shaped cut-out in the bottom of the removable air grille at the side of the units and into the rear of the electric box.
- Cables to the outdoor unit should be routed through the cable glands on the rear of the unit.
- Connect the mains supplies as per the wiring diagrams on pages 27 & 28-29.

Access to the electrical terminals and components on the indoor unit is via the removable cover plate on the front of the unit. Removal of the cover plate gives access to the contactor, the terminal block as well as the electronic controller and rocker switch connections.

To gain access to the electrical box on the outdoor unit, remove the screws of the panel located on the right hand side of the unit and remove the panel. The electrical box is located behind the panel.

Commissioning

General

Important Note:

Before starting the system, ensure that all electrical connections are correctly made and tight, service ports are in the correct position and all covers and guards are fitted.

Switch on the power at the mains isolators and then switch on the rocker switch on the front of the indoor units. Set the required operating temperature on the electronic controller (Master controller on Twin Systems) and check the system parameters in the controller are as required (the controllers are pre-programmed in the factory to suggested settings).

Run the system to the required temperature and check system pressures, gas charge and running currents of motors to ensure correct operation.

Carry out a manual defrost (press the defrost button on the Master controller for more than 2 seconds) to ensure the defrost period is adequate to clear any frost build up on the evaporator coil.

Carry out final leak test and ensure all covers are fitted and securing screws are tightened.

Log all information along with system model and serial numbers for future reference.

Ensure that the customer / responsible person is provided with basic operating instructions and where electrical isolators are situated in case of emergency.

Important Note:

An anti-short cycle timer is built into the controller to prevent the compressor from stop/starting too quickly, which can result in the compressor tripping on its internal overload. If the overload trips, please allow time for it to reset before restarting.

Commissioning

Pre startup checks

Before starting the condensing unit, the following checks should be carried out as a minimum:

- Check electrical supply is correct and all connections are sound.
- All moving parts are free and guards fitted.
- Compressor oil level satisfactory.
- Initial settings for safety switches.
- Overload set correctly.
- All valves in correct operating position.
- Initial refrigerant charge.
- Gauge manifold connected to both low and high sides of system.

Running the unit

- Run the unit and check compressor and condenser fan operation.
- Check system pressures and temperatures, gas charge and running currents of motors to ensure correct operation.
- Check compressor suction superheat. This should be between 10K and 20K at normal operating conditions.
- Final adjustment of safety switch settings.
- Allow the system to run for 3 – 4 hours. Check compressor oil level and top up with the correct oil type as required (RL32-3MAF). Recheck the compressor oil level again after 24 hours operation.
- Carry out final leak test and ensure all panels/covers are fitted and screws tightened.
- Log all information along with the system model and serial numbers for future reference.
- Ensure that the customer / responsible person is provided with basic operating instructions and where electrical isolators are situated in case of emergency.

Compressor operation

Scroll compressor motors are designed to run only in one direction. This is not an issue with single phase compressors as they will always run in the correct direction. The correct rotation of a three-phase compressor motor depends on the connection of the three incoming phases to the unit. Correct rotation can be determined by a drop in suction pressure and a rise in discharge pressure when the compressor is energized. Running the compressor for a short period of time in reverse direction will have no negative impact but prolonged running in reverse direction may cause premature failure. ***To reverse the rotation of a three-phase scroll compressor, shut off the incoming power supply to the unit, swap connection of any two of the three incoming phases at the unit isolator, reapply power to the unit and following compressor restart, recheck operating pressures.***

Do not operate scroll compressors in a vacuum condition, as this will cause the scrolls to overheat very quickly causing premature failure.

Ensure an adequate liquid charge has been introduced to the high side of the system before starting to ensure a minimum operating pressure on the suction side of 0.5 bar is maintained, otherwise overheating of the scrolls and subsequent damage may occur.

Commissioning

Vacuum Operation

Do not operate scroll compressors in a vacuum condition, as this will cause the scrolls to overheat very quickly causing premature failure.

Safety pressure switch settings

The Saginomiya DNS pressure switch fitted to the condensing units with auto reset for low pressure and manual reset for high pressure is **NOT** factory preset. **BOTH THE LP AND HP SWITCH SETTINGS MUST BE ADJUSTED BEFORE STARTING THE UNIT.** Be sure that the high-pressure setting does not exceed the receiver's maximum service pressure.

High pressure safety

The high-pressure safety switch is required to stop the compressor should the discharge pressure exceed the values shown in the following table. The high-pressure switch can be set to lower values depending on the ambient conditions.

Unit Series	Compressor	ZB
	Refrigerant	R448A/R449A
S2/S3	Max. HP Set	27 bar

Low pressure safety

The low-pressure safety switch protects the compressor against deep vacuum operation, a potential cause of failure due to internal arcing and overheating.
For ZB compressors, the low-pressure cut-out should be set as high as possible.

Care should be taken because the scroll sets will unload at a pressure ratio of approximately 10:1 for ZB compressors.
If the unit fails to pump down, the pump down pressure should be reset to a higher value.

Unit Series	Compressor	ZB
	Refrigerant	R448A/R449A
S2/S3	Min. Cut Out (barG)	2
	Min. Cut Out (psi)	30

Compressor operating pressures

The compressor operating pressures should be kept within the following limits:

Unit Series	Compressor	ZB
	Refrigerant	R448A/R449A
S2/S3	High Side (barG)	7.1 ~ 27.7
	Low Side (barG)	2.0 ~ 7.1

Service & Maintenance

Important Note:

Warning! – Disconnect the mains electrical supply before servicing or opening the units.

The units are designed to give long life operation with minimum maintenance. However, they should be routinely checked and the following service schedule is recommended under normal circumstances:

1. Indoor and Outdoor units – Inspect at regular intervals

- Check for refrigerant leaks on all joints and fittings.
- Check mountings for tightness and wear.
- Inspect pipework for any damage.
- Check all electrical connections.
- Ensure that no abnormal noise or vibration is detected during test run.

2. Condenser & Evaporator Fan Motors & Blades – Clean and inspect at regular intervals

- Check for abnormal noise, vibration and fan imbalance.
- Ensure that the fan motors are clean and spin freely.
- Check that the fan blades are clean and free from restriction and damage/imbalance.
- **Note:** The Fan Motors are pre-lubricated and factory sealed so no maintenance is necessary.

3. Condenser & Evaporator Coils – Clean and inspect at regular intervals

- Check and remove the dirt and debris between the fins using a soft brush and/or a suitable chemical coil cleaner then rinse with clean water.
- Check and remove any obstacles that may hinder the airflow through the coils.
- Repair any damage to fins and ensure any guards are fitted correctly.
- DO NOT USE HIGH PRESSURE WASHERS ON COILS – THEY DAMAGE THE FINS.

4. Controls

- Check controller settings and operation.
- Check calibration of temperature probe reading.

5. Power Supply – Inspect at regular intervals.

- Check the running current and voltage for the units.
- Check the electrical wiring and tighten the wires onto the terminal blocks if necessary.

6. Refrigerant Charge

- Check the refrigerant charge by ensuring that the system is operating correctly and the system pressures are as expected.
- Carry out a full leak test.

Service & Maintenance

7. Unit decommissioning and disposal

- At the end of the system's useful life, a suitably qualified engineer should decommission it. The refrigerant and compressor oil are classed as hazardous waste and as such must be reclaimed and disposed of in the correct manner, including completion of waste transfer paperwork. The system components must be disposed of or recycled as appropriate in the correct manner.

NOTICE

Disposal requirement

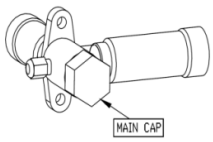
Your refrigeration product is marked with this symbol. This means that electrical and electronic products shall not be mixed with unsorted household waste. Do not try to dismantle the system yourself: the dismantling of the refrigeration system, treatment of the refrigerant, of oil and of other parts must be done by a qualified installer in accordance with relevant local and national legislation. Refrigeration equipment must be treated at a specialized treatment facility for re-use, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. Please contact J & E Hall for more information.

Batteries must be removed from the controller and disposed of separately in accordance with relevant local and national legislation.

8. Component replacement (connections tightening torque value)

- Torque tightening value of all the components and compressor connections can be refer to the table below:

Torque tightening values

Model		Series	COMPRESSOR	Rotolock (Suction) Thread: Tightening Torque (Nm)	Rotolock (Discharge) Thread: Toghtening Torque (Nm)	Thread/Size:		
						Service Valves		Shrader Valve 1/4" SAE, Gomex Hose and HL Pressure Switch
						Liquid	Suction	
						Main Cap	Main Cap	Hexagonal Cap
Medium Temperature	BSCU-30-M1	2	ZB21 KQE-PFJ-558	Not Applicable (Brazed Connection)		M16*1.0mm (20-25 Nm)	M25*1.0mm (42-47 Nm)	7/16" - 20UNF (14-16 Nm)
	BSCU-30-M3		ZB21 KQE-TFD-558					
	BSCU-35-M1	3	ZB26 KQE-PFJ-558			M18*1.0mm (25-30 Nm)		
	BSCU-35-M3		ZB26 KQE-TFD-558					
	BSCU-40-M1		ZB29 KQE-PFJ-558				M33*1.5mm (42-47Nm)	
	BSCU-40-M3		ZB29 KQE-TFD-558					
REMARKS		-	-	-	-			-

9. Warranty

- The warranty as provided by J & E Hall on its products is subject to correct application, siting and installation procedures together with subsequent recorded maintenance/servicing carried out in accordance with our recommendations. Failure to do so could result in the withdrawal of our warranty. Please go to our website for our detailed warranty terms and conditions: www.jehall.co.uk

F-Gas Information

From 1/1/2015, F-Gas Regulation EC 517/2014 came into force replacing the old Regulation EC 842/2006. This affects system labelling, information supplied within documentation and also the way in which thresholds for frequency of leak testing refrigeration systems are calculated. Please be aware of the following:

- The models of equipment covered in this Technical Manual rely on fluorinated greenhouse gases for their functioning.
- All unit models come from the factory pressurized with OFN (Oxygen Free Nitrogen) only.
- The GWP (Global Warming Potential) values of refrigerants which are specified for use along with the three new thresholds for leak testing requirements based on TCO_2Eq (Tonnes CO_2 Equivalent) are as follows:

		Refrigerant Charge - kg		
		5T	50T	500T
Refrigerant	GWP	CO_2Eq	CO_2Eq	CO_2Eq
R448A	1387	3.6	36.0	360
R449A	1397	3.6	35.8	358

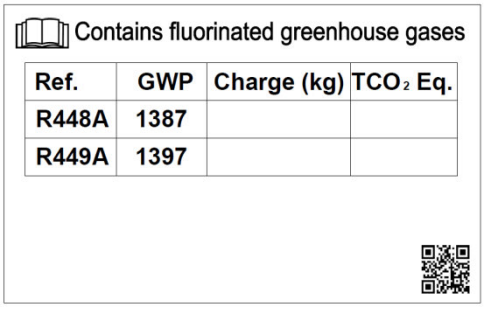
- Changes to leak testing requirements are as follows:

OLD LEGISLATION	NEW LEGISLATION	LEAK CHECKING FREQUENCY
3-30 kgs	5-50 TCO_2Eq	Every 12 months but can be increased to 24 months if fitted with a fixed leak detection system.
30-300 kgs	50-500 TCO_2Eq	Every 6 months but can be increased to 12 months if fitted with a fixed leak detection system.
300+ kgs	500+ TCO_2Eq	Every 6 months - however automatic leak detection system is mandatory which requires servicing every 12 months

To calculate TCO_2Eq value: $\frac{\text{Refrigerant charge (kgs) x Refrigerant GWP}}{1000}$

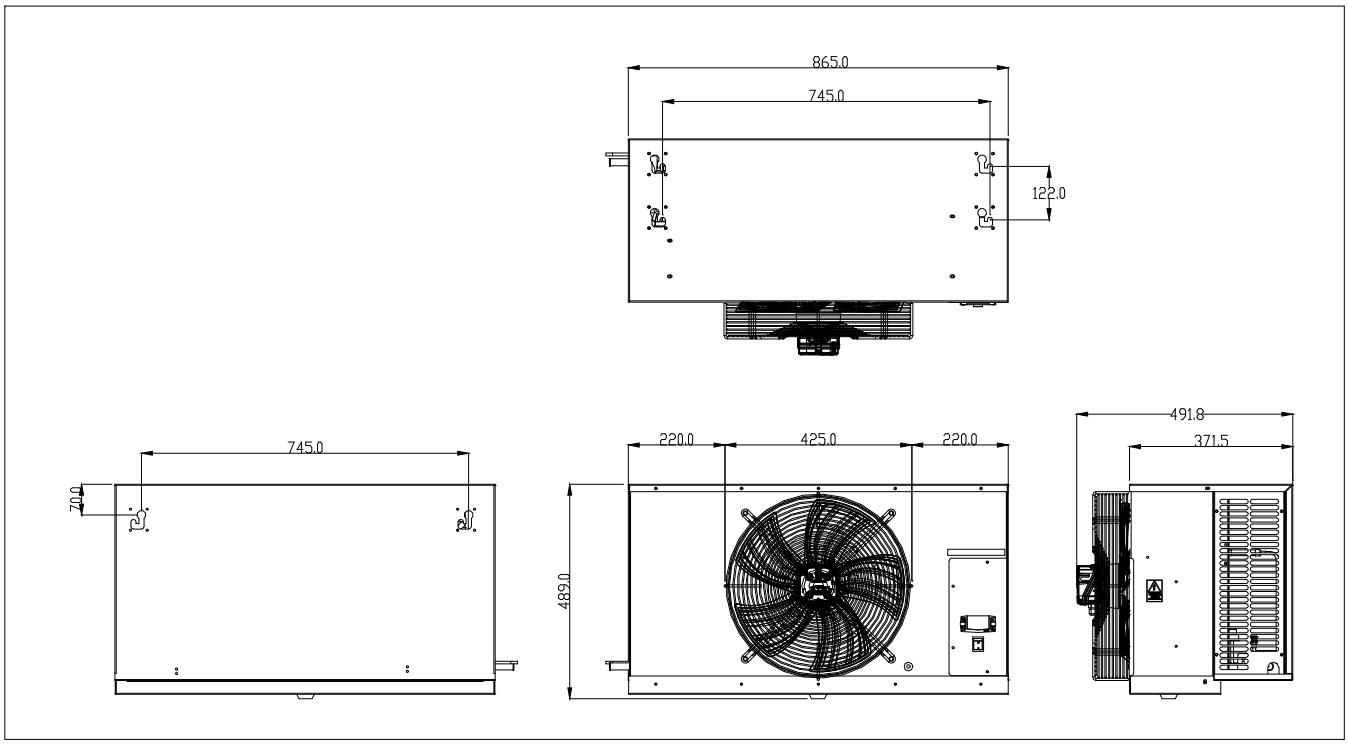
Please note: From 1st January 2017, the new legislation applies to systems which previously were exempt from leak testing under the 'below 3kg' charge limit.

A refrigerant charge label is supplied with each unit (inside the electrical box). The total refrigerant charge for the system and the TCO_2Eq value must be entered on the label with indelible ink and must be adhered in the proximity of the product charging port. The label supplied will represent the refrigerants approved for use with that particular unit. Examples of the unit labels are as follows:

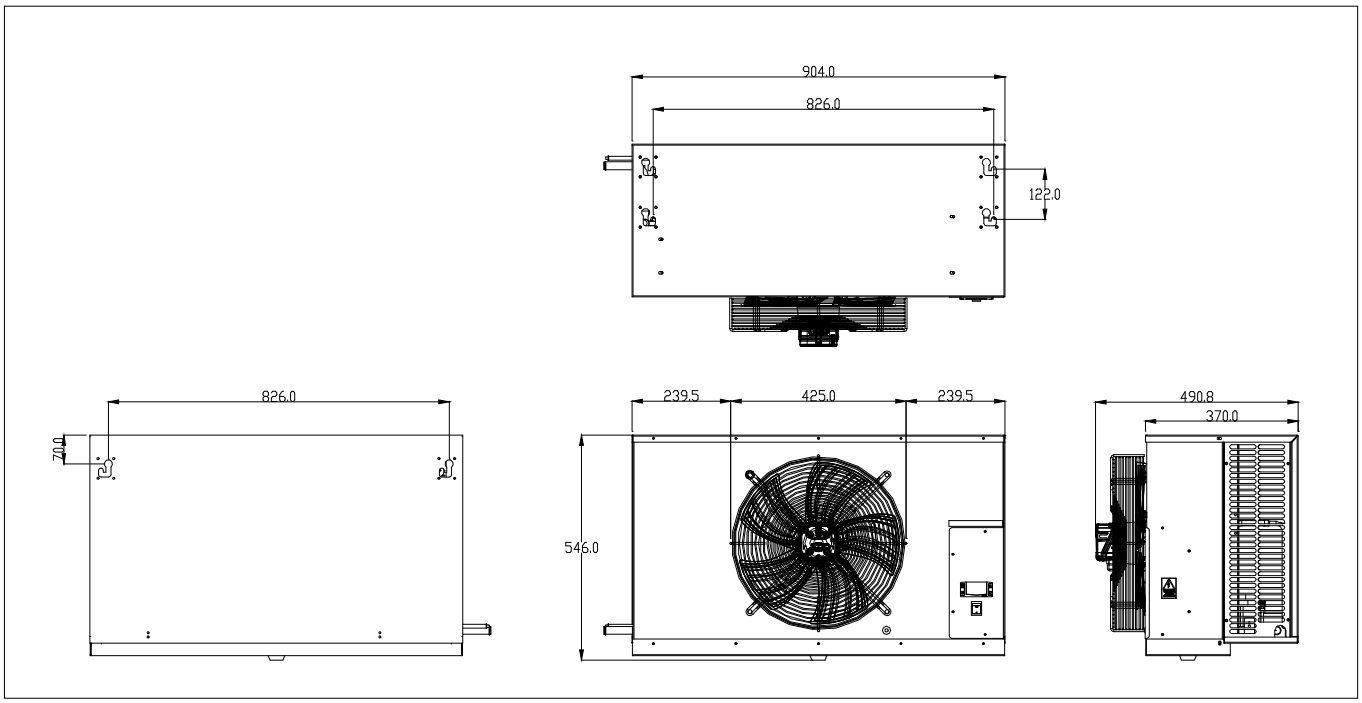


Drawings

Dimensional drawings: Indoor Units (40E)

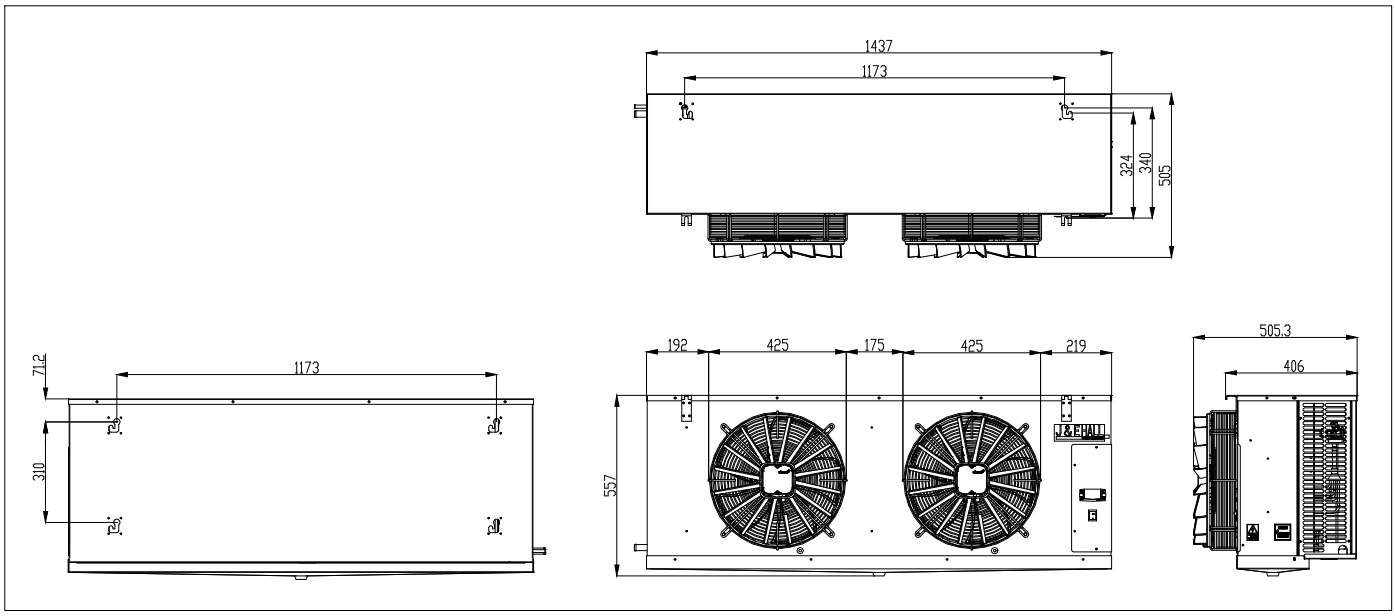


Dimensional drawings: Indoor Units (50E & 60E)



Drawings

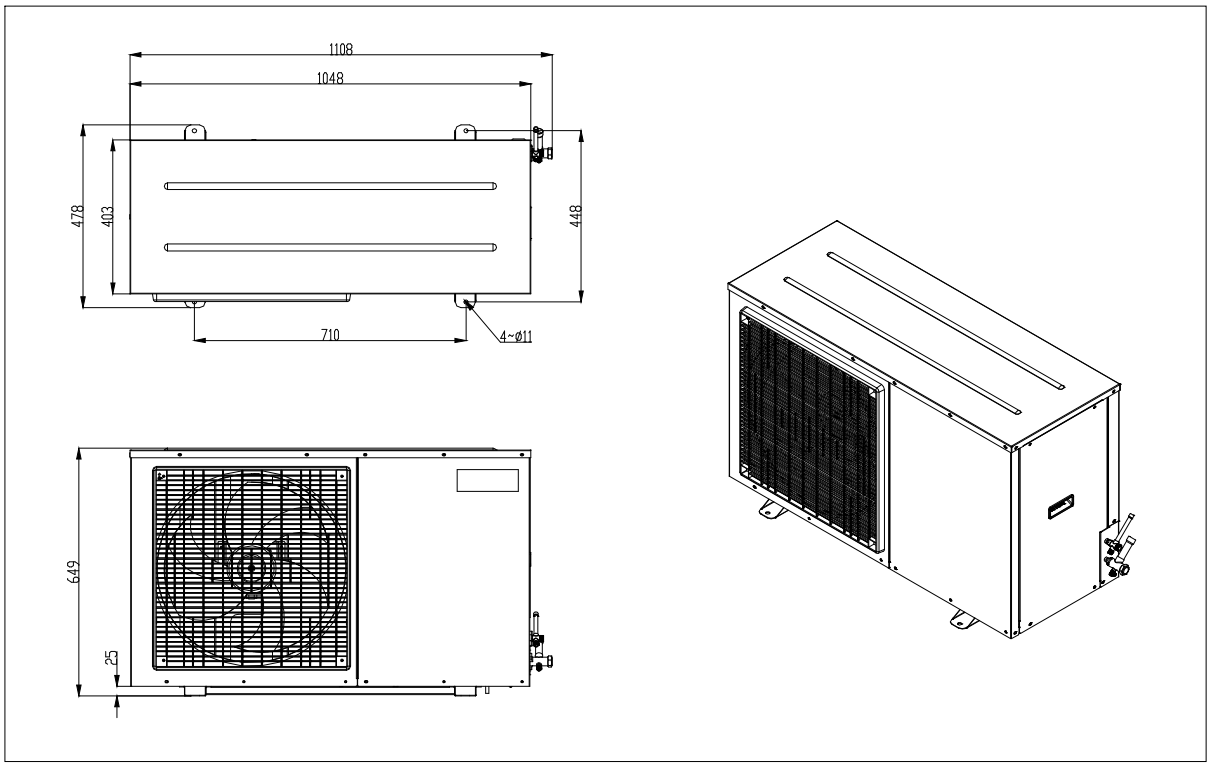
Dimensional drawings: Indoor Unit (80E)



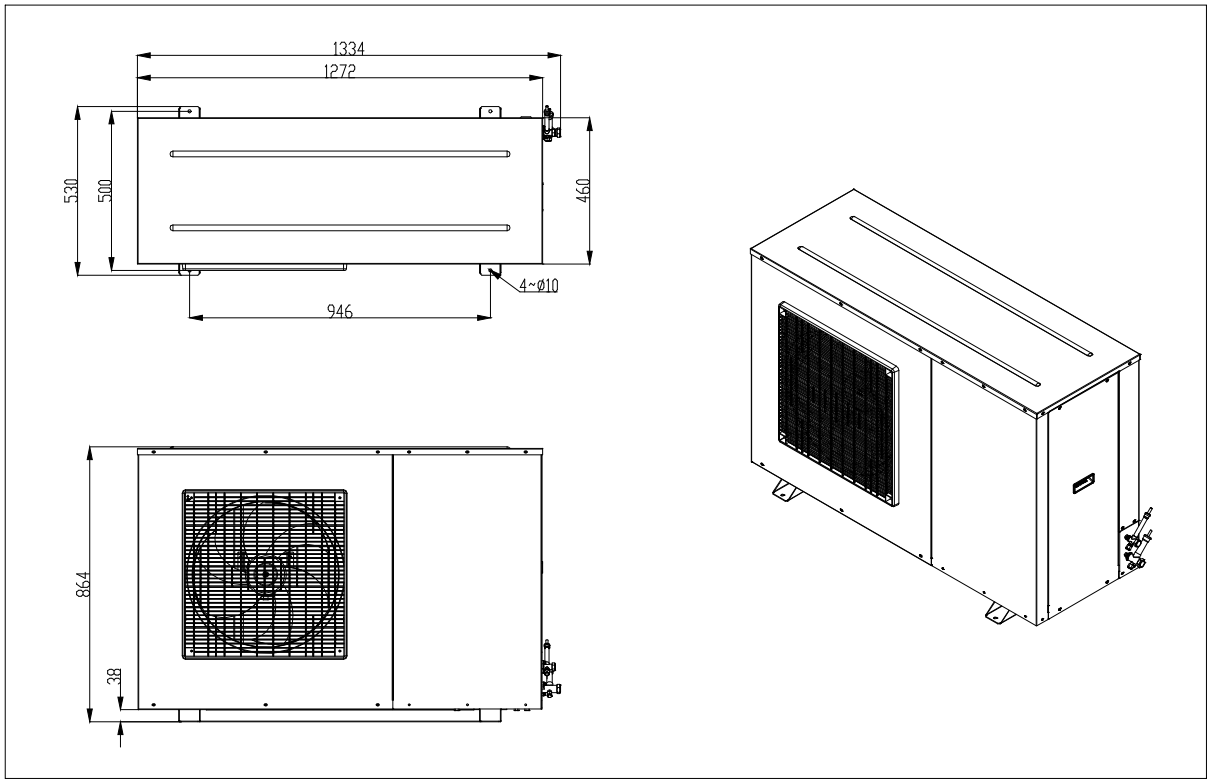
Drawings

Dimensional drawings: Outdoor Units

BSCU-30-M1/M3



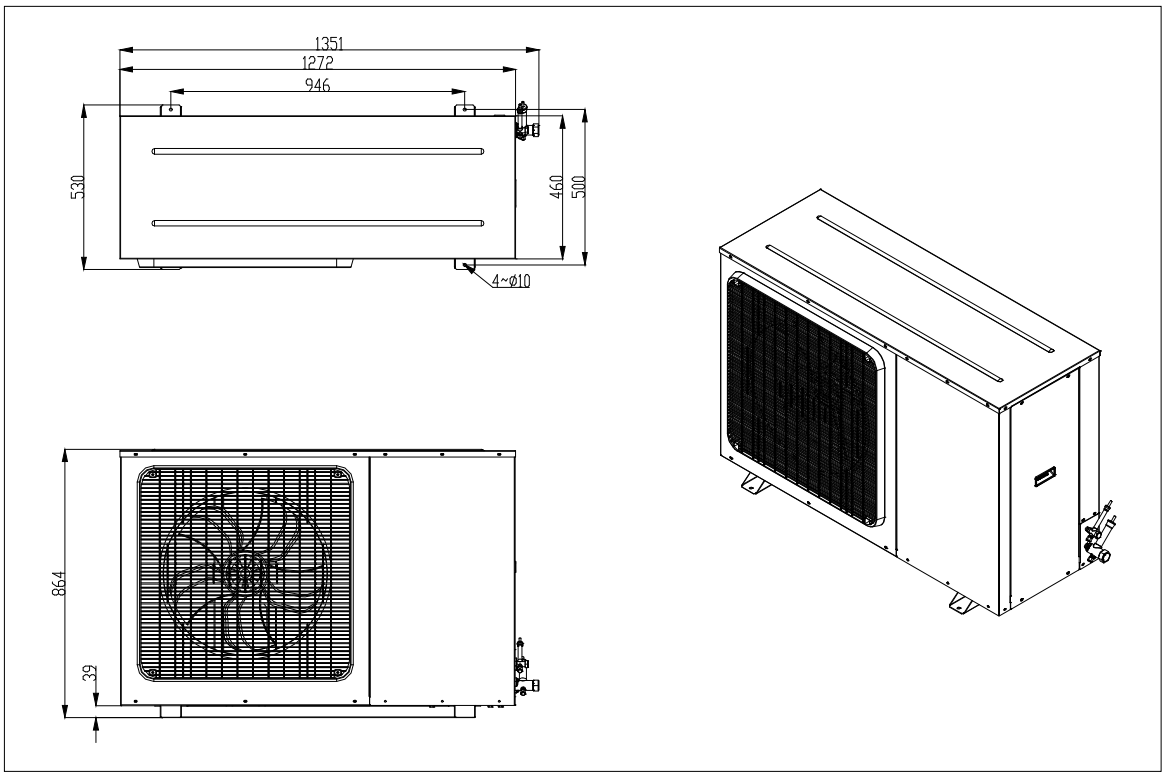
BSCU-35-M1/M3



Drawings

Dimensional drawings: Outdoor Units

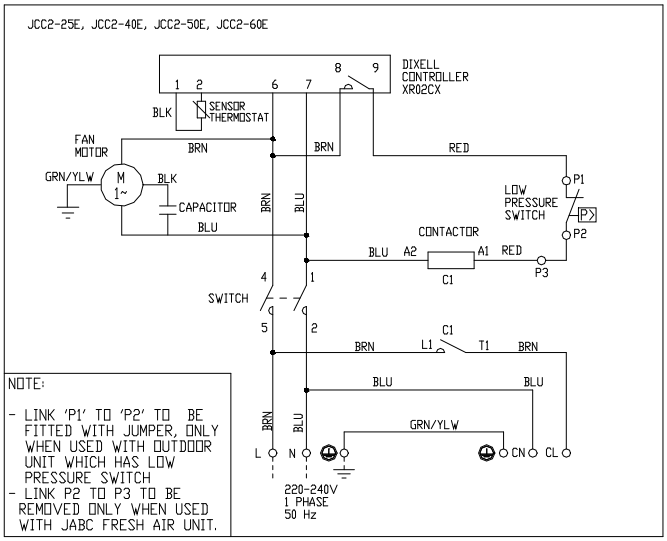
BSCU-40-M1/M3



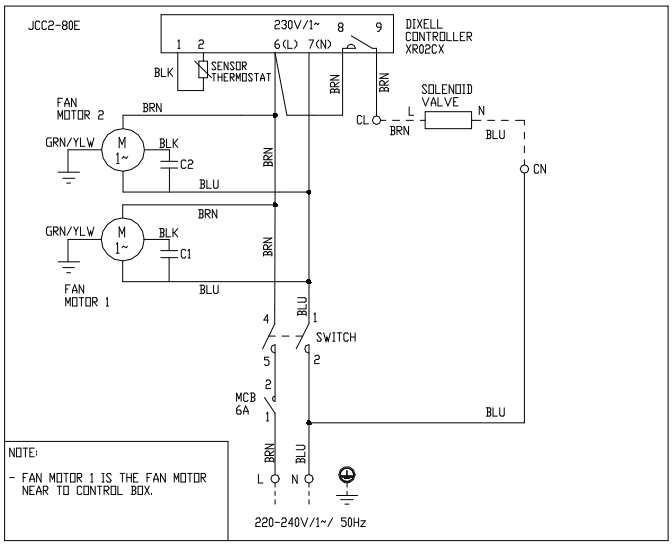
Drawings

Electrical wiring diagrams (Indoor)

Indoor

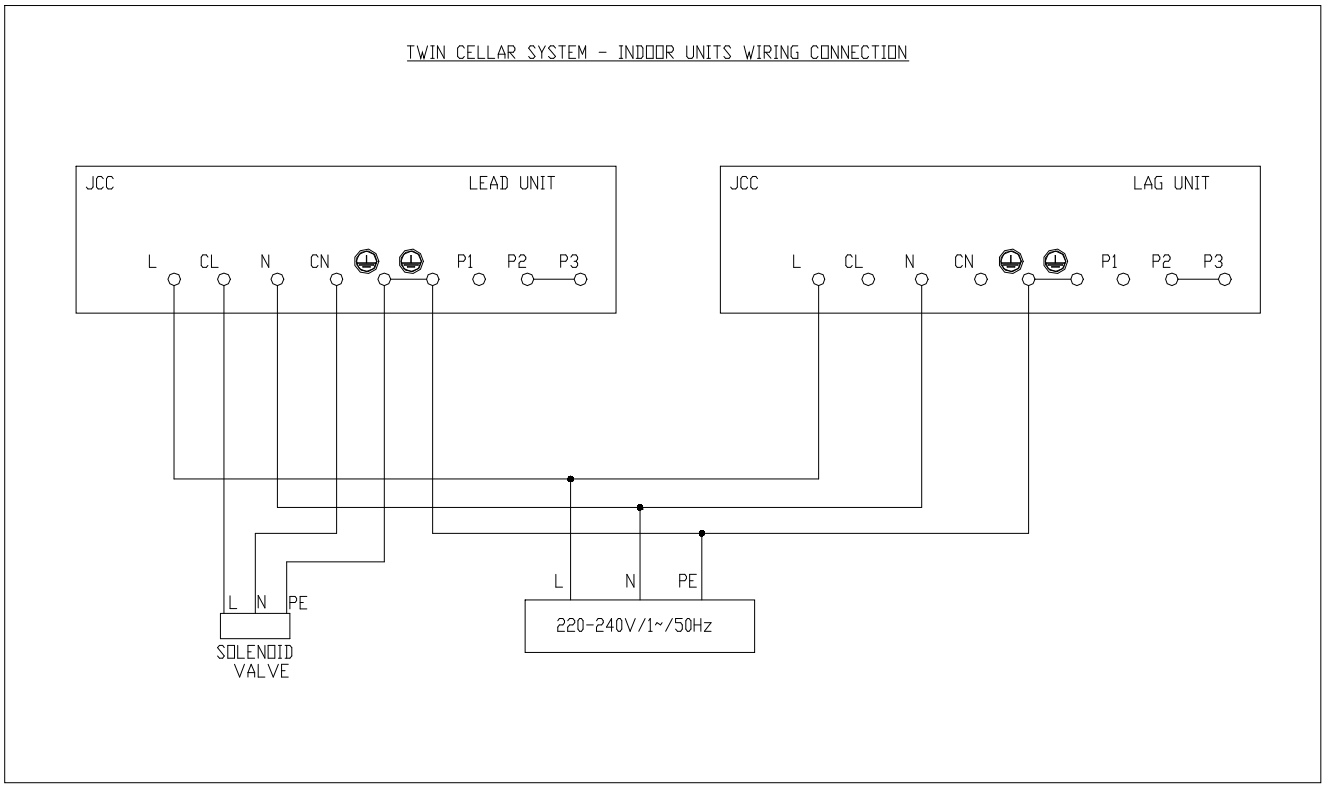


JCC2-40E/50E/60E



JCC2-80E

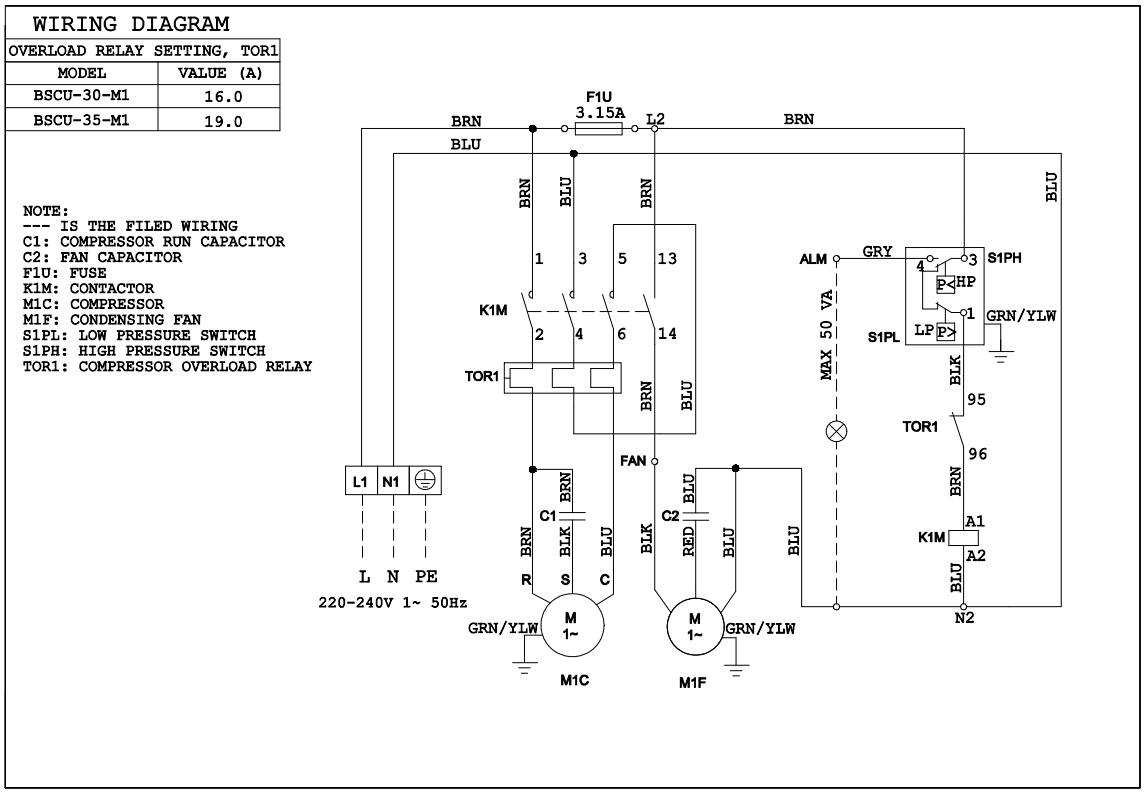
Indoor Lead/Lag (Twin)



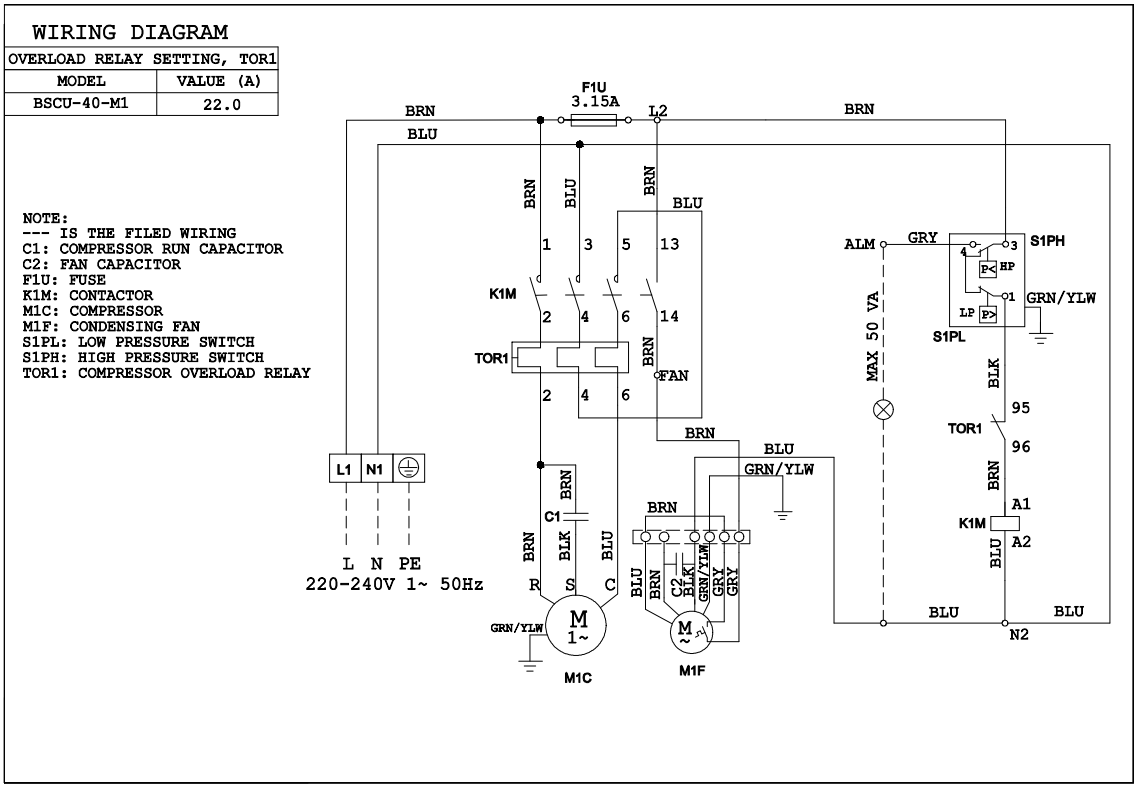
Drawings

Electrical wiring diagrams (Outdoor)

BSCU-30-M1, BSCU-35-M1



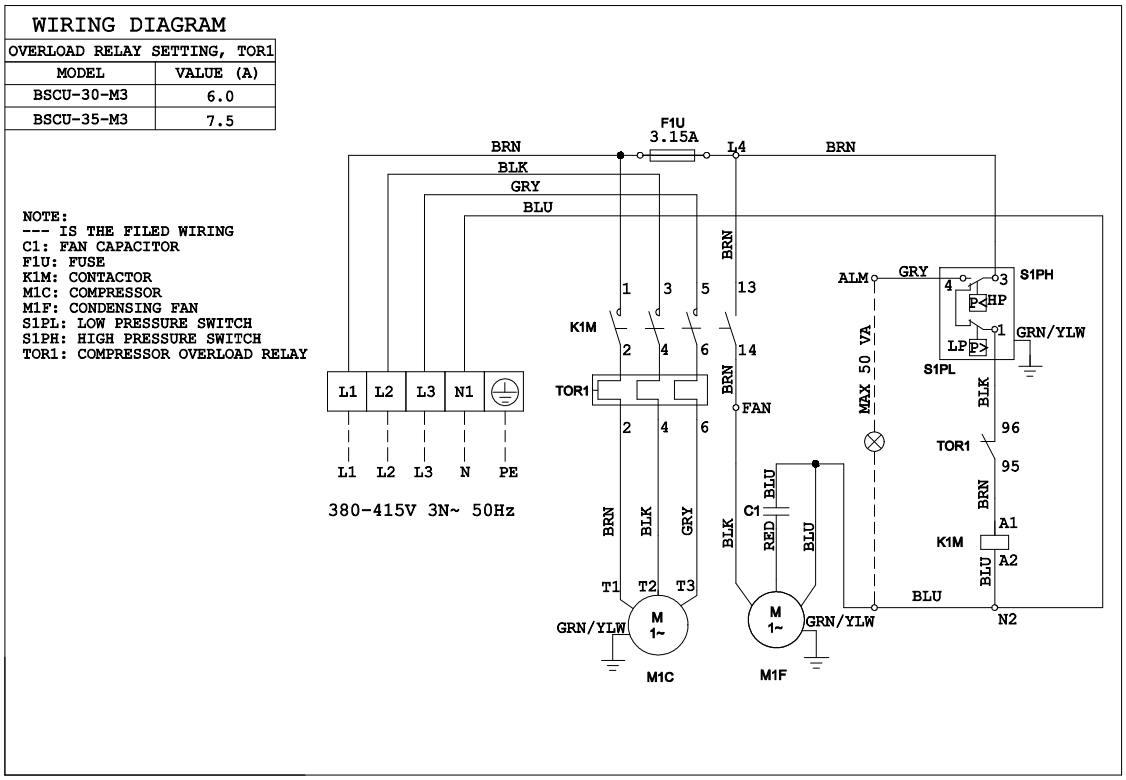
BSCU-40-M1



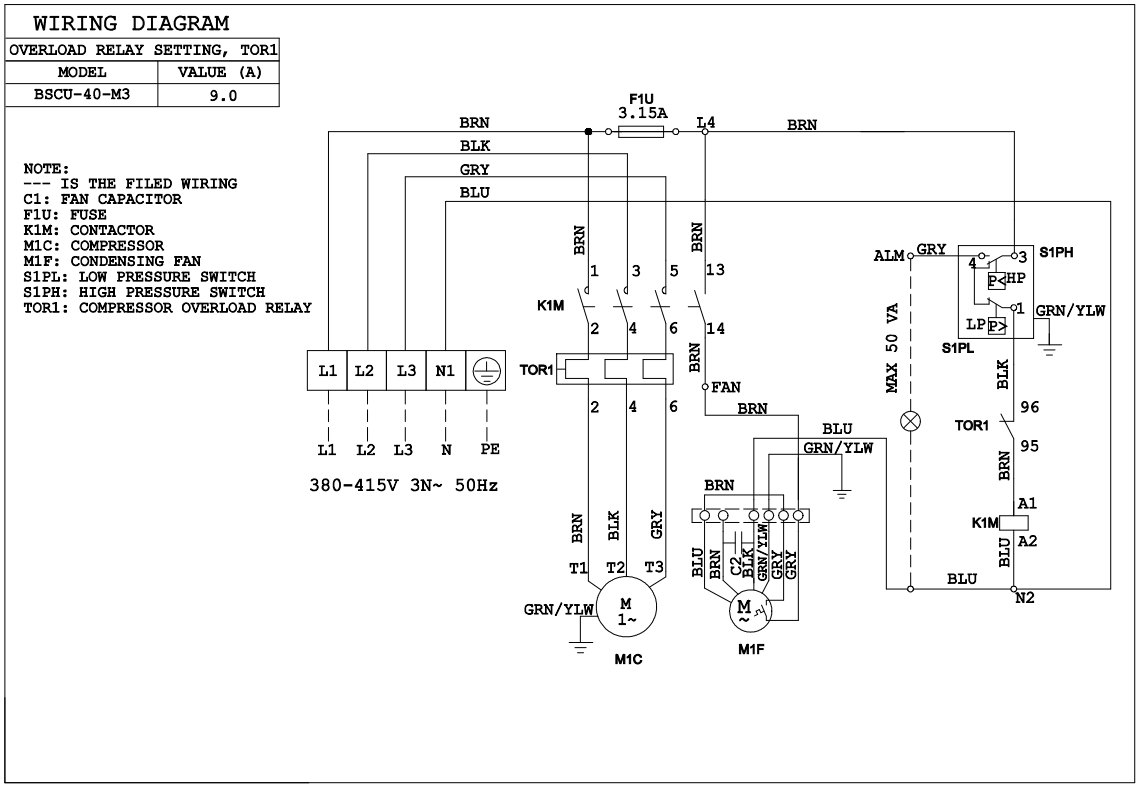
Drawings

Electrical wiring diagrams (Outdoor)

BSCU-30-M3, BSCU-35-M3



BSCU-40-M3



Technical Information

Electronic Controller (Dixell XR02CX)

To check the setpoint temperature:

- Press and release the SET button.

To change the setpoint temperature:

- Press the SET button for more than 3 seconds
- The setpoint value is displayed and the °C or °F led starts flashing.
- To change the setpoint value press the ▲ or ▼ button within 10 seconds.
- To retain the new setpoint press the SET button again or wait 10 seconds.

To start a manual defrost:

- Press the defrost button (top left) for more than 2 seconds.

To lock the buttons:

- Press the ▲ and ▼ buttons together for more than 3 seconds. The 'OF' message will be displayed and the buttons are now locked to prevent unauthorized access.

To unlock the buttons:

- Press the ▲ and ▼ buttons together for more than 3 seconds. When the 'ON' message is displayed the buttons will be unlocked.

To change a parameter value (selected parameters):

- Enter the programming mode by pressing the SET and the ▼ buttons together for more than 3 seconds (°C or °F LED starts blinking). The first parameter (Hy) is displayed.
- Press the SET button to display the parameter value.
- Use the ▲ and ▼ buttons to change the parameter value.
- Press the SET button to store the new value and move to the next parameter.
- To exit the programming mode, press the SET and ▲ buttons together or wait 15 seconds without pressing a button.

To enter the hidden parameter menu (full parameter list):

- Enter the programming mode by pressing the SET and ▼ buttons together for 3 seconds (°C or °F LED starts blinking).
- Release the buttons, and then press the SET and ▼ buttons for more than 7 seconds. L2 will be displayed followed by the first parameter (Hy). **You are now in the hidden menu.**
- Select the required parameter.
- Press the SET button to display the parameter value.
- Use the ▲ and ▼ buttons to change the parameter value.
- Press the SET button to store the new value and move to the next parameter.
- To exit the programming mode, press the SET and ▲ buttons together or wait 15 seconds without pressing a button.

Technical Information

Controller parameters

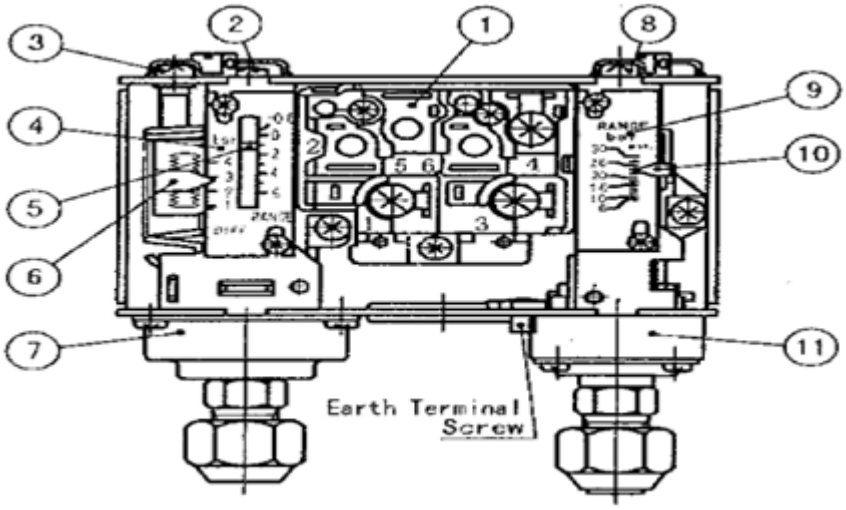
Dixell XR02CX Parameters				
Label	Description	Range	Default setting	**JEH Setting**
Parameter Menu (selected parameters)				
Hy	Differential	0.1 ~ 25°C / 1 ~ 45°F	2.0°C / 4°F	**2.0°C**
ot	Probe calibration	-9.9 ~ 9.9°C / -18 ~ 18°F	0.0	**0.0**
AC	Anti Short Cycle Delay	0 ~ 50 minutes	1	**3**
CH	Kind of Action (Cool / Heat)	cL ~ Ht	cL	**cL**
rE	Resolution (°C only): dE = decimal between -9.9 ~ 9.9°C; in = integer	dE ~ in	dE	**in**
id	Interval between defrost cycles	0 ~ 99 hours	8	**6**
Md	Maximum defrost length	0 ~ 99 minutes	20	**30**
AU	Maximum Alarm Temperature	~ 99°C / ~210°F	99°C / 99°F	**99°C**
AL	Minimum Alarm Temperature	-55°C / -67°F	-55°C / -55°F	**-55°C**
iP	Digital input polarity: oP = activated by closing the contact; cL = activated by opening the contact	cL ~ oP	cL	**cL**
iF	Digital input configuration: EA = external alarm; EA message is displayed: bA = serious alarm; CA message is displayed: do = door switch function: dF = defrost activation: Au = not used: Hc = inversion of the kind of action	EA / bA / do / dF / Au / db / Hc	EA	**EA**
di	Digital input delay. With iF = EL or bA delay between the detection of the external alarm condition and its signalling. With iF = do it represents the delay to activate the door open alarm	0 ~ 99 minutes	5	**5**
Hidden Parameter Menu (Full list including above parameters)				
LS	Minimum Set Point	-55°C / -67°F	-55°C / -55°F	**4°C**
US	Maximum Set Point	99°C / 210°F	99°C / 99°F	**16°C**
od	Output activation delay at startup	0 ~ 99 minutes	0	**0**
Cy	Compressor on time faulty probe. Cy = 0 compressor always OFF	0 ~ 99 minutes	15	**5**
Cn	Compressor off time faulty probe. Cn = 0 compressor always active	0 ~ 99 minutes	30	**10**
CF	Measurement units: °C = Celsius; °F = Fahrenheit	°C / °F	°C	**°C**
dY	Display delay	0 ~ 15 minutes	0	**0**
dF	Display during defrost: rt = real temperature; it = start defrost temperature: St = SET POINT: dF = label dF	rt / it / St / dF	it	**it**
Ad	Temperature alarm delay	0 ~ 99 minutes	15	**15**
dA	Exclusion of temperature alarm at startup	0 ~ 99 minutes	90	**90**
dC	Compressor and fan status when door open: no = normal; Fn = Fans OFF; cP = Compressor OFF; Fc = Compressor and fans OFF	no / Fn / cP / Fc	no	**no**
rd	Regulation with door open: n = no regulation if door is opened; Y = when di is elapsed regulation restarts even if door open alarm is present	n ~ Y	Y	**Y**
Pt	Parameter code table	Read Only	-	**-**
rL	Firmware release	Read Only	-	**-**

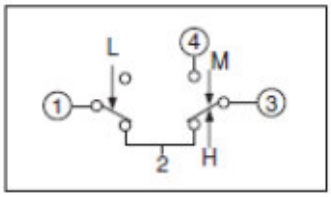
Technical Information

Dual Pressure Switch

Safety pressure switch settings

The pressure switches fitted to condensing units with auto reset for low pressure and manual reset for high pressure are **NOT** factory preset.





1. Micro Switch
2. Range Adjusting Screw
3. Differential Adjusting Screw
4. Low Pressure Scale plate
5. Low Pressure Range pointer
6. Differential pointer
7. Low Pressure Bellows cover
8. High Pressure range Adjusting Screw
9. High Pressure Scale plate
10. High Pressure Range pointer
11. High Pressure Bellow cover

Setting Procedure for Dual Pressure Switch

High Pressure side:

Turning the adjusting screw (8) clockwise will increase the cut-out pressure setting. Turning the adjusting screw anti-clockwise will decrease the cut-out pressure setting. The differential setting is fixed so the cut-in will vary with the cut-out setting. Lock the spindle with locking plate after setting.

Low pressure side:

Range: Turning the range adjusting screw (2) clockwise will decrease the cut-in pressure setting. Turning the range adjusting screw anti-clockwise will increase the cut-in pressure setting.

Differential: Turning the differential adjusting screw (3) clockwise will increase the differential pressure setting. Turning the differential adjusting screw anti-clockwise will decrease the differential pressure setting.
Lock the spindle with locking plate after setting.

Certification

DOC/003-20(0)

DAIKIN REFRIGERATION MALAYSIA SDN. BHD. *(34543-W)*
Lot 10, Jalan Perusahaan 8, Kawasan Perusahaan Pekan Banting, 42700 Banting, Selangor Darul Ehsan, Malaysia.
Tel: +603-31872911 Fax: +603-31878597

Declaration of Conformity

We declare under our sole responsibility that the following products:

CELLAR PLUS CELLAR COOLER
Integration of outdoor unit BSCU-30/35/40-M1/3 and indoor unit JCC2-40/50/60/80, which approved for use with refrigeration fluids R448A & R449A (classified as Group 2 under PED 2014/68/EU).

Model Designations:

Cellar Plus Model	Outdoor Unit	Indoor Unit	PED category
Cellar Plus 70-S	BSCU-30-M1/ BSCU-30-M3	JCC2-80E/EV	I
Cellar Plus 80-S	BSCU-35-M1/ BSCU-35-M3	JCC2-80E/EV	II
Cellar Plus 70-T	BSCU-30-M1/ BSCU-30-M3	JCC2-40E/EV	I
Cellar Plus 80-T	BSCU-35-M1/ BSCU-35-M3	JCC2-50E/EV	II
Cellar Plus 90-T	BSCU-40-M1/ BSCU-40-M3	JCC2-60E/EV	II

Covered by this declaration is in conformity with the following directive(s) or standard(s), provided that the product is used in accordance with our instructions.

Machinery Directive 2006/42/EC
IEC/ EN 60335-1 – Household and similar electrical appliances – Safety – Part 1: General requirement
IEC/ EN 60335-2-89 – Particular requirements for commercial refrigeration appliances with an incorporated or remote refrigerant condensing unit or compressor.

Pressure Equipment Directive 2014/68/EU
The CE-marking according to 2014/68/EU only covers those in category II. The cellar cooler fall under category I are not allowed to be CE-marked according to 2014/68/EU, when they are also within the scope of 2006/42/EC.

The details of pressure equipment as listed below for products under category II.

Pressure equipment	Part description	Category	Conformity assessment
Safety device	High pressure switch	IV	Module B & D
Vessel	Compressor	I	-
Vessel	Liquid receiver	II	Module A2 or Module D1 or Module B & D
Vessel	Filter drier	SEP	-
Piping	System piping, Low pressure switch, Thermal expansion valve, Sight glass, Service valve, Condenser & Evaporator	SEP	-

Evaluation module: A2
Notified body number: 2833
Notified body name & address: Hartford Steam Boiler Ireland Limited
28 Windsor Place Lower Pembroke Street, Dublin 2, Ireland.

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Issue: 01.07.2020