MULTISTACK®

MSCA SERIES

Modular Air Cooled Heat Pump Screw Chiller

MSCA230 | MSCA300

Nominal Capacity 218 to 2620 kW(R)

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Contents

Features

1986, MULTISTACK modular chillers was invented in Melbourne, Australia, this important invention strictly conforms to industry designs in the 20th century, and leading air conditioning technology to a new developing direction with its features of energy-saving, reliability and flexibility. Today, a lot of users all over the world have experiencedthegreatbenefitsofMULTISACKmodulartechnology.MULTISTACKhasbecomethecreatorandleaderofthis technology and without doubt due to its constant development and innovation of modular technology. MULTI-STACK modular chillers have the following features:

ENERGY-SAVING

The chiller regulates the number of running modules according to load demand and each module runs at its peak efficiency, this is different from conventional chillers which will consume more energy when running at part load.

RELIABILITY

Each module is designed as an independent refrigeration system, operating under the control of the computer with certain sequence, and fault of individual module will not affect other modules' running. Service and maintenance can be made to fault modules with chiller running.

ADD-ON FLEXIBILITY

The chiller is combined on site including numbers of standard modules and gone are the days for heavy cranes and special aisles to move the chiller to the roof or basement. A large chiller can be purchased and installed by stages if necessary, and add new modules to increase chiller capacity in the future.

INTELLIGENT OPERATION

MULTISTACK modular control technology is created along with modular chiller, it is based on micro-process control technology and integrates single modules into a complete chiller, each module runs in a sequence and optimizes the chiller operation based on changing load demand, this enables the chiller will always work at it best efficiency.

COMPACT

- Apply compact, high efficient PHE, small size and light weight;
- Water headers are installed within each module allowing each module to be combined via a Victaulic coupling easily - In-line strainer (MULTISTACK patented) installed within each module to ensure PHE in safe operation

SCREW COMPRESSOR

-. Hermetic double-screw compressor for wide applications
-. Motor is cooled by refrigerant and works under low temperature to obtain higher efficiency and better reliability
-. PTC temperature switch avoid motor temperature overload
-. Protection module to avoid reverse operation, motor overheating and high oil temperature
-. Bearings have a 40,000 hours life, even compressor running, no need to replace during chiller life
-. High efficiency oil separator, separates 98% oil from refrigerant to ensure compressor lubrication and efficiency
-. 4-stage slide valve ensures precise load control

STAINLESS STEEL BRAZED PHE

Stainless steel brazed plate heat exchanger; Vacuum brazed, endure working pressure of 3.0MPa, high strength and leak free, small size and light weight; and Low flow velocity, high heat transfer efficiency

EXCELLENT HEAT PUMP FUNCTION (HEAT PUMP CHILLER)

-. MULTISTACK special heat pump design ensures chiller heating performance and reliability
-. Well-designed defrosting control enables defrost within a minute of heating
-. Each module defrosts in turn to maintain hot water leaving temperature

PRE-FILLED REFRIGERANT

R22, R407C and R134a available for standard chiller; Less refrigerant charge required and the Refrigerant charged prior to shipment and undergone performance test

MV6 CONTROL

The MV6 computer control monitors the chiller's operation and schedules the on and off of each compressor and capacity control stages in respect to the change in load demand. The computer continuously and comprehensively monitors the total operation of all modules in the chiller bank. It will also shut down individual module or the entire bank in the event that a fault occurs. A maximum of 32 refrigeration circuits can be monitored at one time.

SYSTEM DATA AND VARIABLES DISPLAY

The controller's 5.7" touch panel can not only display the chiller's operation data but also provides you with direct access to all of the chillers setting and variables for total system control.

Chiller operation status
___chilled water temperature
___condenser water temperature
___% of chiller cooling capacity
___% demand loading
___load /unload time delay
___current fault number
___% of loading limitation
___lead compressor no.

Module operation status
___compressor suction pressure
___compressor discharge pressure
___evaporating temperature
___chilled water leaving temperature
___faults status

Chiller variables settings
____ password
____chilled water temperature
____lead compressor
____temperature integrating time
____economy offset
____load/unload time delay
____time and date

Chiller variables settings
____ password
____chilled water temperature
____lead compressor
____temperature integrating time
____economy offset
____load/unload time delay
____time and date

COMPRESSOR SEQUENCE

The MV6 controller accumulates the running hours of each compressor and hence establishes working sequence. A standby compressor with the least working hours will be activated during loading. The same goes for a compressor with the most working hours will be stopped during unloading. This ensures each compressor in the system has an even usage, which will save you time and money in the long run for maintenance.

FAULT REVIEW

The controller will record and display the last 60 faults that occurred, giving detailed information such as time, date, location, cause, current status, as well as the performance data collected at the moment each fault occurred.

LOAD PROFILE

The controller records all working hours of the chiller and compressor and records it accordingly in 10% brackets from 0% - 100%, giving you detailed information for which percentage the chiller is running mostly.

PASSWORD

A two level password protection is included (for both customer and service personnel) to give you piece of mind. For example the service password will give you full access to settings and variables, but the user password will only enable the user see but not change settings and variables.

STANDBY CONTROL

Each module can be set for three modes: auto/ off/independent operation via the slave outstation card installed in the module. Default setting is “auto”, with “off” mode for when maintenance is required and “independent” mode (where the module is controlled by its own slave outstation card and operates independently from the controller), is usually for commissioning or emergency operation.

REMOTE CONTROL & MONITORING (OPTIONAL)

MV6 is fitted with a RS485 serial port, which enables remote control monitoring.

(1) Connect it to a pc and install the software (Ms Windows based only) and away you go. Multistack’s RCM software give you full access to the chillers controls and settings, with a maximum communication cable length of 1200m.

(2) The MV6 is opened to the ASCII agreement and communicates with bas.

(3) Connect it to an Ethernet-card and with an IP address you can access the chiller over the internet giving you absolute flexibility.

MODEL NUMBER DESIGNATION

M	SC	A	230	C	-	6	A	.	F	V
1	2	3	4	5		6	7	8	9	10

1: Modular series
2: Screw compressor
3: Cooling type:
- A: Air cooled
- W: Water cooled

4: Model Number
5: Chiller type
- C: Cooling Only
- H: Air Cooled Heat Pump chiller

6: The number of modules per chiller (1~10)
7: Electrical Specifications
- A: 380-420V,50Hz,3 Phase
- B: 380V, 60Hz,3 Phase
- C: 440-460V,60Hz,3 Phase

8: Configuration
- Blank for Standard

9: Refrigerant
- E: R134a
- F: R22
- R: 407c

10: Water system
- V: VWF
- Blank for standard

*VWF price to be advised on request

Physical Data Per Module

R22

Model		MSCA230H	MSCA230C	MSCA300H	MSCA300C
Nominal Cooling Capacity (kW)		218		262	
Nominal Cooling Power Input (kW)		70.1		82.0	
Nominal Heating Capacity (kW)		237	-	278	
Nominal Heating Power Input (kW)		67.7	-	78.8	
Compressor	Type	Screw			
	Number	1			
	Control Stages %	0-50-100			
	Power Supply	AC380-420V/50Hz/3Ph			
	Max. Running Current (A)	162		180	
	Startup Current (A)	423		520	
Refrigerant charge (kg)		76	64	86	78
Evaporator	Type	Stainless Steel Brazed Plate Exchanger			
	Nominal Flow Rate (L/s)	10.4		12.5	
	Water Pressure Drop (kPa)	50			
	Fouling Factor (m^2k/kW)	0.018			
	Pipe Connection	8"			
	Max Working Pressure (kPa)	2000			
Condenser	Type	Coil			
	Type of Fan	Axial			
	No of Fan	4			
	Air Flow Rate (m^3/h each)	28000			
	Fan Motor Power (kW/each)	2.5 x 4			
	Fan Max. current (A/each)	5.6 x 4			
Dimension (W×D×H) mm		2300×2200×2240			
Operating weight (kg)		2650	2580	2650	2580
Shipping weight (kg)		2750	2680	2750	2680

Nominal Values based on:

Cooling:	Ambient	35°C	Heating:	Ambient	7°C DB / 6°C WB
	Chilled Water Entering Temp.	12°C		Hot Water Entering Temp	40°C
	Chilled Water Leaving Temp.	7°C		Hot Water Leaving Temp.	45°C

Note: Minimum Chilled Water Flow Rate per module: Nominal Water Flow Rate less 10%

Contact nearest authorized agent if lower flow rate is required.

R407C

Model		MSCA230H	MSCA230C	MSCA300H	MSCA300C
Nominal Cooling Capacity (kW)		211		263	
Nominal Cooling Power Input (kW)		72.2		87.7	
Nominal Heating Capacity (kW)		231	-	283	-
Nominal Heating Power Input (kW)		69.6	-	85.0	-
Compressor	Type	Screw			
	Number	1			
	Control Stages %	0-50-100			
	Power Supply	AC380-420V/50Hz/3Ph			
	Max. Running Current (A)	162		180	
	Startup Current (A)	423		520	
Refrigerant charge (kg)		72	62	84	76
Evaporator	Type	Stainless Steel Brazed Plate Exchanger			
	Nominal Flow Rate (L/s)	10.1		12.6	
	Water Pressure Drop (kPa)	50			
	Fouling Factor (m^2k/kW)	0.018			
	Pipe Connection	8"			
	Max Working Pressure (kPa)	2000			
Condenser	Type	Coil			
	Type of Fan	Axial			
	No of Fan	4			
	Air Flow Rate (m^3/h each)	28000			
	Fan Motor Power (kW/each)	2.5 x 4			
	Fan Max. current (A/each)	5.6 x 4			
Dimension (W×D×H) mm		2300×2200×2240			
Operating weight (kg)		2650	2580	2650	2580
Shipping weight (kg)		2750	2680	2750	2680

Nominal Values based on:

Cooling:	Ambient	35°C	Heating:	Ambient	7°C DB / 6°C WB
	Chilled Water Entering Temp.	12°C		Hot Water Entering Temp	40°C
	Chilled Water Leaving Temp.	7°C		Hot Water Leaving Temp.	45°C

Note: Minimum Chilled Water Flow Rate per module: Nominal Water Flow Rate less 10%

Contact nearest authorized agent if lower flow rate is required.

R134A

Model		MSCA230H	MSCA230C	MSCA300H	MSCA300C
Nominal Cooling Capacity (kW)		187		240	
Nominal Cooling Power Input (kW)		56.2		71.6	
Nominal Heating Capacity (kW)		194	-	250	-
Nominal Heating Power Input (kW)		53.8	-	69.0	-
Compressor	Type	Screw			
	Number	1			
	Control Stages %	0-50-100			
	Power Supply	AC380-420V/50Hz/3Ph			
	Max. Running Current (A)	162		182	
	Startup Current (A)	423		520	
Refrigerant charge		66	60	70	64
Evaporator	Type	Stainless Steel Brazed Plate Exchanger			
	Nominal Flow Rate (L/s)	8.9		11.5	
	Pressure Drop (kPa)	50			
	Fouling Factor (m^2k/kW)	0.018			
	Pipe Connection	8"			
	Max Working Pressure (kPa)	2000			
Condenser	Type	Coil			
	Type of Fan	Axial			
	No of Fan	4			
	Air Flow Rate (m^3/h.each)	23500			
	Fan Motor Power (kW/each)	1.8 x 4			
	Fan Max. current (A/each)	4.2 x 4			
Dimension (W×D×H) mm		2300×2200×2240			
Operating weight (kg)		2640	2575	2640	2575
Shipping weight (kg)		2740	2675	2740	2675

Nominal Values based on:

Cooling:	Ambient	35°C	Heating:	Ambient	7°C DB / 6°C WB
	Chilled Water Entering Temp.	12°C		Hot Water Entering Temp	40°C
	Chilled Water Leaving Temp.	7°C		Hot Water Leaving Temp.	45°C

Note: Minimum Chilled Water Flow Rate per module: Nominal Water Flow Rate less 10%

Contact nearest authorized agent if lower flow rate is required.

Unit Capacity Per Module

COOLING CAPACITY MSCA230C

Leaving Condenser Water Temp. °C	R22		Leaving Chilled Water Temperature °C						R22	
	5		7		8		10		12	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
20	**237.3**	51.6	**258.8**	52.4	**267.8**	52.8	**286.4**	53.5	**306.0**	54.4
25	**225.4**	56.8	**246.3**	57.6	**255.0**	58.0	**273.0**	58.7	**291.9**	59.4
30	**212.4**	62.8	**232.5**	63.6	**240.8**	63.9	**258.2**	64.5	**276.4**	65.3
35	**198.0**	69.2	**217.5**	70.1	**225.5**	70.4	**242.2**	71.1	**259.6**	71.8
40	**182.2**	75.9	**201.1**	77.0	**208.9**	77.5	**224.9**	78.3	**241.6**	79.1
45	**164.3**	82.6	**182.8**	84.3	**190.4**	84.9	**206.1**	86.0	**222.2**	87.0

Leaving Condenser Water Temp. °C	R407c		Leaving Chilled Water Temperature °C						R407c	
	5		7		8		10		12	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
20	**240.7**	52.6	**264.6**	53.8	**274.6**	54.4	**295.6**	55.7	**317.8**	57.2
25	**224.7**	57.9	**247.3**	59.1	**256.8**	59.6	**276.7**	60.8	**297.7**	62.2
30	**207.9**	64.0	**229.2**	65.1	**238.2**	65.6	**256.9**	66.6	**276.6**	67.8
35	**190.5**	71.1	**210.6**	72.2	**219.0**	72.6	**236.5**	73.5	**254.9**	74.4
40	**172.4**	79.4	**191.2**	80.4	**199.1**	80.8	**215.5**	81.6	**232.7**	82.3
45	**148.1**	84.1	**165.4**	85.2	**172.7**	85.6	**187.6**	86.4	**203.3**	87.2

Leaving Condenser Water Temp. °C	R134a		Leaving Chilled Water Temperature °C						R134a	
	5		7		8		10		12	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
20	**203.2**	41.4	**224.8**	42.4	**234.0**	42.9	**253.1**	43.8	**273.4**	44.8
25	**192.3**	45.5	**213.2**	46.5	**222.1**	47.0	**240.6**	47.9	**260.3**	48.8
30	**180.3**	50.1	**200.4**	51.0	**208.9**	51.5	**226.7**	52.3	**245.6**	53.2
35	**167.5**	55.3	**186.6**	56.2	**194.7**	56.6	**211.6**	57.4	**229.7**	58.2
40	**153.8**	61.4	**171.9**	62.3	**179.5**	62.6	**195.6**	63.4	**212.7**	64.1
45	**139.6**	68.6	**156.5**	69.5	**163.7**	69.8	**178.7**	70.5	**194.8**	71.2

CAP Cooling Capacity (kW)

PI Compressor Power input (kW)

Note:

- This table is based on a 5°K difference in water temperature.
- Please contact your local Multistack Agent if you require performance data beyond the limits of the above table.
- Interpolation is permissible. Do not extrapolate.

COOLING CAPACITY MSCA300C

Leaving Condenser Water Temp. °C	R22		Leaving Chilled Water Temperature °C						R22	
	5		7		8		10		12	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
20	**297.2**	61.6	**325.8**	63.0	**337.7**	63.7	**362.5**	65.0	**388.5**	66.5
25	**278.8**	67.2	**306.5**	68.5	**318.1**	69.0	**342.1**	70.2	**367.4**	71.6
30	**258.5**	73.6	**285.2**	74.8	**296.4**	75.4	**319.5**	76.5	**343.9**	77.8
35	**236.6**	80.7	**262.2**	82.0	**272.9**	82.5	**295.1**	83.7	**318.3**	84.9
40	**213.2**	88.3	**237.7**	89.8	**247.9**	90.4	**269.1**	91.6	**291.2**	92.9
45	**187.9**	96.2	**211.4**	98.1	**221.2**	98.8	**241.5**	100.2	**262.6**	101.6

Leaving Condenser Water Temp. °C	R407c		Leaving Chilled Water Temperature °C						R407c	
	5		7		8		10		12	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
20	**300.7**	63.5	**330.7**	64.7	**343.4**	65.2	**369.8**	66.4	**397.7**	67.7
25	**281.1**	70.2	**310.0**	71.2	**322.1**	71.7	**347.4**	72.6	**374.2**	73.7
30	**259.9**	77.9	**287.6**	78.8	**299.2**	79.2	**323.5**	80.0	**349.1**	80.8
35	**236.8**	86.7	**263.3**	87.7	**274.5**	88.0	**297.7**	88.7	**322.2**	89.3
40	**211.2**	96.7	**236.7**	97.9	**247.4**	98.3	**269.7**	99.0	**293.1**	99.5
45	**176.7**	101.8	**200.6**	103.5	**210.5**	104.1	**231.1**	105.1	**252.7**	105.9

Leaving Condenser Water Temp. °C	R134a		Leaving Chilled Water Temperature °C						R134a	
	5		7		8		10		12	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
20	**263.1**	52.7	**291.2**	53.8	**303.1**	54.3	**328.0**	55.2	**354.5**	56.3
25	**248.4**	57.8	**275.4**	58.9	**286.9**	59.3	**310.8**	60.2	**336.3**	61.2
30	**232.5**	63.7	**258.3**	64.7	**269.2**	65.2	**292.1**	66.1	**316.4**	67.0
35	**215.7**	70.5	**240.1**	71.6	**250.4**	72.0	**272.0**	72.9	**295.1**	73.8
40	**198.5**	78.5	**221.3**	79.5	**231.0**	80.0	**251.3**	80.9	**273.0**	81.8
45	**181.5**	87.7	**202.7**	88.7	**211.7**	89.2	**230.6**	90.1	**250.8**	91.0

CAP Cooling Capacity (kW)

PI Compressor Power input (kW)

Note:

- This table is based on a 5°K difference in water temperature.
- Please contact your local Multistack Agent if you require performance data beyond the limits of the above table.
- Interpolation is permissible. Do not extrapolate.

Unit Capacity Per Module

HEATING CAPACITY - MSCA230H

Ambient Air Temp. °C	R22		Leaving Hot Water Temperature °C						R22	
	35		40		45		50		55	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
15	**326.9**	58.5	**318.2**	64.4	**308.8**	70.9	**299.0**	78.1	**287.9**	85.8
10	**282.2**	56.8	**275.2**	62.8	**267.2**	69.2	**258.1**	75.9	**246.9**	82.6
7	**250.3**	55.7	**244.1**	61.6	**236.8**	67.7	**227.6**	73.8		
5	**242.7**	55.4	**236.7**	61.3	**229.5**	67.3	**220.2**	73.2		
0	**207.3**	53.9	**201.9**	59.5	**194.7**	65.0				

Ambient Air Temp. °C	R407c		Leaving Hot Water Temperature °C						R407c	
	35		40		45		50		55	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
15	**332.1**	61.9	**318.5**	66.4	**305.2**	73.2	**292.7**	81.4	**270.0**	86.2
10	**282.6**	57.9	**271.9**	64.0	**261.6**	71.1	**251.8**	79.4	**232.2**	84.1
7	**247.9**	56.2	**239.2**	62.4	**230.8**	69.6	**222.3**	77.8	**204.7**	82.4
5	**239.9**	55.2	**231.6**	62.1	**223.5**	69.2	**215.4**	77.4	**198.1**	82.0
0	**203.2**	53.8	**196.7**	60.5	**190.1**	67.5	**182.9**	75.5		
-5	**165.6**	52.7	**160.5**	58.7	**155.0**	65.6				

Ambient Air Temp. °C	R134a		Leaving Hot Water Temperature °C						R134a			
	35		40		45		50		55		60	
	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI	CAP	PI
15	**283.4**	47.6	**274.2**	52.1	**264.5**	57.2	**254.7**	63.2	**245.3**	70.4	**236.6**	78.9
10	**237.8**	45.5	**230.4**	50.1	**222.8**	55.3	**215.2**	61.4	**208.2**	68.6	**202.2**	77.3
7	**206.2**	44.1	**200.0**	48.6	**193.7**	53.8	**187.8**	59.9	**182.5**	67.2	**178.3**	75.9
5	**199.0**	43.8	**193.1**	48.3	**187.1**	53.5	**181.4**	59.5	**176.5**	66.8	**172.8**	75.5
0	**166.2**	42.5	**161.4**	46.8	**156.9**	51.9	**152.8**	57.8	**149.8**	65.0	**147.8**	73.5
-5	**133.9**	41.5	**130.4**	45.6	**127.1**	50.3	**124.5**	55.9	**62.8**	62.8		

CAP Cooling Capacity (kW)

PI Compressor Power input (kW)

Note:

- This table is based on a 5°K difference in water temperature.
- Please contact your local Multistack Agent if you require performance data beyond the limits of the above table.
- Interpolation is permissible. Do not extrapolate.

HEATING CAPACITY - MSCA300H

Ambient Air Temp. °C	R22		Leaving Hot Water Temperature °C						R22	
	35		40		45		50		55	
	CAP	**PI**	**CAP**	**PI**	**CAP**	**PI**	**CAP**	**PI**	**CAP**	**PI**
15	**405.9**	69.9	**389.8**	76.2	**372.8**	83.4	**355.0**	91.3	**336.2**	99.9
10	**346.0**	67.2	**332.1**	73.6	**317.3**	80.7	**301.5**	88.3	**284.1**	96.2
7	**303.3**	65.5	**291.0**	71.9	**277.6**	78.8	**262.7**	85.9		
5	**293.3**	65.1	**281.3**	71.5	**268.1**	78.3	**253.4**	85.2		
0	**247.0**	63.3	**236.1**	69.3	**224.0**	75.6				

Ambient Air Temp. °C	R407c		Leaving Hot Water Temperature °C						R407c	
	35		40		45		50		55	
	CAP	**PI**	**CAP**	**PI**	**CAP**	**PI**	**CAP**	**PI**	**CAP**	**PI**
15	**413.4**	72.4	**397.1**	79.8	**380.2**	88.5	**362.8**	98.8	**330.7**	104.9
10	**351.3**	70.2	**337.8**	77.9	**323.5**	86.7	**307.9**	96.7	**278.5**	101.8
7	**307.6**	68.7	**295.9**	76.5	**282.8**	85.0	**267.7**	94.3	**239.7**	98.4
5	**297.5**	68.4	**286.1**	76.1	**273.2**	84.6	**258.1**	93.6	**230.4**	97.5
0	**251.0**	66.9	**240.9**	74.4	**228.5**	82.1	**212.9**	89.9		
-5	**203.0**	65.1	**193.7**	72.2	**181.0**	78.69				

Ambient Air Temp. °C	R134a		Leaving Hot Water Temperature °C						R134a			
	35		40		45		50		55		60	
	CAP	**PI**	**CAP**	**PI**	**CAP**	**PI**	**CAP**	**PI**	**CAP**	**PI**	**CAP**	**PI**
15	**364.7**	60.0	**352.1**	65.9	**339.2**	72.7	**326.7**	80.6	**315.6**	89.8	**307.0**	100.4
10	**306.2**	57.8	**296.2**	63.7	**286.2**	70.5	**277.0**	78.5	**269.2**	87.7	**264.0**	98.2
7	**265.7**	56.3	**257.6**	62.2	**249.6**	69.0	**242.5**	76.9	**237.0**	86.0	**234.2**	96.5
5	**256.3**	55.9	**248.6**	61.8	**241.3**	68.7	**234.6**	76.5	**229.6**	85.6	**227.3**	96.1
0	**214.4**	54.5	**208.6**	60.3	**203.2**	67.0	**198.8**	74.8	**196.2**	83.8	**196.3**	94.1
-5	**172.9**	53.2	**169.0**	58.9	**165.8**	65.5	**163.5**	73.0	**163.1**	81.8		

CAP Cooling Capacity (kW)

PI Compressor Power input (kW)

Note:

- This table is based on a 5°K difference in water temperature.
- Please contact your local Multistack Agent if you require performance data beyond the limits of the above table.
- Interpolation is permissible. Do not extrapolate.

Electrical Data Per Module

MSCA 230

Model			MSCA230H	MSCA230C	MSCA230H	MSCA230C	MSCA230H	MSCA230C
Refigerant			R22		R407c		R134a	
Power			AC380 ± 10% V / 50Hz / 3ph					
Compressor (each)	MRC (A)		162					
	LRA (A)		423					
	RLA (A)	Cooling	113.4		110.1		93.0	
		Heating	109.9	-	106.5	-	89.5	-
Fan (each)	RLA (A)		4.5				3.5	
	STC (A)		15.8				12.2	
MSC			(N-1) x MRC + LRA					

MSCA 300

Model			MSCA300H	MSCA300C	MSCA300H	MSCA300C	MSCA300H	MSCA300C
Refigerant			R22		R407c		R134a	
Power			AC380 ± 10% V / 50Hz / 3ph					
Compressor (each)	MRC (A)		180		182			
	LRA (A)		520					
	RLA (A)	Cooling	136.4		144.9		121	
		Heating	131.6	-	141.0	-	117.2	-
Fan (each)	RLA (A)		4.5					
	STC (A)		15.8					
MSC			(N-1) x MRC + LRA					

Note:

N: No. of modules

MCC: Maximum Continuous Current

LRA: Locked Rotor Amperage

MSC: Maximum Starting Current

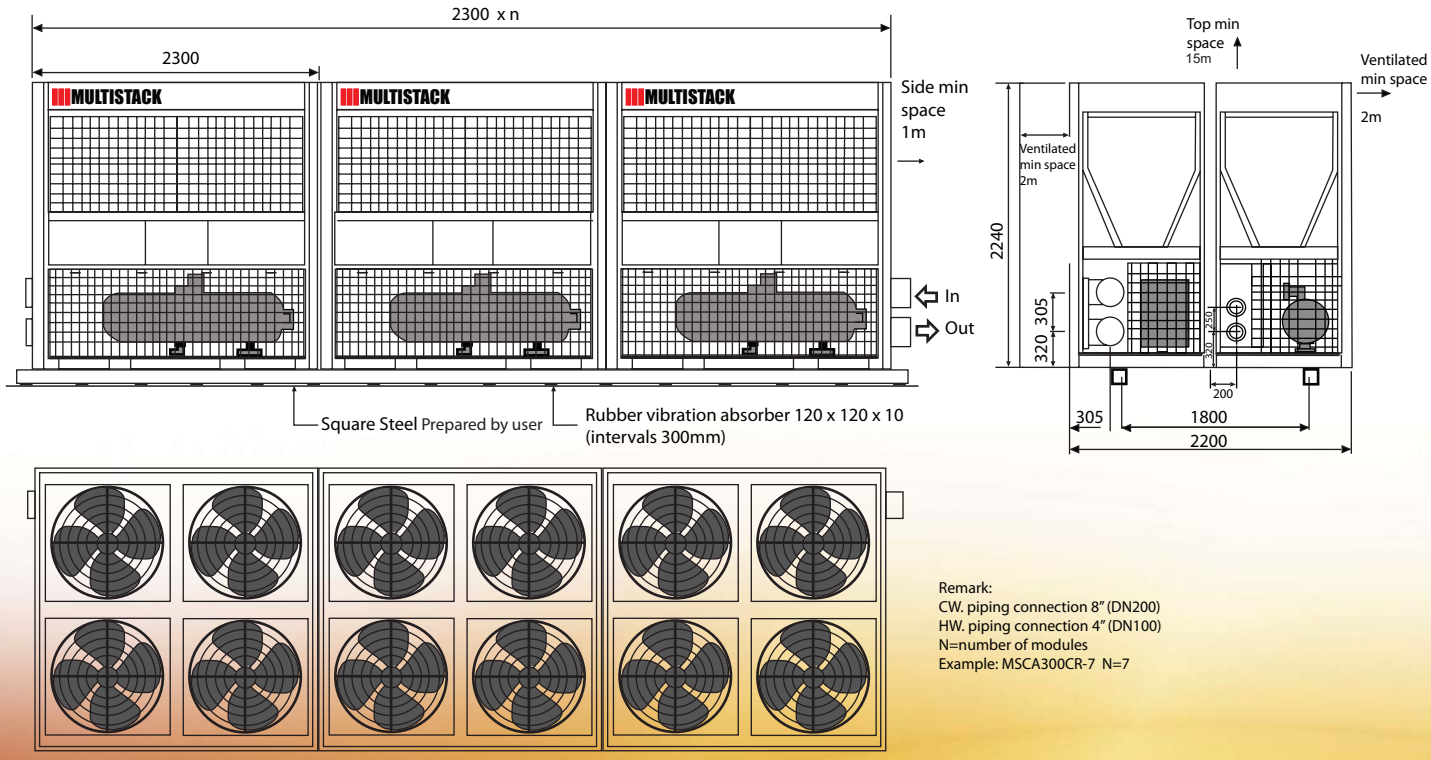
MRC: Maximum Rated Current

RLA: Rating Load Amperage

STC: Starting Current

Physical Dimension

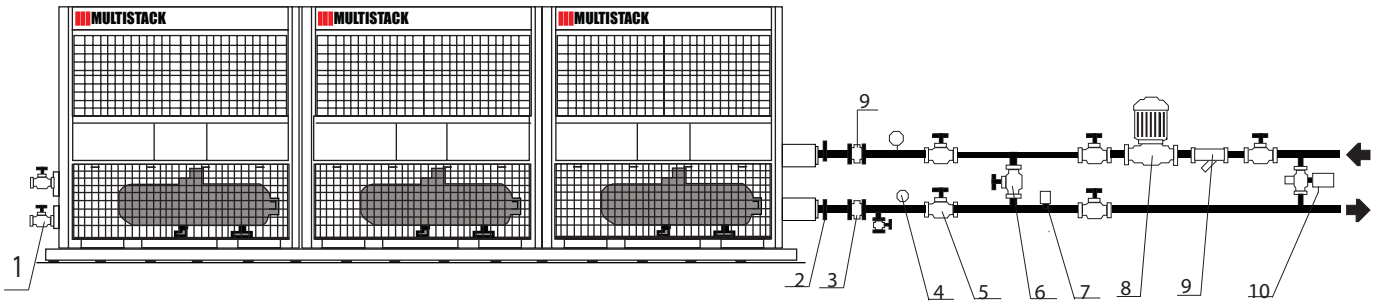
MSCA230 & 300 CONFIGURATIONS

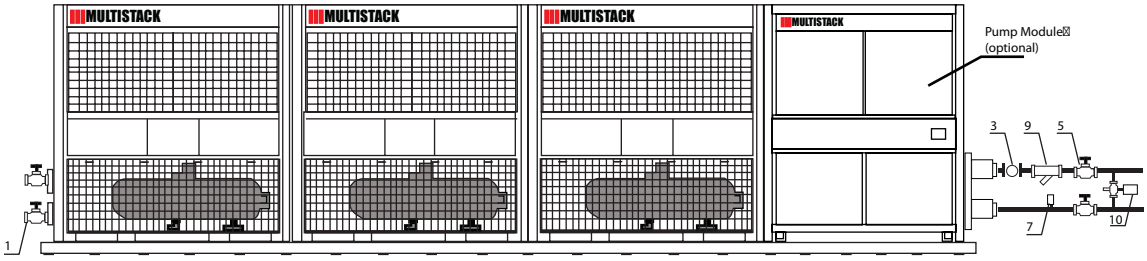


Remark:
CW. piping connection 8" (DN200)
HW. piping connection 4" (DN100)
N=number of modules
Example: MSCA300CR-7 N=7

"Compact, High efficient PHE small size and light weight"

Piping Schematic





Item	Description	Qty
1	Drain valve DN50	2
2	Temperature sensor socket 3/8''	2
3	Vibration eliminator	2
4	Pressure gau ge	2
5	Isolation gate valve	4

Item	Description	Qty
6	Bypass valve	1
7	Flow switch	1
8	Water pump	
9	Strainer 25 mesh/inch	1
10	Pressure differential bypass valve	1

Installation specifications

A. Multistack modular air-cooled chiller can be installed in convenient areas such as the roof, balcony and floor etc. Sufficient ventilation space should be left around the chiller to obtain good convective heat with the outside environment. If more than one chiller bank is installed a minimum distance 3m apart is required.

B.If the chiller consists of more than one module, adjust all water pipe centerlines for each module and align them in a straight line.

C. Flow switch is required to prevent the chiller from damage in the event of insufficient water flow and should be installed on the straight section of the horizontal pipe with a distance of at least 5 times that of the pipe diameter to the front and back valves. And the use of a pressure differential switch and sensor fixed on the main water pipe as substitute for flow switch is not recommended.

D. The setting for the flow switch should ensure immediately cut off whenever the flow rate has reached 80% or less of the rated water flow.

E. To prevent stress on Multistack headers and Victaulic couplings all water pipe work must be properly supported.

F. Water filters should not be less than 25 mesh per inch and installed in the entering pipe of chiller. The strainer should be made of stainless steel and with enough strength to bear extreme pressures in the event of the strainer being blocked.

G. A copper sensor socket (3/8") is placed in the entering/leaving pipe less than 1m to the chiller (see figure below), after inserting the temperature sensor into the socket, fill the socket with heat paste to protect the sensor from being damaged by water accumulation inside the sensor socket.

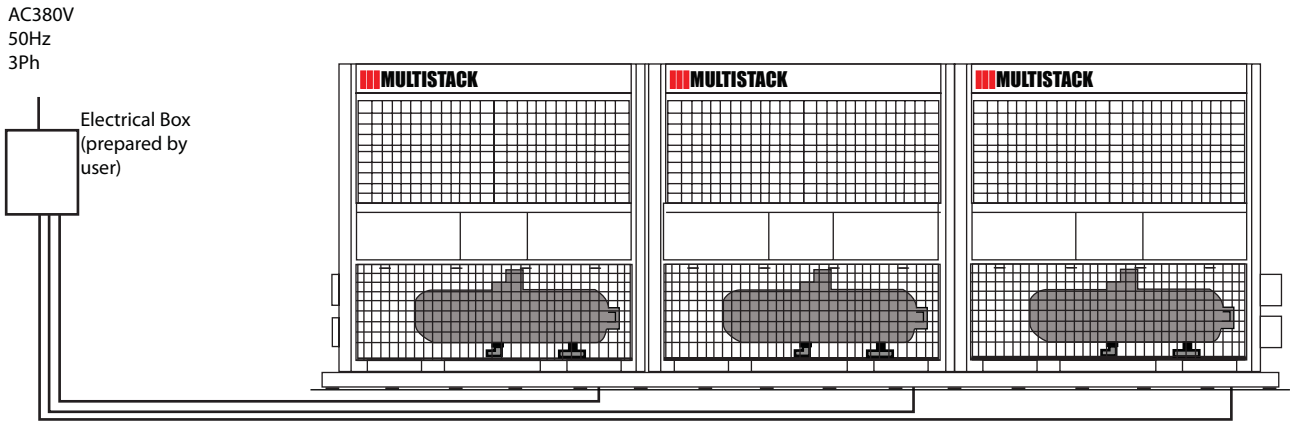
H. During the installation process, the isolation gate valves on both the entering/leaving line to the chiller should be closed. The valves will stay closed until the pipe installation; leak check and cleaning are all completed.

I. The chiller's piping system should be cleaned thoroughly to get rid of any mechanical debris prior to operation. During pipe cleaning, close chiller's entering/leaving isolation gate valves and open the bypass valve to prevent the water circulation through the chiller.

Installation Requirements

ELECTRICAL CONNECTIONS

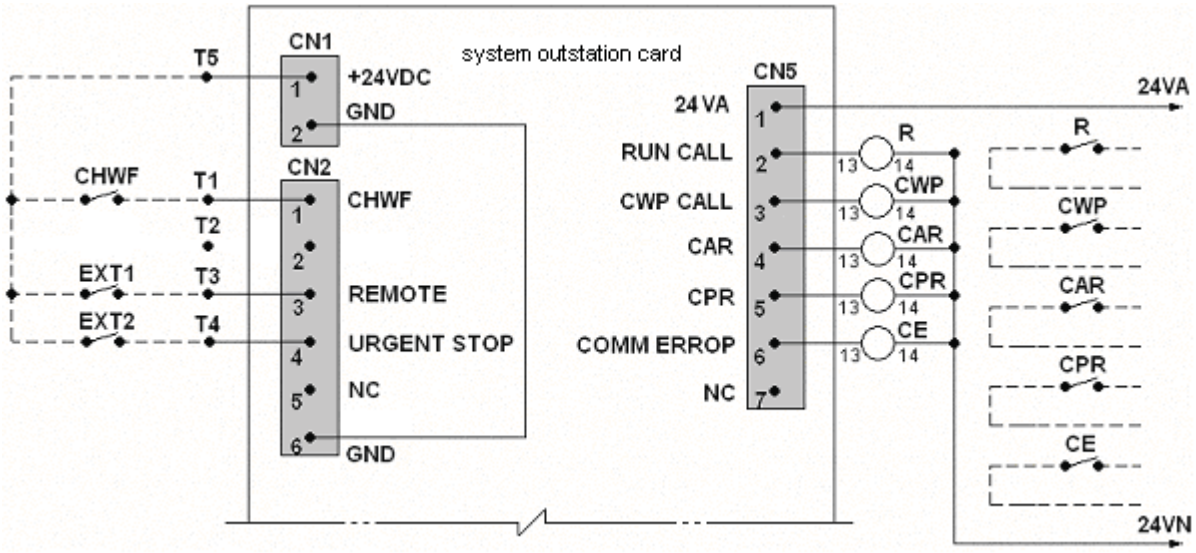
Model	Power supply wiring	
	Location	Connection method
MSCA230-N MSCA300-N	Module electrical box	Terminal Block



1. The cable selection for main power supply should conform to the maximum running current, power supply voltage, ambient temperature, local electrical codes and allowance for voltage imbalance.
2. Each power supply circuit should use separate protection devices and warning labels is required to indicate cutoff procedures.
3. Ground connection terminals installed inside the electrical box of each module must be grounded.

Electrical Wiring Diagram

Field wiring diagram for MV6 system outstation board and external control circuit



External interlock devices:

CHWF	Connect in series with chilled water flow switch and auxiliary contact of water pump contactor to control water flow
EXT1	Remote on/off
EXT2	Urgent stop

Free contacts:

The system outstation card provides 5 free contacts for connection if necessary.

R	Chiller running status
CWP	Condenser water pump running status
CAR	Customer fault alarm relay
CPR	Compressor running status
CE	Communication error

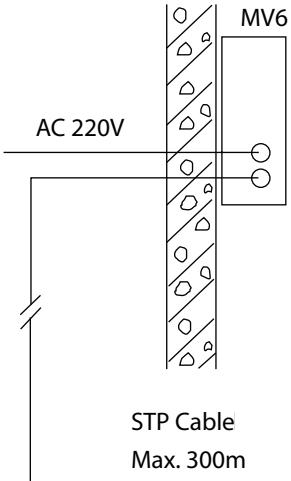
Note:

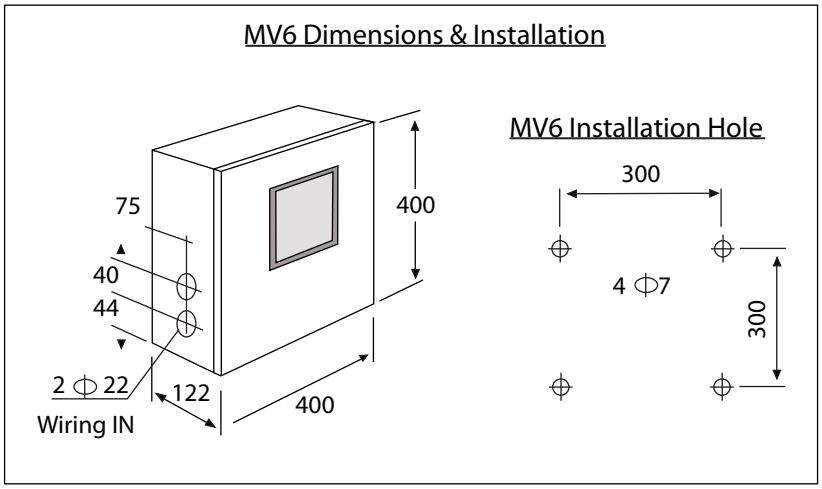
- Bridge between terminals T3 & T5 if EXT-1 is not utilised.
- Bridge between terminals T4 & T5 if EXT-2 is not utilised.
- Free contacts have a maximum rating of 5 Amps.
- Flow switches and external interlock devices are not supplied by Multistack
- Wiring by Multistack _____ / Wiring by Others --------

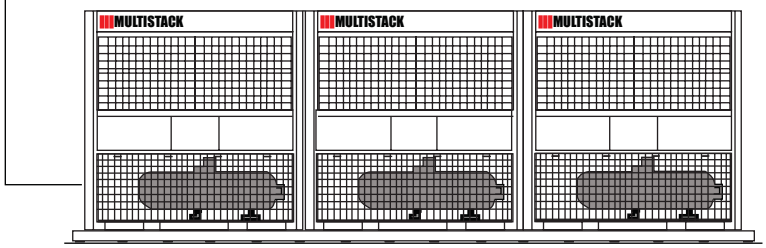
MV6 to Chiller Connection

The MV6 controller should be installed indoors near the chiller to ensure the highest reliability. The control box is wall mounted. A 50m long STP cable (supplied) is used to connect between system control port and MV6 controller. Should there be a need of a longer STP Cable, the user can connect the cable between chiller and the MV6 computer themselves. However the length of cable should be less than 300m otherwise a signal amplifier is required.

The MV6 controller uses a 220VAC power supply, it can be connected either from the 220V port of the chiller transformer or electrical supply provided at MV6 controller installation site. For the later, it is recommended to interlock controller power with the chiller power; otherwise, the MV6 will display "communication error" in the event that the chiller is off while controller power is on.







Optional Features

The following optional features may not be selected simultaneously or not available for some models, please consult our company before ordering.

VWF CHILLER

A motorized valve is installed on the outlet of PHE of each module; the special MV6 pump controller collects the entering/leaving water pressure differentials of the chiller and system separately. The best sampling location of the system lies on the worst circuit. Pump controller regulates its working frequency automatically based on the changes of these two pressure differentials, thus regulating the cooling output, water flow rate, and reduces pump running power at part load as well.

A minimum of 4 combined modules is required for a VWF system (please consult engineer or our company for installation of variable frequency pump and other equipments).

PUMP MODULE

A special dynamic module which integrates water pump, hermetic inflatable water tank, pump control system and electrical box etc. can be combined with the chiller and enables an easier field installation and more compact option.

HR HOT WATER HX

Additional hot water HX is used to recover part of the chillers condensing heat to supply hot water for daily use. The maximum temperature produced is 60 ˚C. This is not recommended for heat pump models.

COMPRESSOR SOUND-INSULATION COVER

The compressor is sealed with a removable box made by steel plate, which has sound absorbing material applied inside of it, thus reducing the chiller noise by up to- 6dB(A).

MULTISTACK INTERNATIONAL LIMITED

140 BERNARD STREET, CHELTENHAM, VICTORIA 3192, AUSTRALIA

TELEPHONE: 61 3 8586 8200 FACSIMILE 61 3 8586 8201

Email: multistack.sales@dunnair.com

Web site: www.multistack.com.au