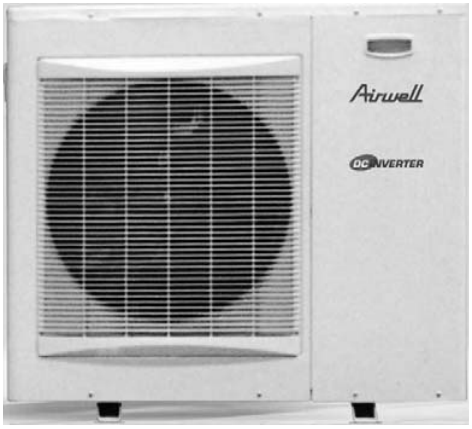
Airwell

Service Manual

Multi Split Trio Quattro Z & E DCI

Indoor Units	Outdoor Units
PNX009	 YAZ3 24 DCI YAZ4 30 DCI
PNX012	
PNX018	
CK009	
CK012	
CK018	
SX009	
SX012	
SX018	
DLF009	
DLF012	
DLF018	
XLF009	
XLF012	
DLS018	
PRIME009	
PRIME012	
PRIME018	
HAD009	
HAD012	



REFRIGERANT

R410A

HEAT PUMP

SM YAZDCI 1-A.1 GB

JANUARY – 2012

LIST OF EFFECTIVE PAGES

Note: Changes in the pages are indicated by a “Revision#” in the footer of each effected page (when none indicates no changes in the relevant page). All pages in the following list represent effected/ non effected pages divided by chapters.

Dates of issue for original and changed pages are:

Original ..... 0 ..... JANUARY 2010

Total number of pages in this publication is **130** consisting of the following:

Page No.	Revision No. #		Page No.	Revision No. #		Page No.	Revision No. #

- Zero in this column indicates an original page.

*Due to constant improvements please note that the data on this service manual can be modified with out notice.
**Photos are not contractual

Table of Contents

1. INTRODUCTION

1.1 General

The **Trio/Quattro Z DCI Multi** series is a full line multi-tubing system with 3 to 4 connected indoor units. The multi-split inverter is a high level technology product for residential and commercial application offering comfort, low noise operation and energy saving.

1.2 Main Features

1.2.1 High Technology

- Sine wave form in both OFAN and Compressor drives.
- DC-BL-SL (Sensor less) Inverter Compressor drive.
- DC-BL Inverter OFAN drive in the controller.
- DSP Power (Digital Signal Processing) – High speed calculation for accurate Sine wave form vector control.
- Smart PFC control.
- Fuzzy Logic Control

1.2.2 System Features

- R410A
- High COP (“A” class energy rating)
- Low noise levels
- IAQ (Indoor Air Quality) features (LEX series)
- Lego concept - Products line of wall mounted, floor/ceiling, cassette, ducted with capacity models of 2.5, 3.5 and 5.0 kW.
- Networking connectivity.
- Pre-charged system.
- Dry contact inputs:
  - STBY
  - Night (in cool mode only)
  - Power Shedding
  - Forced Mode operation
- Dry contact output – Alarm.
- Ready for Base heater connection and logic.
- Cooling operation at outdoor temperature down to -10^{0}C.
- Heating operation at outdoor temperature down to -15^{0}C.
- HMI Display Board (Human-Machine Interface) – 3x7-segment display shows both indoor and outdoor diagnostics and setting up features.
- Monitoring softwear (PC port).
- EEV (Electronic Expansion Valve) for each indoor unit.

1.3 Tubing Connections

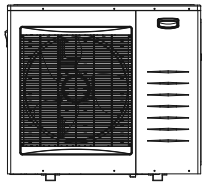
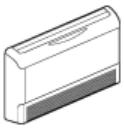
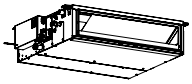
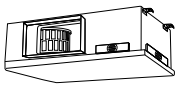
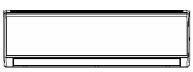
Flare type interconnecting tubing to be produced on site.
For further details please refer to APPENDIX A on this manual, and to the relevant indoor service Manual.

1.4 Inbox Documentation

Each indoor unit is supplied with its own installation and operation manuals.

1.5 Matching Table

R410A

INDOOR UNITS		OUTDOOR UNITS	
			
		Trio YAZ3 24 DCI	Quattro YAZ4 30 DCI
	PNX009	√	√
	PNX012	√	√
	PNX018	√	√
	CK009	√	√
	CK012	√	√
	CK018	√	√
	SX009	√	√
	SX012	√	√
	SX018	√	√
	DLF009	√	√
	DLF012	√	√
	DLF018	√	√
	XLF009	√	√
	XLF018	√	√
	DLS018	√	√
	PRIME009	√	√
	PRIME012	√	√
	PRIME018	√	√
	HAD009	√	√
	HAD012	√	√

1.6 Indoor Unit combinations

Trio				Quattro				
Unit A	Unit B	Unit D	**Code Sum**	Unit A	Unit B	Unit C	Unit D	**Code Sum**
009	009	009	**3**	009	009	009	009	**4**
009	009	012	**3.5**	009	009	009	012	**4.5**
009	009	018	**4**	009	009	012	012	**5**
009	012	012	**4**	009	009	009	018	**5**
012	012	012	**4.5**	009	009	012	018	**5.5**
009	012	018	**4.5**	009	012	012	012	**5.5**
012	012	018	**5**	009	012	012	018	**6**
				012	012	012	012	**6**

Nominal Indoor Units Combination

2. PRODUCT DATA SHEET

2.1 Outdoor Trio YAZ3 24 DCI Specifications.

Model Indoor Unit					
Model Outdoor Unit				**DCI Trio YAZ3 24 R410A**	
Installation Method of Pipe				Flared	
Characteristics			Units	Cooling	Heating
Capacity (4)(5)			Btu/hr	25080 (4440~30710)	31390 (3240~37530)
			kW	7.35 (1.3~9.0)	9.2 (0.95~11.0)
Power input (4)			kW	2.24 (0.5~3.0)	2.31 (0.5~3.0)
EER (Cooling) or COP(Heating) (4)			W/W	3.28	3.98
Energy efficiency class				A	A
Power supply			V	220-240	
			Ph	1	
			Hz	50	
Rated current			A	10.0	10.3
Power factor				0.97	0.97
Prated (IDU)			W	See DCI Single	
Prated (IDU+ODU)			W	3200	
Starting current			A	10	
Circuit breaker rating			A	25	
INDOOR				See DCI Single	
OUTDOOR	Refrigerant control			Electronic expansion valve	
	Compressor type,model			Twin Rotary DC Inverter MELCO TNB220FLBM	
	Fan type & quantity			Propeller x 1	
	Fan speeds	H	RPM	850	
	Air flow	H	m3/hr	3600	
	Sound power level	H	dB(A)	69	
	Sound pressure level (3)	H	dB(A)	57	
	Dimensions	WxHxD	mm	950x864x413	
	Net Weight		kg	69	
	Package dimensions	WxHxD	mm	1070 X940 X510	
	Packaged weight		kg	75	
	Units per pallet		Units	4	
	Stacking height		units	2 levels	
	Refrigerant type			R410A	
	Standard charge		kg	3.2	
	Additional charge			No need	
TUBING	Connection method between the indoor and outdoor units	Liquid line	ln.(mm)	3x 1/4"(6.35)	
		Suction line	ln.(mm)	2x 3/8"(9.53) + 1x 1/2"(12.7)	
		Max tubing length for single IOD to ODU	m	Max.25m	
		Height difference between indoor units	m	Max.15m	
		Height difference between indoor & outdoor	m	Max.15m	
		Max total tubing length	m	Max.50m	
Operation control type					
Heating elements (Option)			kW		
Others					

(1)Airflow in ducted units;at nominal external static pressure.
(2)Sound power in ducted units is measured at air discharge.
(3)Sound pressure level measured at 1-meter distance from unit.
(4)Rating conditions in accordance to ISO 5151 and ISO 13253 (for ducted units).
(5)Nominal capacity is measured with the combination of 4x PNX009 DCI (Quattro) or 3x PNX009 DCI (Trio) and 5m tubing each unit.
Maximum capacity is measured with the combination of PNX009 DCI + 2x PNX0012 DCI + PNX0018 DCI (Quattro) or 2x PNX012 DCI + PNX018 DCI (Trio) and 5m tubing each unit.
Minimum capacity is measured with PNX009 DCI (Quattro/Trio) and 5m tubing.

2.2 Outdoor QUATTRO YAZ4 30 DCI Specifications.

Model Indoor Unit					
Model Outdoor Unit				**DCI Quattro YAZ4 30 R410A**	
Installation Method of Pipe				Flared	
Characteristics			Units	Cooling	Heating
Capacity (4)(5)			Btu/hr	27,300 (4,780~31,390)	33,440 (3,240~37,530)
			kW	8.0 (1.4-9.2)	0.95-11.0))9.8
Power input (4)			kW	0.5-3.0))2.38	0.4-3.0))2.36
EER (Cooling) or COP(Heating) (4)			W/W	3.36	4.15
Energy efficiency class				A	A
Power supply			V	220-240	
			Ph	1	
			Hz	50	
Rated current			A	10.6	10.5
Power factor				0.97	0.97
Prated (IDU)			W	See DCI Single	
Prated (IDU+ODU)			W	3200	
Starting current			A	11	
Circuit breaker rating			A	25	
INDOOR				See DCI Single	
OUTDOOR	Refrigerant control			Electronic expansion valve	
	Compressor type,model			Twin Rotary DC Inverter MELCO TNB220FLBM	
	Fan type & quantity			Propeller x 1	
	Fan speeds	H	RPM	850	
	Air flow	H	m3/hr	3600	
	Sound power level	H	dB(A)	69	
	Sound pressure level (3)	H	dB(A)	57	
	Dimensions	WxHxD	mm	950x864x413	
	Net Weight		kg	70	
	Package dimensions	WxHxD	mm	1070x940x510	
	Packaged weight		kg	76	
	Units per pallet		Units	4	
	Stacking height		units	2 levels	
	Refrigerant type			R410A	
	Standard charge		kg	3.4	
	Additional charge			No need	
TUBING	Connection method between the indoor and outdoor units	Liquid line	ln.(mm)	4x1/4"(6.35)	
		Suction line	ln.(mm)	3x3/8"(9.53) + 1x 1/2"(12.7)	
		Max tubing length for single IOD to ODU	m	Max.25m	
		Height difference between indoor units	m	Max.15m	
		Height difference between indoor & outdoor	m	Max.15m	
		Max total tubing length	m	Max.70m	
Operation control type					
Heating elements (Option)			kW		
Others					

(1)Airflow in ducted units;at nominal external static pressure.
(2)Sound power in ducted units is measured at air discharge.w
(3)Sound pressure level measured at 1-meter distance from unit.
(4)Rating conditions in accordance to ISO 5151 and ISO 13253 (for ducted units).
(5)Nominal capacity is measured with the combination of 4x PNX009 DCI (Quattro) or 3x PNX009 DCI (Trio) and 5m tubing each unit.
Maximum capacity is measured with the combination of PNX009 DCI + 2x PNX012 DCI + PNX018 DCI (Quattro) or 2x PNX012 DCI + PNX018 DCI (Trio) and 5m tubing each unit.
Minimum capacity is measured with PNX009 DCI (Quattro/Trio) and 5m tubing.

2.3 Indoor Units Data

2.3.1 PNX009 DCI Specifications

Model Indoor Unit				PNX009 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-230V/1 Ph/50 Hz
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1050/900/800
	Air flow(1)	H/M/L	m3/hr	530/430/330
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	51/ - /39
	Sound pressure level(3)	H/M/L	dB(A)	39/ - /26
	Moisture removal		l/hr	1
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	810x285x210
	Net Weight		kg	11.5
	Package dimensions	WxHxD	mm	870x356x282
	Packaged weight		kg	14
	Units per pallet		units	28
	Stacking height		units	7 levels

2.3.2 PNX012 DCI Specifications

Model Indoor Unit				PNX012 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-230V/1 Ph/50 Hz
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1100/950/800
	Air flow(1)	H/M/L	m3/hr	550/450/350
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	52/ - /39
	Sound pressure level(3)	H/M/L	dB(A)	40/ - /26
	Moisture removal		l/hr	1.5
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	810x285x210
	Net Weight		kg	11.5
	Package dimensions	WxHxD	mm	870x356x282
	Packaged weight		kg	14
	Units per pallet		units	28
	Stacking height		units	7 levels

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

2.3.3 PNX018 DCI Specifications

Model Indoor Unit				PNX018 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-230V/1 Ph/50 Hz
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1200/1050/900
	Air flow(1)	H/M/L	m3/hr	850/700/550
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	55/51/47
	Sound pressure level(3)	H/M/L	dB(A)	43/39/34
	Moisture removal		l/hr	2
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	1060x295x221
	Net Weight		kg	15
	Package dimensions	WxHxD	mm	1125x360x295
	Packaged weight		kg	18
	Units per pallet		units	16
	Stacking height		units	8 levels

2.3.4 CK009 DCI Specifications

Model Indoor Unit				CK012 DCI	
Installation Method of Pipe				Flared	
Power supply			V/Ph/Hz	220-230V/1 Ph/50 Hz	
INDOOR	Fan type & quantity			Centrifugal x 1	
	Fan speeds	H/M/L	RPM	550/500/450	600/520/450
	Air flow(1)	H/M/L	m3/hr	420/370/320	470/390/320
	External static pressure	Min	Pa	0	
	Sound power level(2)	H/M/L	dB(A)	49	49
	Sound pressure level(3)	H/M/L	dB(A)	32/30/28	34/31/28
	Moisture removal		l/hr	0.7	
	Condenstate drain tube I.D		mm	20	
	Dimensions	WxHxD	mm	575X575X219(625X625X40/725X725X40)	
	Net Weight		kg	12.9(2.2/2.7)	
	Package dimensions	WxHxD	mm	681X681X297(700X700X103/800X800X103)	
	Packaged weight		kg	16.2(3.4/4.2)	
	Units per pallet		units	12	
	Stacking height		units	6 levels	

NOTE:

(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

2.3.5 CK012 DCI Specifications

Model Indoor Unit				CK 012 DCI	
Installation Method of Pipe				Flared	
Power supply			V/Ph/Hz	220-230V/1 Ph/50 Hz	
INDOOR	Fan type & quantity			Centrifugal x 1	
	Fan speeds	H/M/L	RPM	600/520/450	650/550/450
	Air flow(1)	H/M/L	m3/hr	470/390/320	510/420//320
	External static pressure	Min	Pa	0	
	Sound power level(2)	H/M/L	dB(A)	51	51
	Sound pressure level(3)	H/M/L	dB(A)	34/31/28	36/32/28
	Moisture removal		l/hr	1.5	
	Condenstate drain tube I.D		mm	20	
	Dimensions	WxHxD	mm	575X575X219(625X625X40/725X725X40)	
	Net Weight		kg	12.9(2.2/2.7)	
	Package dimensions	WxHxD	mm	681X681X297(700X700X103/800X800X103)	
	Packaged weight		kg	16.2(3.4/4.2)	
	Units per pallet		units	12	
	Stacking height		units	6 levels	

2.3.6 CK018 DCI Specifications

Model Indoor Unit				CK018 DCI	
Installation Method of Pipe				Flared	
Power supply			V/Ph/Hz	220-230V/1 Ph/50 Hz	
INDOOR	Fan type & quantity			Centrifugal x 1	
	Fan speeds	H/M/L	RPM	680/620/550	680/620/550
	Air flow(1)	H/M/L	m3/hr	620/560/500	620/560/500
	External static pressure	Min	Pa	0	
	Sound power level(2)	H/M/L	dB(A)	54	54
	Sound pressure level(3)	H/M/L	dB(A)	36/33/30	36/33/30
	Moisture removal		l/hr	2.0	
	Condenstate drain tube I.D		mm	20	
	Dimensions	WxHxD	mm	575X575X270(625X625X40/725X725X40)	
	Net Weight		kg	15.2(2.2/2.7)	
	Package dimensions	WxHxD	mm	681X681X348(700X700X103/800X800X103)	
	Packaged weight		kg	18.7(3.4/4.2)	
	Units per pallet		units	12	
	Stacking height		units	6 levels	

NOTE

(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.

(2)Airflow in ducted units; at nominal external static pressure.

(3)Sound power in ducted units is measured at air discharge.

(4)Sound pressure level measured at 1 meter distance from unit.

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2.3.7 SX009 DCI Specifications

Model Indoor Unit				SX009 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Centifugal x 2
	Fan speeds	H/M/L	RPM	760/670/500
	Air flow(1)	H/M/L	m3/hr	400/350/300
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	54/49/41
	Sound pressure level(3)	H/M/L	dB(A)	42/37/29
	Moisture removal		l/hr	1
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	820x630x190
	Net Weight		kg	21
	Package dimensions	WxHxD	mm	920x726x273
	Package weight		kg	25
	Units per pallet		units	14units per pallet
	Units stacking		units	7 levels

2.3.8 SX012 DCI Specifications

Model Indoor Unit				SX012 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Centifugal x 2
	Fan speeds	H/M/L	RPM	830/760/500
	Air flow(1)	H/M/L	m3/hr	450/400/300
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	56/53/41
	Sound pressure level(3)	H/M/L	dB(A)	45/41/30
	Moisture removal		l/hr	1.5
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	820x630x190
	Net Weight		kg	22
	Package dimensions	WxHxD	mm	920x726x273
	Package weight		kg	26
	Units per pallet		units	14units per pallet
	Units stacking		units	7 levels

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

2.3.9 SX018 DCI Specifications

Model Indoor Unit				SX018 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Centifugal x 2
	Fan speeds	H/M/L	RPM	1050/950/700
	Air flow(1)	H/M/L	m3/hr	870/750/600
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	65/60/53
	Sound pressure level(3)	H/M/L	dB(A)	51/48/40
	Moisture removal		l/hr	2
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	1200x630x190
	Net Weight		kg	30
	Package dimensions	WxHxD	mm	1300x726x273
	Package weight		kg	35
	Units per pallet		units	7units per pallet
	Units stacking		units	7 levels

2.3.10 DLF009 DCI Specifications

Model Indoor Unit				DLF009 DCI
Installation Method of Pipe				DUCTED
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Centifugal x 2
	Fan speeds	H/M/L	RPM	920/810/740
	Air flow(1)	H/M/L	m3/hr	620/560/490
	External static pressure	Min -Max	Pa	0-30
	Sound power level(2)	H/M/L	dB(A)	50/47/44
	Sound pressure level(3)	H/M/L	dB(A)	29/26/23
	Moisture removal		l/hr	0.5
	Condenstate drain tube I.D		mm	19
	Dimensions	WxHxD	mm	750x630x200
	Net Weight		kg	20
	Package dimensions	WxHxD	mm	885x695x226
	Package weight		kg	23
	Units per pallet		units	14units per pallet
	Units stacking		units	7 levels

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

2.3.11 DLF012 DCI Specifications

Model Indoor Unit				DLF012 DCI
Installation Method of Pipe				DUCTED
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Centifugal x 2
	Fan speeds	H/M/L	RPM	980/860/730
	Air flow(1)	H/M/L	m3/hr	650/580/490
	External static pressure	Min-Max	Pa	0-30
	Sound power leve(2)	H/M/L	dB(A)	53/49/45
	Sound pressure level(3)	H/M/L	dB(A)	31/27/24
	Moisture removal		l/hr	1.0
	Condenstate drain tube I.D		mm	19
	Dimensions	WxHxD	mm	750x630x200
	Net Weight		kg	20
	Package dimensions	WxHxD	mm	885x695x226
	Package weight		kg	23
	Units per pallet		units	14units per pallet
	Units stacking		units	7 levels

2.3.12 DLF018 DCI Specifications

Model Indoor Unit				DLF018 DCI
Installation Method of Pipe				DUCTED
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Centifugal x 2
	Fan speeds	H/M/L	RPM	1100/980/860
	Air flow(1)	H/M/L	m3/hr	710/600/540
	External static pressure	Min-Max	Pa	0-40
	Sound power level(2)	H/M/L	dB(A)	54/51/48
	Sound pressure level(3)	H/M/L	dB(A)	35/32/29
	Moisture removal		l/hr	1.5
	Condenstate drain tube I.D		mm	19
	Dimensions	WxHxD	mm	750x630x200
	Net Weight		kg	21
	Package dimensions	WxHxD	mm	885x695x226
	Package weight		kg	24
	Units per pallet		units	14units per pallet
	Units stacking		units	7 levels

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

2.3.13 XLF009 DCI Specifications

Model Indoor Unit				XLF009 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Helicoid x 1
	Fan speeds	H/M/L	RPM	520/490/450
	Air flow(1)	H/M/L	m3/hr	390/370/330
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	55
	Sound pressure level(3)	H/M/L	dB(A)	38/35/32
	Moisture removal		l/hr	1
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	570x570x160
	Net Weight		kg	13.5
	Package dimensions	WxHxD	mm	700x700x255
	Packaged weight		kg	15.5
	Units per pallet		units	16
	Stacking height		units	8levels

2.3.14 XLF012 DCI Specifications

Model Indoor Unit				XLF012 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Helicoid x 1
	Fan speeds	H/M/L	RPM	540/510/450
	Air flow(1)	H/M/L	m3/hr	400/370/310
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	56
	Sound pressure level(3)	H/M/L	dB(A)	39/36/33
	Moisture removal		l/hr	1.6
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	570x570x160
	Net Weight		kg	14
	Package dimensions	WxHxD	mm	700x700x255
	Packaged weight		kg	16
	Units per pallet		units	16
	Stacking height		units	8evels

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

2.3.15 DLS018 DCI Specifications

Model Indoor Unit				DLS018 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Centrifugal x 1
	Fan speeds	H/M/L	RPM	630/530/425
	Air flow(1)	H/M/L	m3/hr	1170/875/730
	External static pressure	Min	Pa	25
	Sound power level(2)	H/M/L	dB(A)	55/53/50
	Sound pressure level(3)	H/M/L	dB(A)	42/37/34
	Moisture removal		l/hr	1.0
	Condenstate drain tube I.D		mm	22
	Dimensions	WxHxD	mm	770x690x260
	Net Weight		kg	29
	Package dimensions	WxHxD	mm	959x854x315
	Packaged weight		kg	31
	Units per pallet		units	6
	Stacking height		units	6

2.3.16 PRIME009 DCI Specifications

Model Indoor Unit				PRIME009 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1200/1050/850
	Air flow(1)	H/M/L	m3/hr	420/350/270
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	54/50/47
	Sound pressure level(3)	H/M/L	dB(A)	39/35/32
	Moisture removal		l/hr	1
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	680x250x185
	Net Weight		kg	7
	Package dimensions	WxHxD	mm	740x320x265
	Packaged weight		kg	10
	Units per pallet		units	36 units per pallet
	Stacking height		units	9 levels

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

2.3.17 PRIME012 DCI Specifications

Model Indoor Unit				PRIME012 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1200/1000/850
	Air flow(1)	H/M/L	m3/hr	550/450/350
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	56/50/46
	Sound pressure level(3)	H/M/L	dB(A)	39/33/29
	Moisture removal		l/hr	1.5
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	840x250x185
	Net Weight		kg	8
	Package dimensions	WxHxD	mm	930x320x265
	Packaged weight		kg	11
	Units per pallet		units	36 units per pallet
	Stacking height		units	9 levels

2.3.18 PRIME018 DCI Specifications

Model Indoor Unit				PRIME018 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1230/1100/900
	Air flow(1)	H/M/L	m3/hr	720/620/480
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	56/54/47
	Sound pressure level(3)	H/M/L	dB(A)	44/41/34
	Moisture removal		l/hr	2
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	900x295x205
	Net Weight		kg	11
	Package dimensions	WxHxD	mm	960x360x270
	Packaged weight		kg	14
	Units per pallet		units	24 units per pallet
	Stacking height		units	8 levels

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.
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2.3.19 HAD009 DCI Specifications

Model Indoor Unit				HAD009 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1150/1000/800
	Air flow(1)	H/M/L	m3/hr	420/350/270
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	54
	Sound pressure level(3)	H/M/L	dB(A)	40/35/29
	Moisture removal		l/hr	1.0
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	680 x250 X188
	Net Weight		kg	7
	Package dimensions	WxHxD	mm	740x310x248
	Packaged weight		kg	10
	Units per pallet		units	32
	Stacking height		units	8

2.3.20 HAD012 DCI Specifications

Model Indoor Unit				HAD012 DCI
Installation Method of Pipe				Flared
Power supply			V/Ph/Hz	220-240/1/50
INDOOR	Fan type & quantity			Crossflow x 1
	Fan speeds	H/M/L	RPM	1150/950/750
	Air flow(1)	H/M/L	m3/hr	550/450/350
	External static pressure	Min	Pa	0
	Sound power level(2)	H/M/L	dB(A)	56
	Sound pressure level(3)	H/M/L	dB(A)	40/34/28
	Moisture removal		l/hr	1.5
	Condenstate drain tube I.D		mm	16
	Dimensions	WxHxD	mm	840x250x188
	Net Weight		kg	8
	Package dimensions	WxHxD	mm	900x310x248
	Packaged weight		kg	11
	Units per pallet		units	32
	Stacking height		units	8

NOTE:
(1)Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2)Airflow in ducted units; at nominal external static pressure.
(3)Sound power in ducted units is measured at air discharge.
(4)Sound pressure level measured at 1 meter distance from unit.

3. RATING CONDITIONS

Standard conditions in accordance with ISO 5151, ISO 13253 (for ducted units) and EN 14511.

Cooling:
Indoor: 27°C DB 19°C WB
Outdoor: 35 °C DB

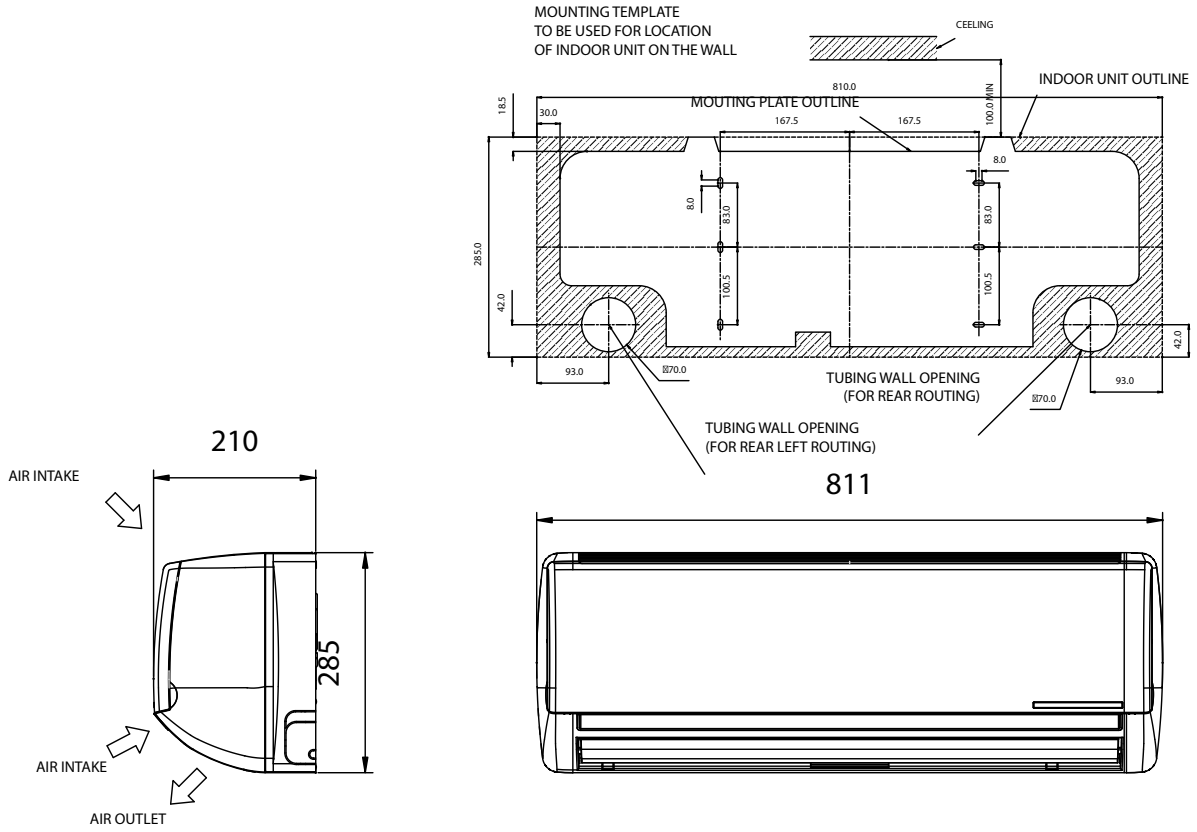
Heating:
Indoor: 20°C DB
Outdoor: 7°C DB 6°C WB

3.1 Operating Limits

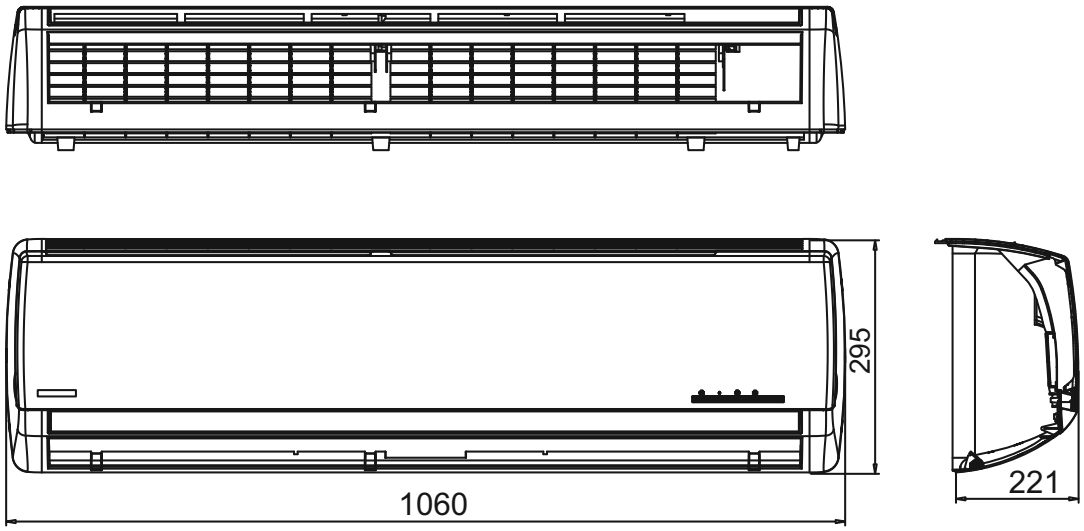
		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	-10°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	10°C DB	-15°C DB -16°C WB
Voltage	1PH	198 – 264 V	
	3PH	N/A	

4. OUTLINE DIMENSIONS

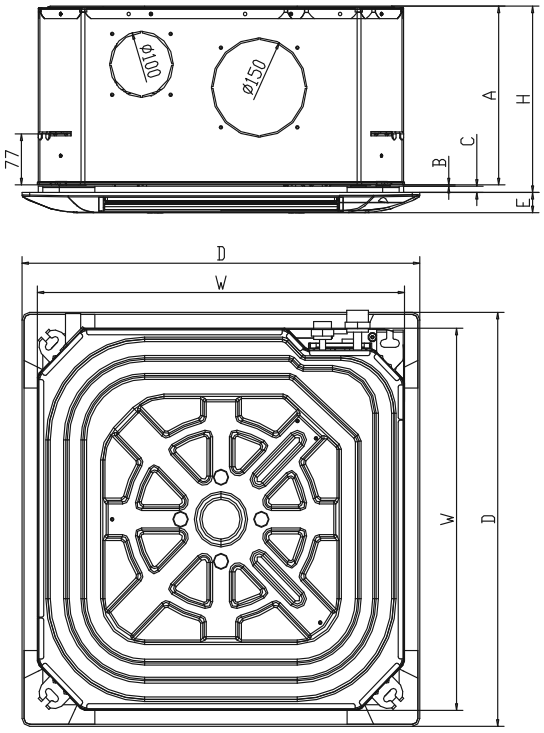
4.1 Indoor Unit: PNX009 / PNX012 DCI



4.2 Indoor Unit: PNX018 DCI

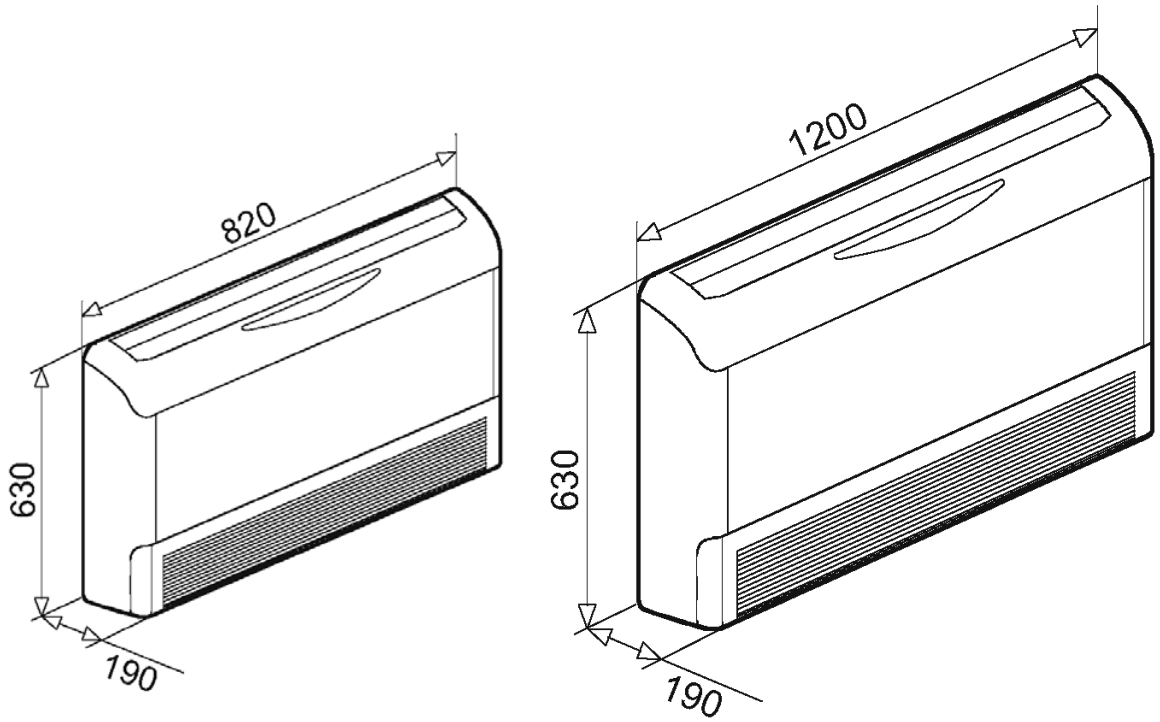


4.3 Indoor Unit: CK009, CK012, CK018 DCI

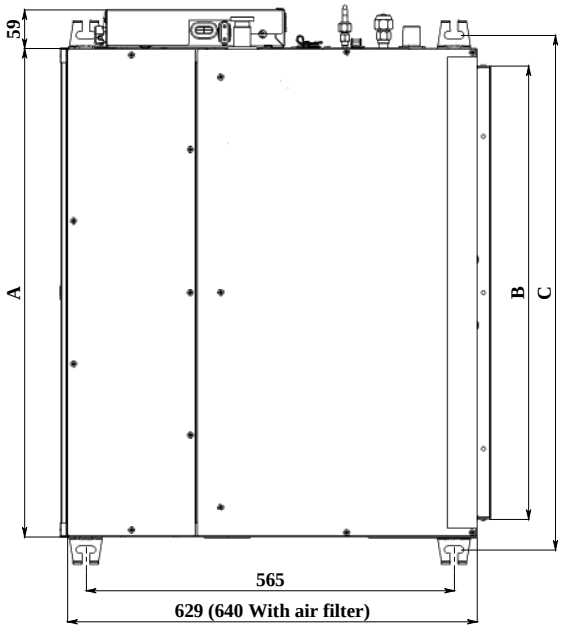


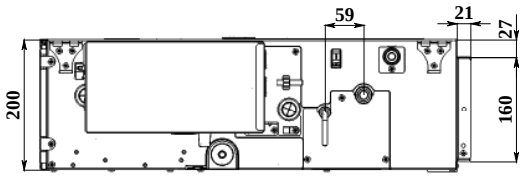
Unit Model	Main unit A	Insulation B	Front Step C	Front width D	Front height E	Effective Height H
25/35	219	2	9	625/725	40	230
50/60/70	270	2	9	625/725	40	281

4.4 Indoor Unit: SX009, SX012 SX018 DCI



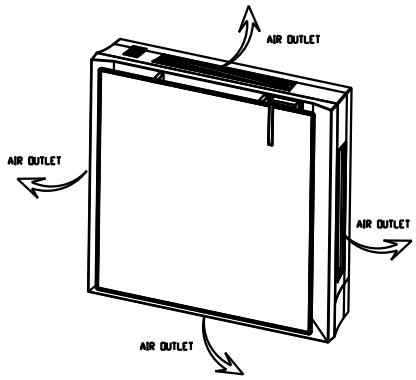
4.5 Indoor Unit: DLF009, DLF012, DLF018 DCI

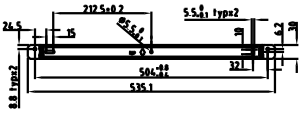


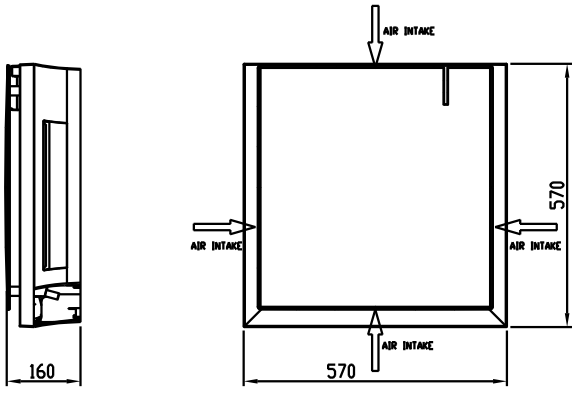


Nominal Capacity	A	B	C
2.5 -5.0 kW	750	696	790
6.0-7.2 kW	1050	996	1090

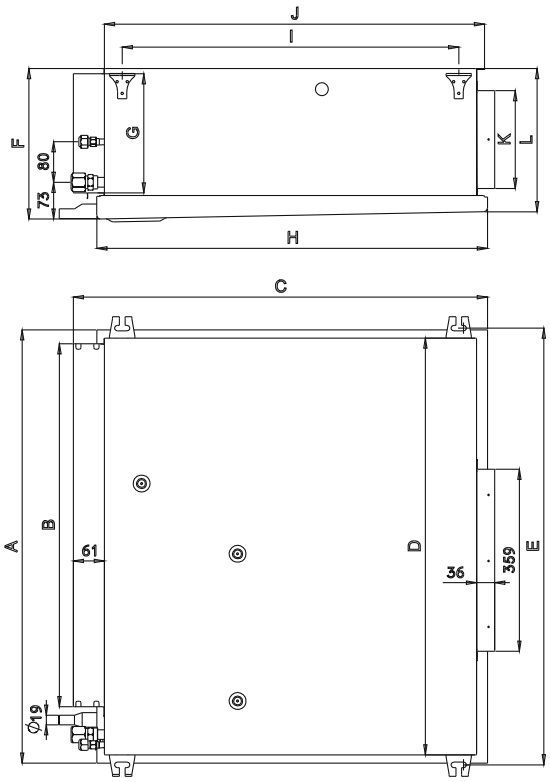
4.6 Indoor Unit: XLF009, XLF012 DCI





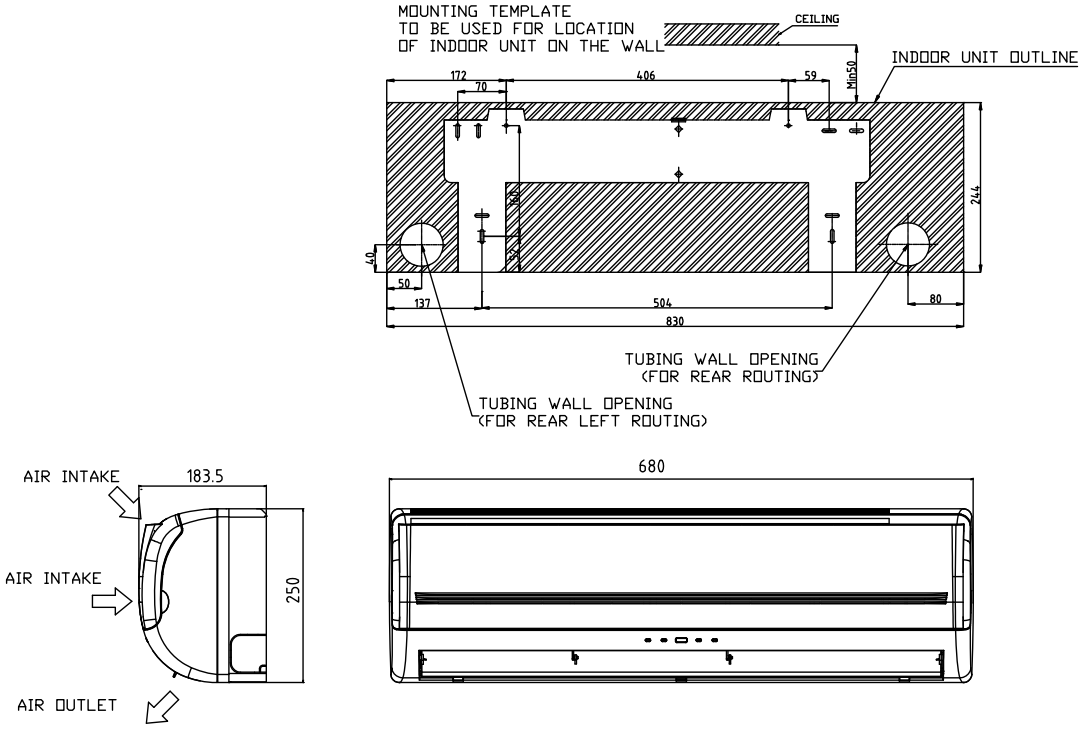


4.7 Indoor Unit: DLS018 DCI

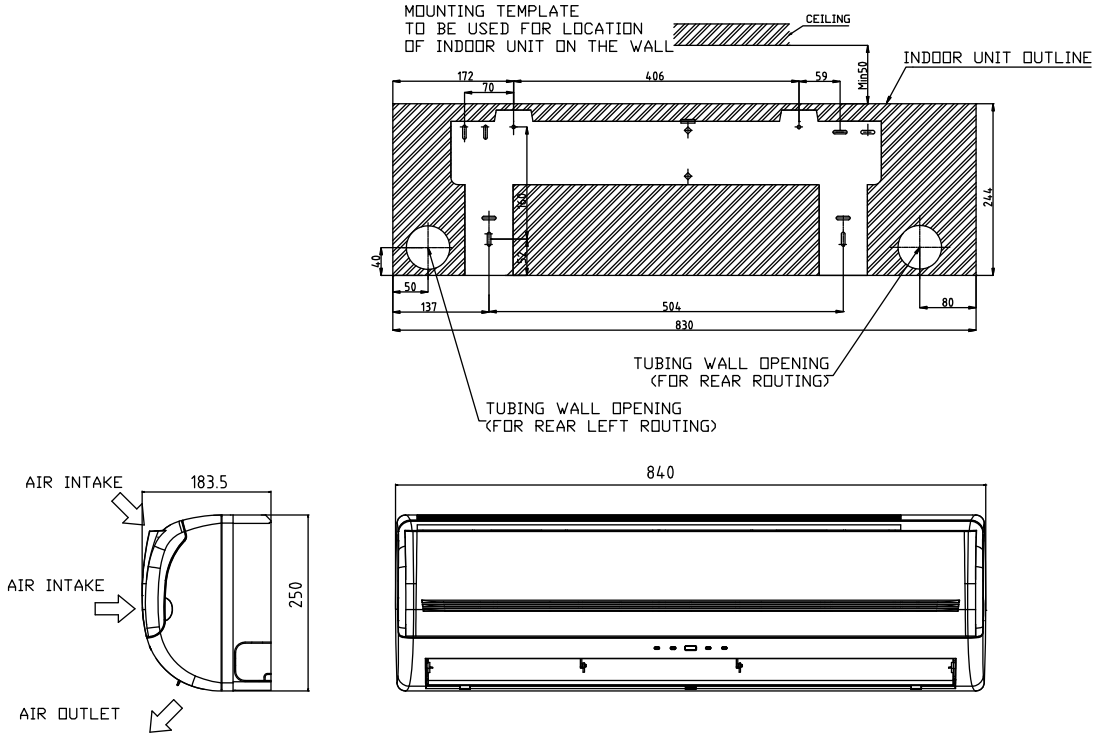


Model	A	B	C	D	E	F	G	H	I	J	K	L
DLF018 DCI	790	653	749	758	797	256	195	702	599	684	162	242

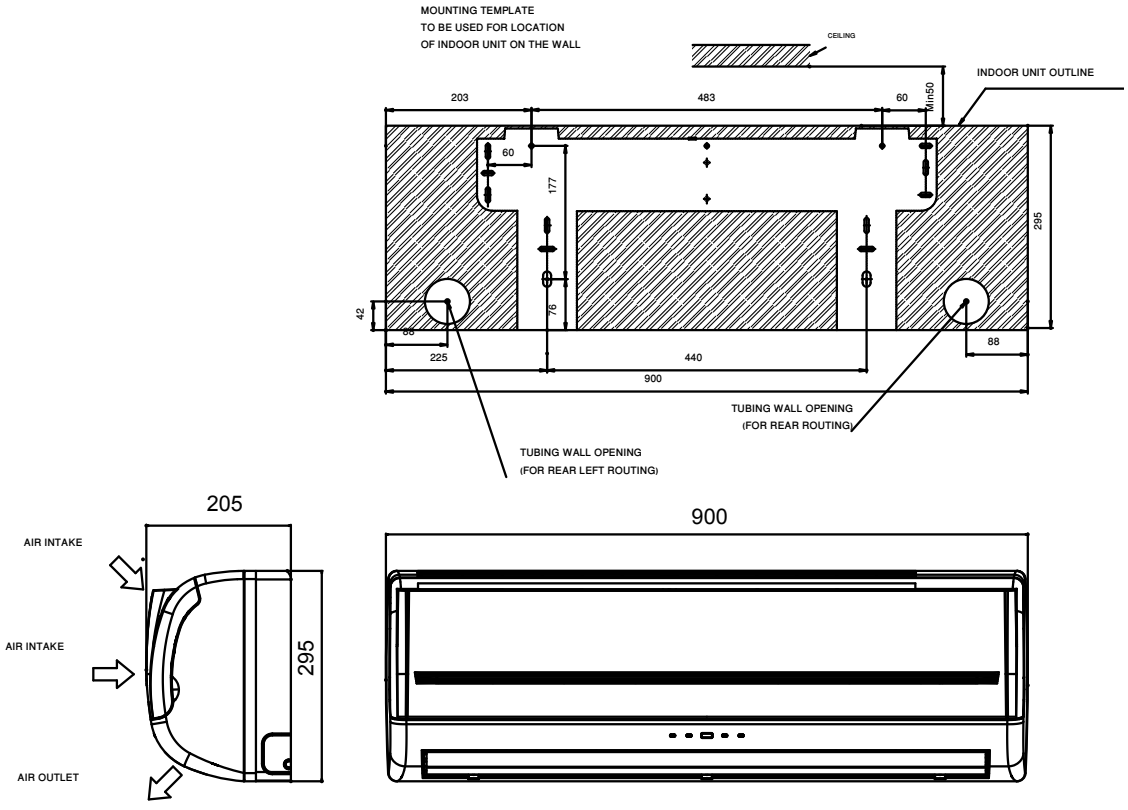
4.8 Indoor Units: PRIME009 DCI



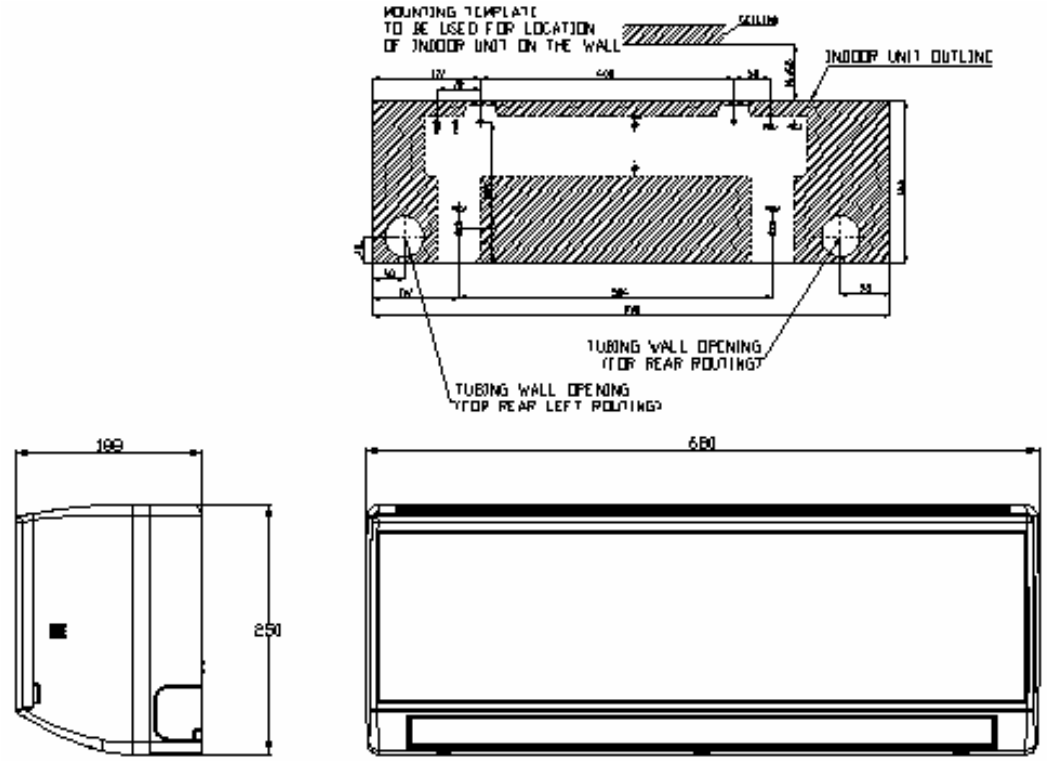
4.9 Indoor Unit: PRIME012 DCI



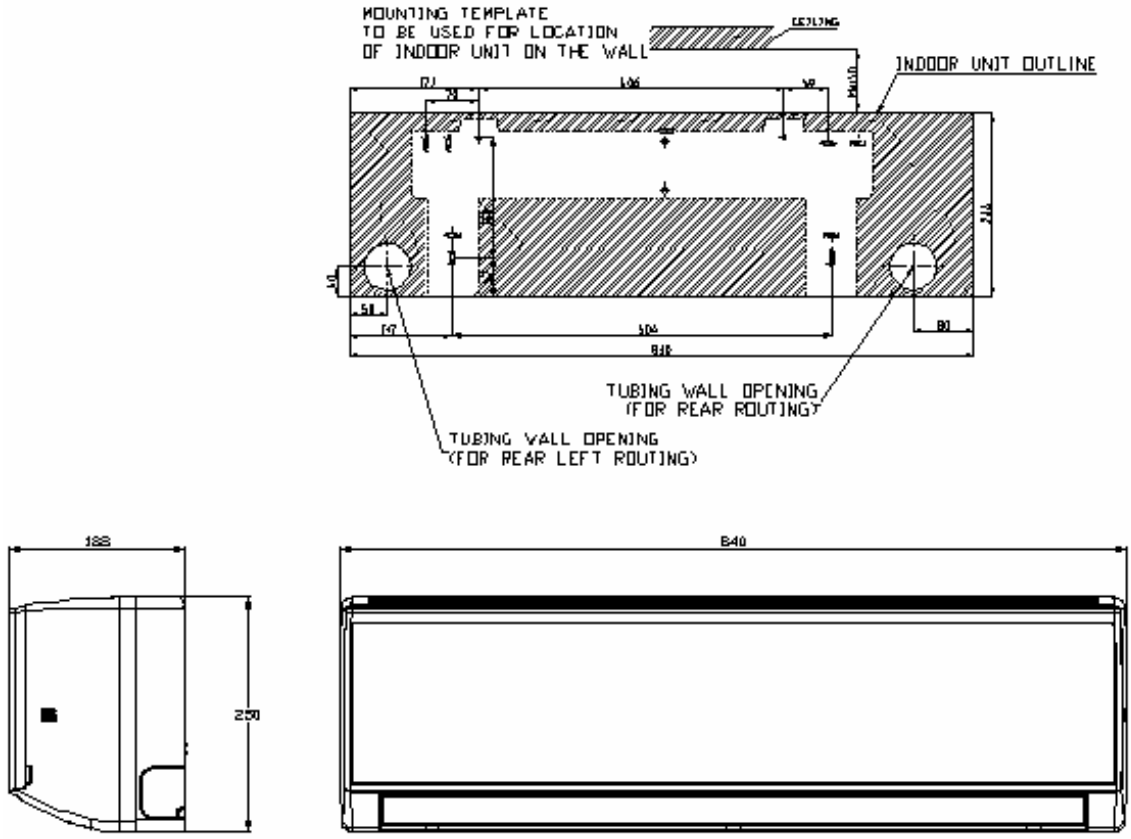
4.10 Indoor Units: PRIME018 DCI



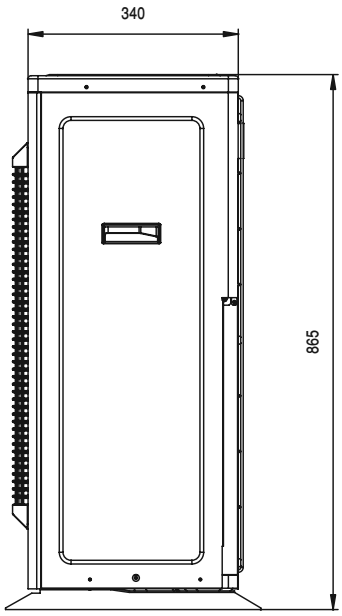
4.11 Indoor Unit: HAD009 DCI

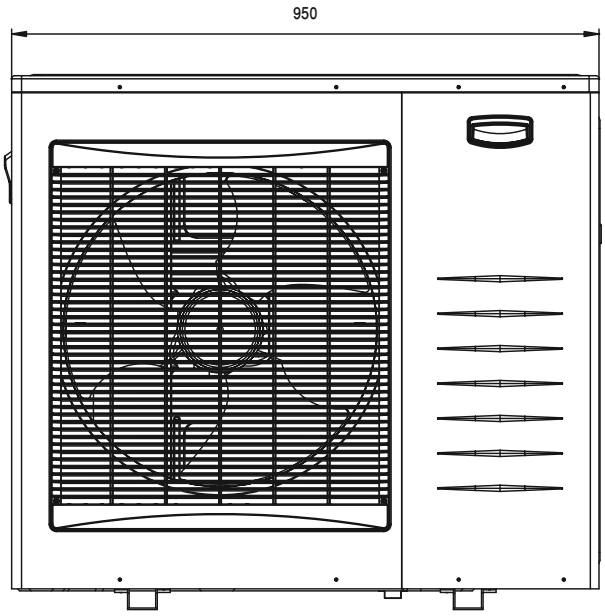


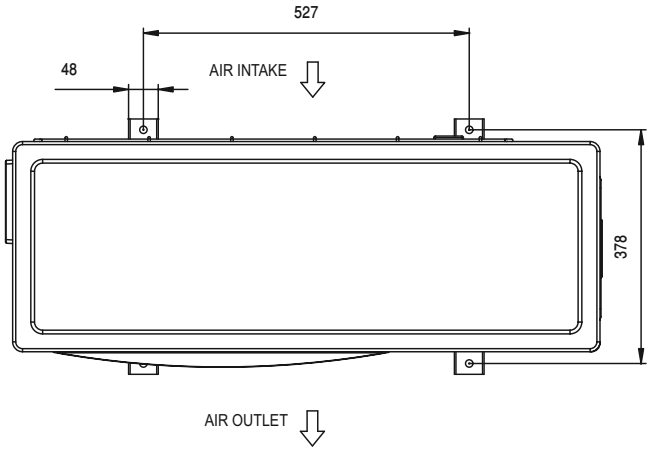
4.12 Indoor Units: HAD012 DCI



4.13 Outdoor Units: YAZ3 24, YAZ4 30 DCI







5. PERFORMANCE DATA

5.1 Outdoor Unit YAZ3 24 DCI Combinations (Based on PNX)

5.1.1 Cooling

Model	Cooling Capacity [KW]						Power Consumption [W]			COP Nominal	Energy Efficiency Class
	A	B	D	Nom.	Min.	Max.	Nom.	Min.	Max.		
25	-	-	2.50	2.50	1.30	3.70	685	500	1,025	3.65	A
35	-	-	3.50	3.50	1.30	4.40	968	500	1,223	3.62	A
50	-	-	5.00	5.00	1.49	5.93	1,393	566	1,656	3.59	A
25+25	-	2.60	2.60	5.19	1.86	6.56	1,532	683	1,856	3.39	A
25+35	-	2.62	3.49	6.11	1.86	7.73	1,823	683	2,541	3.35	A
25+50	-	2.49	4.98	7.47	1.86	9.00	2,251	659	3,046	3.32	A
35+35	-	3.53	3.53	7.06	1.86	9.00	2,120	683	2,246	3.33	A
35+50	-	2.99	4.48	7.47	1.86	9.00	2,251	659	3,055	3.32	A
25+25+25	**2.45**	**2.45**	**2.45**	**7.35**	**2.69**	**8.98**	**2,240**	**949**	**3,049**	**3.28**	**A**
25+25+35	2.25	2.25	2.99	7.48	2.69	9.00	2,281	949	3,157	3.28	A
25+25+50	1.87	1.87	3.74	7.47	2.69	9.00	2,278	962	3,097	3.28	A
25+35+35	2.04	2.71	2.71	7.46	2.69	9.00	2,275	949	3,097	3.28	A
25+35+50	1.72	2.30	3.45	7.46	2.69	9.00	2,275	962	3,061	3.28	A
35+35+35	2.49	2.49	2.49	7.47	2.69	9.00	2,278	990	3,085	3.28	A
35+35+50	2.13	2.13	3.19	7.45	2.69	9.00	2,272	962	3,086	3.28	A

Nominal Indoor Units Combination

5.1.2 Heating

Model	Heaing Capacity [KW]						Power Consumption [W]			COP Nominal	Energy Efficiency Class
	A	B	D	Nom.	Min.	Max.	Nom.	Min.	Max.		
25	-	-	3.40	3.40	0.95	4.00	685	500	897	4.96	A
35	-	-	4.30	4.30	0.95	5.20	1,003	485	1,320	4.29	A
50	-	-	6.20	6.20	1.11	7.50	1,673	549	2,131	3.71	A
25+25	-	3.68	3.68	7.36	1.43	9.10	1,933	649	2,636	3.81	A
25+35	-	3.33	4.44	7.77	1.43	9.50	2,062	649	2,711	3.77	A
25+50	-	3.07	6.13	9.20	1.43	10.10	2,514	622	2,737	3.66	A
35+35	-	4.09	4.09	8.18	1.43	9.80	2,191	649	2,711	3.73	A
35+50	-	3.68	5.52	9.20	1.43	10.50	2,514	622	2,871	3.66	A
25+25+25	**3.07**	**3.07**	**3.07**	**9.20**	**2.06**	**10.99**	**2,310**	**804**	**3,013**	**3.98**	**A**
25+25+35	2.76	2.76	3.68	9.20	2.06	11.00	2,310	804	2,966	3.98	A
25+25+50	2.30	2.30	4.60	9.20	2.06	11.00	2,310	773	2,826	3.98	A
25+35+35	2.51	3.34	3.34	9.19	2.06	11.00	2,307	804	2,938	3.98	A
25+35+50	2.12	2.82	4.24	9.18	2.14	11.00	2,305	773	2,752	3.98	A
35+35+35	3.07	3.07	3.07	9.20	2.06	11.00	2,310	804	2,845	3.98	A
35+35+50	2.63	2.63	3.94	9.19	2.14	11.00	2,307	773	2,696	3.98	A

Nominal Indoor Units Combination

5.2 Outdoor Unit YAZ4 30 DCI Combinations (Based on PNX)

5.2.1 Cooling

Model	Cooling Capacity [KW]							Power Consumption [W]			COP Nominal	Energy Efficiency Class
	A	B	C	D	Nom.	Min.	Max.	Nom.	Min.	Max.		
25	-	-	-	2.50	2.50	1.40	3.70	685	500	1,025	3.65	A
35	-	-	-	3.50	3.50	1.40	4.40	968	500	1,223	3.62	A
50	-	-	-	5.00	5.00	1.60	5.60	1,393	570	1,563	3.59	A
25+25	-	-	2.54	2.54	5.08	2.00	6.20	1,453	689	1,742	3.49	A
25+35	-	-	2.56	3.42	5.98	2.00	7.30	1,722	689	2,385	3.47	A
25+50	-	-	2.54	5.08	7.61	2.00	8.50	2,210	665	2,858	3.45	A
35+35	-	-	3.45	3.45	6.90	2.10	8.80	1,998	689	2,921	3.46	A
35+50	-	-	3.15	4.72	7.87	2.10	8.80	2,285	665	2,876	3.44	A
25+25+25	-	2.40	2.40	2.40	7.19	2.90	9.00	2,112	915	2,938	3.40	A
25+25+35	-	2.36	2.36	3.15	7.87	2.90	9.00	2,445	915	2,899	3.22	A
25+25+50	-	2.00	2.00	4.01	8.01	2.90	9.00	2,466	928	2,851	3.25	A
25+35+35	-	2.17	2.90	2.90	7.97	2.90	9.00	2,445	915	2,851	3.26	A
25+35+50	-	1.87	2.50	3.74	8.11	2.90	9.00	2,476	928	2,821	3.28	A
35+35+35	-	2.69	2.69	2.69	8.07	2.90	9.00	2,372	955	2,841	3.40	A
35+35+50	-	2.31	2.31	3.47	8.10	2.90	9.00	2,372	928	2,802	3.42	A
25+25+25+25	**2.00**	**2.00**	**2.00**	**2.00**	**8.00**	**3.70**	**9.17**	**2,380**	**981**	**2,937**	**3.36**	**A**
25+25+25+35	1.87	1.87	1.87	2.49	8.10	3.70	9.20	2,413	981	2,915	3.36	A
25+25+25+50	1.62	1.62	1.62	3.25	8.12	3.70	9.20	2,337	957	2,882	3.48	A
25+25+35+35	1.74	1.74	2.32	2.32	8.11	3.70	9.20	2,402	981	2,882	3.38	A
25+25+35+50	1.52	1.52	2.03	3.05	8.12	3.70	9.20	2,304	957	2,849	3.53	A
25+35+35+35	1.62	2.16	2.16	2.16	8.11	3.70	9.20	2,391	981	2,871	3.39	A
25+35+35+50	1.43	1.91	1.91	2.87	8.12	3.70	9.20	2,304	957	2,890	3.53	A
35+35+35+35	2.03	2.03	2.03	2.03	8.12	3.70	9.20	2,380	981	2,838	3.41	A

Nominal Indoor Units Combination

5.2.2 Heating

Model	Heating Capacity [KW]							Power Consumption [W]			COP Nominal	Energy Efficiency Class
	A	B	C	D	Nom.	Min.	Max.	Nom.	Min.	Max.		
25	-	-	-	3.40	3.40	0.95	4.00	685	400	859	4.96	A
35	-	-	-	4.30	4.30	0.95	5.20	946	388	1,207	4.54	A
50	-	-	-	6.20	6.20	1.11	7.50	1,497	455	1,875	4.14	A
25+25	-	-	3.75	3.75	7.51	1.43	8.63	1,768	539	2,172	4.25	A
25+35	-	-	3.40	4.53	7.92	1.43	9.01	1,902	539	2,235	4.17	A
25+50	-	-	3.13	6.26	9.38	1.43	9.58	2,337	516	2,255	4.02	A
35+35	-	-	4.17	4.17	8.34	1.43	9.29	1,988	539	2,235	4.20	A
35+50	-	-	3.92	5.88	9.80	1.43	9.96	2,396	516	2,366	4.09	A
25+25+25	-	3.13	3.13	3.13	9.38	2.06	11.00	2,226	671	2,621	4.22	A
25+25+35	-	2.94	2.94	3.92	9.80	2.06	11.00	2,308	671	2,891	4.25	A
25+25+50	-	2.45	2.45	4.90	9.80	2.06	11.00	2,144	646	2,883	4.57	A
25+35+35	-	2.67	3.56	3.56	9.78	2.06	11.00	2,246	671	2,874	4.35	A
25+35+50	-	2.26	3.01	4.51	9.78	2.14	11.00	2,082	646	2,731	4.70	A
35+35+35	-	3.26	3.26	3.26	9.79	2.06	11.00	2,226	671	2,857	4.40	A
35+35+50	-	2.79	2.79	4.19	9.78	2.14	11.00	2,062	646	2,671	4.74	A
25+25+25+25	**2.45**	**2.45**	**2.45**	**2.45**	**9.80**	**2.69**	**10.97**	**2,360**	**561**	**2,935**	**4.15**	**A**
25+25+25+35	2.25	2.25	2.25	3.01	9.77	2.69	11.00	2,336	561	2,900	4.18	A
25+25+25+50	1.96	1.96	1.96	3.92	9.80	2.77	11.00	2,274	551	2,779	4.31	A
25+25+35+35	2.10	2.10	2.80	2.80	9.79	2.69	11.00	2,287	561	2,857	4.28	A
25+25+35+50	1.84	1.84	2.45	3.67	9.79	2.77	11.00	2,177	551	2,762	4.50	A
25+35+35+35	1.96	2.61	2.61	2.61	9.78	2.69	11.00	2,250	561	2,822	4.35	A
25+35+35+50	1.73	2.30	2.30	3.45	9.78	2.77	11.00	2,177	551	2,903	4.49	A
35+35+35+35	2.45	2.45	2.45	2.45	9.80	2.69	11.00	2,360	551	2,796	4.15	A

Nominal Indoor Units Combination

5.3 PNX009 DCI

5.3.1 Cooling Capacity Factors - Unit A,B,C or D

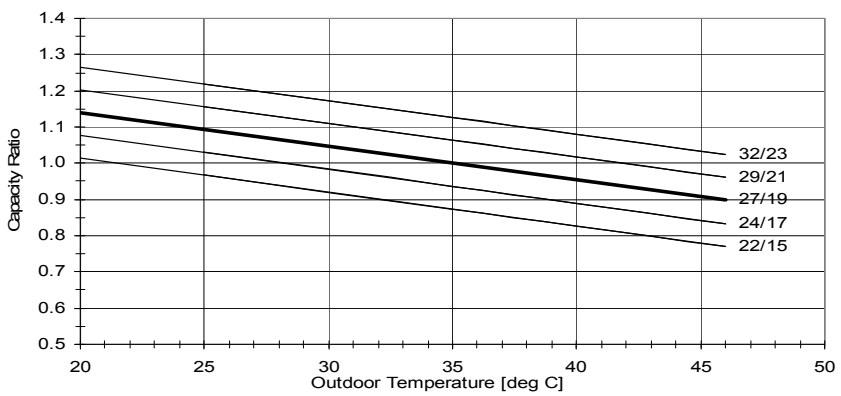
230[V] : Indoor Fan at High Speed.

OD COIL ENTERING AIR DB TEMPERATURE [ºC]	DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [ºC]				
		22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	0.97	1.03	1.09	1.16	1.22
	SC	1.01	1.03	1.05	1.07	1.09
	PI	0.79	0.80	0.82	0.83	0.85
30	TC	0.92	0.98	1.05	1.11	1.17
	SC	0.98	1.00	1.03	1.05	1.07
	PI	0.88	0.89	0.91	0.92	0.94
35	TC	0.87	0.94	**1.00**	1.06	1.13
	SC	0.96	0.98	**1.00**	1.02	1.04
	PI	0.97	0.99	**1.00**	1.02	1.03
40	TC	0.83	0.89	0.95	1.02	1.08
	SC	0.93	0.95	0.97	1.00	1.02
	PI	1.06	1.08	1.09	1.11	1.12
46	TC	0.77	0.83	0.90	0.96	1.02
	SC	0.90	0.92	0.94	0.96	0.99
	PI	1.17	1.19	1.20	1.22	1.23

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.3.2 Capacity Correction Factors



5.3.3 Heating Capacity Factors - Unit A,B,C or D

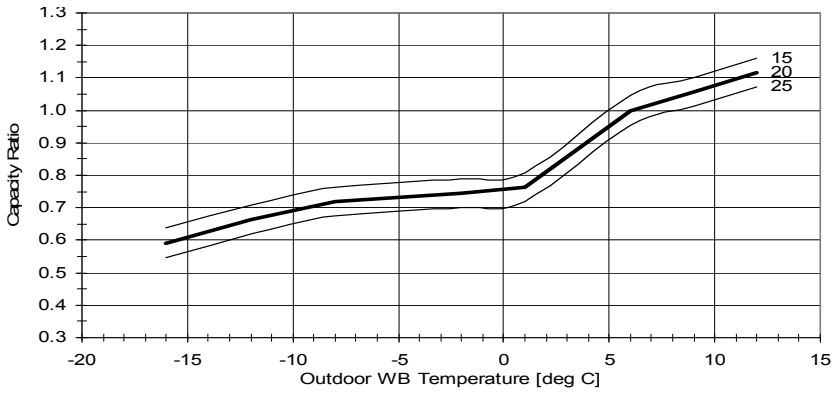
230[V] : Indoor Fan at High Speed.

OD COIL ENTERING AIR DB/WB TEMPERATURE [ºC]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [ºC]		
		15	20	25
-15/-16	TC	0.64	0.59	0.55
	PI	0.60	0.66	0.72
-10/-12	TC	0.71	0.66	0.62
	PI	0.72	0.78	0.85
-7/-8	TC	0.76	0.72	0.67
	PI	0.82	0.88	0.94
-1/-2	TC	0.79	0.75	0.70
	PI	0.86	0.92	0.98
2/1	TC	0.81	0.76	0.72
	PI	0.89	0.95	1.01
7/6	TC	1.04	**1.00**	0.96
	PI	0.94	**1.00**	1.06
10/9	TC	1.10	1.06	1.01
	PI	1.00	1.06	1.12
15/12	TC	1.16	1.12	1.07
	PI	1.05	1.11	1.17
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

TC – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OU – Outdoor

5.3.4 Capacity Correction Factors



5.4 PNX012 DCI

5.4.1 Cooling Capacity Factors - Unit A,B,C or D

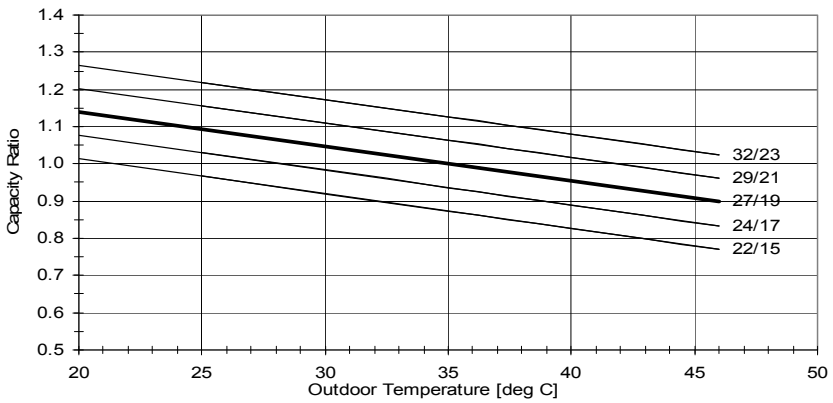
230[V] : Indoor Fan at High Speed.

		ID COIL ENTERING AIR DB/WB TEMPERATURE [ºC]				
OD COIL ENTERING AIR DB TEMPERATURE [ºC]	**DATA**	**22/15**	**24/17**	**27/19**	**29/21**	**32/23**
-10 - 20 (protection range)	**TC**	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	**TC**	0.97	1.03	1.09	1.16	1.22
	SC	1.01	1.03	1.05	1.07	1.09
	PI	0.79	0.80	0.82	0.83	0.85
30	**TC**	0.92	0.98	1.05	1.11	1.17
	SC	0.98	1.00	1.03	1.05	1.07
	PI	0.88	0.89	0.91	0.92	0.94
35	**TC**	0.87	0.94	**1.00**	1.06	1.13
	SC	0.96	0.98	**1.00**	1.02	1.04
	PI	0.97	0.99	**1.00**	1.02	1.03
40	**TC**	0.83	0.89	0.95	1.02	1.08
	SC	0.93	0.95	0.97	1.00	1.02
	PI	1.06	1.08	1.09	1.11	1.12
46	**TC**	0.77	0.83	0.90	0.96	1.02
	SC	0.90	0.92	0.94	0.96	0.99
	PI	1.17	1.19	1.20	1.22	1.23

LEGEND

TC – Total Cooling Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.4.2 Capacity Correction Factors



5.4.3 Heating Capacity Factors - Unit A,B,C or D

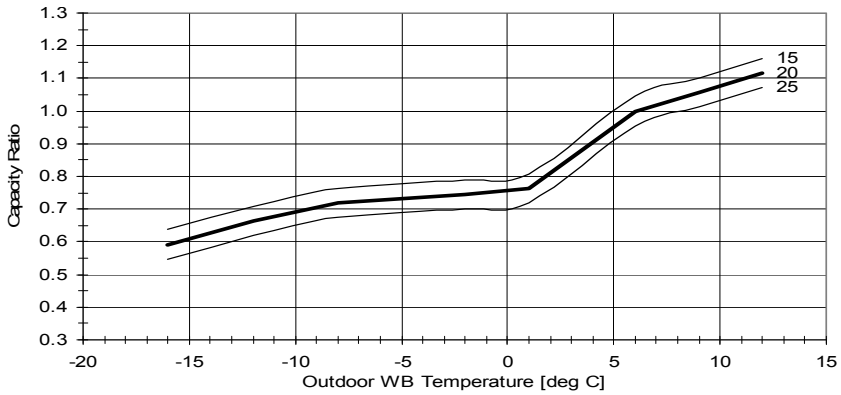
230[V] : Indoor Fan at High Speed.

OD COIL ENTERING AIR DB/WB TEMPERATURE [ºC]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [ºC]		
		15	20	25
-15/-16	TC	0.64	0.59	0.55
	PI	0.60	0.66	0.72
-10/-12	TC	0.71	0.66	0.62
	PI	0.72	0.78	0.85
-7/-8	TC	0.76	0.72	0.67
	PI	0.82	0.88	0.94
-1/-2	TC	0.79	0.75	0.70
	PI	0.86	0.92	0.98
2/1	TC	0.81	0.76	0.72
	PI	0.89	0.95	1.01
7/6	TC	1.04	**1.00**	0.96
	PI	0.94	**1.00**	1.06
10/9	TC	1.10	1.06	1.01
	PI	1.00	1.06	1.12
15/12	TC	1.16	1.12	1.07
	PI	1.05	1.11	1.17
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

TC – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OU – Outdoor

5.4.4 Capacity Correction Factors



5.5 PNX018 DCI

5.5.1 Cooling Capacity Factors - Unit D

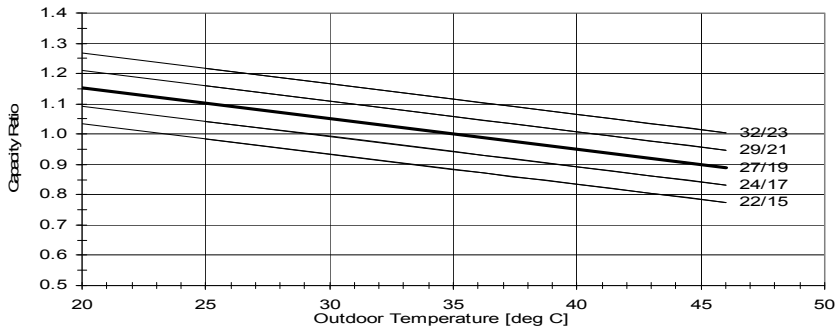
230[V] : Indoor Fan at High Speed.

		ID COIL ENTERING AIR DB/WB TEMPERATURE [ºC]				
OD COIL ENTERING AIR DB TEMPERATURE [ºC]	**DATA**	**22/15**	**24/17**	**27/19**	**29/21**	**32/23**
-10 - 20 (protection range)	**TC**	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	**TC**	0.99	1.04	1.10	1.16	1.22
	SC	1.05	1.07	1.08	1.10	1.11
	PI	0.76	0.77	0.79	0.81	0.82
30	**TC**	0.93	0.99	1.05	1.11	1.17
	SC	1.01	1.03	1.04	1.06	1.07
	PI	0.86	0.88	0.90	0.91	0.93
35	**TC**	0.88	0.94	**1.00**	1.06	1.12
	SC	0.97	0.98	**1.00**	1.02	1.03
	PI	0.97	0.98	**1.00**	1.02	1.03
40	**TC**	0.83	0.89	0.95	1.01	1.07
	SC	0.93	0.94	0.96	0.97	0.99
	PI	1.07	1.09	1.11	1.12	1.14
46	**TC**	0.77	0.83	0.89	0.95	1.00
	SC	0.88	0.89	0.91	0.93	0.94
	PI	1.20	1.21	1.23	1.25	1.27

LEGEND

TC – Total Cooling Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.5.2 Capacity Correction Facto



5.5.3 Heating Capacity Factors - Unit D

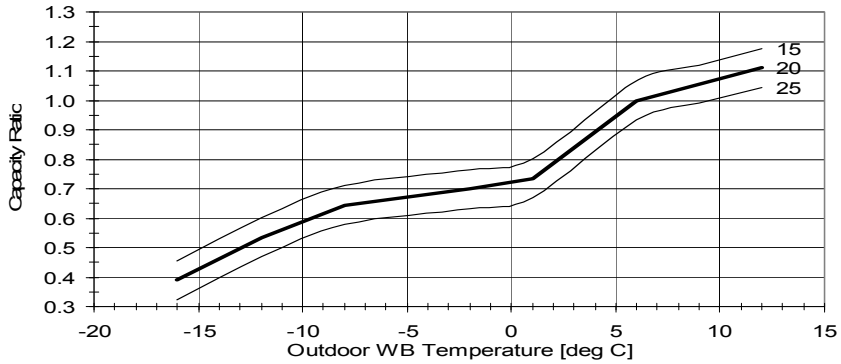
230[V] : Indoor Fan at High Speed.

		ID COIL ENTERING AIR DB TEMPERATURE [ºC]		
OD COIL ENTERING AIR DB/WB TEMPERATURE [ºC]	**DATA**	**15**	**20**	**25**
-15/-16	TC	0.46	0.39	0.32
	PI	0.70	0.75	0.80
-10/-12	TC	0.60	0.54	0.47
	PI	0.79	0.84	0.89
-7/-8	TC	0.71	0.64	0.58
	PI	0.86	0.91	0.96
-1/-2	TC	0.76	0.70	0.63
	PI	0.89	0.94	0.99
2/1	TC	0.80	0.74	0.67
	PI	0.92	0.97	1.02
7/6	TC	1.07	**1.00**	0.93
	PI	0.95	**1.00**	1.05
10/9	TC	1.12	1.06	0.99
	PI	0.97	1.02	1.07
15/12	TC	1.18	1.11	1.04
	PI	0.99	1.04	1.09
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.5.4 Capacity Correction Factors



5.6 CK009 DCI

5.6.1 Cooling Capacity Factors - Unit A,B,C or D

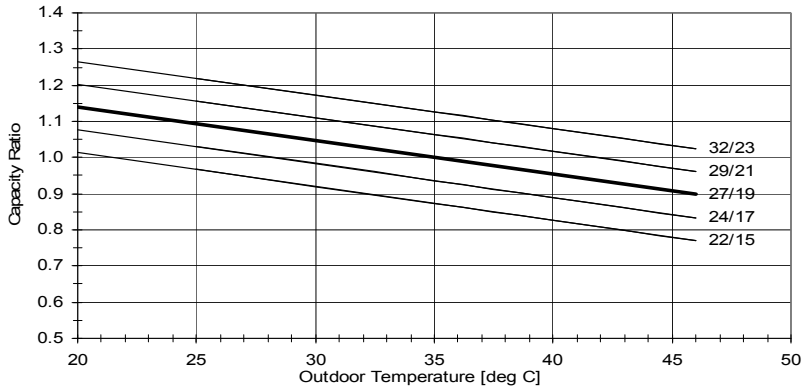
230[V] : Indoor Fan at High Speed.

OD COIL ENTERING AIR DB TEMPERATURE [ºC]	DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [ºC]				
		22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	0.97	1.03	1.09	1.16	1.22
	SC	1.01	1.03	1.05	1.07	1.09
	PI	0.79	0.80	0.82	0.83	0.85
30	TC	0.92	0.98	1.05	1.11	1.17
	SC	0.98	1.00	1.03	1.05	1.07
	PI	0.88	0.89	0.91	0.92	0.94
35	TC	0.87	0.94	**1.00**	1.06	1.13
	SC	0.96	0.98	**1.00**	1.02	1.04
	PI	0.97	0.99	**1.00**	1.02	1.03
40	TC	0.83	0.89	0.95	1.02	1.08
	SC	0.93	0.95	0.97	1.00	1.02
	PI	1.06	1.08	1.09	1.11	1.12
46	TC	0.77	0.83	0.90	0.96	1.02
	SC	0.90	0.92	0.94	0.96	0.99
	PI	1.17	1.19	1.20	1.22	1.23

LEGEND

TC – Total Cooling Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.6.2 Capacity Correction Factors



5.6.3 Heating Capacity Factors - Unit A,B,C or D

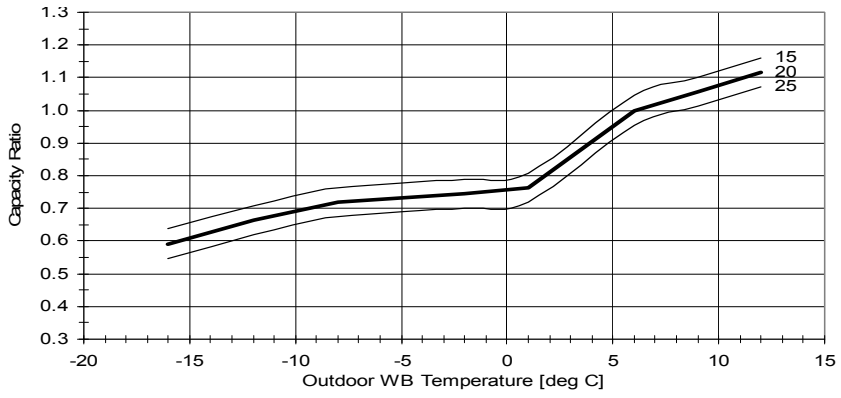
230[V] : Indoor Fan at High Speed.

		ID COIL ENTERING AIR DB TEMPERATURE [ºC]		
OD COIL ENTERING AIR DB/WB TEMPERATURE [ºC]	**DATA**	**15**	**20**	**25**
-15/-16	TC	0.64	0.59	0.55
	PI	0.60	0.66	0.72
-10/-12	TC	0.71	0.66	0.62
	PI	0.72	0.78	0.85
-7/-8	TC	0.76	0.72	0.67
	PI	0.82	0.88	0.94
-1/-2	TC	0.79	0.75	0.70
	PI	0.86	0.92	0.98
2/1	TC	0.81	0.76	0.72
	PI	0.89	0.95	1.01
7/6	TC	1.04	**1.00**	0.96
	PI	0.94	**1.00**	1.06
10/9	TC	1.10	1.06	1.01
	PI	1.00	1.06	1.12
15/12	TC	1.16	1.12	1.07
	PI	1.05	1.11	1.17
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

TC – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OU – Outdoor

5.6.4 Capacity Correction Factors



5.7 CK012 DCI

5.7.1 Cooling Capacity Factors - Run Mode (Unit A,B,C or D)

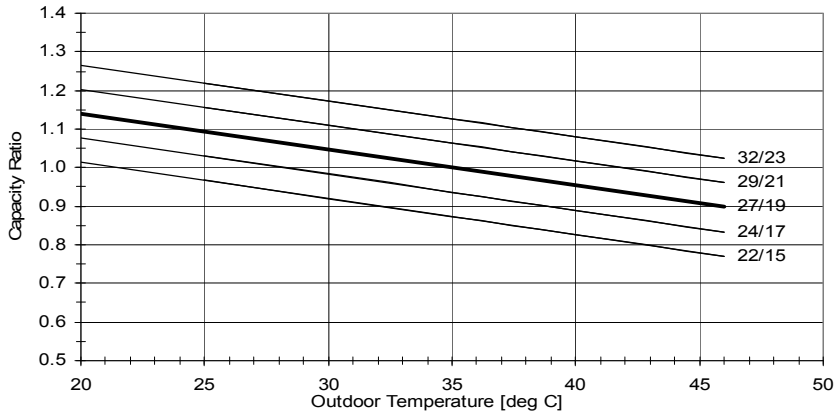
230[V] : Indoor Fan at High Speed.

OD COIL ENTERING AIR DB TEMPERATURE [ºC]	DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [ºC]				
		22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	0.97	1.03	1.09	1.16	1.22
	SC	1.01	1.03	1.05	1.07	1.09
	PI	0.79	0.80	0.82	0.83	0.85
30	TC	0.92	0.98	1.05	1.11	1.17
	SC	0.98	1.00	1.03	1.05	1.07
	PI	0.88	0.89	0.91	0.92	0.94
35	TC	0.87	0.94	**1.00**	1.06	1.13
	SC	0.96	0.98	**1.00**	1.02	1.04
	PI	0.97	0.99	**1.00**	1.02	1.03
40	TC	0.83	0.89	0.95	1.02	1.08
	SC	0.93	0.95	0.97	1.00	1.02
	PI	1.06	1.08	1.09	1.11	1.12
46	TC	0.77	0.83	0.90	0.96	1.02
	SC	0.90	0.92	0.94	0.96	0.99
	PI	1.17	1.19	1.20	1.22	1.23

LEGEND

TC – Total Cooling Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.7.2 Capacity Correction Factors



5.7.3 Heating Capacity Factors - Unit A,B,C or D

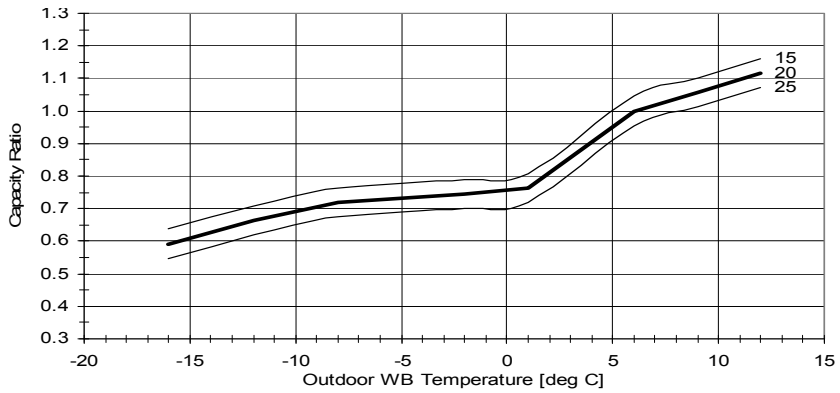
230[V] : Indoor Fan at High Speed.

		ID COIL ENTERING AIR DB TEMPERATURE [ºC]		
OD COIL ENTERING AIR DB/ WB TEMPERATURE [ºC]	**DATA**	**15**	**20**	**25**
-15/-16	TC	0.64	0.59	0.55
	PI	0.60	0.66	0.72
-10/-12	TC	0.71	0.66	0.62
	PI	0.72	0.78	0.85
-7/-8	TC	0.76	0.72	0.67
	PI	0.82	0.88	0.94
-1/-2	TC	0.79	0.75	0.70
	PI	0.86	0.92	0.98
2/1	TC	0.81	0.76	0.72
	PI	0.89	0.95	1.01
7/6	TC	1.04	**1.00**	0.96
	PI	0.94	**1.00**	1.06
10/9	TC	1.10	1.06	1.01
	PI	1.00	1.06	1.12
15/12	TC	1.16	1.12	1.07
	PI	1.05	1.11	1.17
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

TC – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OU – Outdoor

5.7.4 Capacity Correction Factors



5.8 CK018 DCI

5.8.1 Cooling Capacity Factor - Unit D

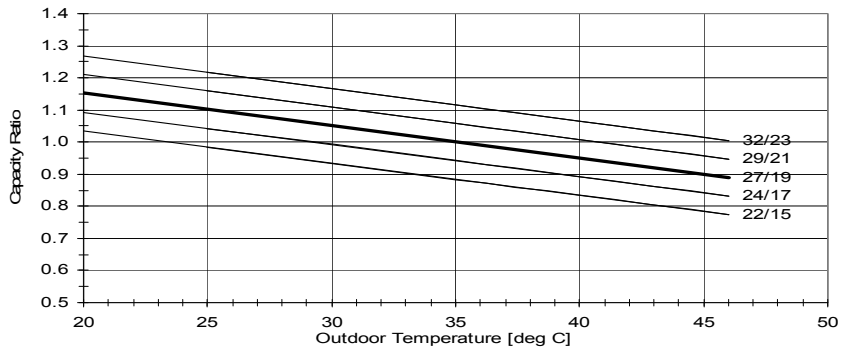
230[V] : Indoor Fan at High Speed.

OD COIL ENTERING AIR DB TEMPERATURE [ºC]	DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [ºC] 22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	0.99	1.04	1.10	1.16	1.22
	SC	1.05	1.07	1.08	1.10	1.11
	PI	0.76	0.77	0.79	0.81	0.82
30	TC	0.93	0.99	1.05	1.11	1.17
	SC	1.01	1.03	1.04	1.06	1.07
	PI	0.86	0.88	0.90	0.91	0.93
35	TC	0.88	0.94	**1.00**	1.06	1.12
	SC	0.97	0.98	**1.00**	1.02	1.03
	PI	0.97	0.98	**1.00**	1.02	1.03
40	TC	0.83	0.89	0.95	1.01	1.07
	SC	0.93	0.94	0.96	0.97	0.99
	PI	1.07	1.09	1.11	1.12	1.14
46	TC	0.77	0.83	0.89	0.95	1.00
	SC	0.88	0.89	0.91	0.93	0.94
	PI	1.20	1.21	1.23	1.25	1.27

LEGEND

TC – Total Cooling Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.8.2 Capacity Correction Factors



5.8.3 Heating Capacity Factor - Unit D

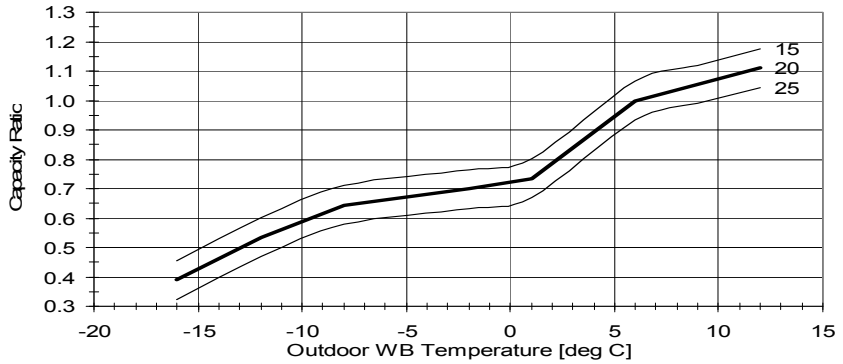
230[V] : Indoor Fan at High Speed.

		ID COIL ENTERING AIR DB TEMPERATURE [ºC]		
OD COIL ENTERING AIR DB/WB TEMPERATURE [ºC]	**DATA**	**15**	**20**	**25**
-15/-16	TC	0.46	0.39	0.32
	PI	0.70	0.75	0.80
-10/-12	TC	0.60	0.54	0.47
	PI	0.79	0.84	0.89
-7/-8	TC	0.71	0.64	0.58
	PI	0.86	0.91	0.96
-1/-2	TC	0.76	0.70	0.63
	PI	0.89	0.94	0.99
2/1	TC	0.80	0.74	0.67
	PI	0.92	0.97	1.02
7/6	TC	1.07	**1.00**	0.93
	PI	0.95	**1.00**	1.05
10/9	TC	1.12	1.06	0.99
	PI	0.97	1.02	1.07
15/12	TC	1.18	1.11	1.04
	PI	0.99	1.04	1.09
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

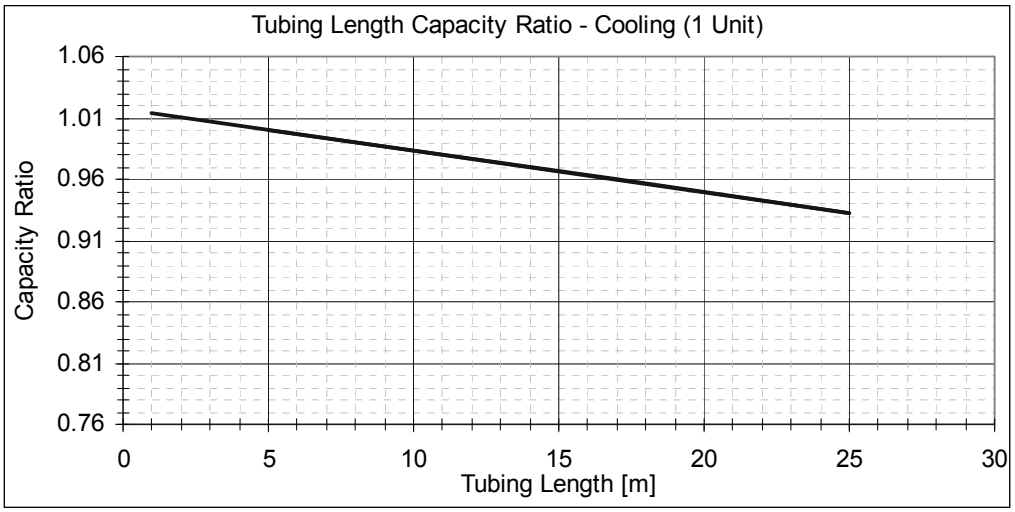
TC – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OU – Outdoor

5.8.4 Capacity Correction Factors

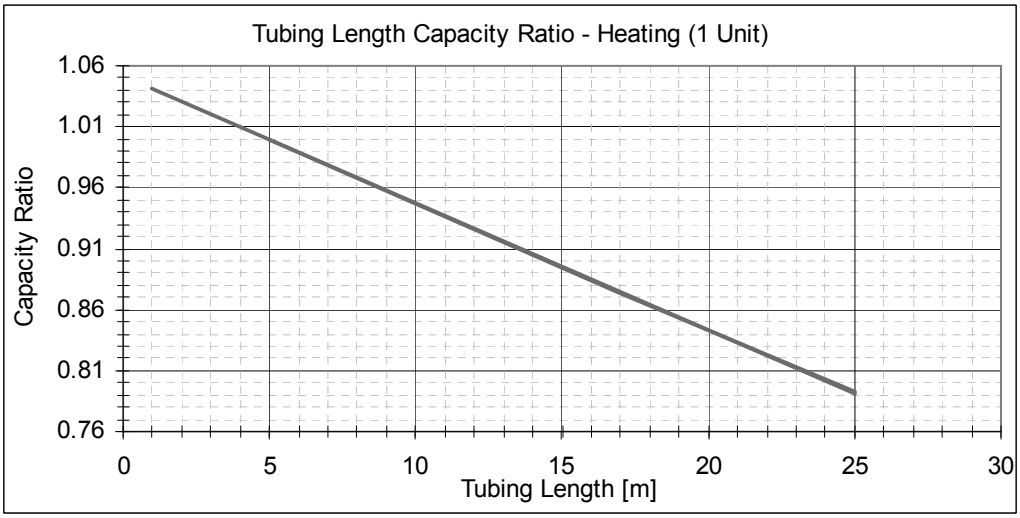


5.9 Tubing Length Capacity Correction Factor

5.9.1 Cooling



5.9.2 Heating



5.10 Model Correction Factors (F_M)

Model	Capacity		Power input	
	Cooling	Heating	Cooling	Heating
PNX DCI	1.00	1.00	1.00	1.00
CK DCI	1.03	1.07	1.01	1.10
SX DCI				
DLF DCI				
XL DCI				
DLS DCI				
PRIME DCI				
HAD DCI				

15.11 Calculation Example

Outdoor Unit	YAZ4 30 DCI
Indoor Combination	PNX009+PNX012+CK012+PNX018
Operation Mode	Cooling Mode
Conditions Indoor	22°CDB/15°WB
Conditions Oudoor	30°CDB
Tubing length	20m+10m+5m+25m

Cooling Capacity calculation:

C_{A-D} [KW] = Nominal x F_M x F_C x F_T

Total System Capacity [KW] (TC) = C_A + C_B + C_C + C_D

Indoor Unit	Nom' Cooling Capacity [KW]	Model Factor (F_M)	Condition Factor (F_C)	Tubing(L) Factor (F_T)	Corrected Capacity [KW], (C_{A-D})
Room A – PNX009	1.43	1.00	0.92	0.95	C_A = 1.43x1.00x0.92x0.95=**1.25**
Room B – PNX012	1.91	1.00	0.92	0.985	C_B = 1.91x1.00x0.92x0.985=**1.73**
Room C – CK012	1.91	1.03	0.92	1.00	C_C = 1.91x1.03x0.92x1.00=**1.81**
Room D – PNX018	2.87	1.00	0.93	0.93	C_D = 2.87x1.00x0.93x0.93=**2.48**
				Total	**TC** =1.25+1.73+1.81+2.48=**7.27**

Cooling Power Input calculation:

P_{A-D} [KW] = Nominal x F_M x F_C x F_T

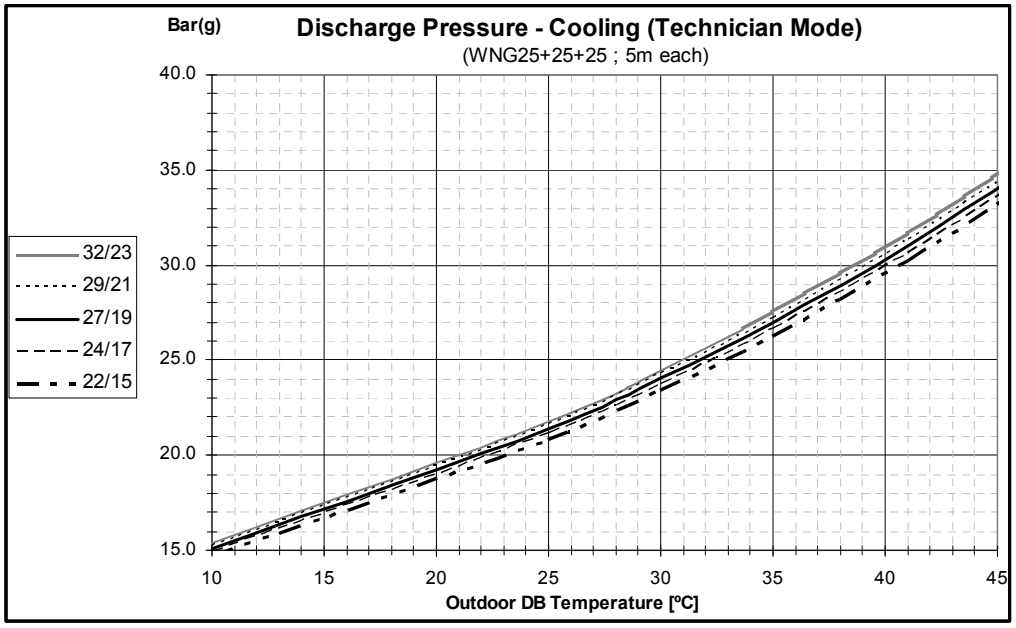
Total System Power Input [W] (TP) = P_A + P_B + P_C + P_D

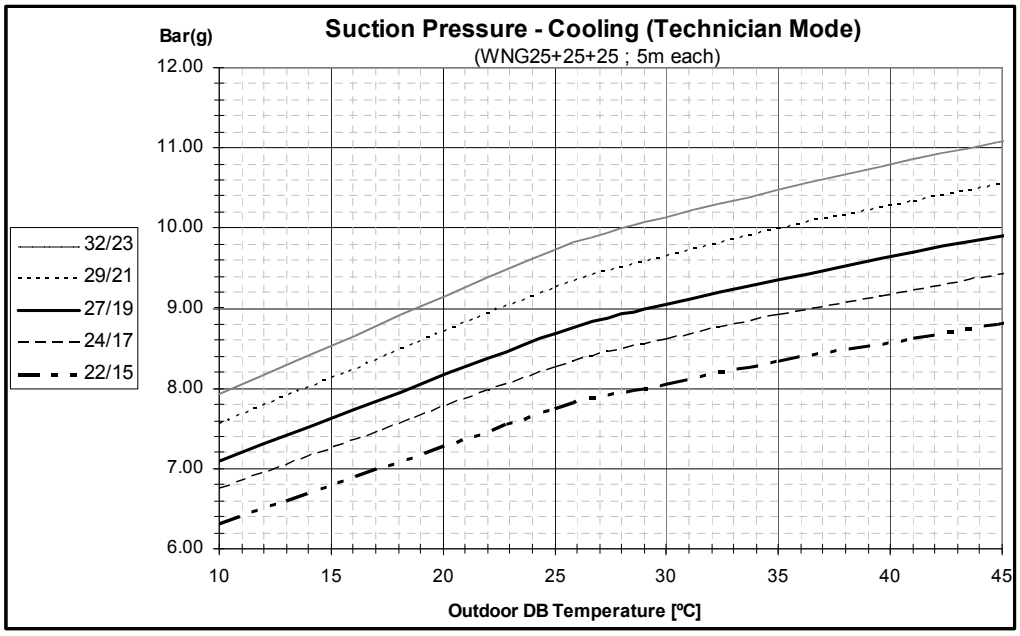
Indoor Unit	Nom' Cooling Power Input [W]	Model Factor (F_M)	Condition Factor (F_C)	Corrected Power Input [W] (P_{A-D})
Room A – PNX009	2,410 / 4 = 602.5	1.00	0.88	P_A = 602.5 x 1.00 x 0.88 = 530
Room B – PNX012		1.00	0.88	P_B = 602.5 x 1.00 x 0.88 = 530
Room C – CK012		1.01	0.88	P_C = 602.5 x 1.01 x 0.88 = 535
Room D – PNX018		1.00	0.86	P_D = 602.5 x 1.00 x 0.86 = 518
			Total	**TP** = 530 + 530 + 535 + 518 = **2,113**

6. PRESSURE CURVES

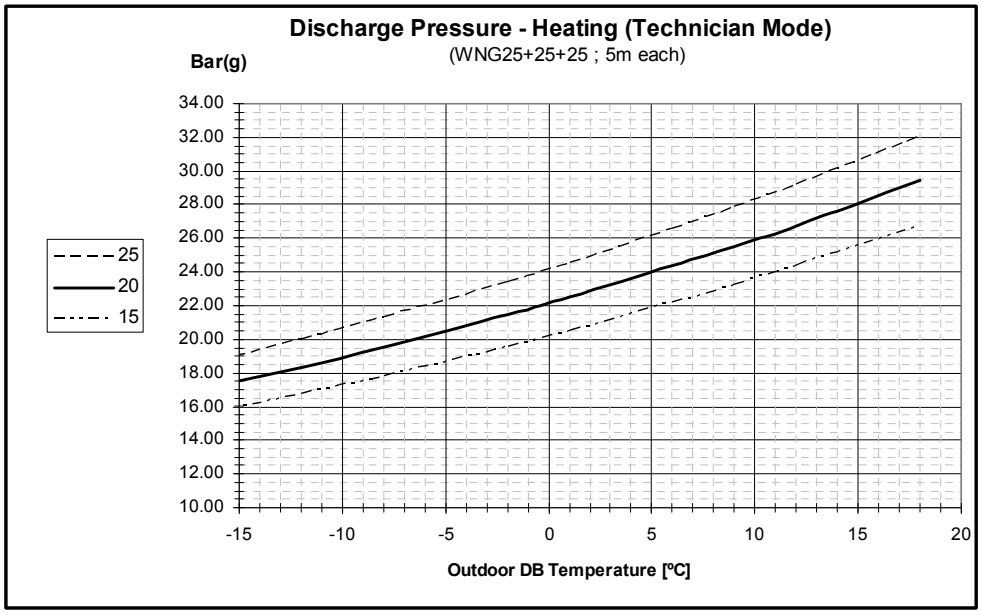
6.1 Model: YAZ3 24 DCI

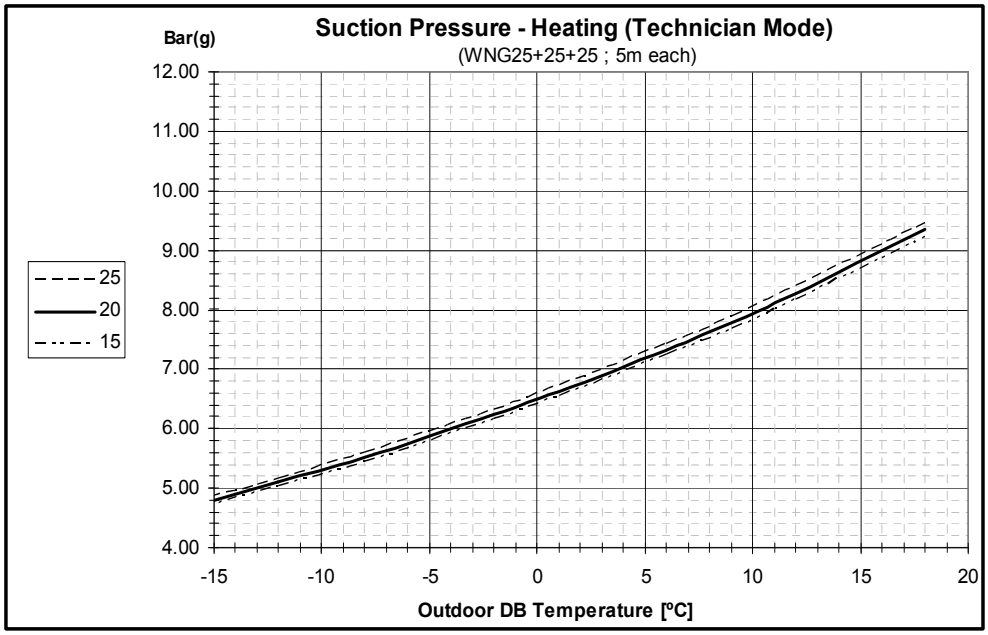
6.1.1 Cooling – Technician Mode



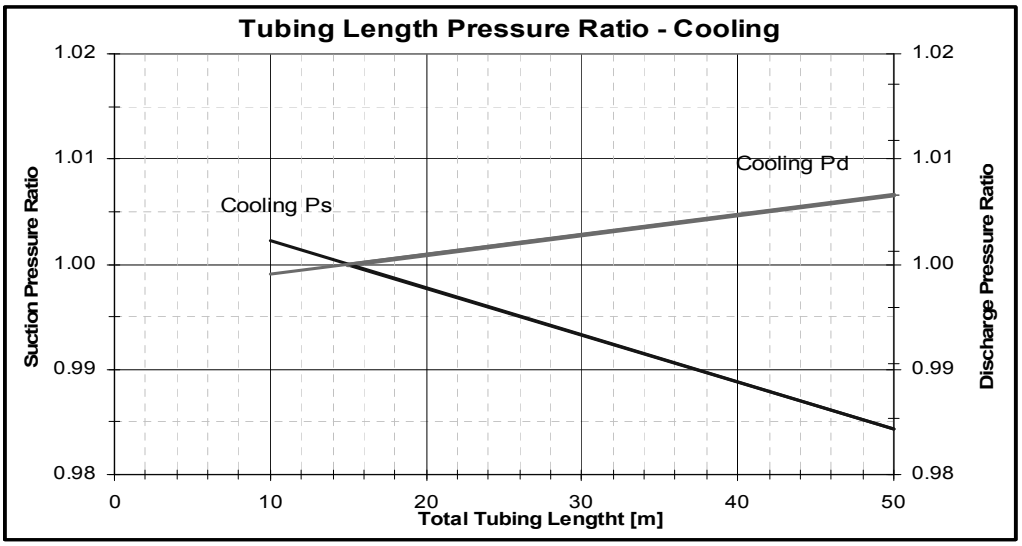


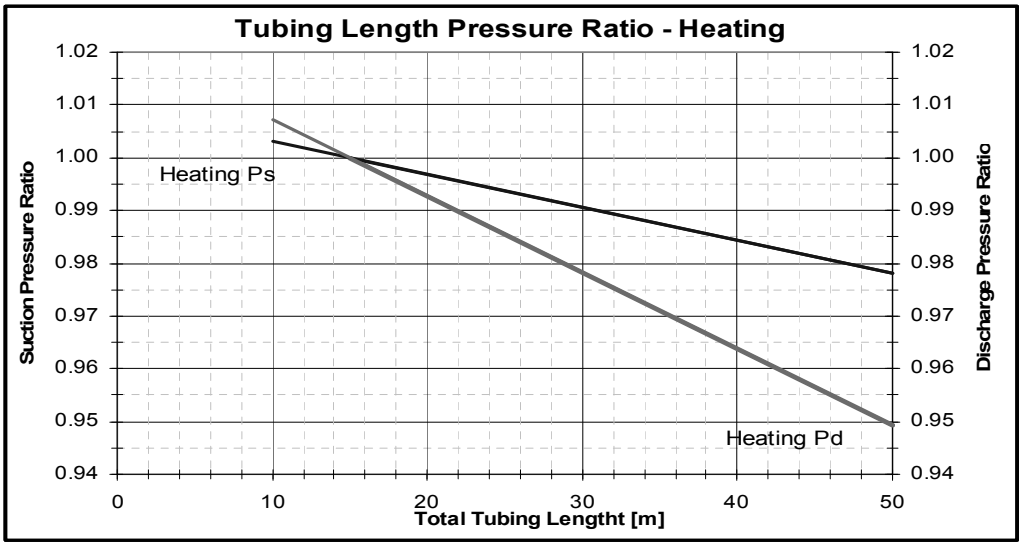
6.1.2 Heating – Technician Mode





6.1.3 Tubing Length correction Factor





6.1.4 Outdoor Unit Code correction Factor (F_c)

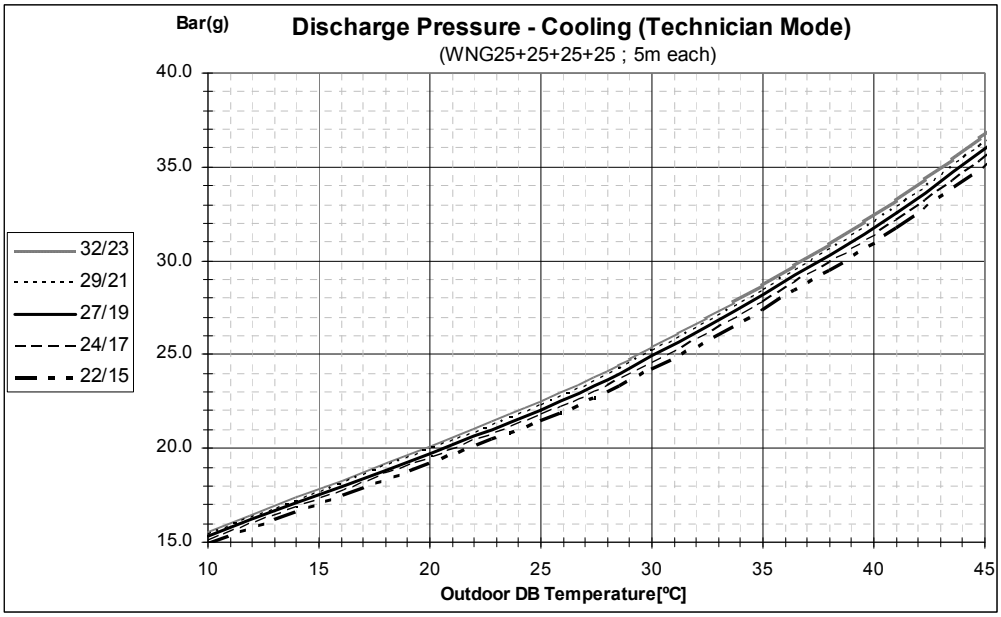
ODU Code	Cooling		Heating	
	Suction Pressure	Discharge Pressure	Suction Pressure	Discharge Pressure
3	1.00	1.00	1.00	1.00
3.5	1.02	1.00	1.00	0.98
4	1.05	1.01	0.99	0.97
4.5	1.07	1.02	0.99	0.95
5	1.09	1.02	0.98	0.93

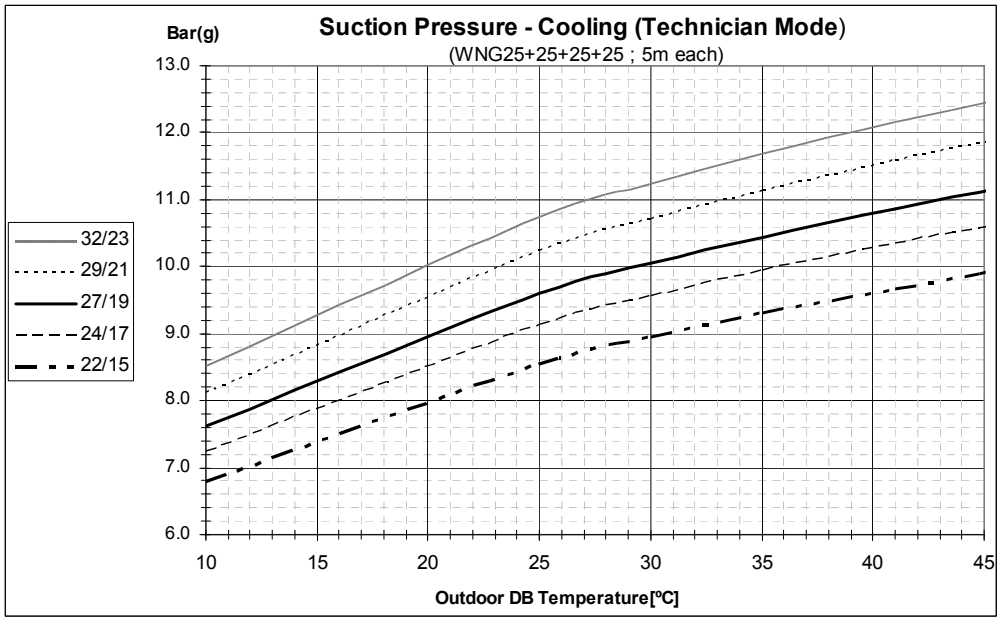
6.1.5 Unit Model correction Factor (F_m)

Model	Cooling		Heating	
	Suction Pressure	Discharge Pressure	Suction Pressure	Discharge Pressure
PNX009 DCI	1.00	1.00	1.00	1.00
PNX012 DCI	1.00	1.00	1.00	1.00
PNX018 DCI	1.00	1.00	1.00	1.00
CK009 DCI	1.01	1.00	1.02	1.17
CK012 DCI	1.08	1.02	1.01	1.11
CK018 DCI	0.87	1.00	1.00	0.69
SX009 DCI				
SX012 DCI				
SX018 DCI				
DLF009 DCI				
DLF012 DCI				
DLF018 DCI				
XLF009 DCI				
XLF012 DCI				
DLS018 DCI				
PRIME009 DCI				
PRIME012 DCI				
PRIME018 DCI				
HAD009 DCI				
HAD012 DCI				

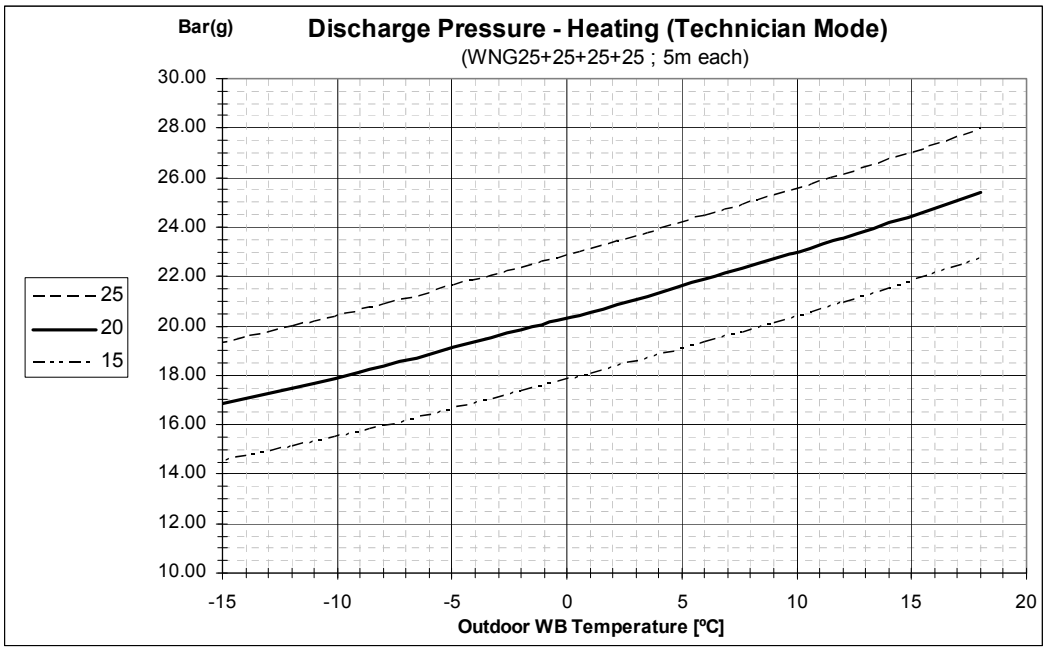
6.2 Model: YAZ4 30 DCI

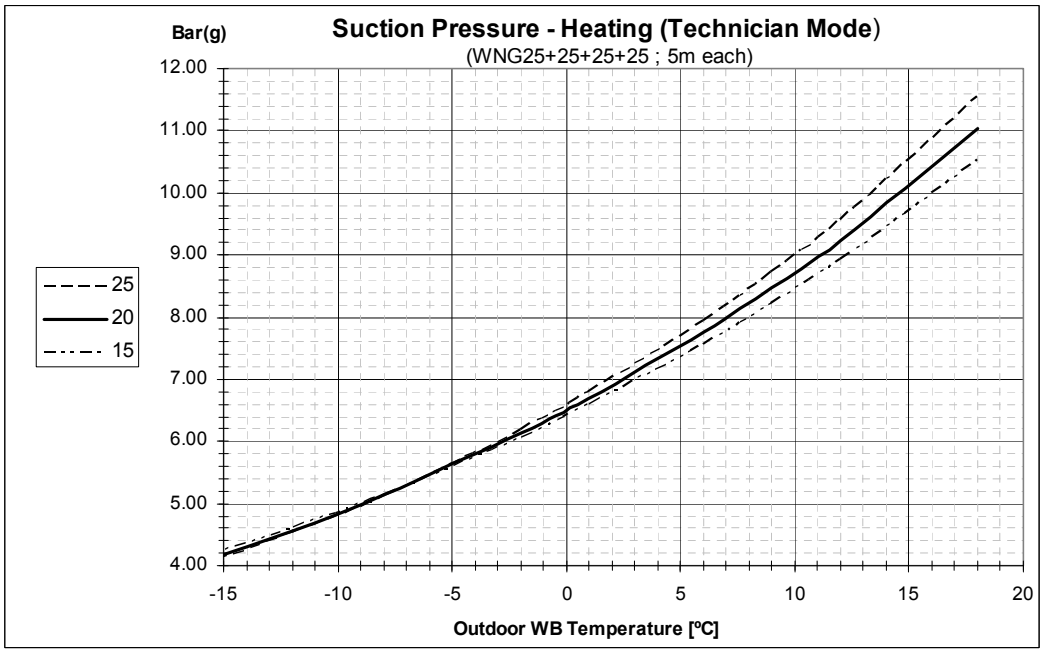
6.2.1 Cooling – Technician Mode



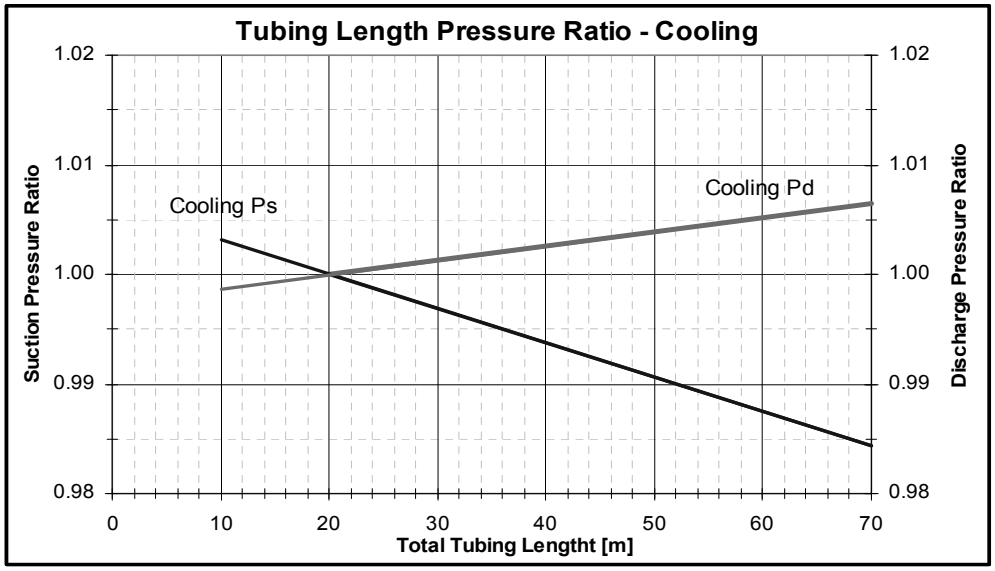


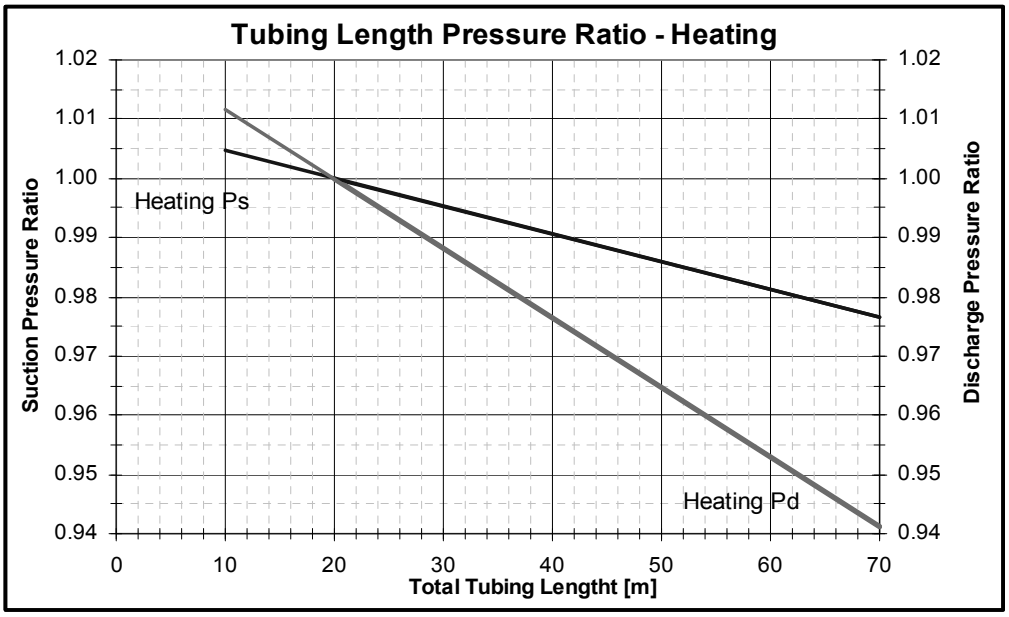
6.2.2 Heating – Technician Mode





6.2.3 Tubing Length correction Factor (F_T)





6.2.4 Unit Code correction Factor (F_c)

ODU Code	Cooling		Heating	
	Suction Pressure	Discharge Pressure	Suction Pressure	Discharge Pressure
4	1.00	1.00	1.00	1.00
4.5	1.02	1.01	1.00	0.99
5	1.04	1.01	0.99	0.98
5.5	1.05	1.02	0.99	0.97
6	1.07	1.02	0.98	0.96

6.2.5 Unit Model correction Factor (F_m)

Model	Cooling		Heating	
	Suction Pressure	Discharge Pressure	Suction Pressure	Discharge Pressure
PNX009 DCI	1.00	1.00	1.00	1.00
PNX012 DCI	1.00	1.00	1.00	1.00
PNX018 DCI	1.00	1.00	1.00	1.00
CK009 DCI	1.00	0.99	1.02	1.16
CK012 DCI	1.00	0.99	1.00	1.11
CK018 DCI	0.97	0.99	0.98	0.78
SX009 DCI				
SX012 DCI				
SX018 DCI				
DLF009 DCI				
DLF012 DCI				
DLF018 DCI				
XLF009 DCI				
XLF012 DCI				
DLS018 DCI				
PRIME009 DCI				
PRIME012 DCI				
PRIME018 DCI				
HAD009 DCI				
HAD012 DCI				

6.3 Calculation Example

Outdoor Unit	**YAZ4 30 DCI**
Indoor Combination	PNX009+PNX012+CK012+PNX018
Operation Mode	Cooling Mode
Conditions Indoor	22°CDB/15°WB
Conditions Oudoor	30°CDB
Tubing length	20m+10m+5m+25m = 60m

Cooling Pressure calculation:

Pressure [Barg] = Nominal x F_C x F_T

Unit	Code
Room A – PNX009	1.0
Room B – PNX012	1.5
Room C – CK012	1.5
Room D – PNX018	2.0
ODU Code (Total)	**6.0**

Nominal Pressure [Barg]		ODU Code Factor (F_C)	Tubing (L) Factor (F_T)	Corrected Pressure [Barg]
Discharge	24.5	1.02	1.005	**Pd**= 24.5 x 1.02 x 1.005 = **25.11**
Suction	9.0	1.07	0.988	**Ps**= 9.0 x 1.07 x 0.988 = **9.51**

7. ELECTRICAL DATA

7.1 Trio 72 Z, Quattro 80 Z DCI

Power Supply	1 PH, 220-240 VAC, 50Hz
Connected to	Outdoor
Maximum Current	16 A
Inrush Current	35 A
Starting Current	11 A
Circuit breaker	25 A
Power supply wiring - No. x cross section	3 X 2.5 mm^2
Interconnecting cable - No. x cross section	4 X 1.5 mm^2 (For each IDU)

Note:

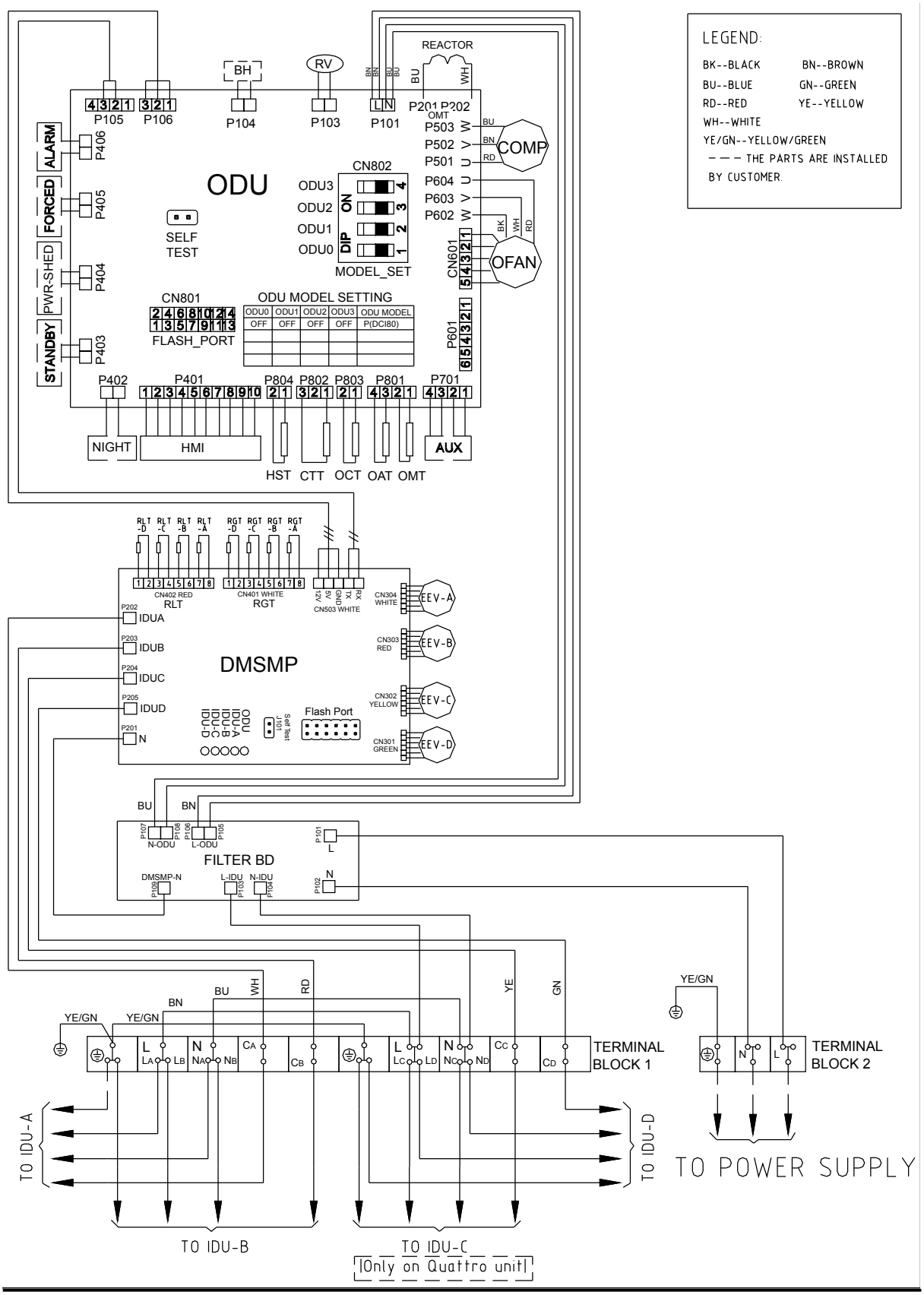
- Inrush current is the current when power is up. (charging the DC capacitors at outdoor PCB).
- Starting current is the current at comp; start up.

NOTE

Power wiring cord should comply with local lows and electrical regulations requirements.

8. WIRING DIAGRAMS & ELECTRICAL CONNECTIONS

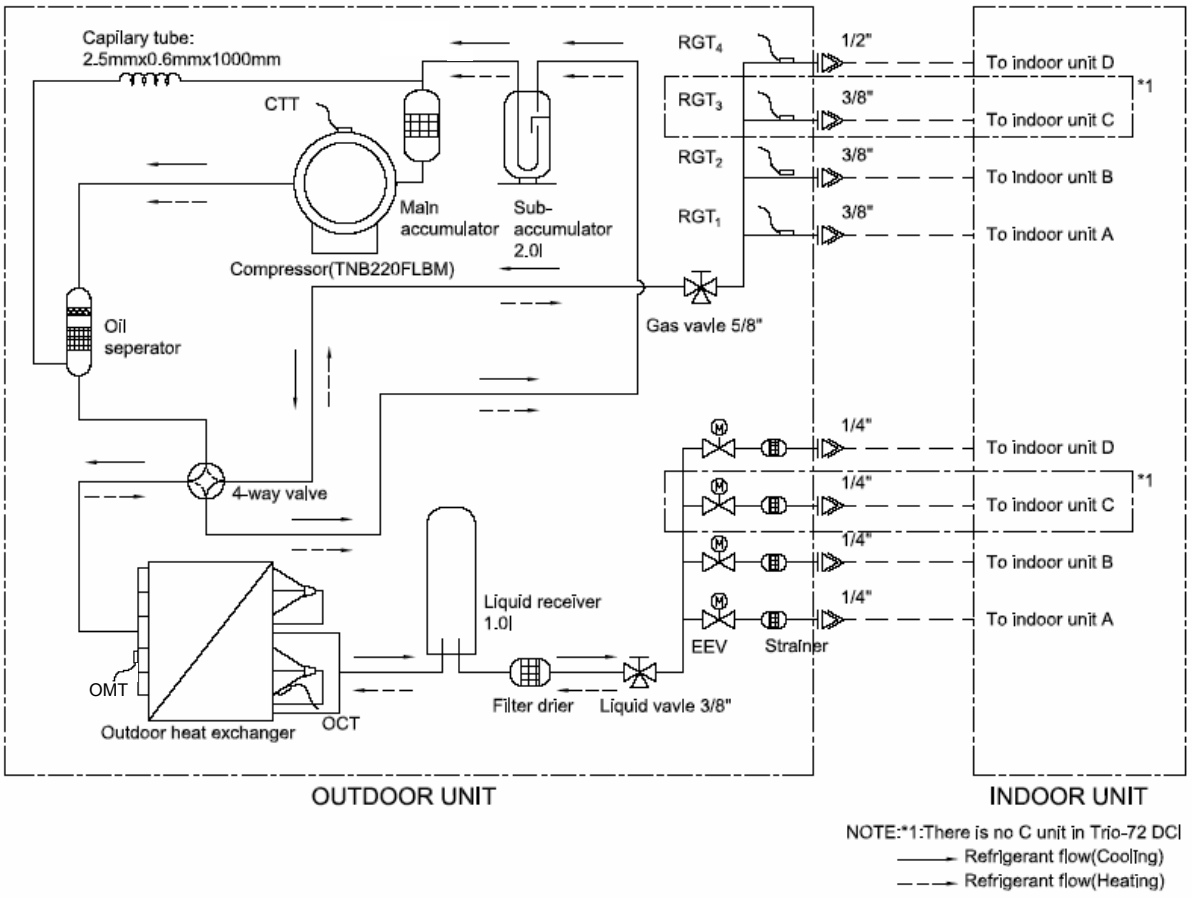
8.1 Outdoor Units: YAZ3 24, YAZ4 30 DCI



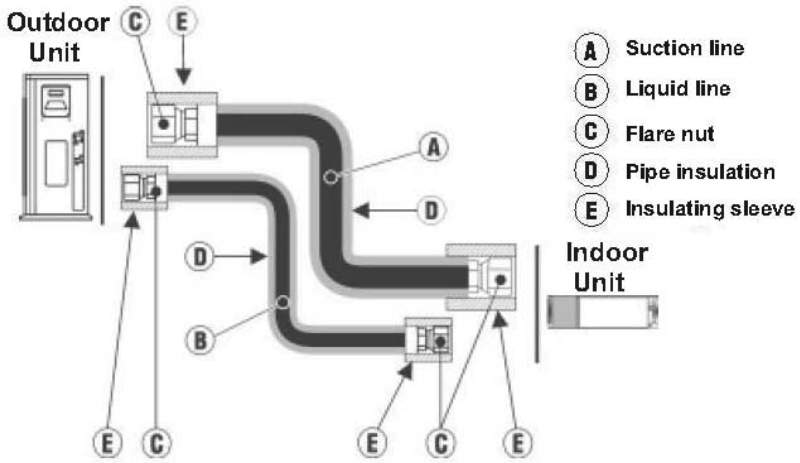
9. REFRIGERATION DIAGRAMS

9.1 YAZ3 24 DCI, YAZ4 30 DCI

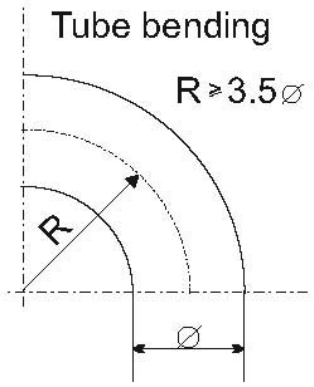
Outdoor Unit Refrigerant System Diagram

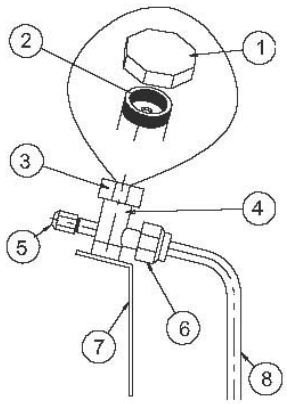


10. TUBING CONNECTIONS



A Suction line
B Liquid line
C Flare nut
D Pipe insulation
E Insulating sleeve





TUBE (Inch) / TORQUE (Nm)	1/4"	3/8"	1/2"	5/8"	3/4"
Flare Nuts	11-13	40-45	60-65	70-75	80-85
Valve Cap	13-20	13-20	18-25	18-25	40-50
Service Port Cap	11-13	11-13	11-13	11-13	11-13

1. Valve Protection Cap-end
2. Refrigerant Valve Port (use Allen wrench to open/close)
3. Valve Protection Cap
4. Refrigerant Valve
5. Service Port Cap
6. Flare Nut
7. Unit Back Side
8. Copper Tube

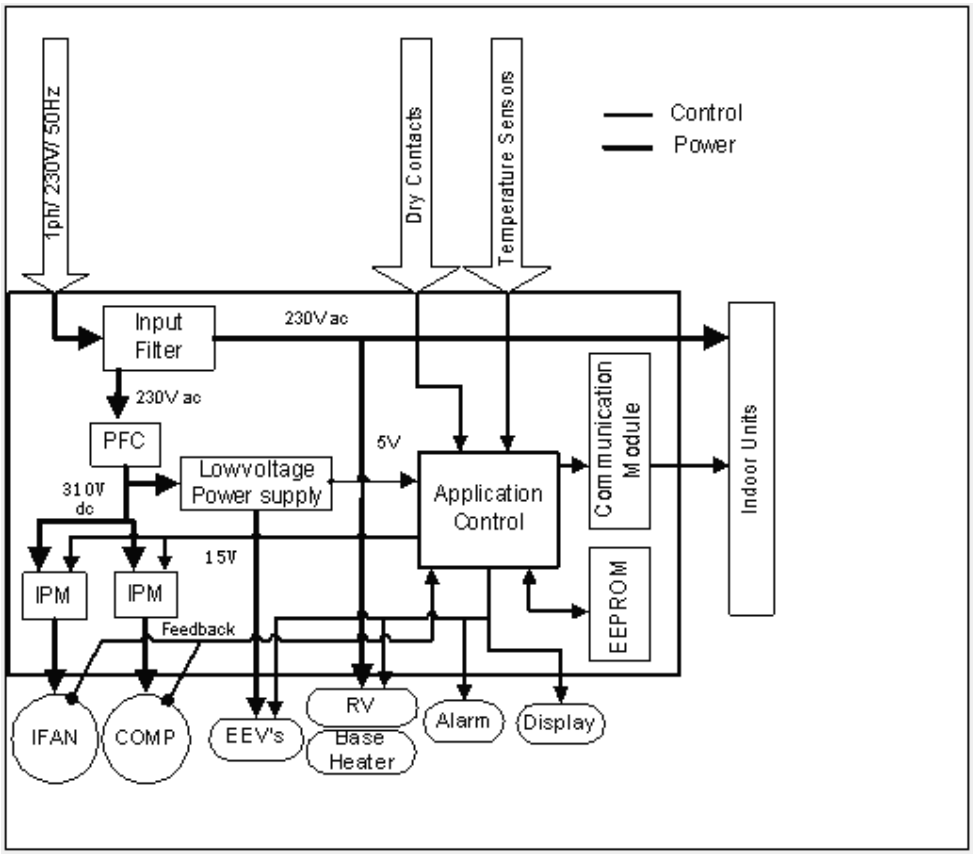
11. CONTROL SYSTEM

11.1 Abbreviations

Abbreviation	Definition
A/C	Air Condition
BMS	Building Management System
PWR	System Power
CTT	Compressor Top Temperature sensor
DCI	DC Inverter
EEV	Electronic Expansion Valve
HE	Heating Element
HMI	Human Machine Interface
HST	Heat Sink Temperature sensor
Hz	Hertz (1/sec) – electrical frequency
ICT	Indoor Coil Temperature (RT2) sensor
IDU	Indoor Unit
MCU	Micro Controller Unit
OAT	Outdoor Air Temperature sensor
OCT	ODU Coil Temperature sensor
OMT	Outdoor middle coil temperature
ODU	Outdoor Unit
OFAN	Outdoor Fan
PFC	Power Factor Corrector
RAC	Residential A/C
RC	Reverse Cycle (Heat Pump)
RGT	Return Gas Temperature sensor
RLT	Return Liquid Temperature sensor
RPS	Rounds per second (mechanical speed)
RV	Reverse Valve
SB,STBY	Stand By
S/W	Software
TBD	To Be Defined
TMR	Timer

11.2 Product Overview

11.2.1 Block Diagram



11.2.2 Compressor

DC brush less and sensor less 2.5/3 horsepower motor inverter driven compressor.

11.2.3 Outdoor Fan

DC brushless motor.

11.2.4 RV

Reverse Valve set the direction of refrigerant flow in the system, thus setting the operation mode for cooling or heating.
When the solenoid is powered, system will work in heat mode.

11.2.5 EEV's

Expansion valve operated by step motor which controls the size of the orifice.

11.2.6 HMI

Three "7-Segments" + four Push buttons

11.2.7 Dry Contacts

Dry contacts are used to interface the system with an external building management system (BMS).

- **Night** input. Switches the system to night mode when closed.

During night mode, the outdoor unit speed will be reduced in order to reduce the system noise level.

- **SB** input. System will be turned to Stand-by when the contact is closed.
- **Power Shedding** input. Limits the maximum power consumption when closed.
- **Forced Mode** input. Used to force the operation mode of the system
- **Alarm** output indicates a failure at the system.

Alarm output will be activated when there in the following ODU Faults/Protections 1 to 7, 11,13 to19, 24 to 26, 28 to 29, 311.

Alarm output will be OFF when the Fault/Protection is cleared.

11.2.8 Temperature Sensors

CTT – Compressor Top Temperature
OAT – Outdoor Air Temperature
OMT– Outdoor middle coil temperature
OCT – Outdoor Coil (heat exchanger) Temperature
HST – Heat Sink Temperature
RGT11..4 – Indoor Unit 11..4 Returned Gas Temperatures
RLT 11..4 – Indoor Unit 11..4 Returned Liquid Temperatures

11.2.9 Base Heater

Heating element designed to melt any ice that is accumulated on the outdoor unit base during low heating operation.

11.3 General Operating Rules

11.3.1 Initialization

Initialization process is the first operation done each time power is up.
The targets of the initialization are:

- Addressing of IDU's
- Identification of connected IDU's
- IDU Matching Check
- EEV's homing (reset position)
- Restoring Parameters from EEPROM/Jumpers/Dipswitches

111. CONTROL SYSTEM

11.3.1.1 IDU's Initializatio

11.3.1.1.1 Capacity Codes Setting

The capacity groups of the IDU's are translated into capacity codes according to the following table:

Capacity group	Capacity Code
0 (2.0 - 2.9kw)	1
1 (3.0 - 3.9kw)	11.5
2 (4.0 - 4.9kw)	Reserved
3 (5.0 to 6.0)	2
4 (6.1kw and above)	3

11.3.1.1.2 Indoor Total Capacity Test

This test is performed only for Multi split units.
The test comes to check the total IDU capacity code to match the outdoor unit capacity.
The capacity groups of the IDU's are translated into capacity codes according to the following table:

Capacity group	Capacity Code
0	1
1	11.5
2	Reserved
3	2
4	3

For Model P:

	Total Detected IDU Code (Sum of IDU code)	
Detected IDU units	Minimum Allowed	Maximum Allowed
1	2	2
2	2	4
3	3	5.5
4	4	6

Whenever the sum of the IDU code is outside the range the unit will be forced to Idle Mode and report: "*Mismatch between IDU and ODU models*".

If the unit is forced to Idle Mode, then it will keep checking this condition (the indoor total capacity test) in order to prevent system latch up. Once the condition is fine, the fault will be cleared and the unit will proceed to normal operation.

11.3.1.1.3 Model Plug & Indoor Capacity Test

This test is performed for both single split channel and multi split channel:

Test	How to check?	Error to report?	System Action (ODU Mode)
Jumper is inserted/DIP is configured	ODU model is 0 (zero).	*"Missing ODU configuration"*	Force to Idle mode.
Jumper/DIP is not defined in the software	ODU model is not P.	*"Undefined ODU model"*	Force to Idle mode
IDU-ODU capacity group mismatch	When ODU model is P, and the capacity group is not allowed.	*"Mismatch between IDU and ODU models "*	Force to Idle mode

The following combinations show the allowed and not allowed capacity group:

ODU Model	Communication channel		Is it allowed capacity group?				
			Indoor Capacity				
			0	1	2	3	4
P (DCI80)	Single		No	No	No	No	Yes
	Multi	Com Channel 1	Yes	Yes	No	Yes	No
		Com Channel 2	Yes	Yes	No	Yes	No
		Com Channel 3	Yes	Yes	No	Yes	No
		Com Channel 4	Yes	Yes	No	Yes	No

Notes

1. The outdoor will keep establishing normal communication with the indoor or DMSMP.
2. The outdoor will show diagnostics normally.
3. The SB LED will keep ON as long as the power is on.
4. Once the unit is forced to Idle due to either of the above, it will keep checking the above items, until the system is recovered.

11.3.2 Communication with Indoor Units

11.3.2.1 Communication Failures Definition

Two types of communication failures are diagnosed. The communication failures are checked separately for each IDU channel.

11.3.2.1.1 'Bad Communication' fault

The system keeps a balance of a good/bad communication packet ratio for each active communication channel. When the ratio getting high , system enters 'Bad Communication' fault.

11.3.2.1.2 'No Communication' fault

If no legal transmission or no message received for 30 seconds, system enters 'No Communication' fault.
When in 'No Communication' fault, the system will act as following:

- If there is no communication in all channels, the following will be performed:
  1. The unit changes to SB.
  2. The system will scan all the communication.
  3. Each channel that is identified as 'no communication' channel will be referred as STBY unit.
  4. The unit resumes its normal operation with only the operative channels.

11.3.3 Temperature Measurements

11.3.3.1 Thermistor failures definition

Thermistor	Type a – Disconnected	Type b – Shorted
OAT	Temp < -30 °C	Temp > 75 °C
OCT	Temp < -35C	Temp > 75 °C
CTT	Temp < -30 °C	Temp > 125 °C
HST	Temp < -30 °C	Temp > 125 °C
OMT	Temp < -35 °C	Temp > 75 °C
ICT	Temp < -30 °C	Temp > 75 °C
RGT	Temp < -30 °C	Temp > 126 °C
RLT	Temp < -30 °C	Temp > 126 °C

1.1.3.3.2 System responses for different thermistor failure

Thermistor	Default value	System Reaction
OCT	43°C	
OAT	6°C	
CTT	43°C	Compressor is stopped.
OMT	43°C	Compressor is stopped in cooling mode.
HST	43°C	Compressor is stopped.
RGT	43°C	
RLT	43°C	
ICT	43°C	

11.3.4 Flash Memory Programming

In order to upgrade the ODU software the auxiliary port will be used. A special application should be run on a PC to transmit the new firmware. Special programmer (Panasonic) should be used to update the S/W.

11.4 Indoor Unit Control

11.4.1 Indoor Fan Control

10 Indoor fan speeds are determined for each model. 5 speeds for each mode cool/dry/fan or heat.
When user sets the indoor fan speed to a fixed speed (Low/ Medium/ High), unit will operate constantly at set speed.
When Auto Fan is selected, indoor unit controller can operate in all speeds. The actual speed is set according to the cool/heat load.

11.4.1.1 Turbo Speed

The Turbo speed is activated during the first 30 minutes of unit operation when auto fan speed is selected and under the following conditions:
Difference between set point and actual room temperature is higher than 3 degrees.
Room temperature is higher than 22°C for cooling or less than 25°C for heating.

11.4.2 Cool Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by PI control.
In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the calculated NLOAD.

11.4.3 Heat Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by PI control.
In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the calculated NLOAD.

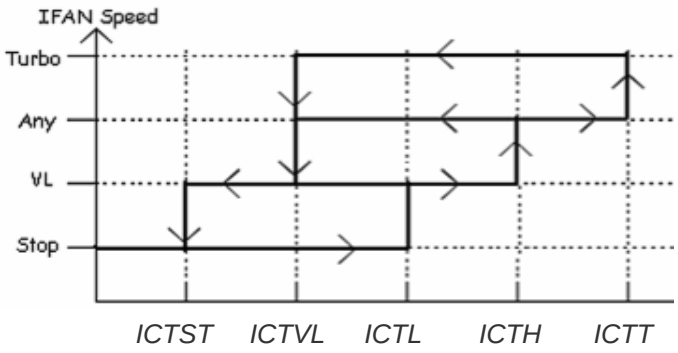
11.4.3.1 Temperature Compensation

In wall mounted, ducted, and cassette models, 3 degrees are reduced from room temperature reading (except when in I-Feel mode), to compensate for temperature difference between high and low areas in the heated room, and for coil heat radiation on room thermistor.
The temperature compensation can be enabled/disabled by shortening of J2 on the indoor unit controller.

Model	J2 Shorted	J2 Opened
Wall mounted	Compensation Disabled	Compensation Enabled
Cassette	Compensation Enabled	Compensation Disabled
Ducted	Compensation Enabled	Compensation Disabled
Floor/Ceiling	Compensation Disabled	Compensation Enabled

11.4.3.2 Indoor Fan Control in Heat Mode

Indoor fan speed depends on the indoor coil temperature:



11.4.4 Auto Cool/Heat Mode

When in auto cool heat mode unit will automatically select between cool and heat mode according to the difference between actual room temperature and user set point temperature (ΔT).
Unit will switch from cool to heat when compressor is off for 3 minutes, and ΔT < -3.
Unit will switch from heat to cool when compressor is off for 5 minutes, and ΔT < -3.

11.4.5 Dry Mode

As long as room temperature is higher then the set point, indoor fan will work in low speed and compressor will work between 0 and *MaxNLOADIF1C* Hz.
When the room temperature is lower than the set point, compressor will be switched OFF and indoor fan will cycle 3 minutes OFF, 1 minute ON.

11.4.6 Indoor Units Operation when Indoor Unit Mode is Different than Outdoor Unit Mode

- Open louvers according to user selection.
- Indoor fan is forced to OFF.

11.4.7 Heating Element Control

Heating element can be lit on if LOAD > 0.8 * MaximumNLOAD AND Indoor Coil temperature < 45°C.
The heating element will be off when LOAD < 0.5 * MaximumNLOAD OR if Indoor Coil temperature > 50°C.

11.4.8 Ioniser Control

LEX Family - Ioniser is on when unit is on AND indoor fan is on AND Ioniser power switch (on Ioniser) is on.

11.4.9 Electro Static Filter (ESF) Control

LEX Family - ESF is on when ESF switch is on, Safety switch is pressed, unit is on, AND indoor fan is on.

11.4.10 Indoor Unit Dry Contact

Indoor unit Dry contact has two alternative functions that are selected by J9.

Status	Function	Contact = Open	Contact = Short
J9 = Open	Presence Detector Connection	No Limit	Forced to STBY
J9 = Short	Power Shedding Function	No Limit	Limit NLOAD

11.4.11 Operating the Unit from the Mode Button

Forced operation allows to start, stop and operate in Cooling or Heating, in pre-set temperature according to the following table:

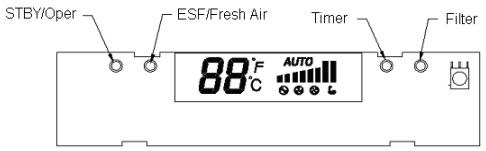
Forced operation Mode	Pre-set Temperature
Cooling	20°C
Heating	28°C

11.4.12 On Unit Controls and Indicators

11.4.12.1 All Models Except for Floor/Ceiling model

STAND BY INDICATOR	Lights up when the Air Conditioner is connected to power and ready to receive the R/C commands
OPERATION INDICATOR	Lights up during operation. Blinks for 300 msec to announce that a R/C infrared signal has been received and stored. Blinks continuously during protections (according to the relevant spec section).
TIMER INDICATOR	Lights up during Timer and Sleep operation.
FILTER INDICATOR	Lights up when Air Filter needs to be cleaned.
COOLING INDICATOR	Lights up when system is switched to Cool Mode by using the Mode Switch on the unit.
HEATING INDICATOR	Lights up when system is switched Heat Mode by using the Mode Switch on the unit.
Mode SWITCH (COOL/HEAT/OFF)	Every short pressing , the next operation mode is selected, in this order : SB → Cool Mode → Heat Mode → SB → … In long pressing system enters diagnostic mode.
RESET / FILTER SWITCH	For short pressing: When Filter LED is on - turn off the FILTER INDICATOR after a clean filter has been reinstalled. When Filter LED is off – enable/disable the buzzer announcer, if selected.

11.4.12.2 LCD Display



	STBY	Cool	Heat	Auto	Fan	Dry
88	OFF	SPT	SPT	SPT	SPT	SPT
°C	OFF	ON	ON	ON	ON	ON
°F	OFF	OFF	OFF	OFF	OFF	OFF
(Low)	OFF	User setting IFAN speed	User setting IFAN speed	User setting IFAN speed	User setting IFAN speed	User setting IFAN speed
(Med)	OFF					
(High)	OFF					
(Turbo)	OFF					
AUTO (Auto)	OFF					
Backlight(red)	OFF	OFF	ON	ON	ON	OFF
Backlight(green)	OFF	ON	OFF	ON	ON	ON

11.4.12.3 Floor/Ceiling Model

STANDBY INDICATOR	Lights up when the Air Conditioner is connected to power and is ready for operation
OPERATE INDICATOR	1. Lights up during operation. 2. Blinks for 300 msec to announce that a R/C infrared signal has been received and stored. 3. Blinks continuously during protections (according to the relevant spec section).
TIMER INDICATOR	Lights up during Timer and Sleep operation.
FILTER INDICATOR	1. Lights up when Air Filter needs to be cleaned. 2. Blinks during Water Over Flow in PXD models. (Cf. Sect. 7.3)
COOLING INDICATOR	Lights up when system is switched to Cool Mode by using the Mode Switch on the unit.
HEATING INDICATOR	Lights up when system is switched Heat Mode by using the Mode Switch on the unit.
FAN MODE INDICATOR	Lights up in Fan Mode activated by local switches.
FAN SPEED INDICATORS	L -- Lights up when IFAN setting is Low. M -- Lights up when IFAN setting is Medium. H -- Lights up when IFAN setting is High. A -- Lights up when IFAN setting is Auto.
TEMP. SETTING INDICATORS	Each one of the seven indicators indicates the following SPT: 18, 20, 22, 24, 26, 28, 30 [°c]. The odd number temperatures are indicated by turning on the two adjacent indicators.
FAN SPEED BUTTON	Press this button to change the speed of the IFAN. Each pressing change the speed in the sequence of: ... L → M → H → Auto → L → ...
TEMP. SETTING UP BUTTON	Pressing this button increases the SPT by 1°c. Note: The Max SPT is 30°c.
TEMP. SETTING DOWN BUTTON	Pressing this button decreases the SPT by 1°c. Note: The Min SPT is 18°c.
MODE BUTTON	Every short pressing , the next operation mode is selected, in this order :SB → Cool Mode → Heat Mode → SB → … In long pressing system enters diagnostic mode.
POWER BUTTON	Toggle the unit between OPER & STBY modes.
RESET / FILTER BUTTON	For short pressing: When Filter LED is on - turn off the FILTER INDICATOR after a clean filter has been reinstalled. When Filter LED is off – enable/disable the buzzer announcer, if selected. In long pressing system enters set up mode (if in SB).

11.5 Run Mode

Run mode is the default operation mode of the system. This is the standard operation mode that is active in field application (at customer site).
System can go from run mode to other operation modes through keyboard or serial ports.

11.5.1 Mode Setting

Mode defines the ODU operation mode. There are three possible operation modes:

1. STBY – standby mode
2. COOL - the unit operating at cooling cycle
3. HEAT - the unit operating at heat pump cycle

The ODU define the system operation mode according to three methods set by the display key board:

1. First request priority

   The first IDU which requests different mode than STBY mode will set the new operation mode. The mode will change once all the units exit the current operation mode.

2. Priority unit

   If an IDU is defined as a priority unit, the operational mode will be defined according to that unit request, unless the unit is at STBY mode.
   In case priority unit is SB the mode will be set acceding to first request priority.

3. Forced operation mode

   If forced mode is enabled than the ODU mode will be forced according to the Forced mode input:
   Open COOL
   Short HEAT
   The ODU will go to SB if all the IDU are at SB or at different modes.

4. SB Input

   The ODU will change mode between COOL/HEAT and Idle according to the STBY dry contact input as follows:

STBY input	ODU mode
Short	SB
Short Open	last mode
Open	according normal mode selection

11.5.2 Compressor Speed Control

11.5.2.1 Compressor Min On/Off time

Compressor minimum OFF time is MinOFFTime minutes except during Deicing protection.
Compressor minimum ON time is MinOnTime minutes, minimum ON time is ignored during protections, and when unit is turned to STBY.

11.5.2.2 Compressor Speed calculation

During normal operation (excluding protections), the compressor speed is limited by the following table:

Min Speed Cool (check)	*Max Speed Cool*	*Min Speed Heat*	*Max Speed Heat*
15	**80**	**15**	**95**

11.5.2.3 Indoor Units NLOAD calculation

The NLOAD setting is done by the indoor unit controller, based on a PI control scheme. The actual NLOAD to be sent to the outdoor unit controller is based on the preliminary LOAD calculation, the indoor fan speed, and the power shedding function.

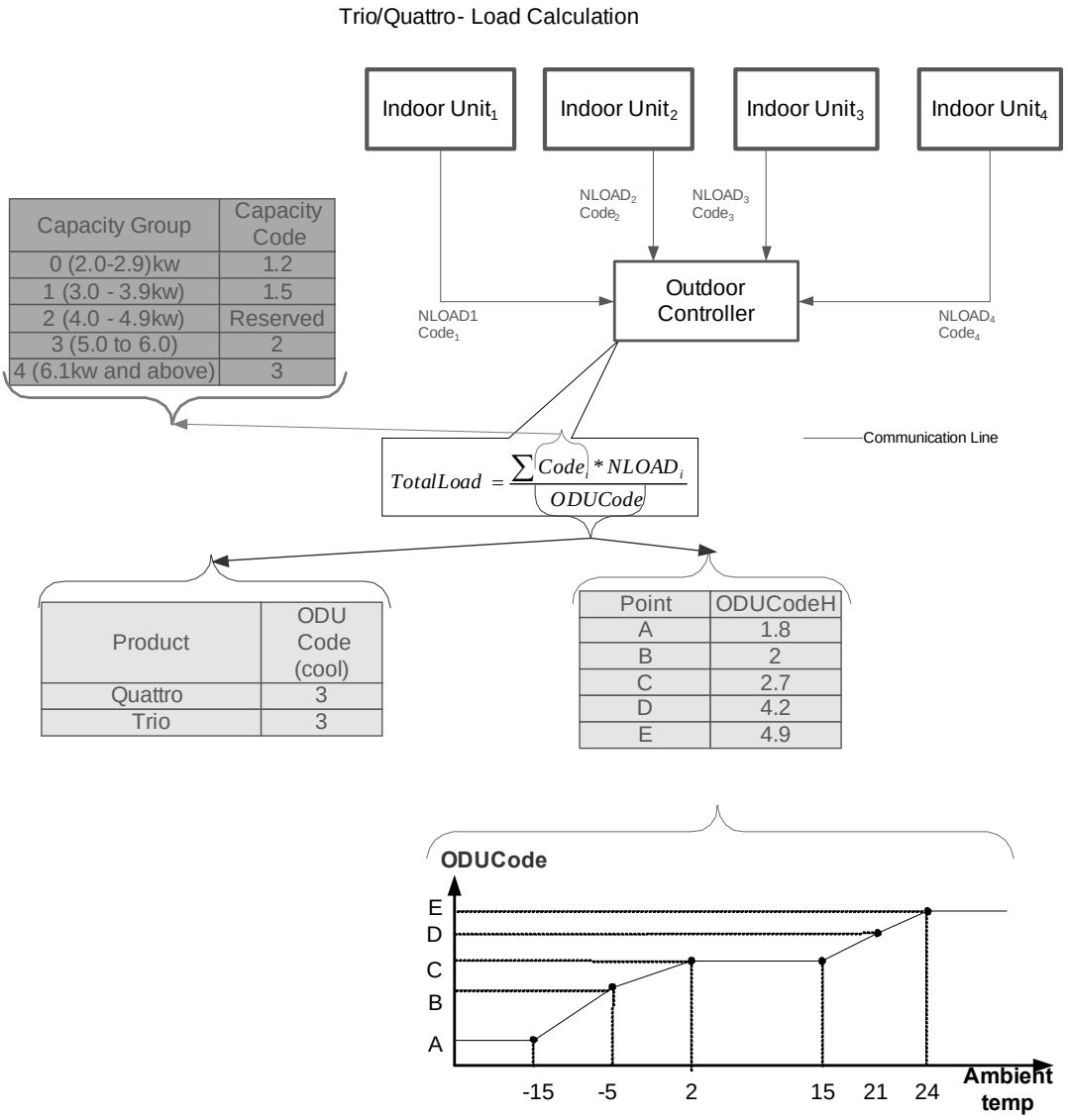
NLOAD limits as a function of indoor fan speed:

Indoor Fan Speed	Maximum NLOAD Cooling	Maximum NLOAD Heating
Low	*Max NLOADIF1C*	127
Medium	*Max NLOADIF2C*	127
High	*Max NLOADIF3C*	127
Turbo	*Max NLOADIF4C*	127
Auto	*Max NLOADIF5C*	127

NLOAD limits as a function of power shedding:

Mode	Power Shedding OFF	Power Shedding ON
Cool	No limit	Nominal Cooling
Heat	No limit	Nominal Heating

11.5.2.4 Outdoor Unit NLOAD calculation



Compressor speed will be set between the minimum speed and the max speed according to the ODU NLOAD

11.5.2.5 Speed Step Limitations

11.5.2.5.1 *Step 1 and step 2*

The compressor speed cannot go below *Step1Freq* or above *Step2Freq* during 3 continuous minutes once after the compressor starts up when the ODU unit changes from STBY

11.5.2.5.2 *Step 3 limit*

The speed cannot go higher than *Step3Freq* unless it was operating for more than 1 continuous minute between *Step3Freq* – 5 and *Step3Freq*.

11.5.3 EEV Control

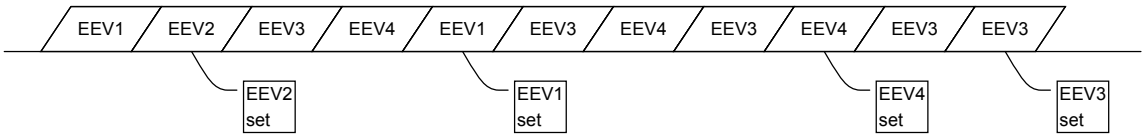
11.5.3.1 Operation Range

The EEV operation range is defined according to the operation mode as following

ODU Mode	Normal operation	IDU inactive	Compressor off
SB	*400*		*400*
COOL	*50* to *480*	0	
HEAT	*50* to *480*	*50* to *120*	

11.5.3.2 Reaching target value rules

For all cases except at EEV initialization procedure, each EEV can move no more than *20* steps at a time.
When required the EEV's move, one by one in sequence, till the target position is achieved for every EEV.
The following diagram presents the EEV steps till the target position is set.



11.5.3.3 EEV homing

When compressor stops or unit is power on, the following is performed immediately:

- All EEV's are set to ***400.***
- They remain in this position for ***80*** Sec.
- Then, close to 60 steps below 0 to ensure full closure, then proceed to normal operation

11.5.3.4 EEV Opening Determination

The target EEV value is the sum of open loop value (OL) and a result of the accumulative correction values (CV).

$$EEV_i = EEV_{OLi} + \sum EEV_{CVi}$$

EEV_i is the EEV opening for each 'i' IDU.

11.5.3.5 EEV initial value determination

The EEV initial value (open loop) is determined according to the number of the active indoor units, mode, and the capacity code of the unit.

EEVBase Base open loop (Nominal Conditions/Capacity Code=1/MaxFrequency)						*EEVCpctyCrct* Capacity code correction			
Unit Type	ODU Mode	Number of active IDU units				IDU Capacity Group			
		1	2	3	4	0	1	3	4
Multi (Active IDU)	COOL	250	210	170	150	0	25	80	110
	HEAT	230	190	150	130	0	25	90	110
Multi (In Active IDU)	Cool	NA				NA			
	Heat	90				0			

11.5.3.6 Balance time

During the first 5 minutes after SB the correction is not calculated. After that the correction value is updated every *30* seconds.

11.5.3.7 EEV corrections

The corrections in cool mode will keep the compressor in the proper operation temperature and will balance between the indoor units by controlling their super heat.

11.5.3.8 Accumulative correction value storage

For each combination of active IDUs, the accumulated EEV correction value (for each IDU) will be stored in the memory. Default correction values after power up are zero.

11.5.4 Outdoor Fan Speed Control

The OFAN operation keeps the outdoor heat exchanger temperature within a predefined values by increasing or reducing the OFAN speed. Whenever the OFAN speed is abnormal, the OMT and OCT sensors need to be checked.

11.5.4.1 Behavior when there is a failure in OFAN

Whenever OFAN fault occurs the compressor will be stopped immediately.

11.5.4.2 Protection Behavior

- In cool mode the OFAN will operate according to CTT or HST protection level:

Protection level	Action
SR, D1 *or* **D2**	OFAN will go to the Max. speed
Stop-Compressor	continue to operate for maximum 3 minutes at 500 rpm or until normal level is achieved.

11.5.4.3 OFAN Force On condition

If HST is fauty, OFAN will continue to operate for 3 minutes at 500 rpm after COMP is OFF.

11.5.4.4 Night mode

Upon receiving night mode, the OFAN will be limited to max *NightRPM* speed only in Cool. It will be back to its normal operation when receiving the mode is cleared.

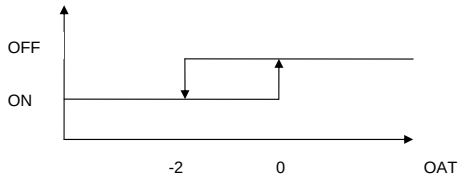
11.5.5 RV State Setting

During heat mode (except during Deicing) RV is ON.
During cool/SB mode RV is OFF.
RV status will be changed only if COMP is OFF for 3 minutes or more.

11.5.6 Base Heater Setting

Base heater should be ON when unit is in heating and according to the below graph.

If OAT is disconnected, Base heater will be ON when unit is in heating.



Note: ‘On’ state has higher priority.

11.5.7 Thermodynamic Protections

11.5.7.1 Protection level definition

Five protection levels are defined:
Normal – No protection status is ON.
Stop-Rise (SR*)* – System is in protection, first level
D1 - System is in protection, second level
D2 - System is in protection third level
Stop-Compressor (SC*)* – System is in protection fourth level

11.5.7.2 IDU Protection Level

The overall protection level of the indoor units will be the worst protection status among the all indoor units

11.5.7.3 IDU Protections

11.5.7.3.1 Indoor Coil Defrost Protection

ICT	ICT Trend				
	Fast Increasing	Increasing	No change	Decreasing	Fast Decreasing
ICT < -2	SC	SC	SC	SC	SC
-2 ≤ ICT < 0	D1	D1	D2	D2	D2
0 ≤ ICT < 2	SR	SR	D1	D2	D2
2 ≤ ICT < 4	SR	SR	SR	D1	D2
4 ≤ ICT < 6	Norm	Norm	SR	SR	D1
6 ≤ ICT < 8	Norm	Norm	Norm	SR	SR
8 ≤ ICT	Normal				

11.5.7.3.2 Indoor Coil over Heating Protection

ICT	ICT Trend				
	Fast Decreasing	Decreasing	No Change	Increasing	Fast Increasing
ICT > 55	SC	SC	SC	SC	SC
53 < ICT ≤ 55	D1	D1	D2	D2	D2
49 < ICT ≤ 53	SR	SR	D1	D2	D2
47 < ICT ≤ 49	SR	SR	SR	D1	D2
45 < ICT ≤ 47	Norm	Norm	SR	SR	D1
43 < ICT ≤ 45	Norm	Norm	Norm	SR	SR
ICT ≤ 43	Normal				

11.5.7.4 ODU Protections

There are 3 ODU protections:

- Compressor overheating
- Heat sink overheating
- System over power

Operation logic of all protections is the same. The controlled input (CTT, HST, or PWR) is controlled by changing the protection level using the fuzzy logic algorithm according the input level and the change rate.
There are two sets of POWER values, the selection of the values are set according to the state of the Power-Shed dry contact input.
Power-Shed input open ➔ Power1
Power-Shed input sort ➔ Power2

The following table summarizes the basic levels of each protection.

Protection level	Compressor Overheat (CTT)	Heat Sink (HST)	Power1	Power2
Stop compressor	*105*	*88*	*3400*	*2900*
Down 2	*100*	*84*	*3300*	*2750*
Down 1	*95*	*80*	*3200*	*2600*
Stop rise	*90*	*76*	*3150*	*2450*
Normal	*90*	*72*	*3050*	*2300*

11.5.7.5 Total Protection Level Definition

The total protection level is defined by the higher level of protection received.

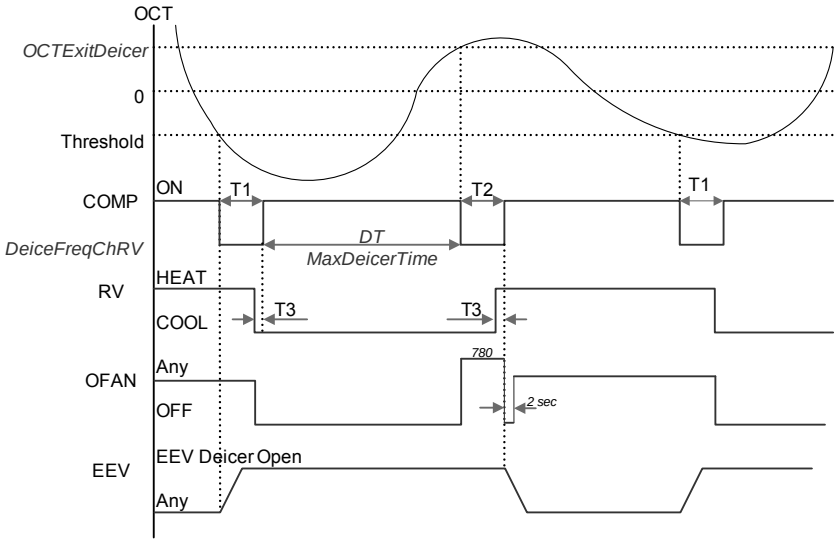
11.5.8 Deicing

11.5.8.1 Deicing Starting Conditions

Deicing operation will start when either one of the following cwonditions exist:
Case 1: OCT < OAT – *DST* AND TLD > *DI*
Case 2: OCT < OAT – 12 AND TLD > 30 minutes.
Case 3: OCT is Invalid AND TLD > *DI*
Case 4: Unit is just switched to STBY AND OCT < OAT – *DST*
Case 5: NLOAD = 0 AND OCT < OAT - *DST*
Case 6: OAT is invalid AND OCT< *DST* AND TLD > *DI* AND Compressor ON Time > *CTMR* minutes
OCT – Outdoor Coil Temperature
OAT – Outdoor Air Temperature
TLD – Time from Last Deicing
DI – Deicing Interval (Time Interval between Two Deicing)
DST – Deicing static threshold (Temperature)

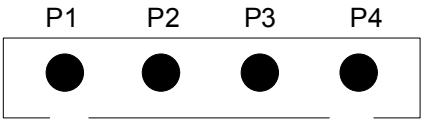
Deicing interval time when compressor is first started in heat mode, is 10 minutes if OCT < -2, and is 40 minutes in other cases.
Deicing interval time is changed (increased/ decreased in 10 minutes steps) as a function of deicing time. If deicing time is shorter then former deicing time, the deicing interval time will be increased. If deicing time is longer then former deicing time, the deicing interval time will be decreased.

11.5.8.2 Deicing Protection Procedure



T1 = T2 = 36 seconds, T3 = 6 seconds

11.5.9 Condensate Water over Flow Protection

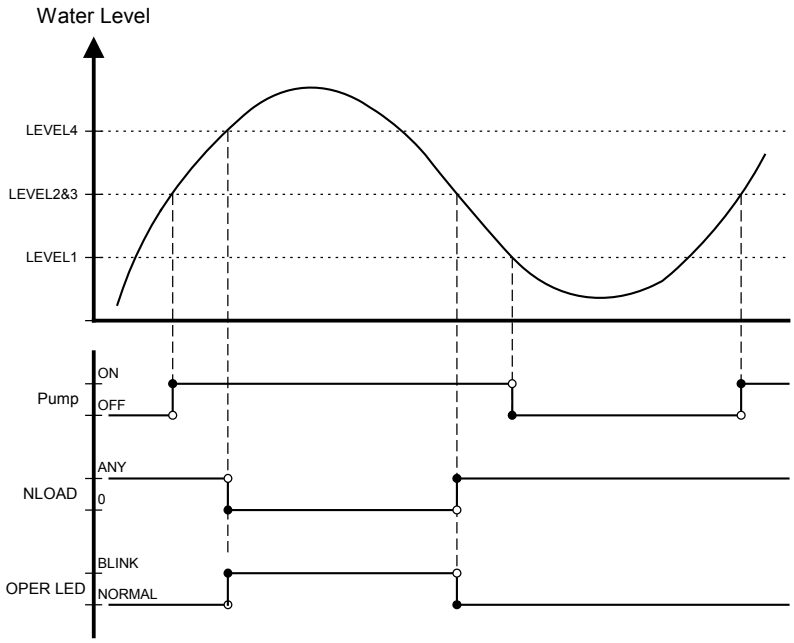


Level Connector Top View

Each of the pins P1, P2, P3 can have two options:
1 – When it is shorted with P4
0 – When it is not shorted to P4

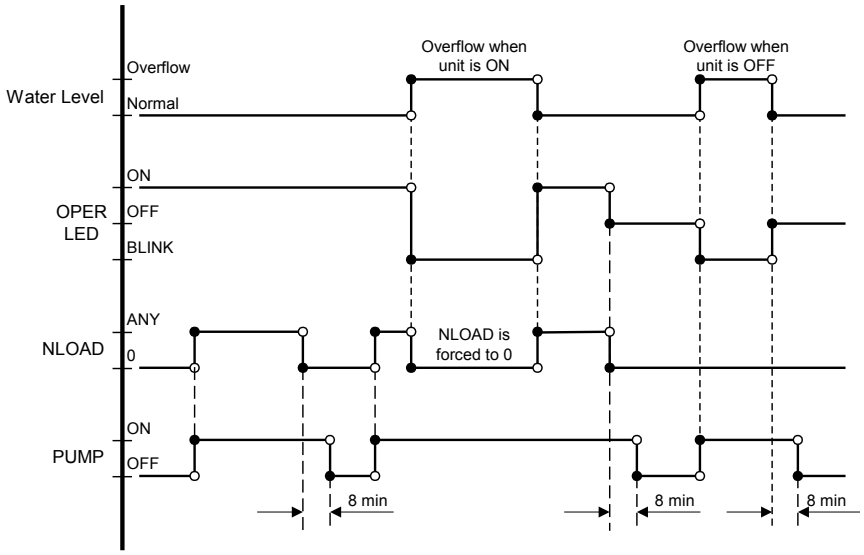
11.5.9.1 3 Levels Logic (used in floor/ceiling models)

P2	P3	Level
0	0	L0
1	0	L1
1	1	L2&3
0	1	L4



11.5.9.2 1 Level Logic (used in all models except for floor/ceiling models)

P2	P3	Level
Don't care	1	Normal
Don't care	0	Overflow



11.6 Installation Test Mode

11.6.1 Test Objectives

- Find tube-communication wires mismatch.
- Instruct the technician to match the tubes to the communication wires.
- Find EEV or tubing problems.

11.6.2 Test Concept

- The unit will open each EEV separately in cooling mode.
- Detect a temperature drop on the indoor unit.
- Based on the temperature drop, the system can match the tube to the indoor unit.

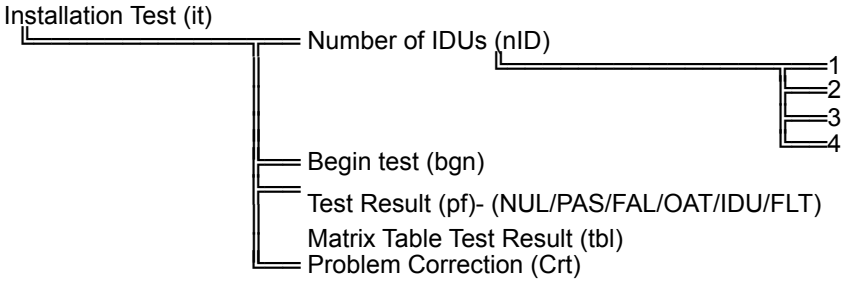
11.6.3 Test Rules

Before starting the installation/technician test, make sure for the following:

1. No indoor communication channel is connected to non existing tube channel.
2. The number of the connected/installed indoor unit is set properly.
3. All the EEVs are connected properly to the right EEV channels.
4. No mix between the indoor unit's tubes, each indoor unit must have its own tubes connected properly to the outdoor unit.

If the rules above are not respected, the test results will make no sense.

11.6.4 Installation test menu

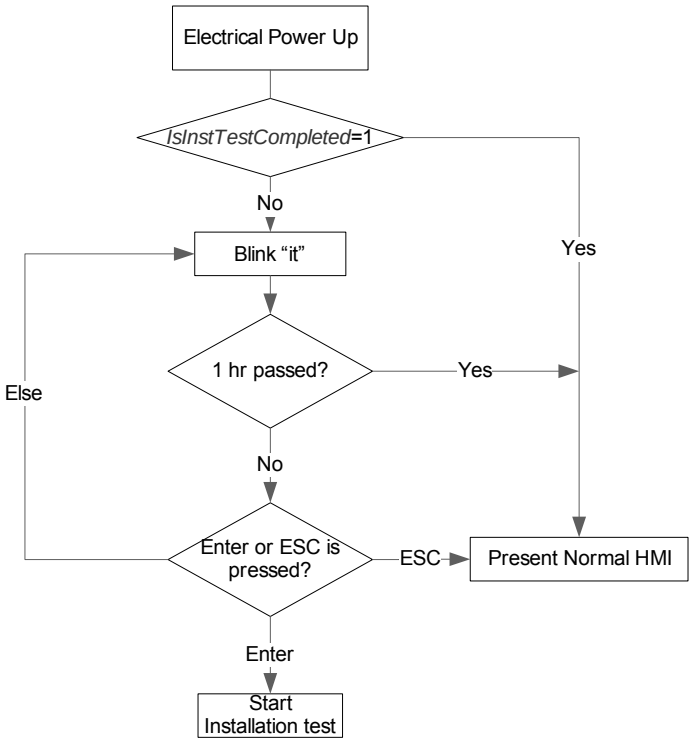


11.6.5 How to do installation test

1. While the power is off, set the following labels on the wires:

On unit Label	C_A	C_B	C_C	C_D
Wire name (Marked by technician)	1	2	3	4
For non connected indoor units, there is no need for label.				

2. Set the number of the connected/installed indoor units.
   Elect 'nID' number under 'it', the selected number blinks. The factory setting value is 4.
3. Enter installation test (by either of the following):
   a. Select 'bgn' under 'it' menu.
   b. According to the following:



4. During the test, the unit will show count down counter (in minutes). The test maximum time is 20 minutes.
5. When the test is finished, the system will show the test result, pass or fail.

6. You can scroll the menu to observe:
   a. Observe the matrix result
   b. Guide for problem correction.
7. For fixing problem, copy on paper the results displayed results, power off the unit, and then fix the problem accordingly. Do not do any wire fixing under power!

Note:

You can exit the installation test any moment by pressing Esc for 5 seconds. When exiting the test, the system will still keep the latest result from the previous test.

11.6.8 Faults during the test

Upon the following the system will terminate installation test:

Fault (display)	Reasons
'OAT' blink	Outdoor ambient temperature is too low, cannot run installation test.
'IDU' blink	The selected number of the installed indoor units by the technician does not match the number of indoor units detected by the system.
Display indoor or outdoor fault as in diagnostics	Check indoor and outdoor diagnostics. ICT disconnected will be tested during the first 3 minutes of installation test.

Note: When the system terminates the tests due to the problem above, the matrix results will present partial test.

How to interpret the results (pf sub menu):

Test Result (pf)	Interpretation
NUL	The test has never been done before.
PAS	The test is pass
FAL	The test is fail
OAT	Outdoor air temperature is lower than 5 degrees. The installation test cannot be done.
IDU	The selected number of the installed indoor units by the technician does not match the number of indoor units detected by the system.
FLT	IDU or ODU fault

11.6.7 Matrix Table Test Result (tbl) & Problem Correction (Crt)

The technician has to use labels on the indoor wires connected to the outdoor

On unit Label	C_A	C_B	C_C	C_D
x=Wire name (Marked by technician)	1	2	3	4
For non connected indoor units, there is no need for label.				

The result is presented in the following way:

Present for 2 sec	Present for 2 Sec.	Interpretation
x--:	Cz	**'x'** is the wire name (1,2,3,4) **'z'** is the communication channel (A,b,c,d) **'x--:Cz'** is move wire 'x' to communication channel Cz
Ey-:	W	**'y'** is the EEV channel name (A,b,c,d) **'w'** can be: 1. 'c' is closed 2. 'o' is open 3. 'oc' is either close or open.
x--:	C_	**'x'** is the wire name (1,2,3,4) **'C_'** is unknown communication channel. **'x--:C_'** is the system does not know where to move wire 'x'.

Possible reasons for 'o' and 'c':

Term	Possible reasons
'c'	• Clogged EEV • EEV Coil problem • EEV driver problem • Clogged indoor unit or part of it. • Problem in ICT sensor • Extremely high load at the indoor side
'o'	• Valve always open • EEV coil problem • Driver Problem

Examples:

#	Problem Correction (Crt)		Problem Correction (Crt)	
	HMI Display	**Technician Interpretation**	**HMI Display**	**Technician Interpretation**
1,2	2--:Cb	Keep wire 2 on communication channel C_B	1--:CA	Keep wire 1 inside communication channel C_A
	3--:Cc	Keep Wire 3 on communication channel C_C	2--:Cb	Keep wire 2 inside communication channel C_B
	1--:Cd	Move wire 1 to communication channel C_D	3--:Cc	Keep wire 3 inside communication channel C_C
	4--:CA	Move Wire 4 to communication channel C_A	4--:Cd	Keep wire 4 inside communication channel C_D
3,4	**HMI Display**	**Technician Interpretation**	**HMI Display**	**Technician Interpretation**
	1--:Cb	Move wire 1 to communication channel C_B	4--:Cd	Keep wire 4 to communication channel C_D
	2--:CA	Move Wire 2 to communication channel C_A	1--:Cb	Move wire 1 to communication channel C_B
			2--:CA	Move wire 2 to communication channel C_A
5,6	**HMI Display**	**Technician Interpretation**	**HMI Display**	**Technician Interpretation**
	4--:Cd	Keep wire 4 in communication channel C_D	1--:Cd	Move wire 1 to communication channel Cd
	1--:Cb	Move wire 1 to communication channel C_B	2--:Cc	Move wire 2 to communication channel Cc
	2--:Cc	Move wire 2 to communication channel C_C	3--:C_	Do not know where to put wire 3
	4--:CA	Move wire 3 to communication channel C_A	4--:C_	Do not know where to put wire 4
	EA--:o	EEV of channel A is always open	**EA**-:o	EEV of channel A is always open
			Eb--:o	EEV of channel B is always open
7,8	**HMI Display**	**Technician Interpretation**	**HMI Display**	**Technician Interpretation**
	1--:CA	Keep wire 1 in communication channel CA	2--:Cc	Move wire 2 to communication channel Cc
	2--:Cb	Keep wire 2 to communication channel Cb	3--:CA	Move wire 3 to communication channel CA
	3--:Cd	Move wire 3 to communication channel Cd	1--:C_	Do not know where to put wire 1
	4--:Cc	Move wire 4 to communication channel Cc	4--:C_	Do not know where to put wire 4
	Ec--:c	EEV of channel C is always close	**Eb**-:c	EEV of channel B is always close
			Ed-:c	EEV of channel D is always close
9,10	**HMI Display**	**Technician Interpretation**	**HMI Display**	**Technician Interpretation**
	4--:Cd	Keep wire 4 to communication channel Cd	3--:**Cc**	Keep wire 3 in communication channel Cc
	2--:Cc	Move wire 2 to communication channel Cc	4--:**Cd**	Keep wire 4 in communication channel Cd
	1--:C_	Do not know where to put wire 1	1--:C**A**	Move wire 1 in communication channel CA
	3--:C_	Do not know where to put wire 3	EA-:O	EEV in channel A is always open
	EA-:Oc	EEV in channel A can be open or close		
	EB-:Oc	EEV of channel B can be open or close		

11.6.8 Matrix Table Test Result (tbl)

		IDU channels on the DMSMP			
		Channel1 (j=1)	**Channel2 (j=2)**	**Channel3 (j=3)**	**Channel4 (j=4)**
EEV channels on the DMSMP	**EEV1 (i=1)**	X_1=T/F/N/C	Y_1=T/F/N/C	Z_1=T/F/N/C	W_1=T/F/N/C
	EEV2 (i=2)	X_2=T/F/N/C	Y_2=T/F/N/C	Z_2=T/F/N/C	W_2=T/F/N/C
	EEV3 (i=3)	X_3=T/F/N/C	Y_3=T/F/N/C	Z_3=T/F/N/C	W_3=T/F/N/C
	EEV4 (i=4)	X_4=T/F/N/C	Y_4=T/F/N/C	Z_4=T/F/N/C	W_4=T/F/N/C

Stored Matrix Type [Rows, Column]	How to present?
2 x 2	Repeat: r1(keep 2 sec)→ X1Y1 (keep 2 sec)
	Repeat: r2 (keep 2 sec) → X2Y2 → (keep 2 sec)
3 x 3	Repeat: r1 (keep 2 sec) → X1Y1Z1 (keep 2 sec)
	Repeat: r2 (keep 2 sec) → X2Y2Z2 (keep 2 sec)
	Repeat: r3 (keep 2 sec) → X3Y3Z3 (keep 2 sec)
4 x 4	Repeat: r1 (keep 2 sec) → X1Y1Z1 (keep 2 sec) → W1 (keep 2 sec)
	Repeat: r2 (keep 2 sec) → X2Y2Z2 (keep 2 sec) → W2 (keep 2 sec)
	Repeat: r3 (keep 2 sec) → X3Y3Z3 (keep 2 sec) → W3 (keep 2 sec)
	Repeat: r4 (keep 2 sec) → X4Y4Z4 (keep 2 sec) → W4 (keep 2 sec)

NOTE: SCROLLING BETWEEN R1, R2, R3, AND R4 IS DONE THROUGH THE 'UP' AND 'DOWN' BUTTONS

DEFINITIONS

Term	Definition
'F'	• Clogged EEV • EEV Coil problem • EEV driver problem • Clogged indoor unit or part of it. • Problem in ICT sensor • Extremely high load at the indoor side
'T'	• Valve always open • EEV coil problem • Driver Problem
C	Non detected channel
N	Null- never done before

11.7 Technician Test Mode

This test is aimed for the technicians to check the system under a preset compressor and outdoor fan values while the expansion valves will function according to the normal running mode.

11.7.1 Entering technician mode

- This mode is entered through the outdoor unit using the HMI (refer to user interface section).
- It can be selected either for cool or heat.
- Technician test is not possible to enter during deicer.

11.7.2 Technician mode procedure

- All the connected indoor units will enter technician test at high indoor fan speed.
- The outdoor unit will be working normally (according to the run mode control logic) except the following changes:
  - o The dry contacts inputs will be ignored.
  - o Protections will be operative for stop compressor (not to be implemented in the current version).
  - o The compressor and the outdoor fan will be working in target preset values according to the following table:

Technician Test			
Unit	Compressor Speed		OFAN speed
	Cool	Heat	
Trio	60	67	850rpm
Quattro	62	72	850rpm

11.7.3 Exiting technician mode

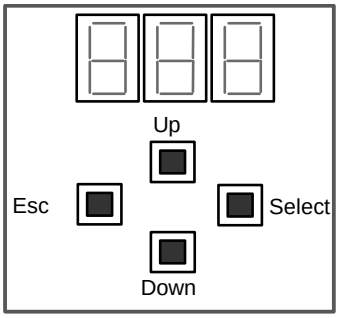
Technician mode will be exited either when:

- o Escaping by the HMI (exiting the ttC or ttH menus)
- o 60 minutes are passed from entering

11.8 User Interface

11.8.1 User interface description

- o The user interface uses three 7 segments, and 4 keys.
- o Keys, The 4 keys are:
  - Scroll - used to scroll between options (up and down)
  - Select - use to select an option
  - Escape - Will go up one level in the menu
- o The user interface concept is Tree menus.
- o Active selection or status will be indicated by blinking the display.

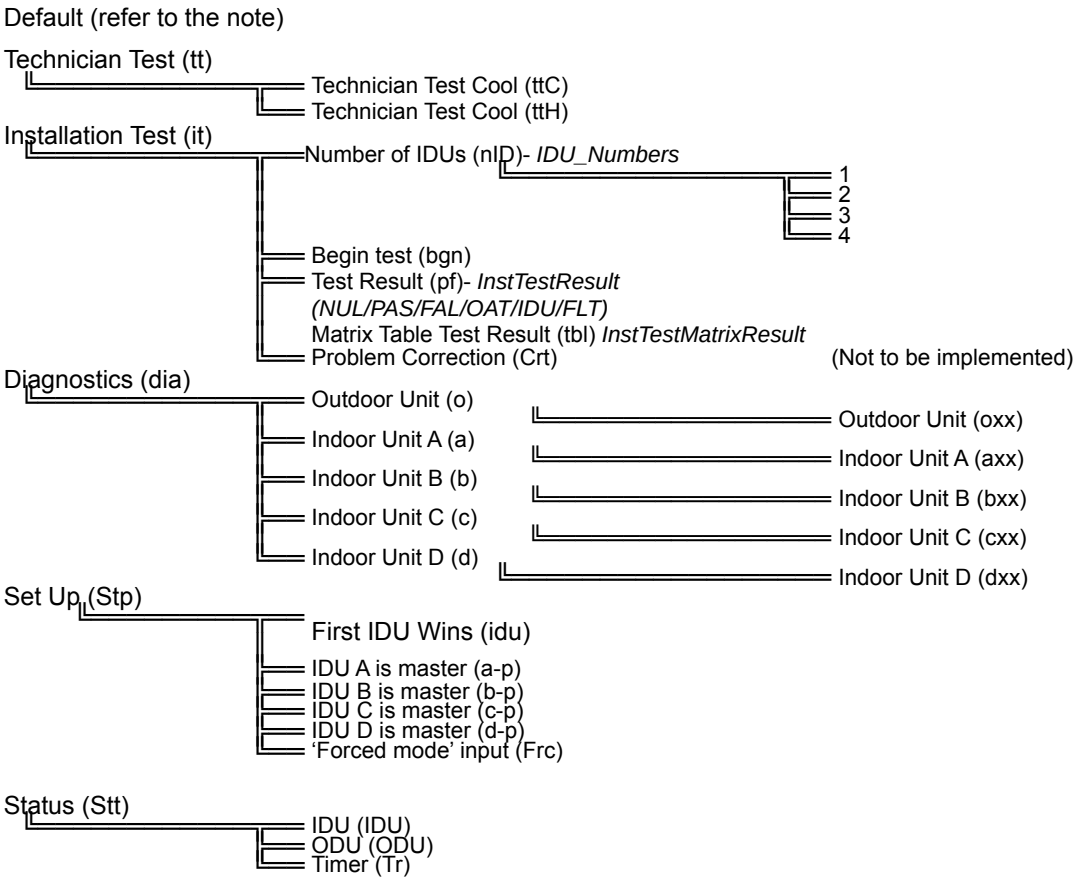


11.8.2 Keys functionality

- o Scrolling will be done whenever the button is pressed.
- o When scrolling alpha values, if the scroll button is held in, the selection will change at the rate of one step per second.
- o When changing/scrolling numeric value, if the scroll button is held in, the selection will change at the rate of one step per second. After 2 seconds, if the button continues to be held in, the rate of change will increase to 10 steps per second.
- o The display will not roll over during selection

11.8.3 Main Menu

11.8.3.1 Menus

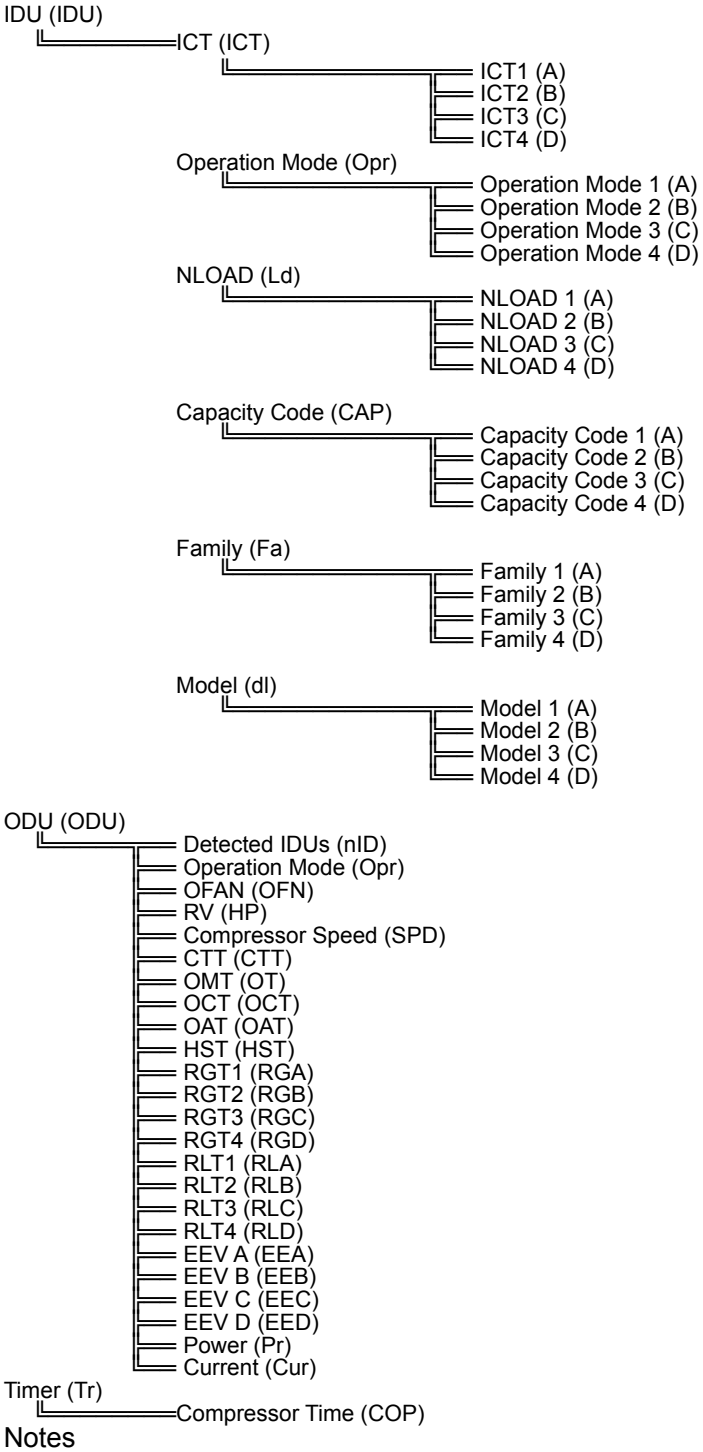


Notes:

1. The default presentation will be alternating repeatedly among the following for single and multi split units:
   - ('id' + the number of communicative IDUs number) shown for 2 sec.
   - The mode of the unit (Cl/Ht/Sb) shown for 2 sec.
   - Active fault (among ODU or IDUs number), each to be shown for 2 sec.
2. In diagnostics menu:
   - xx means failure code.
   - Maximum 5 faults are presented for each unit (each IDUs/ODU). When no faults "--" sign will be shown.
   - The active faults have higher priority for presentation than non active ones.
   - Non active faults are presented according to their chronological order, starting from the latest one.
   - Whenever a new active fault occurs, it will be presented immediately.
   - Active faults are blinking, where non active ones do not.
3. The Status menu will be enabled to be presented and navigated, only by pressing select + escape together for more than 5 seconds under the main menu.

4. Exiting ‘Status’ menu and its sub-menus back to the main menu is done by either pressing escape or after continuous 60 minutes out of any press.
5. Technician Test mode, once is selected, is exited after 60 minutes from entry.
6. All the menus, except Status and its sub-menu, Technician Test once selected, are automatically exited to the main menu after 10 continuous minute out of any press.
7. When Technician test cool or heat menus are selected (operative), it will be blinking constantly until, this menu is escaped.
8. When the installation test is begins, the system will show up count down based (refer to the installation test sect. At the end of the installation test, the result will be presented.
9. For the indoor diagnostics, whenever there is no-communication with indoor unit or indoor unit is not detected, ‘no-communication’ will be shown under the relevant indoor unit diagnostics. In addition to the indoor diagnostics, these faults will be also shown as well under the default show.
10. When Alpha and numeric values are combined, they will be separated by dot.

11.8.3.2 Status (Sub Menu)



Notes

- For the temperature display, when a thermistor is shorted, disconnected show FLT, when it's diabled show DIS.
- It's possible to present a number between 999 and 99,999 by alternating between two numbers (each number is presented for 1 second). The two numbers format is (off)xx, yyy.
- The compressor time is measured in hour's units.
- The modes: Cool, Heat, Dry, Fan Auto will be presented: CL, Ht, dr, FAn, AUt.

- The current is the AC current of the unit.
- The models A, b, C, and d will be presented -A-, -b-, -c-, and -d- respectively.

11.9 Jumper settings

ODU4	ODU3	ODU2	ODU1	ODU0	ODU Model	Compressor Type	
						Single Split	Multi Split
ON	OFF	OFF	OFF	OFF	P (DCI80)	Sanyo	Mitsubishi
ON	OFF	OFF	OFF	ON	Q		
ON	OFF	OFF	ON	OFF	R		
ON	OFF	OFF	ON	ON	S		
ON	OFF	ON	OFF	OFF	T		
ON	OFF	ON	OFF	ON	U		
ON	OFF	ON	ON	OFF	V		
ON	OFF	ON	ON	ON	W		
ON	ON	OFF	OFF	OFF	X		
ON	ON	OFF	OFF	ON	Y		
ON	ON	OFF	ON	OFF	Z		
ON	ON	OFF	ON	ON	AA		
ON	ON	ON	OFF	OFF	AB		
ON	ON	ON	OFF	ON	AC		
ON	ON	ON	ON	OFF	AD		
ON	ON	ON	ON	ON	AE		

11.10 System Parameters

11.10.1 General parameters

#	Name	Default Value	Units
1.	MinOFFTime	3	Minute
2.	MinONTime	3	minute
3.	HzDown1	3	Hz/min
4.	HzDown2	5	Hz/min
5.	DImin	30	minute
6.	DImax	120	minute
7.	TimeD	1	minute
8.	DTmin	2	minute
9.	DIT	10	minute
10.	CTMRUP	10	minute
11.	DIF	30	minute
12.	TCT	240	second
13.	HSTOH1	72	°C
14.	HSTOH2	76	°C
15.	HSTOH3	80	°C
16.	HSTOH4	84	°C
17.	HSTOH5	88	°C
18.	HSTOHDelta1	-1	NA
19.	HSTOHDelta2	1	NA
20.	BalanceTime	5	minute
21.	DEICT1	60	second
22.	DEICT2	36	second
23.	DEICT3	6	second
24.	DSTF	12	
25.	DeiceFreqChRV	0	Hz
26.	OMTOH1	58	°C
27.	OMTOH2	60	°C
28.	OMTOH3	62	°C
29.	OMTOH4	64	°C
30.	OMTOH5	66	°C
31.	ICTOH1	46	°C
32.	ICTOH2	49	°C

#	Name	Default Value	Units
33.	ICTOH3	52	°C
34.	ICTOH4	55	°C
35.	ICTOH5	58	°C
36.	ICTOH6	61	°C
37.	EEVLearning	1	
38.	EEVTimeSingle	30	second
39.	EEVTimeMultiSHC	30	second
40.	EEVTimeMultiDSHC	30	second
41.	EEVTimeMultiSCH	30	second
42.	EEVTimeMultiDSHH	30	second
43.	EEVTimeMultiFBH	30	Second
44.	InstTestIFANHighITime	120	Second
45.	InstTestIFANOffTime	120	Second
46.	InstTestDeltaICT	15	°C
47.	OATInstTst	5	°C
48.	UpToDownHzUp	1	HZ
49.	EEVIanctiveLogicH	0	NA
50.	OFBIncTime	2	minute
51.	OFTcnst	40	second

11.10.2 ODU Model Dependent Parameters

#	Name	P (DCI80)	Unit
1.	MinFreqC	15	Hz
2.	MaxFreqC	80	Hz
3.	MinFreqH	20	Hz
4.	MaxFreqH	95	Hz
5.	LoadDeadZone	In Text	
6.	ODUCodeC	In Text	
7.	ODUCodeH	In Text	
8.	EEVBase	In Text	
9.	EEVCpctyCrct	In Text	
10.	Step1Freq	40	Hz
11.	Step2Freq	60	Hz
12.	Step3Freq	75	Hz
13.	OFMinRPM	16	*10RPM
14.	OFMaxRPM	90	*10RPM
15.	NightRPM	60	*10RPM
16.	OFNNoiseMaxRPM	78	*10RPM
17.	CTTOH1	90	°C
18.	CTTOH2	95	°C
19.	CTTOH3	100	°C
20.	CTTOH4	105	°C
21.	CCROC1	13.5	A
22.	CCROC2	14	A
23.	CCROC3	15.0	A
24.	CCROC4	15.6	A
25.	EEVMinOperOpenC	50	Step
26.	EEVMaxOperOpenC	480	Step
27.	EEVMinOperOpenH	50	Step
28.	EEVMaxOperOpenH	480	Step
29	EEVMinOperOpenHInactive	50	Step
30.	EEVMaxOperOpenHInactive	120	Step
31.	HeaterDisableFlag	0	NA
32.	NormAccel	1	Hz/s
33.	NormDecel	1	Hz/s
34.	OCTExitDeicer	12	°C
35.	MaxDeicerTime	15	Minute
36.	EEVDecierOpenSingle	480	Step
37.	EEVDecierOpenMulti	160	Step
38.	DeicerCoef	0.8	NA
39.	EEV_Active_H_Isotherm	6	°C

#	Name	P (DCI80)	Unit
40.	EEV_Active_H_SC	10	°C
41.	EEV_Active_H_SC_Crct	1	°C
42.	EnableExceedCond	0	
43.	OVRPWR1	3050	Watt
44.	OVRPWR2	3150	Watt
45.	OVRPWR3	3200	Watt
46.	OVRPWR4	3300	Watt
47.	OVRPWR5	3400	Watt
48.	OVRPWRPS1	2300	Watt
49.	OVRPWRPS2	2450	Watt
50.	OVRPWRPS3	2600	Watt
51.	OVRPWRPS4	2750	Watt
52.	OVRPWRPS5	2900	Watt
53.	OVRPWRTcnst	5	Seconds
54.	MinSumCapCode1	2	NA
55.	MinSumCapCode2	2	NA
56.	MinSumCapCode3	3	NA
57.	MinSumCapCode4	4	NA
58.	MaxSumCapCode1	2	NA
59.	MaxSumCapCode2	4	NA
60.	MaxSumCapCode3	5.5	NA
61.	MaxSumCapCode4	6	NA
62.	Max_IDU_Number	4	NA
63.	InstTestCompSpeed	35	
64.	InstTestEEV	180	Step

11.10.3 Indoor Units SW Parameters

11.10.3.1 General Parameters for All Models:

Parameters defining the indoor fan speed as a function of Indoor Coil temperature in heat mode (ICT):

11.10.3.1.1 Parameters for defrost protection:

ICTST Speed	ICT to stop indoor fan	25
ICTVLSpeed	ICT to go down to very low speed	28
ICTLSpeed	ICT to start in very low speed	30
ICTHSpeed	ICT to start in increase speed from very low	32
ICTTSpeed	ICT to enable Turbo fan speed	40
ICTDef1	ICT to go back to normal	8
ICTDef2	ICT to ‘stop rise’ when ICT decrease	6
ICTDef3	ICT to ‘stop rise’ when ICT is stable	4
ICTDef4	ICT to ‘Hz Down’ when ICT decrease	2
ICTDef5	ICT to ‘Hz Down’ when ICT is stable	0
ICTDef6	ICT to stop compressor	-2

11.10.3.1.2 Parameters for indoor coil over heating protection:

ICTOH1	ICT to go back to normal	45
ICTOH2	ICT to ‘stop rise’ when ICT increase	48
ICTOH3	ICT to ‘stop rise’ when ICT is stable	52
ICTOH4	ICT to ‘Hz Down’ when ICT increase	55
ICTOH5	ICT to ‘Hz Down’ when ICT is stable	60
ICTOH6	ICT to stop compressor	62

11.10.3.2 Model Depended Parameters:

Parameter name	Wall Mounted Models			Floor/Ceiling Models			Cassette Models			Ducted Models	
	25	35	50	25	35	50	25	35	50	35	50
NLOAD limits as a function of selected indoor fan speed											
MaxNLOADIF1C	40	40	45	40	40	40	40	40	40	N/A	N/A
MaxNLOADIF2C	53	53	62	53	53	60	53	56	60	N/A	N/A
MaxNLOADIF3C	120	120	120	120	120	90	120	90	90	N/A	N/A
MaxNLOADIF4C	127	127	127	127	127	90	127	90	90	N/A	N/A
MaxNLOADIF5C	127	127	127	127	127	90	127	90	90	N/A	N/A
Indoor Fan speeds				**Fix RPM Motor**							
IFVLOWC	700	700	700								
IFLOWC	800	800	900								
IFMEDC	900	950	1050								
IFHIGHC	1050	1100	1200								
IFTURBOC	1150	1200	1250								
IFVLOWH	700	700	700								
IFLOWH	800	850	900								
IFMEDH	950	1000	1100								
IFHIGHH	1100	1150	1250								
IFTURBOH	1200	1250	1300								

12. TROUBLESHOOTING

WARNING!!!

When Power Up – the whole outdoor unit controller, including the wiring, is under HIGH VOLTAGE!!!

Never open the Outdoor unit before turning off the Power!!!

When turned off, the system is still charged (400V)!!!

It takes about 1 Min. to discharge the system.

Touching the controller before discharging may cause an electrical shock!!!

For safe handling of the controller please refer to section 12.5 below.

12.1 General System Failures and Corrective Actions

No	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1.	Indoor unit power supply indicator (Red LED) does not light up.	No power supply	Check power supply. If OK, check display and display wiring. if OK, replace controller
2.	Indoor unit does not respond to remote control message	Remote control message not reached the indoor unit	Check remote control batteries, if OK, check display and display wiring, if OK, replace display PCB. If still not OK replace controller
3.	Indoor unit responds to remote control message but Operate indicator (Green LED) does not light up	Problem with display PCB	Replace display PCB. If still not OK replace controller
4.	Indoor fan does not start (louvers are opened and Green LED is ON)	Unit in heat mode and coil is still not warm	Change to cool mode
		Outdoor unit is in opposite mode	Change operation mode
		Problem with controller or capacitor	Change to high speed and Check power supply to motor is higher than 130VAC (for triack controlled motor) or higher than 220VAC for fixed speed motors, if OK replace capacitor, if not OK replace controller
5.	Indoor fan works when unit is OFF, and indoor fan speed is not changed by remote control command.	Controller problem	Replace controller
6.	Water leakage from indoor unit	Indoor unit drainage tube is blocked	Check and open drainage tube
7.	One indoor unit or more are operating in cool mode with no capacity, and the other units have water leaks/freezing problems	The communication wires of the indoor units are switched	Check and correct the communication wires connection
8.	One indoor or more are operating in heat mode with a limited capacity, and the coil on the other units are very hot.		

No	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
9.	Outdoor unit display board and leds are off	No power supply	Check the connections and the wiring on the main terminal - Repair if needed. Check PFC choke connection - Repair if needed
		PFC Chock coil	Check the PFC Chock coil (12.4.3)
		Burnt fuse	Check 25A fuse on the Filter (12.4.2)
10.	Compressor operates but one or more units generates no capacity	EEV problem	Check EEV (12.4.7)
		Refrigerant leakage	Check refrigeration system (12.2)
		Indoor coil block	Clean filters and/or remove block
		Outdoor coil block	Remove block and/or avoid air by-pass
11.	Compressor is over heated and unit does not generate capacity	EEV problem	Check EEV (12.4.7)
		Refrigerant leakage	Check refrigeration system (12.2)
		Indoor coil block	Clean filters and/or remove block
		Outdoor coil block	Remove block and/or avoid air by-pass
12.	Compressor stops during operation	Electronic control	Check diagnostics (see 12.3 below)
		Refrigerant leakage	Check refrigeration system (12.2)
13.	Not all units are operating	Communication problems	Check diagnostics (see 12.3 below)
14.	Compressor does not start	Electronics control problem or protection	
15.	Unit works in wrong mode (cool instead of heat or heat instead of cool)	Electronics or RV problem	Check RV (12.4.6)
16.	All components are operating properly but no cooling or no heating	Refrigerant leak	Check refrigeration system (12.2)
17.	Compressor motor is generating noise and no suction occurs	Phase order to compressor is wrong	Check compressor phase order
18.	Freezing of outdoor unit in heat mode and outdoor unit base is blocked with ice		Connect base heater
19.	The unit stop suddenly during operation	EMC interference to the A/C unit	Check for EMC problems (12.4.10.1)
20.	Indoor unit(s) Indicator(s) leds may flicker		
21.	Other home appliances operation is faulty such as noise appears in the television picture, or the picture is distorted or static occurs in the radio sound	EMC interference by the A/C unit	Check for EMC problems (12.4.10.2)
22.	All others	Specific problems of indoor or outdoor units	Check diagnostics (see 12.3 below)

12.2 Checking the refrigeration system

Checking system pressures and other thermodynamic measures should be done when system is in technician Mode where the system operates as in fixed settings. The performance curves given in this manual are given for unit performance in Technician mode when high indoor fan speed is selected.

For entering technician mode check **11.7**.

12.3 Diagnostics

12.3.1 Fault Code for Outdoor unit

The last fault occurred in the system will be stored in the EEPROM.

If no fault exist in the system, no fault code will be displayed during normal operation mode.

For single Split units only, when system enters diagnostics mode (through IDU communication), the last fault code will be displayed even if the system has recover from that fault. The last fault will be deleted from the EEPROM after the system has exit diagnostics mode (through IDU communication). The current system operation mode (cool/ heat/ off) will not be changed when system enters diagnostics.

The coding method is as follow:

STATUS LED is blinking 5 times in 5 seconds, and shut off for the next 5 seconds.

FAULT LED will blink during the same 5 seconds according to the following table

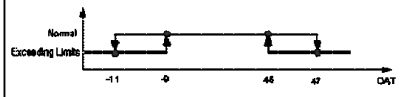
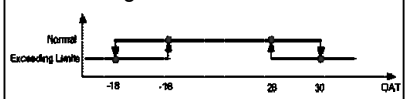
No	Problem	AO	5	4	3	2	1
1	OCT is shorted/disconnected	Yes	0	0	0	0	1
2	CTT is shorted/disconnected	Yes	0	0	0	1	0
3	HST is shorted/disconnected	Yes	0	0	0	1	1
4	OAT is shorted/disconnected	Yes	0	0	1	0	0
5	OMT is shorted/disconnected	Yes	0	0	1	0	1
6	RGT is shorted/disconnected	Yes	0	0	1	1	0
7	RLT is shorted/disconnected	Yes	0	0	1	1	1
8	Reserved	No	0	1	0	0	0
9	Reserved	No	0	1	0	0	1
10	Reserved	No	0	1	0	1	0
11	Compressor IPM Fault / IPM Driver Pin / Compressor Current Sensor Fault	Yes	0	1	0	1	1
12	Bad EEPROM	No	0	1	1	0	0
13	DC under voltage	Yes	0	1	1	0	1
14	DC over voltage	Yes	0	1	1	1	0
15	AC under voltage/AC over Voltage/Zero Crossing detection	Yes	0	1	1	1	1
16	Mismatch between IDU & ODU models	Yes	1	0	0	0	0
17	No Communication	Yes	1	0	0	0	1
18	System Over Power	Yes	1	0	0	1	0
19	PFC Current sensor	Yes	1	0	0	1	1
20	Heat sink Over Heating	No	1	0	1	0	0
21	Deicing	No	1	0	1	0	1
22	Compressor Over Heating	No	1	0	1	1	0
23	Compressor Over Current	No	1	0	1	1	1
24	No OFAN Feedback	Yes	1	1	0	0	0
25	OFAN IPM fault / OFAN IPM Driver Pin	Yes	1	1	0	0	1
26	Compressor Lock	Yes	1	1	0	1	0
27	Bad Communication	No	1	1	0	1	1
28	Missing ODU configuration	Yes	1	1	1	0	0
29	Undefined ODU Model	Yes	1	1	1	0	1
30	Outdoor/Indoor Coil Overheating	No	1	1	1	1	0
31	Operation conditions are exceeded	Yes	1	1	1	1	1

1 – ON, 0 – OFF

Only one code is shown. Order of priority is 1-24. Diagnostics is continuously ON as long power is on.

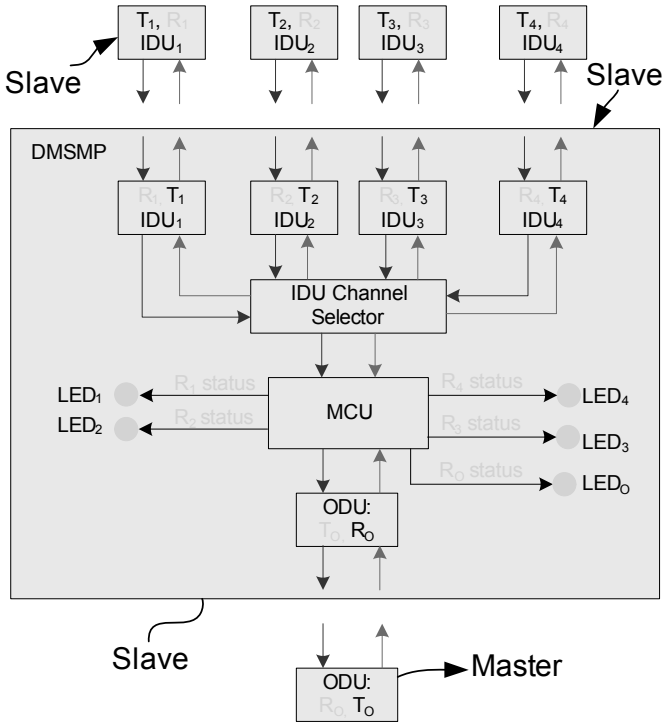
11.3.2 Outdoor unit diagnostics and corrective actions

No	Fault Name	Fault Description	Corrective Action
1	OCT bad	Thermistor not connected or damaged	Check Thermistor (12.4.8)
2	CTT bad		
3	HST bad		
4	OAT bad		
5	OMT bad		
6	RGT bad		
7	RLT bad		
8	Reserved	NA	NA
9	Reserved	NA	NA
10	Reserved	NA	NA
11	Compressor IPM Fault / IPM Driver Pin / Compressor Current Sensor Fault	IPM module detect shoot-through current / IPM driver control pin is unconditionally latch to high state / The quiescent reference voltage of sensor resistor is either too high or too low.	Disconnect the the compressor plug and measure between U-V, U-W for resistance using multimeter. Resistance value should be below 1 OHM. If multimeter display high resistance, replace compressor. Make sure the phase sequence of U-V-W is correctly plug into the compressor, othewise replace controller if error is persistent
12	Bad EEPROM	Writing to EEPROM is impossible or EEPROM IC is damage	There is no electrinonic corrective action, just replace controller if error is persistent. Note: A/C still be able to operate, but no event logging and mode restore on power up
13	DC under voltage	The capacitor bank DC voltage supply for the compressor is below operable value	Check AC input line voltage RMS value, it should read above 198VAC. If voltage is above 198VAC, and DC under voltage error is continuous display, replace controller.
14	DC over voltage	The capacitor bank DC voltage supply for the compressor is too high value	Check AC input line voltage RMS value, it should read below 264VAC. If voltage is below 264VAC, and DC over voltage error is continuously display, replace controller.
15	AC under voltage/AC over Voltage/Zero Crossing detection	The AC input supply voltage is below the limit of 198V / The AC input supply voltage is above 264V / The AC line frequency is out of range from 45Hz to 55Hz.	Check AC input line voltage RMS value, it should read in the range of 198VAC – 264VAC. Check AC input line operating frequency, it should be in the range from 45Hz to 55Hz. If error is continuously being display, replace controller.
16	Mismatch between IDU & ODU models	Miss-match between the IDUs connected to port A,B,C or D, or the total capacity code of IDUs is higher than the ODU maximum capacity code	Change configuration if needed.
17	No Communication	No signals in lineA,B,C,D	Check communication (12.4.9)
18	System Over Power	Compressor stopped due to over power protection	No action required
19	PFC Current sensor	Controller cannot detect valid AC line current after compressor start	If error is continuously being display, replace controller.

No	Fault Name	Fault Description	Corrective Action
20	Heat sink Over Heating	Compressor stopped due to heatsink protection	Check that the airflow around the ODU is free and the fan is running free. Check fan motor (12.4.4)
21	Deicing	During deicing procedure	No action required
22	Compressor Over Heating	Compressor stopped due to over heat protection	Check if gas is missing in the system
23	Compressor Over Current	Compressor stopped due to over current protection	No action required
24	No OFAN Feedback	No encoder signal can be detected from the OFAN	Check DC-FAN hall sensor connection/ plug for damage. Check DC-FAN for any blockage. Measure between U-V, U-W for resistance using multimeter. Resistance value should be below 1 OHM. If multimeter display high resistance, replace DC-FAN motor, otherewise replace controller.
25	OFAN IPM fault / OFAN IPM Driver Pin	OFAN IPM module detect shoot-through current / OFAN IPM driver control pin is unconditionally latch to high state	Check DC-FAN hall sensor connection/ plug for damage. Check DC-FAN for any blockage. Measure between U-V, U-W for resistance using multimeter. Resistance value should be below 1 OHM. If multimeter display high resistance, replace DC-FAN motor. Return controller if error is persistent.
26	Compressor Lock	No correct drive current can be detected from the compressor	Check compressor cable or compressor wire assembly. Make sure the phase sequence of U-V-W is correctly plug into the compressor.
27	Bad Communication	Lost of communication from indoor unit	Check communication wire between indoor and outdoor unit
28	Missing ODU configuration	All the DIP is set to 0 (the DIP are not configured).	This problem cannot happen in DCI80. Previously, this fault is used to detect model plug that fall down.
29	Undefined ODU Model	The outdoor model is not defined in the software.	● Wrong Outdoor DIP setting. ● Too old outdoor software. Update software
30	Outdoor/Indoor Coil Overheating	This protection combines the following: 1. Overheating in cooling mode (based on OMT reading). 2. Overheating in heating mode based on ICT.	● Improper ventilation of the coils ● Over charged system ● Problem with ICT sensors or OMT sensor (fake up). ● Illegal too small indoor unit's installation (heating).
31	Operation conditions are exceeded	For cooling:  For Heating:  	This is not a fault but information on the ambient operation: ● The unit operates outside the defined operation range. ● The OAT fakes and cause false alarm.

12.3.3 DMSMP diagnostics

The DMSMP system has 4 IDU LEDs, 1 ODU LED, and 1 Power LED.
Each communication channel is built up from receiving and transmitting channels.
The outdoor controller is the master of communication (always initiated communication) while the DMSMP and indoor are slave (responds only when it receives).



Channel	LED
R_i has communication	The relevant LED_i will be ON.
R_i has no communication	The relevant LED_i will be Off.

Damage	Outdoor	Indoors no com?	LED1	LED2	LED3	LED4	LEDO	How to check?
T_o(ODU)	No Com	All no com	Off	Off	Off	Off	Off	Voltage To(ODU) no change
R_o(DMSMP)	No Com	All no com	Off	Off	Off	Off	Off	Voltage To(ODU) changes Voltage Ro(DMSMP) no change
T_o(DMSMP)	No com	All ok	On	On	On	On	On	Voltage Ro(DMSMP) changes Voltage To(DMSMP) no change
Ro(ODU)	No com	All ok	On	On	On	On	On	Voltage To(DMSMP) changes. Voltage To(ODU) no changes.
T_4(DMSMP)	Ok	Indoor 4	On	On	On	Off	On	Exchange with other IDU to know the problem is in the IDU or the DMSMP.
R_4(IDU)	Ok	Indoor 4	On	On	On	Off	On	
T4(IDU)	Ok	All ok	On	On	On	Off	On	
R4(DMMSP)	Ok	All ok	On	On	On	Off	On	

12.3.4 Fault Code for Indoor unit

Pressing Mode button for long will activate diagnostic mode by the acknowledgment of 3 short beeps and lighting of COOL and HEAT LED's.
When Indoor diagnostics is displayed, all four LED's (STBY, Operate, Filter, TMR) are on.
Entering diagnostics in STBY mode allows only viewing of status (fault-display).
In diagnostic mode, system problems / information will be indicated by blinking of Heat & Cool LED's.
The coding method will be as follows:
Heat led will blink 5 times in 5 seconds, and then will be shut off for the next 5 seconds. Cool Led will blink during the same 5 seconds according to the following table:

No	Fault Name	5	4	3	2	1
1	RT-1 is disconnected	0	0	0	0	1
2	RT-1 is shorted	0	0	0	1	0
3	RT-2 is disconnected	0	0	0	1	1
4	RT-2 is shorted	0	0	1	0	0
…	Reserved	0	0	1	0	1
7	Communication mismatch	0	0	1	1	1
8	No Communication	0	1	0	0	0
9	No Encoder	0	1	0	0	1
10	Reserved	0	1	0	1	0
11	Outdoor Unit Fault	0	1	0	1	1
…	Reserved					
17	Defrost protection	1	0	0	0	1
18	Deicing Protection	1	0	0	1	0
19	Outdoor Unit Protection	1	0	0	1	1
20	Indoor Coil HP Protection	1	0	1	0	0
21	Overflow Protection	1	0	1	0	1
…	Reserved					
24	EEPROM Not Updated	1	1	0	0	0
25	Bad EEPROM	1	1	0	0	1
26	Bad Communication	1	1	0	1	0
27	Using EEPROM data	1	1	0	1	1
28	Model A	1	1	1	0	0
29	Model B	1	1	1	0	1
30	Model C	1	1	1	1	0
31	Model D	1	1	1	1	1

1 - ON,0 - OFF
Only one code is shown. Order of priority is lower to the higher number. Diagnostics is continuously ON as long power is on.

12.3.5 Indoor unit diagnostics and corrective actions

No.	Fault	Probable Cause	Corrective Action
1-4	Sensor failures	Sensors not connected or damaged	Check sensor connections or replace sensor
7	Communication mismatch	Indoor and Outdoor controllers are with different versions	Replace Indoor controller
8	No Communication	Communication or grounding wiring is not good	Check Indoor to Outdoor wiring and grounding
9	No Encoder	Indoor electronics or motor	Check motor wiring, if ok, replace motor, if still not ok, replace Indoor controller.
11	Outdoor Unit Fault	Outdoor controller problem	Switch to Outdoor diagnostics.
17-21	Protections	Indication	No action
24	EEPROM Not Updated	System is using ROM parameters and not EEPROM parameters	No action, unless special parameters are required for unit operation.
25	Bad EEPROM		No action, unless special parameters are required for unit operation.
26	Bad Communication	Communication quality is low reliability	Check Indoor to Outdoor wiring and grounding
27	Using EEPROM data	No problem	
28-31	IDU model	Indication : DCI-25,35,50,60	

12.4 Procedures for checking Main Parts

12.4.1 Checking Mains Voltage

Confirm that the Mains voltage is between 198 and 264 VAC. If Mains voltage is out of this range, abnormal operation of the system is expected. If in range check the Power (Circuit) Breaker and look for broken or loosed cable lugs or wiring mistake(s).

12.4.2 Checking Main fuse

Check 25A fuse on the Filter Board - If burnt – check the compressor, fan or any other peripheral that can cause a short. In case of a problematic peripheral - replace it.
In case no problematic peripheral, check the resistance on the DC bank (B+ & B- on the Power board), if it is less than 30Ω, replace the controller. Otherwise replace the burnt fuse.
In case of frequent burning fuse, replace the controller.

12.4.3 Checking PFC Chock coil

Check PFC chock connection – repair if needed.

1.1.1 Checking the Outdoor Fan Motor

Check FAN-Power and FAN-Halls connections - Repair if needed.
Rotate the fan slowly by hand. If the fan does not rotate easily, check whether something is obstructing the fan, or if the fan itself is coming into contact with the outer case, preventing it from rotating. Correct if necessary - otherwise, the fan motor bearings have seized. Replace the motor.
If the fan rotates easily, use a current probe (“Clamp”) to assure AC current on each phase and it is less than 1A.
In case there is no current, check the resistance between the three poles. Assure the three coil resistances are almost the same.
The normal value should be between 10Ω to 20Ω.

Change to Stand-by or Power OFF and re-start - If the fault is still active - replace controller.

12.4.5 aaChecking the Compressor

Check Compressor connections - Repair if needed.
Use a current probe (“Clamp”) to assure that there is an AC current on each phase – no more than 15A.
In case there is no current, check the resistance between the three poles. Assure the three coil resistances are almost the same (between 0.8Ω to 1.5Ω).
Change to Stand-by or Power OFF and re-start - If the fault is still “Active” - replace controller.

12.4.6 Checking the Reverse Valve (RV)

The RV has two parts, Solonoid and valve.
Solonoid - Running in heating mode, check the voltage between two pins of reverse valve connector, normal voltage is 230VAC. if no power supply to RV, Check RV operation with direct 230VAC power supply, if OK, replace outdoor controller.
Valve - if RV solonoid is OK (as above) but still no heating operation while compressor is On, replace the valve.

12.4.7 Checking the electrical expansion valve (EEV)

The EEV has two parts, drive and valve.
When Outdoor unit is powered on, EEV shall run and have click and vibration.
For assuring the problem is of the EEV parts, perform the installation test check(11.6) and if fails and no other indications in the diagnostics, than the problem is with the EEV (one or more).
Drive - a step motor; ringed on the valve. Check the drive voltage, should be12VDC.
Valve – if drive is OK (as above) but still the indoor unit perform no conditioning replace the valve (no need to take out the refrigerant, just pump down and shut off the main valves).

12.4.8 Checking the thermistors

Check Thermistor connections and wiring - Repair if needed.
Check Thermistor resistance – between 0ºC and 40ºC should be between 35KΩ and 5KΩ.

12.4.9 Checking the communication

Change to Stand-by or Power OFF and re-start - If the fault is still “Active” check Indoor to Outdoor Communication wiring and grounding connections (should be less than 2.0Ω) - Repair if needed.
If IDU failure – replace IDU controller that does not respond.
If ODU failure – replace ODU.

12.4.10 Checking for electromagnetic interferance (EMC problems)

12.4.10.1 EMC troubles to the A/C unit

Locations most susceptible to noise :

1. Locations near broadcast stations where there are strong electromagnetic waves.
2. Locations near amateur radio (short wave) stations.
3. Locations near electronic sewing machines and arc-welding machines.

Trouble :

Either of the following trouble may occur:

1. The unit may stop suddenly during operation.
2. Indicator lamps may flicker

Correction :
The fundamental concept is to make the system less susceptible to noise (insulate for noise or distance from the noise source):
1. Use shielded wires.
2. Move unit away from the noise source.

12.4.10.2 EMC troubles to near by home appliances

Locations most susceptible to noise :
1. A television or radio is located near the A/C and A/C wiring.
2. The antenna cable for a television or radio is located close to the A/C and A/C wiring.
3. Locations where television and radio signals are weak.

Trouble :
1. Noise appears in the television picture, or the picture is distorted.
2. Static occurs in the radio sound.

Correction
1. Select a separate power source.
2. Keep the A/C and A/C wiring at least 1 meter away from wireless devices and antenna cables.
3. Change the wireless device's antenna to a high sensitivity antenna.
4. Change the antenna cable to a BS coaxial cable.
5. Use a noise filter (for the wireless device).
6. Use a signal booster.

12.5 Precaution, Advise and Notice Items

12.5.1 High voltage in Outdoor unit controller

Whole controller, including the wires, connected to the Outdoor unit controller may have the potential hazard voltage when power is on. Touching the Outdoor unit controller may cause an electrical shock.
Advise: Don't touch the naked lead wire and don't insert finger, conductor or anything else into the controller when power is on.

12.5.2 Charged Capacitors

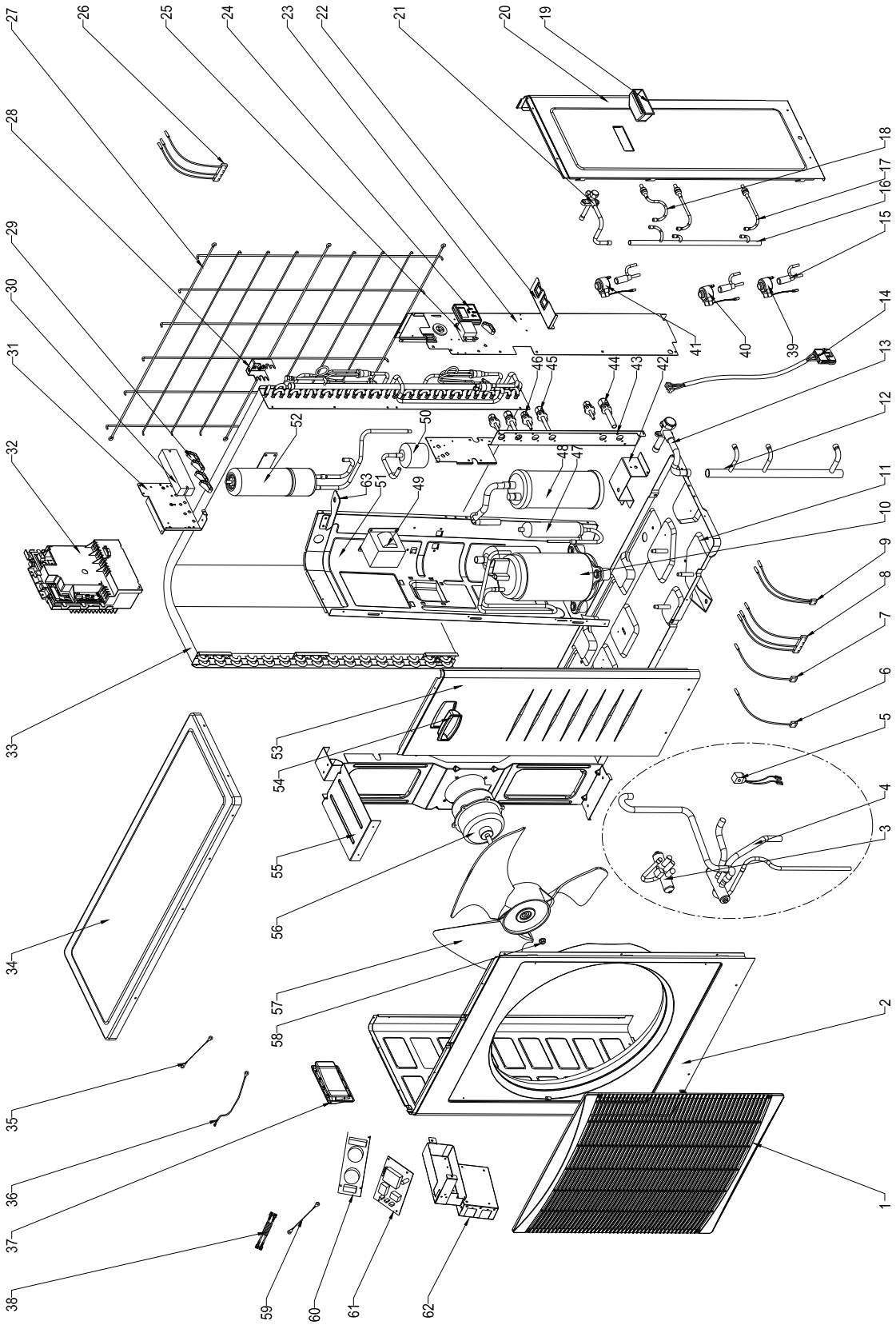
Three large-capacity electrolytic capacitors are used in the Outdoor unit controller. Therefore, charging voltage (380VDC) remains after power down. Discharging takes about one minute after turned off. Touching the Outdoor unit controller before discharging may cause an electrical shock. When open the Outdoor unit controller cover, don't touch the soldering pin by hand or by any conductive material.

Advise:
- Open the Outdoor unit controller cover only after one minute from power off.
- Measure the electrolytic capacitors voltage before farther checking controller.

Additional advises
- When disassemble the controller or the front panel, turn off the power supply.
- When connecting or disconnecting the connectors on the PCB, hold the whole housing, don't pull the wire.
- There are sharp fringes and sting on shell. Use gloves when disassemble the A/C units.

13. EXPLODED VIEWS AND SPARE PARTS LISTS

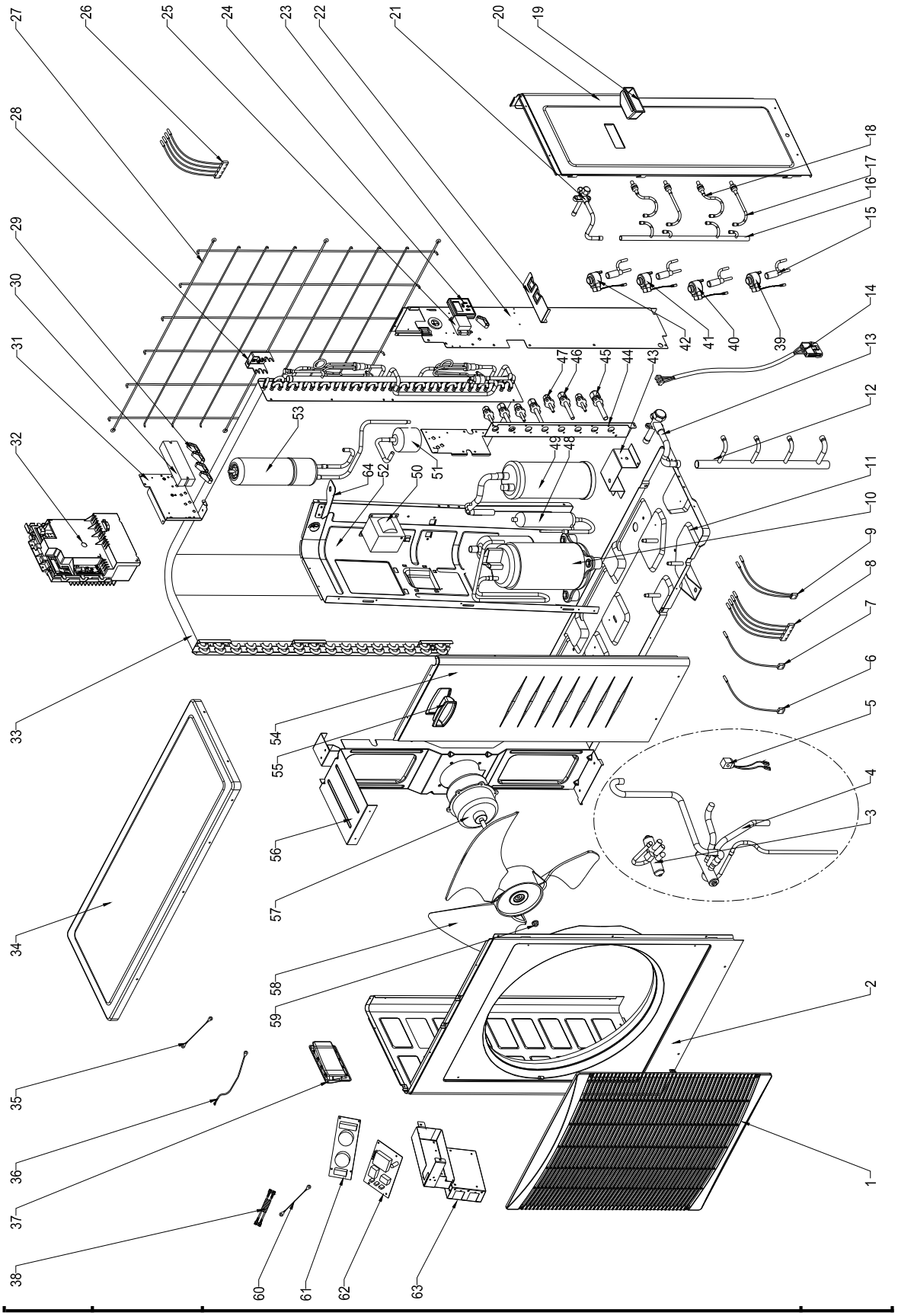
13.1 Outdoor Unit: YAZ3 24 DCI



13.2 Outdoor Unit: YAZ3 24 DCI

Item Seq	Item	Description	Quantity
1	465100000	Grill/ DCI Trio	1
2	4523652	PAINTED LEFT CABINET ASSY	1
3	4526522	FOUR-WAY VALVE R410A	1
4	452803600	4-Way Valve System Assy.	1
5	452956700	4-way Valve Coil	1
6	467400200	CTT Compressor Top Temperature Sensor/10K/Resin-capsulation	1
7	467400038	ODU COIL MIDDLE TEMPERATURE SENSOR/CMV/VRF	1
8	467400068	RGT Return Gas Temperature Sensor/10K/Copper-capsulation Ω6	1
9	467400040	Condenser Middle Temperature Sensor/OAT & OMT/DCR LC 25/35	1
10	453174100	Compressor Assy. TNB220FLBM	1
11	452809900	Base Plate Painting Assy.	1
12	463650049	Manifold Assy.	1
13	452783000	Low Pressure Stop Valve 5/8" R410a	1
14	452956600	Compressor Cable	1
15	4526827	Electronical expansion valve CAM-BD15 FKS-1	3
16	452962700	Distributing Pipe Assy.	1
17	463750233	Connect Pipe 2/Electronic Expansion Valve to High Pressure Stop Valve	2
18	463750232	Connect Pipe 1/Electronic Expansion Valve to High Pressure Stop Valve	1
19	4517772	Little Handle	1
20	452957700	Painted Side Plate Assy.	1
21	452783100	High Pressure Stop Valve 3/8" R410a	1
22	452956200	Painted Stop Plate Assy.	1
23	452957600	Painted Right-back Plate Assy.	1
24	465800112	Display Board Assy.	1
25	453031800	3 Poles Terminal Block	1
26	467400041	Return Liquid Temperature Sensor(RLT) /Trio 72 Z DCI	1
27	453175500	Guard Net Painting Assy.	1
28	453083800	Support/OAT	1
29	204107	Cable clip Nylon	5
30	453031700	10 Poles Terninal Block	1
31	453256700	Support Painting Assy./Electrical Box	1
32	467300184R	Controller / DCI 80 CR OUTDOOR BOX ASSY	1
33	462300106	Condenser System Assy.	1
34	4523657	PAINTED TOP COVER ASSY	1
35	455015100	ground wire,UL1015 18AWG,150MM	1
36	453256900	Ground Wire 2	1
37	4522600	Left Handle	1
38	4526226	Power lead wire	1
39	452682803	EEV coil(Green connector, 800mm)	1
40	452682800	EEV coil CAM-MD12FKS-1 (Red, 530mm)	1
41	452682802	EEV coil CAM-MD12FKS-2ΩWhite connector, 530mm)	1
42	453256100	Support Painting Support Assy./Gas-Liquid Separator	1
43	464860000	Valve Support Painting Assy.	1
44	452783500	Brass Connector with Flange 1/2"	1
45	452783501	Brass Connector with Flange 3/8"	2
46	452783502	Brass Connector with Flange 1/4"	3
47	452783600	Oil Separator Assy.	1
48	452783200	Liquid-gas Separator	1
49	467550002R	Choke / DCI 80 CR	1
50	4518950	Filter Drier BFK-053S	1
51	464730010	Partition Plate Assy./DCI 80 CR	1
52	463250008	Liquid Accumulator/DCI Quattro 80 Z Z	1
53	452956300	Painted Right-front Plate Assy.	1
54	4522601	Right Handle	1
55	464200026	Motor Support/TRIO DCI/VIESSMANN	1
56	466110008R	DC Resin Motor(SIC-71FW-F170-1A)/DCI 80 CR	1
57	452960400	Outdoor Axial Fan OD=493	1
58	4523758	Nut M8 left	1
59	4516540	GROUND WIRE	1
60	467300239R	Controller / DCI 80 CR Filter Board Quattro	1
61	467300232R	Communication Board /DMSMP	1
62	464750017	Controller Box Assy./Quattro 80 Z DCI	1
63	464200031	Support/ Liquid Accumulator/Quattro 80 Z DCI	1

13.3 Outdoor Unit: YAZ4 30 DCI



13.4 Outdoor Unit: YAZ4 30 DCI

Item Seq	Component	Item Description	Quantity
1	465100000	Grill/ DCI Trio	1
2	4523652	PAINTED LEFT CABINET ASSY	1
3	4526522	FOUR-WAY VALVE R410A	1
4	452803600	4-Way Valve System Assy.	1
5	452956700	4-way Valve Coil	1
6	467400200	CTT Compressor Top Temperature Sensor/10K/Resin-capsulation	1
7	467400038	ODU COIL MIDDLE TEMPERATURE SENSOR/CMV/VRF	1
8	467400067	RGT Return Gas Temperature Sensor/10K/Copper-capsulation 6	1
9	467400040	Condenser Middle Temperature Sensor/OAT & OMT/DCR LC 25/35	1
10	453174100	Compressor Assy. TNB220FLBM	1
11	452809900	Base Plate Painting Assy.	1
12	463650048	Manifold Assy.	1
13	452783000	Low Pressure Stop Valve 5/8" R410a	1
14	452956600	Compressor Cable	1
15	4526827	Electronical expansion valve CAM-BD15 FKS-1	4
16	452805000	Distributing Pipe Assy.	1
17	463750233	Connect Pipe 2/Electronic Expansion Valve to High Pressure Stop Valve	2
18	463750232	Connect Pipe 1/Electronic Expansion Valve to High Pressure Stop Valve	2
19	4517772	Little Handle	1
20	452957700	Painted Side Plate Assy.	1
21	452783100	High Pressure Stop Valve 3/8" R410a	1
22	452956200	Painted Stop Plate Assy.	1
23	452957600	Painted Right-back Plate Assy.	1
24	465800112	Display Board Assy.	1
25	453031800	3 Poles Terminal Block	1
26	467400042	Return Liquid Temperature Sensor(RLT) /Quattro 80 Z DCI	1
27	453175500	Guard Net Painting Assy.	1
28	453083800	Support/OAT	1
29	204107	Cable clip Nylon	5
30	453031700	10 Poles Terninal Block	1
31	453256700	Support Painting Assy./Electrical Box	1
32	467300184R	Controller / DCI 80 CR OUTDOOR BOX ASSY	1
33	462300106	Condenser System Assy.	1
34	4523657	PAINTED TOP COVER ASSY	1
35	455015100	ground wire,UL1015 18AWG,150MM	1
36	453256900	Ground Wire 2	1
37	4522600	Left Handle	1
38	4526226	Power lead wire	1
39	452682803	EEV coil(Green connector, 800mm)	1
40	452682801	EEV Coil (Yellow,700mm)	1
41	452682800	EEV coil CAM-MD12FKS-1 (Red, 530mm)	1
42	452682802	EEV coil CAM-MD12FKS-2 White connector, 530mm)	1
43	453256100	Support Painting Support Assy./Gas-Liquid Separator	1
44	452811100	Valve Support Painting Assy.	1
45	452783500	Brass Connector with Flange 1/2"	1
46	452783501	Brass Connector with Flange 3/8"	3
47	452783502	Brass Connector with Flange 1/4"	4
48	452783600	Oil Separator Assy.	1
49	452783200	Liquid-gas Separator	1
50	467550002R	Choke / DCI 80 CR	1
51	4518950	Filter Drier BFK-053S	1
52	464730010	Partition Plate Assy./DCI 80 CR	1
53	463250008	Liquid Accumulator/DCI Quattro 80 Z Z	1
54	452956300	Painted Right-front Plate Assy.	1
55	4522601	Right Handle	1
56	464200026	Motor Support/TRIO DCI/VIESSMANN	1
57	466110008R	DC Resin Motor(SIC-71FW-F170-1A)/DCI 80 CR	1
58	452960400	Outdoor Axial Fan OD=493	1
59	4523758	Nut M8 left	1
60	4516540	GROUND WIRE	1
61	467300239R	Controller / DCI 80 CR Filter Board Quattro	1
62	467300232R	Communication Board /DMSMP	1
63	464750017	Controller Box Assy./Quattro 80 Z DCI	1
64	464200031	Support/ Liquid Accumulator/Quattro 80 Z DCI	1

APPENDIX A

INSTALLATION AND OPERATION MANUAL

► **INSTALLATION MANUAL YAZ3 24, YAZ4 30 DCI**