



# SARMAAFARIN

## Single-Package Cooling Units

A wide range of cooling units in nominal 6 to 44 ton capacities



Certificate No.: Dbi - 2002011

**50DA, 50DAS** پکیج های برودتی یکپارچه سری  
**50BBS** پکیج های برودتی بدون کندانسور سری

FORM SSI - 50BBS, 50DA, 50DAS (93)

## Description

The 50DA, 50DAS single-package cooling units are designed for use with duct work for efficient air distribution. They may be used singly or as part of a multiple unit Weather maker system. All models are factory wired, charged and tested to minimize installation time. The condensers are air cooled. Because of their compact design, these units may be installed outdoors thru the roof or thru the wall to cool practically any residential, commercial or industrial building.

## Features

### Direct Drive Propeller Fan

resiliently mounted, moves condenser air quietly, efficiently. Maintenance minimized by permanently lubricated bearings.

**Centrifugal Evaporator Blower** moves large volumes of air slowly and quietly.

### Compressor

provides dependable operation. Has spring isolation, crankcase heater, discharge manifold, and internal motor protection.

**Time Guard Circuit** prevents compressor short cycle regardless of cause. Standard on all units.

### Weather Armor Cabinet

protects unit in any climate, even sea air. Sturdy Galvanneal steel, bonderized and painted with baked enamel.

**Complete Refrigeration System** is factory dehydrated, tested and charged. Only duct work and wiring needed to complete installation.

### Head Pressure Control

automatically cycles one of the two condenser fans on 50DAS012, 016 & 50DA024, 028 permitting unit operation during low ambient conditions.

### Capacity Control

on unit 50DA024, 028 permits partial operation at low-load conditions.

50DA, DAS

# Compact, self-contained units that offer complete flexibility to your building design

From SSI excellence in engineering comes a line of cooling units that can meet your toughest building requirements. Whether new construction or renovation. No matter where you place them, in the conditioned space or in an equipment room, they'll deliver unparalleled performance from 82000 to 433000 Btuh.

Whether you choose the 50BBS condenser less model (for remote condenser), you'll get a packaged unit that can cool, heat, dehumidify, filter and efficiently work at full or partial load.

All units are designed for duct systems in stores, offices and factories. The 008 thru 024 sizes

use an accessory plenum and grill for free-blow applications.

And installation is easy-versatility in unit location gives you a wide range of options. Factory installed piping and pre wired electrical center simplify field connections. The 016 thru 044 units can be installed for either vertical or horizontal air discharge. These units also contain built in circuit breakers which means you don't have to be concerned with field-supplied current protective devices. The Weather Armor cabinet surrounds an all-welded steel frame providing strength, rigidity and durability. An attractive installation that complements any environment.

Convenient servicing-these single-package cooling units are designed so that inspection, service and repair can be accomplished with little waste of time. Easy to remove panels provide complete access to internal components and controls. Precision parts have minimum wear surfaces and heavy gauge galvanized steel, double protected with rugged, baked enamel finish.

Lifetime economy time tested and reliable, these packages offer significant cost savings with their quick and simple installation, efficient cooling and sub cooling operation, and reduced service and maintenance requirements.

50BBS

## Quality engineered features assure outstanding performance

**Copeland ZR Series compressors** from the ZR scroll in the smallest unit, Copeland compressors deliver quiet, reliable high cooling capacity at low cost.

**Crankcase heaters** remain on during compressor off cycle to prevent dilution of oil by refrigerant. thus preventing flooded starts.

**Compressor motor protection** assured on all units by use of quick sensing elements that prevent trouble before it starts.

**QT fans** move large volumes of indoor air quietly and at a lower rpm than most comparable fans. Compact housing and specially designed discharge give fans superior air handling capability.

**Evaporator coils** - Space saving slab type provide high heat transfer efficiency with large face area; fins are mechanically bonded to seamless copper tubing.

**Pre-wired electrical control center** contains all control devices. Terminal block provides for a single field power connection.

### Accessories

**Heating coils** - Hot water coils are provided for easy piping connection in the field.

**Air inlet grille** - (016 and 024) adds an attractive touch to the front of the base unit when duct work is not used.

Covers the filter opening with a decorative, easily attached expanded metal assembly

# PHYSICAL DATA



50DA, DAS

UNIT	50DAS006	50DAS009	50DAS012	50DAS016	50DAS024	50DAS028	50DA024	50DA028
OPER. WT. (lb)	630	750	1420	1710	2425	2550	2425	2550
REFRIGERANT								
Type	R-22	R-22	R-22	R-22	R-22	R-22	R-22	R-22
Oper. Chg. (lb)	9	13	21	32	36	47	36	47
COMPRESSOR								
Model	ZR40	ZR94	ZR61	ZR94	ZR125, ZR190	ZR190	06E4250	06E4265
Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Reciprocating	Reciprocating
Qty.	2	1	2	2	1, 1	2	1	1
Cylinders	NA	NA	NA	NA	NA	NA	4	6
OUTDOOR AIR FAN(S)								
Type	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Drive	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct
Qty...Dia.(in)	1...24	1...26	2...22 ea	2...26 ea	2...28 ea	2...28 ea	2...28 ea	2...28 ea
Nom. Cfm	4100	5400	8000	14000	13550	12200	13550	12200
Motor hp	1/3	1	1ea	1 ea	1 ea	1 ea	1 ea	1 ea
Motor rpm	900	900	900	900	900	900	900	900
CONDENSER COIL								
Plate Fin/in.	15	15	15	15	15.6	16	15.6	16
Face Area (sq ft)	9.75	12.5	16.25	24	27.1	29.2	27.1	29.2
No. of Rows	3	3	3	3	3	4	3	4
INDOOR AIR FAN(S)								
Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Drive	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley
Qty...Dia.(in)	1...12 5/8	2...10 5/8	2...12 5/8	3...12 5/8	2...15	2...15	2...15	2...15
Nom. Cfm	2000	3400	4000	6000	8000	10000	8000	10000
Motor hp	1	1 1/2	2	3	7 1/2	7 1/2	7 1/2	7 1/2
Motor rpm	2850	2850	1425	1425	1425	1425	1425	1425
EVAPORATER COIL								
Expansion Type	Thermostatic	Thermostatic	Thermostatic	Thermostatic	Thermostatic	Thermostatic	Thermostatic	Thermostatic
Plate Fin/in.	15	15	15	15	14.2	11	14.2	11
Face Area (sq ft)	4.32	7.1	8.13	12.75	16.38	17.5	16.38	17.5
No. of Rows	3	3	3	3	3	4	3	4
FILTER								
Type	Cleanable	Cleanable	Cleanable	Cleanable	Cleanable	Cleanable	Cleanable	Cleanable
Qty...Size	2...C	2...A	3...D	2...D 2...A	4...D 6...B	4...D 6...B	4...D 6...B	4...D 6...B
Filter Size (in):	A=20x25x1		B=16x25x1		C=16x20x1		D=20x20x1	

50BBS

UNIT	50BBS 008	50BBS 012	50BBS 016	50BBS 024	50BBS 028	50BBS 034	50BBS 044
OPER WT (lb)	640*	800*	1230*	1230*	2100	2200	2750
OPER CHG (lb)							
Sys 1	8	5	8	7	15	15	15
Sys 2	-	5	8	7	12	15	15
Sys 3	-	-	-	-	-	-	11
COMPRESSOR							
	ZR						
Sys 1	94	61	94	125	190	190	190
Sys 2	-	61	94	125	125	190	190
Sys 3	-	-	-	-	-	-	125
EVAP FAN (S)							
Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Drive	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley	Belt & Pulley
Nom. cfm	3000	4000	6000	8000	10000	12000	16000
Range cfm	2250-3750	3000-5000	4500-7500	6000-10000	7500-12500	9000-15000	12000-20000
Motor hp	1	2	2	3	7 1/2	7 1/2	7 1/2
EVAP COIL							
Rows	3	3	3	4	4	4	4
Plat Fin/in.	13	13	13	11	11	11	11
Face Area (sq ft)	7.31	8.54	16.90	18.04	22.6	26.9	36.5
FILTERS							
Type**	Low Vel						
No. - Size	4 - B	4 - B	3 - C 3 - A	3 - C 3 - A	6 - D 2 - E	6 - D 2 - E	11 - D
CONNECTION							
Hot Gas Line	1... 3/4 ODF	1... 3/4 ODF	1... 1 1/8 ODM	2... 1 7/8 ODM	1... 1 1/8 ODS 1... 3/8 ODS*	2... 1 1/8 ODS	2... 1 1/8 ODM 1... 3/8 ODM*
Liquid Line	1... 5/8 ODF	1... 5/8 ODF	1... 5/8 ODM	2... 5/8 ODM	2... 5/8 ODS	2... 5/8 ODS	3... 5/8 ODM
Condensate	1... 3/4 FPT	1... 3/4 FPT	1... 1 FPT	1... 1 FPT	1... 1 1/4 MPT	1... 1/4 MPT	1... 1 1/4 MPT
HEATING COIL CONN.							
Steam 1-row	1... 1 1/4	1... 1 1/4	1... 1 1/4	1... 1 1/4	2... 1 1/2	2... 1 1/2	2... 2 1/2
Outlet	1... 1 1/4	1... 1 1/4	1... 1 1/4	1... 1 1/4	2... 1 1/4	2... 1 1/4	2... 1 1/2
Hot Water	1... 1 1/4	1... 1 1/4	2... 1 1/2	2... 1 1/2	2... 1 1/2	2... 1 1/2	2... 1 1/2
Arrangement	Location of Steam or Hot Water Connections#						
Vertical	Left			Right		Left or Right	

\* Add 140lb for plenum. \*\* Filters shown are supplied with unit. Field - supplied 2 - in. filters will fit 008 thru 024 units. ^ Shaded values are for System 2.  
 \*\*\* With fan section relocated for horizontal discharge. Left and Right are sides determined when facing return air opening on front of unit.  
 # Does not include charge for matching air - cooled condenser or connecting piping used with 50BBS units. All 50BBS units are shipped with holding charge.  
 Filter Size (in.) A - 20 x 25 x 1 B - 16 x 20 x 1 C - 16 x 25 x 1 D - 25 x 20 x 2 E - 16 x 20 x 2



No.	UNIT	NOM CFM	NOM TC
1	50BBS008	3,000	74,000
2	50BBS012	4,000	100,000
3	50BBS016	6,000	156,000
4	50BBS024	8,000	203,000
5	50BBS028	10,000	253,000
6	50BBS034	12,000	307,000
7	50BBS044	16,000	406,000

### COOLING CAPACITIES INDEX

- Most selection are based on 30 F  $\Delta t$ . Selections using over 40 F  $\Delta t$  are not recommended.
- Operation of 50BBS008 and 012 units above 155 F condensing temperature and 50BBS016 thru above 144 F condensing temperature, is not recommended as it may cause nuisance tripping of the high pressure switch.
- Direct interpolation is permissible. Do not extrapolate.

### SHC CORRECTION FACTOR

- SHC is based on 80 F db temperature of air entering evaporator coil.

Below 80 F db, subtract (corr factor x cfm) from SHC.

Above 80 F db, add (corr factor x cfm) to SHC.

Bypass Factor	Entering Air Dry-Bulb Temp (F)						Correction Factor
	79	78	77	76	75	under 75	
	81	82	83	84	85	over 85	
.10	.97	1.95	2.92	3.89	4.86	use formula shown below	
.20	.86	1.73	2.59	3.46	4.32		
.30	.76	1.51	2.27	3.03	3.78		

Interpolation is permissible.

$$\text{Correction Factor} = 1.08 \times (1 - \text{BF}) \times (\text{db} - 80).$$

- Gross capacities do not include deduction for indoor fan motor heat.

- Ratings for 50BBS units are based on 15 F of sub cooling.

For 0° F sub cooling, reduce capacity by 7.5%.

UNIT 50BBS	LOWER COIL (% Unit Cap.)	UPPER COIL (% Unit Cap.)
008	100	-
012	100	-
016	100	-
024	50	50
028	40	60
034	50	50
044	25	37.5

Duplicate these values for middle coil 044 only.

## COOLING CAPACITIES

1		50BBS008								
Cond Temp (F)		Air Ent Evap. - Cfm/BF								
		2250/.19			3000/.25			3750/.29		
		Temp Air Ent Evap - Ewb (F)								
		72	67	62	72	67	62	72	67	62
110	TC	84	77	69	87	80	73	90	83	76
	SHC	44	54	62	49	60	71	52	66	76
	KW THR	6.5	6.3	6.1	6.5	6.4	6.2	6.5	6.5	6.3
120	TC	78	72	66	82	76	69	85	77	71
	SHC	42	51	60	46	57	69	50	63	71
	KW THR	7.0	6.8	6.5	7.1	6.9	6.7	7.1	7.0	6.8
130	TC	74	69	62	78	71	65	80	74	67
	SHC	40	49	57	44	55	65	48	61	67
	KW THR	7.6	7.3	7.1	7.7	7.4	7.1	7.7	7.5	7.2
140	TC	69	64	58	72	67	61	74	69	62
	SHC	38	47	55	42	54	61	46	59	62
	KW THR	8.1	7.8	7.5	8.2	7.9	7.7	8.3	8.0	7.7
145	TC	68	61	56	69	64	58	71	65	60
	SHC	37	46	55	41	52	58	45	58	60
	KW THR	8.4	8.1	7.8	8.5	8.2	7.9	8.7	8.3	8.0
2		50BBS012								
Cond Temp (F)		Air Ent Evap. - Cfm/BF								
		3000/.23			4000/.28			5000/.33		
		Temp Air Ent Evap - Ewb (F)								
		72	67	62	72	67	62	72	67	62
110	TC	111	102	93	118	108	99	121	111	102
	SHC	59	71	83	65	80	95	69	86	102
	KW THR	7.8	7.7	7.5	7.9	7.8	7.7	8.0	7.8	7.7
120	TC	107	98	89	112	102	93	116	106	97
	SHC	57	70	81	62	78	92	67	85	97
	KW THR	8.7	8.4	8.2	8.8	8.6	8.3	8.8	8.6	8.4
130	TC	101	93	85	107	97	89	109	101	92
	SHC	55	67	78	60	75	89	65	83	92
	KW THR	9.5	9.2	8.9	9.6	9.4	9.0	9.7	9.4	9.2
140	TC	97	88	80	101	93	85	104	94	86
	SHC	53	65	76	58	72	85	62	80	86
	KW THR	10.2	9.9	9.5	10.4	10.0	9.7	10.5	10.1	9.8
145	TC	93	85	78	98	89	82	101	92	84
	SHC	52	63	74	56	71	82	61	79	84
	KW THR	10.6	10.3	9.8	10.8	10.5	9.9	10.9	10.5	10.2

50BBS



# ELECTRICAL DATA (50-cycle)



50DA, DAS

UNIT	VOLTS PHASE	DSDV	Comp. No. 1		Comp. No. 2		FUSE Amps.	UNIT	VOLTS	TOTAL KW Per HEATER	Number of element per heater	KW Per element	Max. Number of heaters
			LR Amp.	FL Amp.	LR Amp.	FL Amp.							
50DAS006	400 3	380-415	46	7	46	7	25	50DAS006	230 400	6.0 5.0	1 1	6.0 5.0	3 3
50DAS009	400 3	380-415	95	15.9	NA	NA	30	50DAS009	230 400	12.0 9.0	1 1	12.0 9.0	3 3
50DAS012	400 3	380-415	65.5	11	65.5	11	40	50DAS012	230 400	30.3 28.2	2 2	15.1 14.1	1 1
50DAS016	400 3	380-415	95	15.9	95	15.9	55	50DAS016	230 400	45.4 42.2	3 3	15.1 14.1	1 1
50DAS024	400 3	380-415	174	39	118	19.6	100	50DA024	230 400	36.8 27.8	2 2	18.4 13.9	3 3
50DAS028	400 3	380-415	174	39	174	39	125	50DA028	230 400	36.8 27.8	2 2	18.4 13.9	3 3
50DA024	400 3	380-415	173	38.6	NA	NA	80						
50DA028	400 3	380-415	223	52.8	NA	NA	100						

**DSDV** - Distribution System Design Voltage

Max dual element fuse and min wire size include compressor  
Part wind compressor, Starting

**NOTE :**

Power supply voltage must be within 10% of DSDV. Extended operation at the extremes of DSDV is not recommended. Phase imbalance must not exceed 3%

## INDOOR FAN MOTORS AND DRIVES

## INDOOR FAN MOTORS AND DATA

Unit	Drive	FAN MOTORS			FAN			Unit	TYPE	NOM HP	MAX BHP	FRAME	SHAFT DIAM (mm)
		HP	RPM	PDR	PPD	Chg+	FSR						
50DAS006	STD	1	2850	2.4 - 3.4	9.0	32.0	760 - 1080	50DAS006	STD	1	1.58	80	19
50DAS009	STD	1.5	2850	2.4 - 3.4	9.0	32.0	760 - 1080	50DAS009	STD	1½	2	80	19
50DAS012	STD	2	1425	4.0 - 5.0	7.0	20.5	815 - 1020	50DAS012	STD	2	2.4	90	24
50DAS016	STD	3	1425	4.5 - 5.5	7.0	20.5	915 - 1120	50DAS016	STD	3	3.5	100	28
50DA 50DAS 024	STD	7 ½	1425	4.6 - 5.6	6.6	22.0	990 - 1210	50DA 024	STD	7 ½	8.63	112	28
50DA 50DAS 028	STD	7 ½	1425	5.5 - 6.5	8.0	18.0	980 - 1160	50DA 028	STD	7 ½	8.63	112	28

**PDR** - Pitch Diameter Range (in.)

**PPD** - Pulley Pitch Diameter (in.)

**FSR** - Fan Speed Range (rpm)

+ Fan rpm change per ½ turn of adjustable motor pulley .

**STD** - Standard

50BBS

UNIT	VOLT PH HZ	VOLT- AGE RANGE		COMPRESSOR NO. 1		COMPRESSOR NO. 2		COMPRESSOR NO. 3		INDOOR FAN MOTOR		POWER SUPPLY	
		Min	Max	FLA	LRA	FLA	LRA	FLA	LRA	Hp	FLA	Min Wire Amps	Max Fuse Amps
50BBS008	400-3-50	342	457	15.9	95	N/A	N/A	N/A	N/A	1	2	20	25
50BBS012	400-3-50	342	457	11	65.5	11	65.5	N/A	N/A	2	4	32	40
50BBS016	400-3-50	342	457	15.9	95	15.9	95	N/A	N/A	2	4	43	50
50BBS024	400-3-50	342	457	19.6	118	19.6	118	N/A	N/A	3	5.2	54	60
50BBS028	400-3-50	342	457	39	174	19.6	118	N/A	N/A	7½	12.5	88	100
50BBS034	400-3-50	342	457	39	174	39	174	N/A	N/A	7½	12.5	110	125
50BBS044	400-3-50	342	457	39	174	39	174	19.6	118	7½	12.5	120	135

**FLA** - Full load Amps

**LRA** - Locked Rotor Amps



50DA, 50DAS					
SINGLE-PACKAGE(ROOF TOP) COOLING UNITS					
Model	NOM CLG CAP (Ton) 50HZ	Dimension (mm)			Approx Operation Weight (Kg)
		Length	Width	Height	
50DAS006	6	1054	1686	756	286
50DAS009	9	1054	1873	838	340
50DAS012	12	2294	1283	1162	644
50DAS016	16	3004	1283	1162	776
50DAS024 50DA024	24	2883	1918	1429	1100
50DAS028 50DA028	28	2883	1918	1429	1157

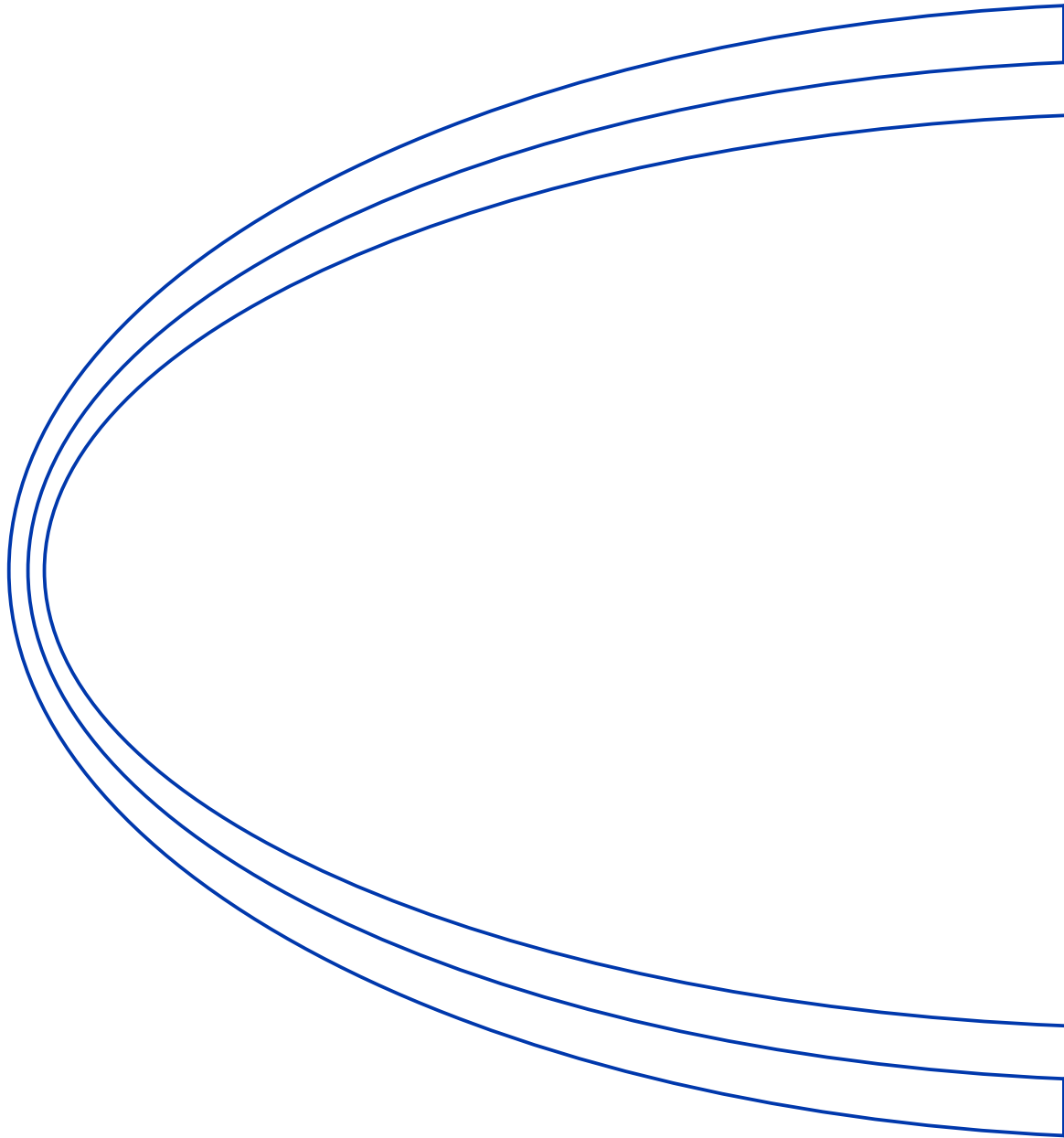
50BBS					
CONDENSERLESS PACKAGE COOLING UNITS					
Model	NOM CLG CAP (Ton) 50HZ	Dimension (mm)			Approx Operation Weight (Kg)
		Length	Width	Height	
50BBS008	8	1219	765	1956	290
50BBS012	12	1219	765	1956	363
50BBS016	16	2032	743	2096	558
50BBS024	24	2032	743	2096	558
50BBS028	28	2369	895	2442	952
50BBS034	34	2369	895	2442	998
50BBS044	44	3210	1175	2692	1247



**50DA, 50DAS**



**50BBS**



**Sanaye Sarmaafarin Iran**

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