20.5 SEER IDS 2.0
Inverter Ducted Split 2.0

BOSCH
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Start-up Guide

BoschHeatingAndCooling.com

Bosch Inverter Ducted Split System IDS 2.0

The Bosch Inverter Ducted Split system provides supremely-efficient comfort by adjusting compressor capacity rather than a simple on/off control like other units, thereby reducing operating costs and saving you money. With enhanced humidity control and higher efficiency, the performance of the IDS 2.0 system provides you with maximum comfort with minimum energy usage! The system's intelligent features work in tandem with your thermostat to automatically adjust to your preferences, while integrated sound dampening features keep the units nice and quiet for your peace of mind.

Features

- Premium efficiency – Up to 20.5 SEER and 10.5 HSPF
- 10 speed ECM outdoor blower for whisper quiet and efficient operation – as low as 56 dBA(1)
- Two stage x13 ECM blower for enhanced humidity control
- Easy to install – compatible with most standard 24 VAC heat pump thermostats
- 10-year Residential Limited Warranty(2)
- All AHRI certified BOVA2.0 + BVA2.0 combinations meet the requirements for ENERGY STAR
- There are 2,3,4, & 5 ton ENERGY STAR rated systems available when paired with Bosch 96% Furnaces*
- Aluminum evaporator coil for superior corrosion resistance
- Compatible with the Bosch Connected Control (BCC) Thermostat family*

(1) 56 dBA sound level is based on outdoor unit. (2) Please go to boschheatingandcooling.com for full limited warranty details *Product sold separately

BOSCH BOVA MODEL OUTDOOR UNIT		
MODEL NUMBER	PART NUMBER	DESCRIPTION
BOVA-36HDN1-M20G	8733952437	36 kBTU/hr (3 ton), Condensing Unit 2.0
BOVA-60HDN1-M20G	8733952438	60 kBTU/hr (5 ton), Condensing Unit 2.0
BOSCH BVA MODEL AIR HANDLER		
BVA-24WN1-M20	8733952439	24 kBTU/hr (2 ton), Air Handler Unit 2.0
BVA-36WN1-M20	8733952440	36 kBTU/hr (3 ton), Air Handler Unit 2.0
BVA-48WN1-M20	8733952441	48 kBTU/hr (4 ton), Air Handler Unit 2.0
BVA-60WN1-M20	8733952442	60 kBTU/hr (5 ton), Air Handler Unit 2.0

FIELD INSTALLED ELECTRIC HEAT KITS		
MODEL NUMBER	PART NUMBER	DESCRIPTION
EHK-05B	7739832075	5 kW Electric Strip heater
EHK-08B	7739832076	7.5 kW Electric Strip heater
EHK-10B	7739832077	10 kW Electric Strip heater
EHK-15B	7739832078	15 kW Electric Strip heater
EHK-20B	7739832079	20 kW Electric Strip heater

INVERTER DUCTED SPLIT AHRI 210/240 PERFORMANCE DATA

OUTDOOR UNIT MODEL	INDOOR AIR HANDLER MODEL	COOLING CAPACITY (BTU/H)			HEATING CAPACITY (BTU/H)			CFM
		TOTAL	EER[3]	SEER[4]	HI	HSPF[5]	LOW	
BOVA-36HDN1-M20G	BVA-24WN1-M20	24000	14	20.5	24000	10.5	23000	860/680
BOVA-36HDN1-M20G	BVA-36WN1-M20	34600	12.5	20	34200	10.5	28000	1150/820
BOVA-60HDN1-M20G	BVA-48WN1-M20	47500	13.5	20	48000	10.5	40000	1530/1150
BOVA-60HDN1-M20G	BVA-60WN1-M20	54500	12.5	19	56000	10.5	44000	1750/1350

INVERTER DUCTED SPLIT + CASED COIL ONLY AHRI 210/240 PERFORMANCE DATA

OUTDOOR UNIT MODEL	CASED COIL MODEL	COOLING CAPACITY (BTU/H)			HEATING CAPACITY (BTU/H)			CFM
		TOTAL	EER[3]	SEER[4]	HI	HSPF[5]	LOW	
BOVA-36HDN1-M20G	BMAC2430ANTD	23400	11.8	16.5	23400	9.5	18000	750/600
BOVA-36HDN1-M20G	BMAC2430BNTD	23600	11.8	16.5	23800	9.5	18000	800/600
BOVA-36HDN1-M20G	BMAC3036ANTD	32000	10.8	16	33600	9.5	22000	900/750
BOVA-36HDN1-M20G	BMAC3036BNTD	32400	11.2	16	33800	9.5	23000	1000/800
BOVA-36HDN1-M20G	BMAC3036CNTD	32600	11.4	16	34000	9.5	23000	1050/800
BOVA-60HDN1-M20G	BMAC4248BNTF	43000	11.2	16.5	44500	9.5	31500	1200/1050
BOVA-60HDN1-M20G	BMAC4248CNTF	44000	11.8	16.5	46000	9.5	32000	1350/1050
BOVA-60HDN1-M20G	BMAC4248DNTF	45000	11.8	16.5	46500	9.5	32000	1450/1050
BOVA-60HDN1-M20G	BMAC4860CNTF	55000	10.5	16	55500	9.5	38000	1350/1150
BOVA-60HDN1-M20G	BMAC4860CNTF	56000	10.5	16	56000	9.5	39000	1500/1150

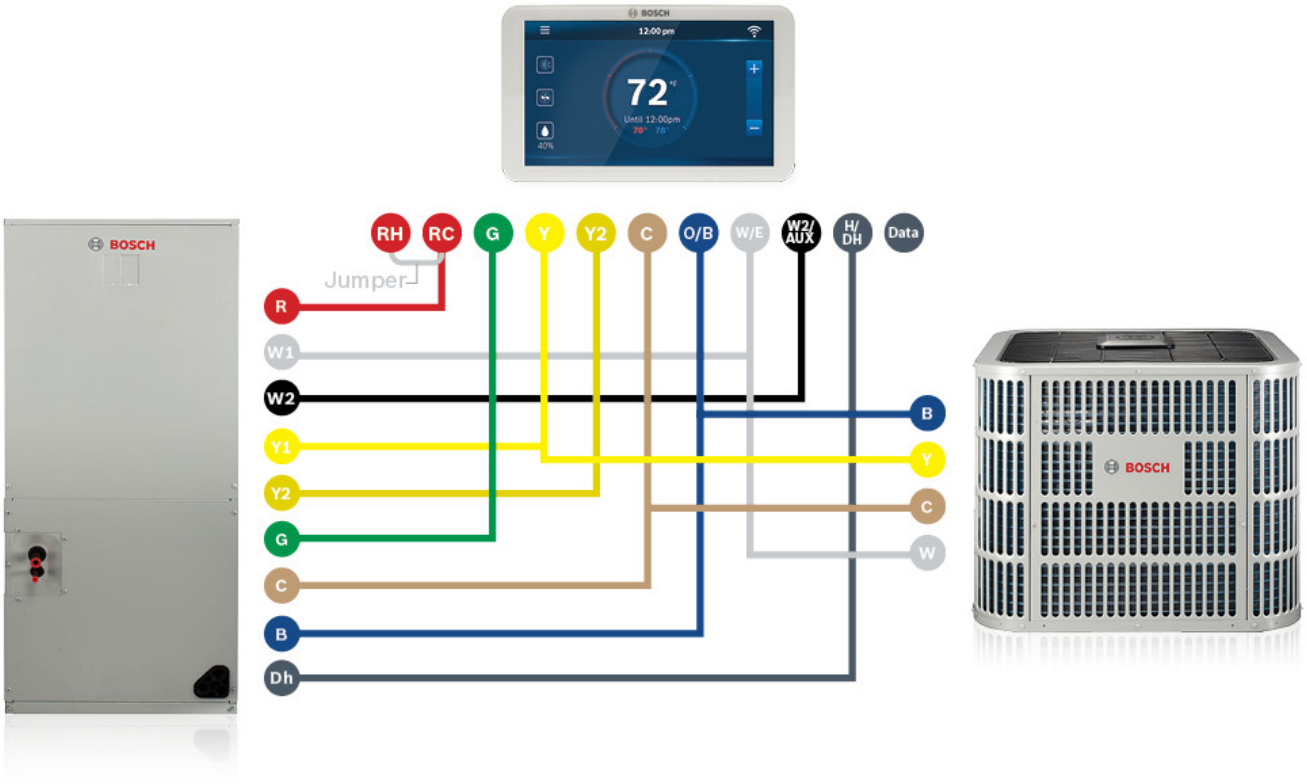
INVERTER DUCTED SPLIT + CASED COIL + 96% FURNACE AHRI 210/240 PERFORMANCE DATA

SYSTEM TONNAGE	OUTDOOR UNIT MODEL	CASED COIL MODEL	PAIRING FURNACES	COOLING CAPACITY (BTU/H)			HEATING CAPACITY (BTU/H)			CFM
				TOTAL	EER[3]	SEER[4]	HI	HSPF[5]	LOW	
2	BOVA-36HDN1-M20G	BMAC2430ANTD	BGH96M060B3A	24000	13	18.5	24000	10	18000	820/630
	BOVA-36HDN1-M20G	BMAC2430ANTD	BGH96M080B3A	24000	13	18.5	24000	10	18000	800/580
	BOVA-36HDN1-M20G	BMAC2430BNTD	BGH96M060B3A	24000	13.5	19	24000	10	19000	860/680
	BOVA-36HDN1-M20G	BMAC2430BNTD	BGH96M080B3A	24000	13.5	19	24000	10	19000	840/630
3	BOVA-36HDN1-M20G	BMAC3036ANTD	BGH96M060B3A	32200	11.2	17	34000	10	25000	1050/800
	BOVA-36HDN1-M20G	BMAC3036ANTD	BGH96M080B3A	32200	11.2	17	34000	10	25000	1020/800
	BOVA-36HDN1-M20G	BMAC3036BNTD	BGH96M060B3A	33000	11.6	17.5	34200	10	25000	1100/850
	BOVA-36HDN1-M20G	BMAC3036BNTD	BGH96M080B3A	33000	11.6	17.5	34200	10	25000	1070/850
	BOVA-36HDN1-M20G	BMAC3036CNTD	BGH96M080C4A	33600	12	18	34200	10	25000	1050/820
	BOVA-36HDN1-M20G	BMAC3036CNTD	BGH96M100C5A	33600	12	18	34200	10	25000	1150/750
	BOVA-36HDN1-M20G	BMAC4248BNTF	BGH96M080B3A	33000	12.5	18.5	34200	10	26000	1000/850
	BOVA-36HDN1-M20G	BMAC4248CNTF	BGH96M100C5A	33000	12.5	18.5	34200	10	26000	1100/800
4	BOVA-60HDN1-M20G	BMAC4248BNTF	BGH96M080B3A	43000	11.2	18	45000	9.5	34000	1250/1050
	BOVA-60HDN1-M20G	BMAC4248CNTF	BGH96M080C4A	44000	12	18.5	46000	10	35000	1250/1050
	BOVA-60HDN1-M20G	BMAC4248CNTF	BGH96M100C5A	45000	12.5	18.5	46500	10	35000	1450/1150
	BOVA-60HDN1-M20G	BMAC4248DNTF	BGH96M100D5A	45500	12.5	18.5	47000	10	35000	1500/1200
	BOVA-60HDN1-M20G	BMAC4248DNTF	BGH96M120D5A	45500	12.5	18.5	47000	10	35000	1500/1200
5	BOVA-60HDN1-M20G	BMAC4860CNTF	BGH96M100C5A	52000	12	18	53500	10	37000	1450/1150
	BOVA-60HDN1-M20G	BMAC4860DNTF	BGH96M100D5A	52000	12.5	18.5	54000	10	38000	1500/1200
	BOVA-60HDN1-M20G	BMAC4860DNTF	BGH96M120D5A	52000	12.5	18.5	54000	10	38000	1500/1200

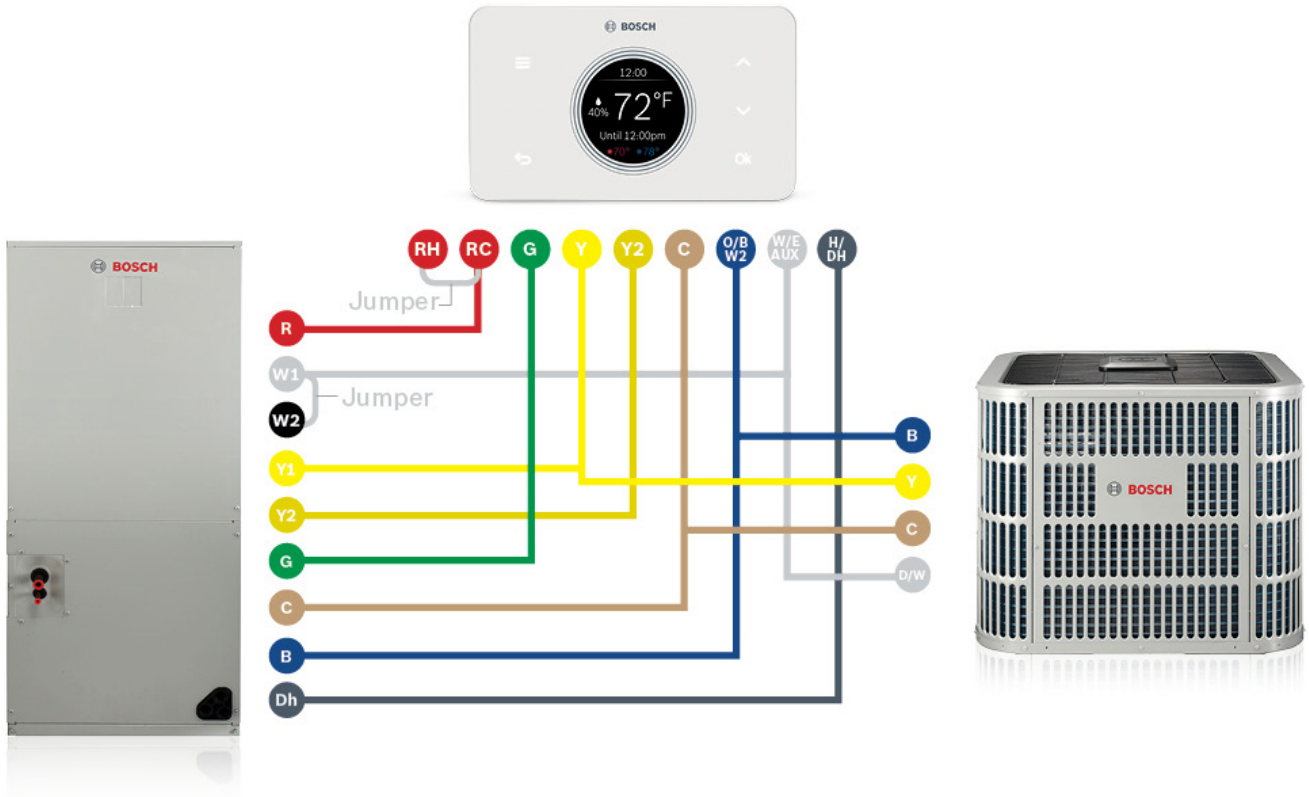
Blue Text = ENERGY STAR Certified. (3) Energy Efficiency Ratio; Certified per AHRI 210/240. (4) Seasonal Energy Efficiency Ratio; Certified per AHRI 210/240. (5) HSPF = Heating Seasonal Performance Factor; Certified per AHRI 210/240. Note: Always check the rating plate for electrical data on the unit being installed. The listed data is for reference only. Please consult boschheatingandcooling.com for further details.

Wiring Diagrams

IDS 2.0 with Electric Heat Back-up + BCC100

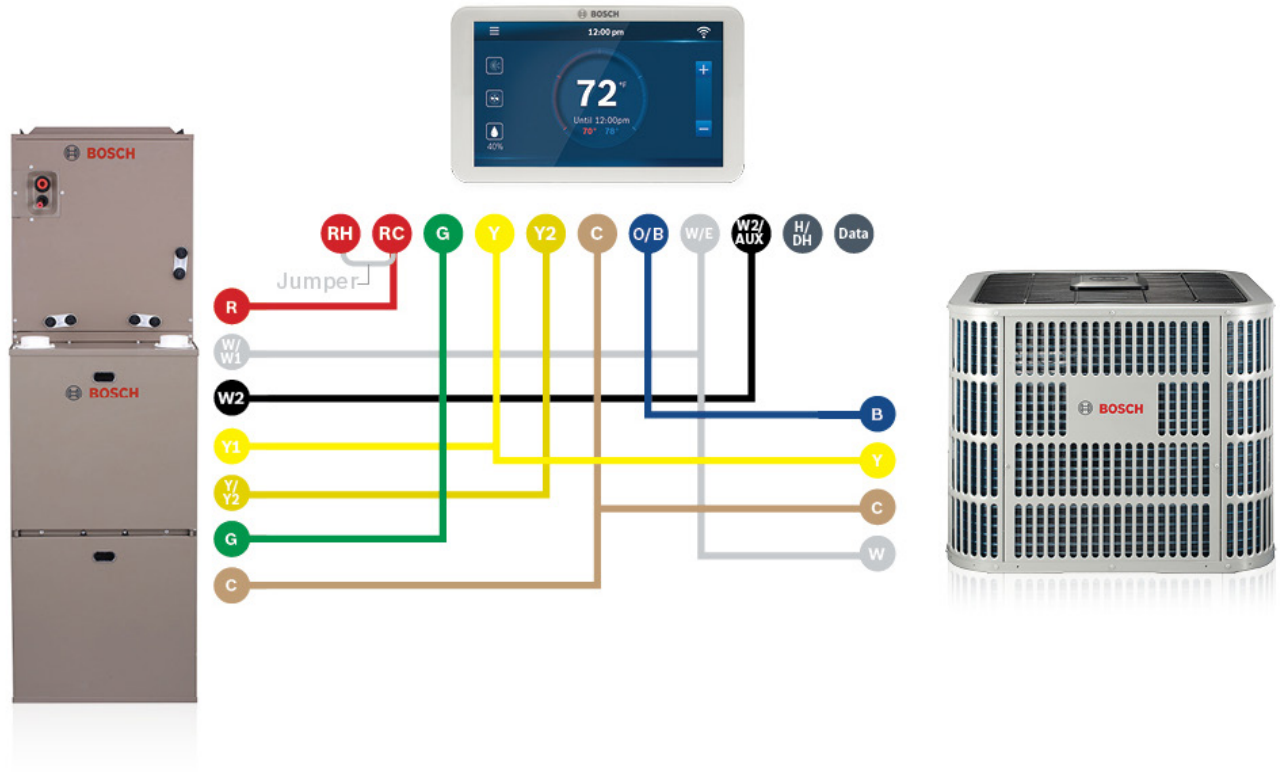


IDS 2.0 with Electric Heat Back-up + BCC50

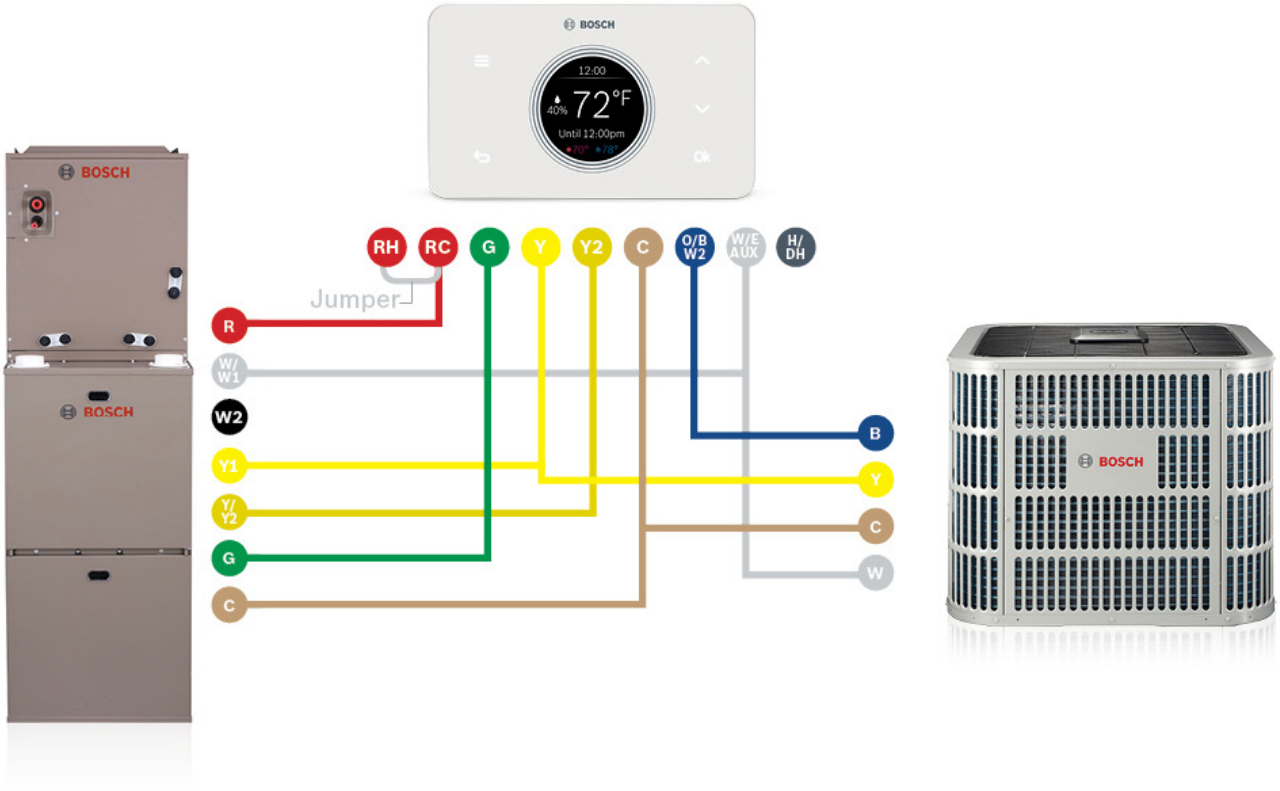


Wiring Diagrams

BGH96 + Cased Coil + IDS 2.0 + BCC100 (Dual Fuel)



BGH96 + Cased Coil + IDS 2.0 + BCC50 (Dual Fuel)



Line Sets and Charging

The Bosch BOVA condenser comes factory pre-charged (410a) for 15' of standard size line set. Up to 150' of line set is allowed with a maximum of 25' lift (refer to Figure 2.1). Any application with line set length of more than 15' would require an additional 0.6 oz/ft for each additional foot of line set (refer to Figure 2.2), this can be done by one of two methods: (1) Charge by Weight, (2) Charge by Subcooling.

(1) Charge by Weight

Can be used at any time and is the recommended way to charge an IDS system (especially for initial installs). This method can be used when power is not available to the equipment site or when operating conditions are not in range to verify the charge based on subcooling. It is recommend to verify charge and adjust as necessary by subcooling. (Refer to Figure 2.4 for subcooling and superheat requirements.)

(2) Charge Based on Subcooling (AC Mode)

Outside temperature must be between 55° and 120°F and indoor temperature must be between 70° and 80°F to charge by subcooling. After starting the system in cooling mode, short press "FORCE" button (see Figure 2.3), "⊢" symbol appears, and operate the system for a minimum of 20 minutes. (Refer to Figure 2.4 for subcooling and superheat requirements.)

Figure 2.1

System Capacity Model	Liquid Line	Suction Line	Total Equivalent Length - Feet					
			25	50	75	100	125	150
	Inch O.D.		Maximum Vertical Separation - Feet					
2 Ton	3/8 *	3/4 Std.	25	50	45	40	30	25
		5/8 Opt.	25	50	45	40	30	25
3 Ton	3/8*	3/4 Std.	25	50	50	50	35	25
		5/8 Opt.	25	50	50	50	35	25
4 Ton	3/8*	7/8 Std.	25	50	50	40	30	25
		3/4 Opt.	25	50	50	40	30	25
5 Ton	3/8*	7/8 Std.	25	50	50	40	30	25
		3/4 Opt.	25	50	50	40	30	25
		1 1/8 Opt.	25	40	N/A	N/A	N/A	N/A

*Standard line size is recommended, N/A: Application not recommended

Figure 2.2

1. Total Line Length (ft) = _____(a)
2. Standard Lineset (ft) = 15 (b)
3. (a) minus (b) = _____(c)
4. Refrigerant Multiplier = 0.6 oz/ft (d)
5. Refrigerant Adder (c*d) = _____(e)*

*If lineset is less than 15 ft, (e) = 0

Figure 2.3

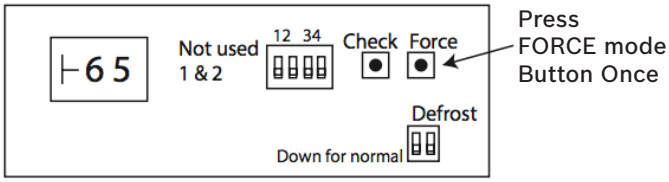


Figure 2.4

Model	Design Subcooling	
	Subcooling/°F	Superheat/°F
24K/36K	10±2	10–18
	8±2	7–10
48K	8±2	9–18
	6±2	7–9
60K	8±2	8–18
	6±2	6–8

Liquid Temp (°F)	Final Subcooling (°F)							
	6	7	8	9	10	11	12	13
	Liquid Gauge Pressure (PSI)							
55	173	176	179	182	185	188	191	195
60	188	191	195	198	201	204	208	211
65	204	208	211	215	218	221	225	229
70	221	225	229	232	236	239	243	247
75	239	243	247	251	255	259	262	266
80	259	262	266	270	275	279	283	287
85	279	283	287	291	295	300	304	309
90	300	304	309	313	318	322	327	331
95	322	327	331	336	341	346	351	355
100	346	351	355	360	365	370	376	381
105	370	376	381	386	391	397	402	407
110	397	402	407	413	418	424	430	435
115	424	430	435	441	447	453	459	465
120	453	459	465	471	477	483	489	496
125	483	489	469	502	508	515	521	528

Suction Temp (°F)	Final Superheat (°F)								
	6	8	10	12	14	16	18	20	22
		Suction Gauge Pressure (PSI)							
40	105	101	97	93	89	86	82	78	75
42	109	105	101	97	93	89	86	82	78
44	114	109	105	101	97	93	89	86	82
46	118	114	109	105	101	97	93	89	86
48	123	118	114	109	105	101	97	93	89
50	128	123	118	114	109	105	101	97	93
52	133	128	123	118	114	109	105	101	97
54	138	133	128	123	118	114	109	105	101
56	143	138	133	128	123	118	114	109	105
58	148	143	138	133	128	123	118	114	109
60	153	148	143	138	133	128	123	118	114
62	159	153	148	143	138	133	128	123	118
64	164	159	153	148	143	138	133	128	123
66	170	164	159	153	148	143	138	133	128
68	176	170	164	159	153	148	143	138	133
70	182	176	170	164	159	153	148	143	138
72	188	182	176	170	164	159	153	148	143

Control Board/Dip Switch Adjustments

Dip Switch SW4

SW4-1 and SW4-2 are not used and should remain in the factory default position at all times. SW4-3 and SW4-4 give you coil temperature and modulation control.

Figure 3.1

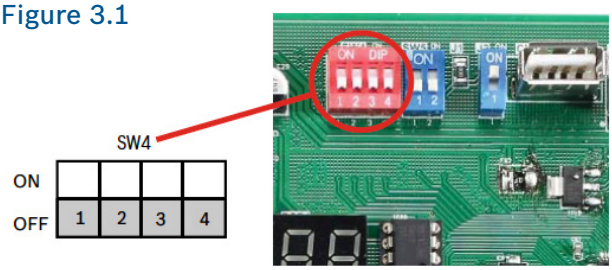


Figure 3.2

Switch	Description	
SW4-1	ON	Unused
	OFF*	Must be set at "OFF" position
SW4-2	ON	Unused
	OFF*	Must be set at "OFF" position
SW4-3	ON	Adaptive capacity output disabled
	OFF*	Adaptive capacity output enabled
SW4-4	ON	Accelerated cooling/heating
	OFF*	Normally cooling/heating

SW4-3 Function

While SW4-3 is in the off position (enabled) it allows for coil/condenser target temperature to drift +/- 1-4°F based on the previous hour of operation in an attempt to optimize run time. Reason to Disable: In zoning applications but only as needed as a result of customer expectations and/or performance.

SW4-4 Function

Reduces target coil temperature by 4°F in cooling and increases target coil temperature by 4°F in heating. Recommended to be used only as needed as a result of customer expectations and/or performance.

Dip Switch SW5

Demand Defrost Adjustments

Figure 3.3

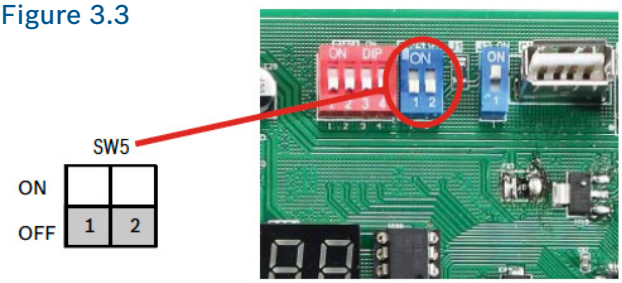


Figure 3.4

Defrosting Choice	SW5-1	SW5-2	Remarks
ON	Operating time is reduced by 10%	Defrosting extended for 60 seconds	
OFF	Normal	Normal	Default
Remarks	Enter defrost	Quit defrost	

SW5-1 Function

Functions allows for the equipment to enter defrost sooner than normal. Used in northern cool climates where high humidity is common.

SW5-2 Function

Function allows for defrost cycle to be extended from 8 minutes to 9 minutes. Also used in cooler climates where high humidity is common.

Manual/Force Defrost

To initiate defrost cycle:

1. System must have a call for heat and have been operating for a minimum of 8 minutes.
2. Press “FORCE” button on inverter board for 6 seconds to begin forced defrost.
3. Wait approximately 40 seconds for defrost to initiate.
4. Once defrost initiates the display will indicate “dF”.
5. Defrost test will terminate automatically after which the display will indicate running speed.
6. If a second defrost test is required, repeat step 2-5 after 5 minutes.

Onboard Parameter Check and Diagnostics

Figure 4.1

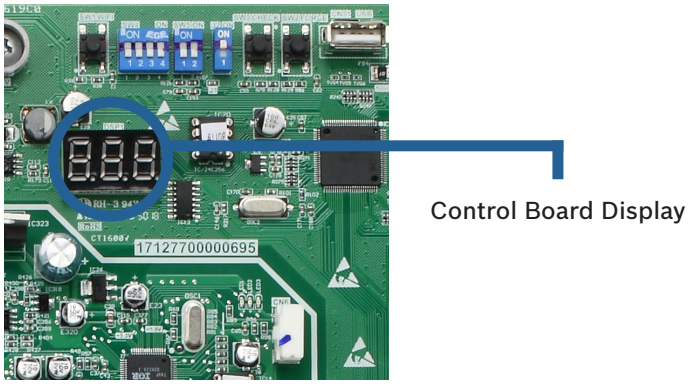
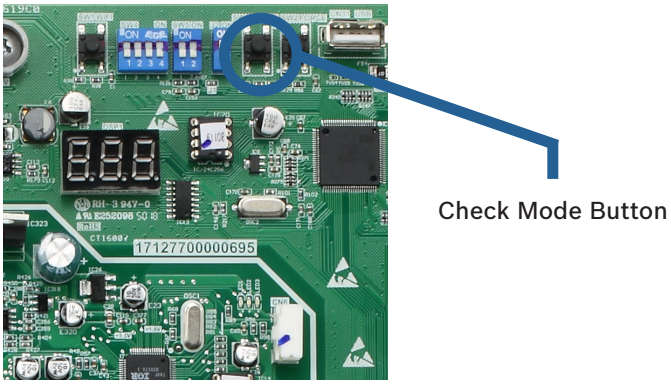


Figure 4.2



1. Press the “Check” button to index through parameters.
2. After first pressing on the “Check” button, it will display the sequence, and after 1 second it will display the value of the parameter.
3. After 20 seconds on same parameter, display will revert back to normal status.
4. If a system protection is active, first digit will display “status code.”

Figure 4.3

No.	Point check content
0	Outdoor unit capacity
1	Outdoor unit mode
2	Outdoor unit set compressor speed (Hz)
3	T3 (outdoor coil temp.) (°F)
4	T4 (outdoor ambient temp.) (°F)
5	T5 (compressor discharge temp.) (°F)
6	Th (compressor suction temp.) (°F)
7	T3L (liquid line temp.) (°F)
8	Tf (module temp.) (°F)
9	Pe (evaporating pressure) (PSI)
10	Pc (condensing pressure) (PSI)
11	Tes target of the evaporating temp. (only use for cooling mode) (°F)
12	Te (evaporating temp.) (°F)
13	Tcs target of the condensing temp. (only use for heating mode) (°F)
14	Tc (condensing temp.) (°F)
15	Target of the compressor discharge superheat (only use for heating mode) (°F)
16	Compressor discharge superheat (°F)
17	Openings of EEV
18	Fan speed
19	Compressor current (A)
20	Power AC voltage input (V)
21	Compressor input dc voltage (V)
22	Continuous running time of the compressor (min)
23	Last fault code
24	Software version
25	Remark“--”

System Protection Codes

Figure 4.4

⊦	Forced operation mode
L	Running indication under T3 limited condition
D	Running indication under T5 limited condition
P	Running indication under compressor ratio limited condition
F	Running indication under TF limited condition
C	Running indication under current limited condition
U	Running indication under low voltage limited condition
A	Running indication under return oil mode
dF	Running indication under defrost mode

System Fault Codes

Figure 4.5

Code	Fault Description (Sensor)
C3	The coil sensor is seated fault in cooling (T3)
E4	Temperature sensor fault (T3, T4, T5, Th, T3L, TF)
E5	High/low voltage protection
E6	DC fan motor fault
E7	Compressor discharge sensor is seated fault (T5)
E9	EEPROM fault
H0	Communication fault in main control chip
H5*	5 times (P2) protection in 100 minutes, system lockout
H8	Pressure transducer fault (PT)
P0	High module radiator temperature protection (TF)
P1	High pressure switch protection (HPS)
P2	Low pressure protection in cooling or heating (PT)
P3	Compressor over current protection
P4	High compressor discharge temperature protection (T5)
P5	Condensor coil temperature protection in cooling (T3)
P8	DC fan motor hurricane/typhoon protection
PH	Low discharge superheat protection
F1	High pressure switch protection (HPS)
L0-L9	The IPM module protection
AtL	Ambient Temperature Limited

*Fault requires hard restart

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Notes

Notes

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In the U.S., Canada and Mexico, the Bosch Group manufactures and markets automotive original equipment and aftermarket solutions, industrial drives and control technology, power tools, security and communication systems, packaging technology, thermotechnology, household appliances and software solutions. The Bosch Group's products and services are designed to improving quality of life by providing innovative and beneficial solutions. In this way, the company offers technology worldwide that is "Invented for life." Additional information is available online at boschheatingandcooling.com and bosch.ca.

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Bosch Thermotechnology is a leading source of high quality water heating and comfort systems. The company offers gas tankless, electric whole house and point-of-use water heaters, Bosch and Buderus floor-standing and wall mounted boilers, Bosch and FHP geothermal, water-source and air-source systems as well as controls and accessories for all product lines. Bosch Thermotechnology is committed to being Simply Smart by offering products that work together as integrated systems that enhance quality of life in an ultra-efficient and environmentally friendly manner. For more information, visit boschheatingandcooling.com.

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