GR9S96-U

Heating Input: 40,000–80,000 BTU/H

Ultra Low NOx, Single-Stage, Multi-Speed ECM Gas Furnace Up to 97% AFUE

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R32

Standard Features

- Heavy-duty stainless-steel tubular heat exchanger
- Super-ferritic Stainless-steel secondary heat exchanger
- Single-stage gas valve
- Durable Silicon Nitride igniter
- Quiet multi-speed induced draft blower
- Self-diagnostic control board with constant memory fault code history output to a LED
- Eligible for installation in California's South Coast Air Quality Management District (SCAQMD) and San Joaquin Valley Air Pollution Control District (SJVUAPCD). This furnace complies with the 14 ng/J NOx emission limit in SCAQMD Rule 1111 and SJVUAPCD Rule 4905.
- AHRI Certified; ETL Listed

Cabinet Features

- Designed for multi-position installation — GR9S96-U: upflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy-to-install top venting with optional side venting — GR9S96-U: upflow models only
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (Q_{Leak}) ≤ 1.4%
- Heavy-gauge steel cabinet with durable finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side return with easy-cut tabs for effortless removal in bottom air-inlet applications

LIFETIME HEAT EXCHANGER LIMITED WARRANTY* | 10 YEAR UNIT REPLACEMENT LIMITED WARRANTY* | 10 YEAR PARTS LIMITED WARRANTY* | Intertek | AHRI CERTIFIED | COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 = | COMPANY WITH ENVIRONMENTAL SYSTEM CERTIFIED BY DNV GL = ISO 14001 =

* Complete warranty details available from your local dealer or at www.franklinhvacsystems.com. To receive the Lifetime Heat Exchanger Limited Warranty (good for as long as you own your home), 10-Year Unit Replacement Limited Warranty and 10-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Québec. The duration of warranty coverage in Texas and Florida differs in some cases.

G	R	9	S	96	060	3	B	N	A	A
1	2	3	4	5,6	7,8,9	10	11	12	13	14

Brand
G - Goodman

Configuration
R- Upflow/ Horizontal R32
D - Downflow/Horizontal R32

Motor
9 - Nine Speed ECM
V - variable Speed ECM

Gas Valve
T - 2 Stage
S - 1 STAGE
M - Modulating Gas Valve

AFUE
80 - 80% AFUE
92 - 92% AFUE
96 - 96% AFUE***
97 - 97% AFUE

MBTU/h
030 - 30,000 BTU/h
040 - 40,000 BTU/h
060 - 60,000 BTU/h
80 - 80,000 BTU/h
100 - 100,000 BTU/h
120 - 120,000 BTU/h

Maximum CFM
3 - 1200 CFM
4 - 1600 CFM
5 - 2000 CFM

Cabinet Width
A - 14"
B - 17½"
C - 21"
D - 24½"

NOx
N = > 40 NG/J NOx
X = < 40 NG/J NOx
U = < 14NG/J NOx

Major Revision
A - Initial Release
B - 1st Revision

Minor Revision
A - Initial Release
B - 1st Revision

***Some models are rated up to 97% AFUE

	GR9S96 0403BU	GR9S96 0603BU	GR9S96 0805CU
Heating Data			
High Fire Input[1]	40,000	60,000	80,000
High Fire Output[1]	38,800	58,200	77,600
AFUE[2]	97.0	97.0	97.0
Temperature Rise Range (°F)	15 - 45	30 - 60	30 - 60
Vent Diameter[3]	2" - 3"	2" - 3"	2" - 3"
No. of Burners Ports	2	3	4
Circulator Blower			
Available AC @ 0.5" ESP	1.5 - 3	1.5 - 3	2.5 - 5
Size (D x W)	10" x 8"	11" x 8"	11" x 10"
Horsepower @ 1075 RPM	½	½	1
Speed	9	9	9
Filter Size (in²) (Qty)	(1) 16 x 25 (side or bottom)	(1) 16 x 25 (side or bottom)	(1) 20 x 25 (bottom) or (2) 16 x 25 (side)
Electrical Data			
Min. Circuit Ampacity[4]	8.5	8.5	15.1
Max. Overcurrent Device (amps)[5]	15	15	25
Shipping Weight (lbs)	115	120	145
ENERGY STAR® CERTIFIED	ENERGY STAR	ENERGY STAR	ENERGY STAR

1 Natural Gas BTU/h

2 DOE AFUE based upon Isolated Combustion System (ICS)

3 Installer must supply one or two PVC pipes: one for combustion air (optional) and one for the flue outlet (required). Vent pipe must be either 2" or 3" in diameter, depending upon furnace input, number of elbows, length of run and installation (1 or 2 pipes). The optional Combustion Air Pipe is dependent on installation/code requirements and must be 2" or 3" diameter PVC.

4 Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

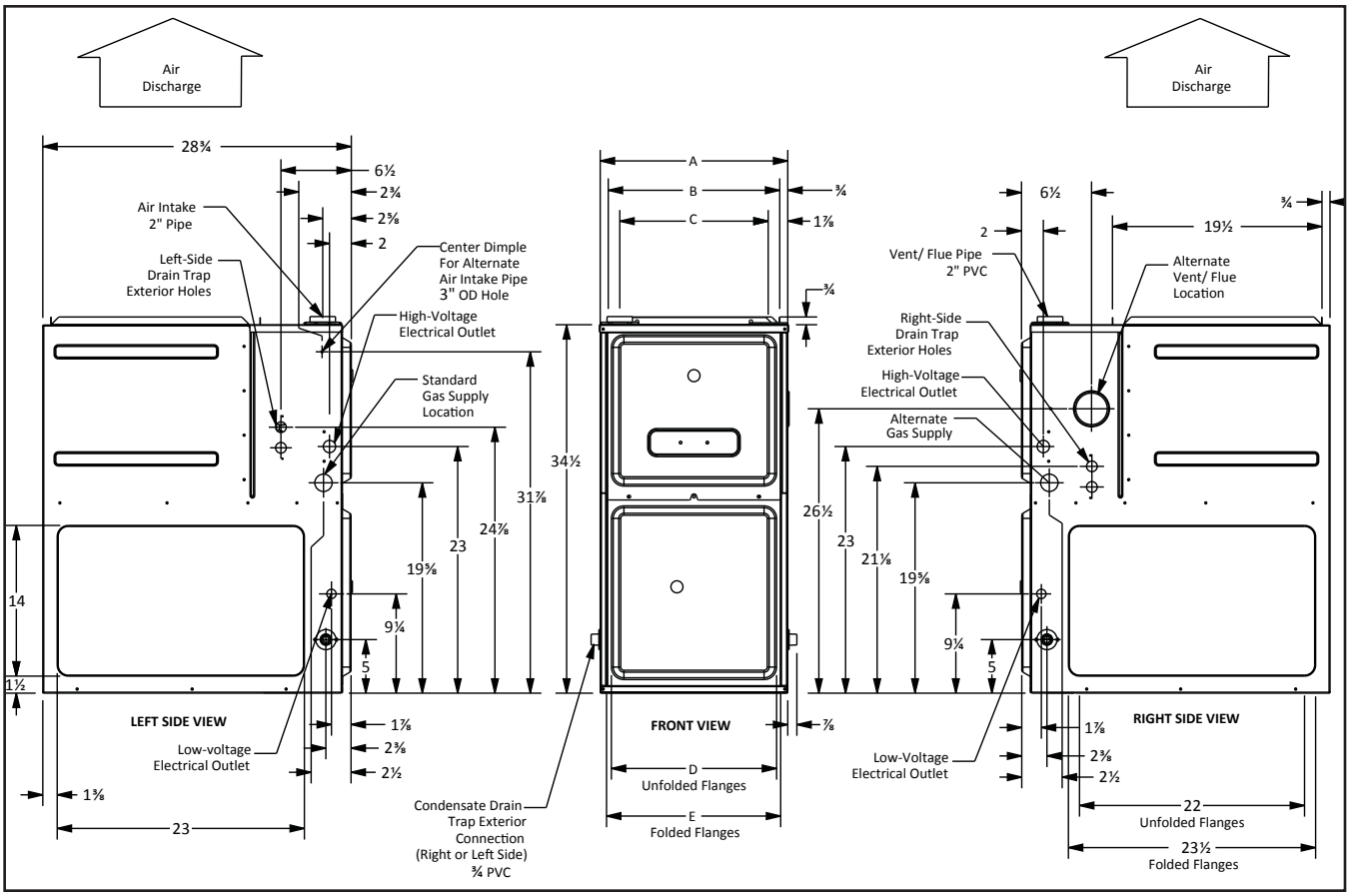
5 Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

Notes

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½" FNPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24" front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

Energy Star Notes

- Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet **ENERGY STAR®** criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet **ENERGY STAR®** requirements.



Model	Dimensions (In Inches)							
	W	D	H	A	B	C	D	E
GR9S960403BU	17½"	28⅞"	34½"	17½"	16"	13⅞"	12⅛"	13⅝"
GR9S960603BU	17½"	28⅞"	34½"	17½"	16"	13⅞"	12⅛"	13⅝"
GR9S960805CU	21"	28⅞"	34½"	21"	19½"	17⅞"	16"	17½"

Minimum Clearances to Combustible Materials

Position	Sides	Rear	Front	Bottom	Flue	Top
Upflow	0"	0"	3”	C	0"	1"
Horizontal	6"	0"	3”	C	0"	6”

C = If placed on combustible floor, the floor MUST be wood ONLY.

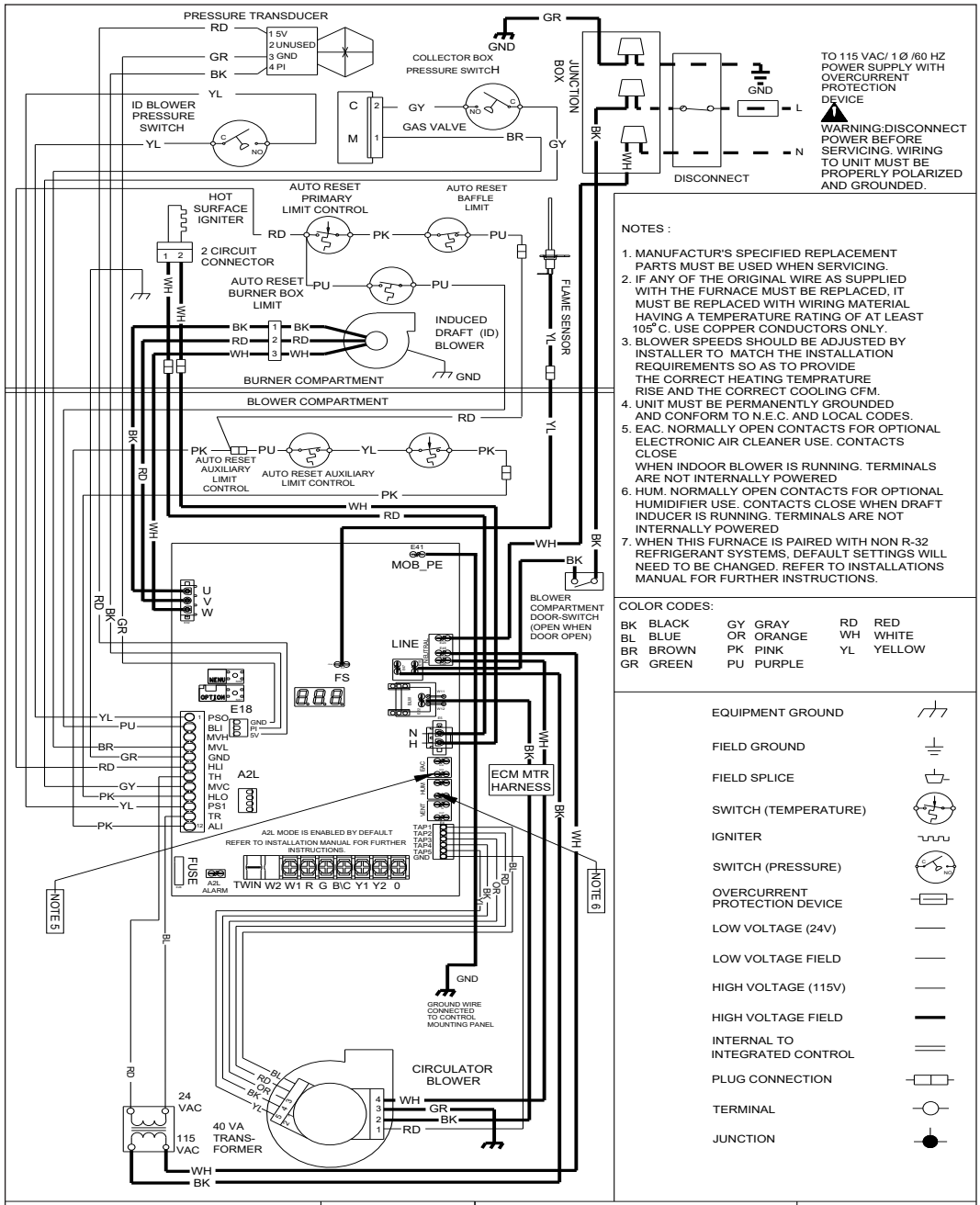
COOLING & CIRCULATION AIRFLOW														
MODEL	THERMOSTAT CALL	TAP #	EXTERNAL STATIC PRESSURE, (INCHES WATER COLUMN)											
			0.10	0.20	0.30	0.40	0.50		0.60		0.70		0.80	
			CFM	CFM	CFM	CFM	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
GR9S96 0403BU*	Y1 / Y2 / G	F01	714	667	620	573	528	100	483	106	439	111	394	117
		F02	841	803	765	725	686	139	645	145	605	151	565	157
		F03	862	823	784	745	706	144	666	151	626	158	586	165
		F04	1043	1011	976	945	912	219	879	227	845	235	810	243
		F05^	1080	1051	1021	990	961	246	932	255	903	262	867	270
		F06	1182	1155	1129	1102	1075	298	1048	307	1020	316	992	325
		F07	1193	1164	1136	1108	1080	306	1052	315	1025	324	997	334
		F08^^	1280	1256	1231	1206	1183	370	1156	378	1132	388	1107	398
		F09	1333	1306	1280	1255	1231	399	1205	408	1180	417	1155	427
GR9S96 0603BU*	Y1 / Y2 / G	F01	767	712	655	592	528	101	476	107	431	113	388	118
		F02	919	871	824	774	723	149	665	156	612	163	565	170
		F03	925	889	842	797	748	153	693	160	636	169	589	176
		F04^	1099	1060	1018	977	935	222	891	230	848	239	803	248
		F05	1125	1086	1047	1008	970	235	931	244	885	253	844	262
		F06	1239	1200	1163	1127	1095	290	1053	296	1014	305	974	314
		F07^^	1317	1283	1249	1214	1179	350	1146	361	1110	372	1073	383
		F08	1337	1304	1269	1235	1206	353	1167	362	1133	371	1097	382
		F09	1415	1383	1353	1321	1288	387	1256	397	1222	407	1190	418
GR9S96 0805CU*	Y1 / Y2 / G	F01	999	934	877	814	740	143	681	153	615	160	554	167
		F02	1297	1245	1194	1143	1096	238	1044	247	991	257	933	267
		F03	1407	1354	1307	1257	1210	285	1164	297	1118	308	1067	319
		F04^	1532	1488	1440	1396	1352	344	1304	356	1259	367	1210	378
		F05^^	1641	1594	1552	1509	1477	409	1425	418	1388	432	1347	444
		F06	1687	1644	1604	1560	1519	439	1479	453	1441	467	1409	484
		F07	1831	1791	1755	1718	1680	544	1642	558	1607	573	1570	589
		F08	1895	1860	1822	1788	1753	601	1716	616	1684	633	1650	650
		F09	2298	2260	2222	2182	2149	920	2114	934	2087	946	2022	1889

Notes:
- Default speed is F01 for circulation for all models
- ^ Default Y1 speed
- ^^ Default Y2 speed

NOTE: Watts provided are blower motor watts. Undersized duct size may affect the blower watts performance

HEATING AIFLOW																TEMP RANGE
MODEL	THERMO-STAT CALL	TAP #	EXTERNAL STATIC PRESSURE, (INCHES WATER COLUMN)													
			0.10		0.20		0.30		0.40		0.50		0.60	0.70	0.8	
			CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	CFM	CFM	
GR9S96 0403BU*	W/W1	F04^	1043	34	1011	35	976	36	945	38	912	39	879	845	810	15-45
		F05	1080	33	1051	34	1021	35	990	36	961	37	932	903	867	
GR9S96 0603BU*	W/W1	F04	1099	49	1060	50	1018	52	977	55	935	57	891	848	803	30-60
		F05	1125	47	1086	49	1047	51	1008	53	970	55	931	885	844	
		F06^	1239	43	1200	44	1163	46	1127	47	1095	49	1053	1014	974	
GR9S96 0805CU*	W/W1	F03	1407	51	1354	53	1307	54	1257	57	1210	59	1164	1118	1067	30-60
		F04^	1532	46	1488	48	1440	49	1396	51	1352	53	1304	1259	1210	

Notes:
- ^ Default Heating speed



NOTES :

1. MANUFACTUR'S SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
2. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE FURNACE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105°C. USE COPPER CONDUCTORS ONLY.
3. BLOWER SPEEDS SHOULD BE ADJUSTED BY INSTALLER TO MATCH THE INSTALLATION REQUIREMENTS SO AS TO PROVIDE THE CORRECT HEATING TEMPRATURE RISE AND THE CORRECT COOLING CFM.
4. UNIT MUST BE PERMANENTLY GROUNDED AND CONFORM TO N.E.C. AND LOCAL CODES.
5. EAC. NORMALLY OPEN CONTACTS FOR OPTIONAL ELECTRONIC AIR CLEANER USE. CONTACTS CLOSE WHEN INDOOR BLOWER IS RUNNING. TERMINALS ARE NOT INTERNALLY POWERED
6. HUM. NORMALLY OPEN CONTACTS FOR OPTIONAL HUMIDIFIER USE. CONTACTS CLOSE WHEN DRAFT INDUCER IS RUNNING. TERMINALS ARE NOT INTERNALLY POWERED
7. WHEN THIS FURNACE IS PAIRED WITH NON R-32 REFRIGERANT SYSTEMS, DEFAULT SETTINGS WILL NEED TO BE CHANGED. REFER TO INSTALLATIONS MANUAL FOR FURTHER INSTRUCTIONS.

COLOR CODES:

BK	BLACK	GY	GRAY	RD	RED
BL	BLUE	OR	ORANGE	WH	WHITE
BR	BROWN	PK	PINK	YL	YELLOW
GR	GREEN	PU	PURPLE		

EQUIPMENT GROUND
FIELD GROUND
FIELD SPLICE
SWITCH (TEMPERATURE)
IGNITER
SWITCH (PRESSURE)
OVERCURRENT PROTECTION DEVICE
LOW VOLTAGE (24V)
LOW VOLTAGE FIELD
HIGH VOLTAGE (115V)
HIGH VOLTAGE FIELD
INTERNAL TO INTEGRATED CONTROL
PLUG CONNECTION
TERMINAL
JUNCTION

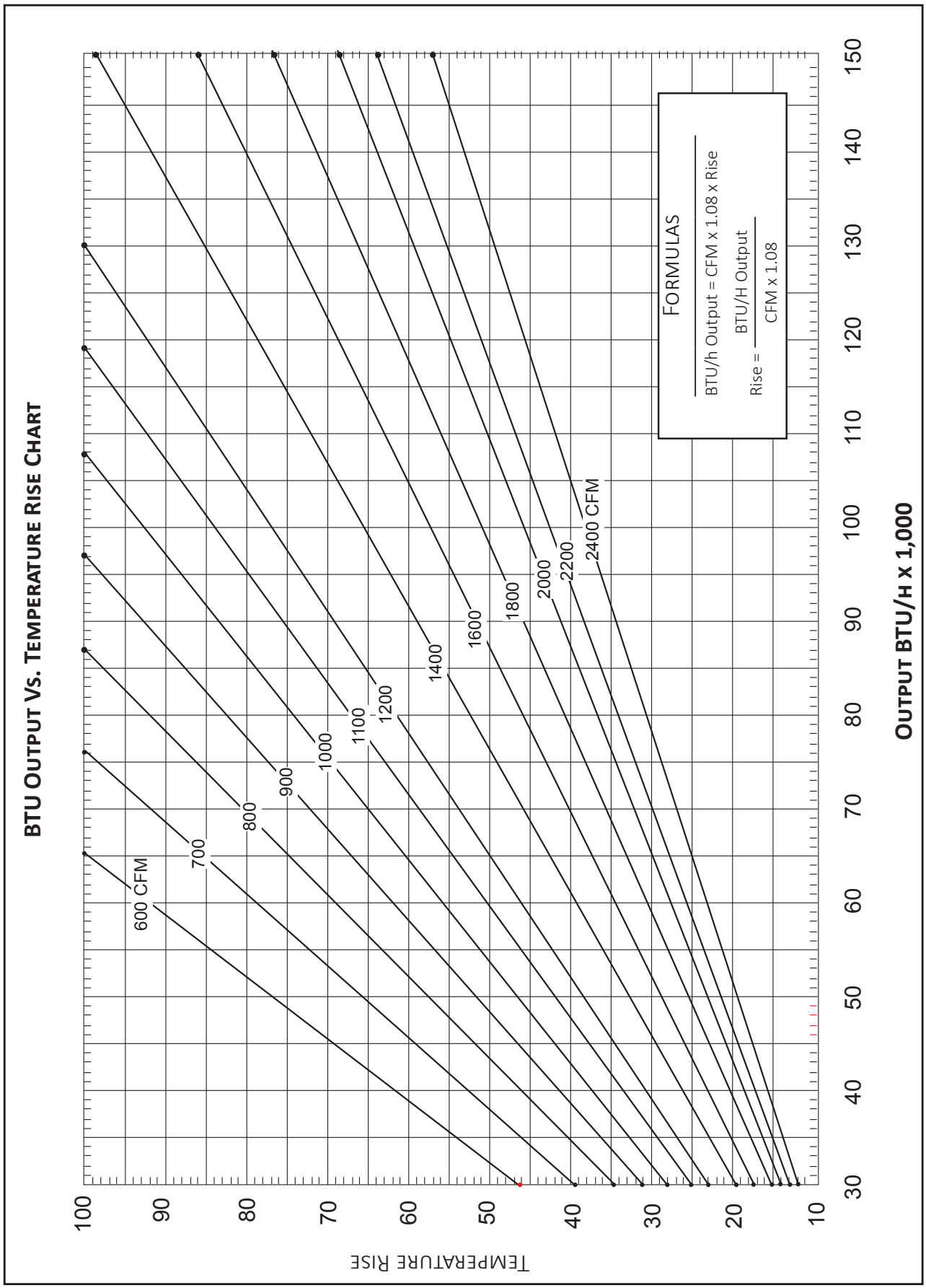
STATUS & FAULT (SEE INSTALLATION MANUAL FOR COMPLETE LIST OF FAULTS)	SEVEN SEGMENT DISPLAY Seg. 1	Seg. 2	Seg. 3
IDLE	I	d	L
CONTINIOUS FAN	F	A	n
LOW STAGE COOLING	1	A	C
HIGH STAGE COOLING	2	A	C
GAS HEAT		g	H
HEAT PUMP HEAT, LOW STAGE	1	H	P
HEAT PUMP HEAT, HIGH STAGE	2	H	P
DEFROST	d	F	t
LOCKOUT DUE TO EXCESSIVE RETRIES RECYCLE	E	E	0
PRESSURE SWITCH CLOSED WHEN ECPECTED TO BE OPEN	E	E	1
PRESSURE SWITCH OPEN WHEN EXPECTED TO BE CLOSED	E	E	2
OPEN HIGH LIMIT SWITCH	E	E	3
FLAME DETECTED WHEN NO FLAME SHOULD BE PRESENT	E	E	4
OPEN FUSE	E	E	5
LOW FLAME SIGNAL	E	E	6
IGNITOR FAULT OR IGNITOR RELAY FAULT	E	E	7
REVERSED LINE POLARITY	E	E	A
GROUNDING ERROR	E	1	0
INTERNAL GAS VALVE ERROR	E	E	b
EXTERNAL GAS VALVE ERROR	E	E	C

STATUS & FAULT (SEE INSTALLATION MANUAL FOR COMPLETE LIST OF FAULTS)	SEVEN SEGMENT DISPLAY Seg. 1	Seg. 2	Seg. 3
AUXILLIARY LIMIT SWITCH OPEN	E	E	d
BURNER LIMIT SWITCH OPEN	E	1	I
LOW CIRCULATOR CURRENT	E	b	L
CIRCULATOR CURRENT UNEXPECTED	E	b	U
A2L COMMUNICATION ALARM	E	A	F
A2L LEAKAGE ALARM	E	A	L
A2L INTERNAL ALARM	E	A	S
A2L RELAY ALARM	E	A	r

0140F20035-A

WARNING ***High Voltage:*** Disconnect all power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury, or death.

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.


BTU Output Vs. Temperature Rise Chart
Temperature Rise
Output BTU/H x 1,000
600 CFM
700
800
900
1000
1100
1200
1400
1600
1800
2000
2200
2400 CFM
Formulas
BTU/h Output = CFM x 1.08 x Rise
Rise = BTU/H Output / CFM x 1.08
100
90
80
70
60
50
40
30
20
10
30
40
50
60
70
80
90
100
110
120
130
140
150

MODEL	DESCRIPTION	GR9S96 0403BU	GR9S96 0603BU	GR9S96 0805CU
72950	Concentric Vent Kit (2")	√	√	√
72951	Concentric Vent Kit (3")	√	√	√
RF000142	Drain Kit -Horizontal Left Vertical Flue	√	√	√
EFR02	External Filter Rack with 16"x25" Permanent Filter	√	√	---
0170K00000S	Flush Mount Vent Kit - 3" or 2"	√	√	√
0170K00001S	Flush Mount Vent Kit - 2"	√	√	√
0270F05404	Horizontal Drain Tubing Kit	√	√	√

MINIMUM FILTER SIZES

	GR9S96 0403BU	GR9S96 0603BU	GR9S96 0805CU
Filter Size (in^2) (Qty)	(1) 16 x 25 (side or bottom)		(1) 20 x 25 (bottom) or (2) 16 x 25 (side)

Note: Other size filters of equal or greater dimensions may be used. Filters may also be centrally located.

The manufacturing entity reserves the right to discontinue or change the specifications or design at any time without notice and without incurring any obligations.