



MACH 1 BUILDER SERIES MPH13 PACKAGED HEAT PUMP

13.4 SEER2

Capacity: 24 - 60 kBTU/h



Contents:

NOMENCLATURE	2
SPECIFICATIONS	3
DIMENSIONS	4
AIRFLOW DATA	5
ELECTRIC HEAT KIT DATA	11
WIRING DIAGRAMS	12

Features:

- ✓ Quiet horizontal discharge.
- ✓ Power-painted galvanized steel cabinet.
- ✓ Electric heat kit available as a field-installed option: 5/8/10/15/20kW.
- ✓ High-efficiency compressors operate smoothly, quietly, consistently.
- ✓ Internal safeguards protect compressor against high and low pressure, coil temperature.
- ✓ Copper tube/aluminum fin coil.
- ✓ High efficiency ECM blower motor (not all models).
- ✓ AHRI Certified and ETL listed.



NOMENCLATURE

M	P	H	24	1	M	4	13	B
1	2	3	4	5	6	7	8	9

LEGEND		
NO.	CODE	REMARKS
1	M	MACH 1 Builder Series
2	P	Packaged Unit
3	H	Heat Pump
4	24	Capacity: 24: 24 kBtu/h; 30: 30 kBtu/h; 36: 36 kBtu/h; 42: 42 kBtu/h; 48: 48 kBtu/h; 60: 60 kBtu/h;
5	1	Single Phase
6	M	M = Multi-Position (Horizontal/Downflow) H = Horizontal
7	4	Refrigerant type: 4 = R410A
8	13	13.4 SEER
9	B	3rd Generation



SPECIFICATIONS

MODEL	MPH241H413B	MPH301H413B	MPH361H413B	MPH421H413B	MPH481H413B	MPH601H413B
NOMINAL CAPACITY						
Cooling (BTU/h)	24,000	30,000	36,000	42,000	48,000	60,000
Heating (BTU/h)	/	/	/	/	/	/
ELECTRICAL DATA						
Voltage / Phase (60 Hz)	208/230 / 1	208/230 / 1	208/230 / 1	208/230 / 1	208/230 / 1	208/230 / 1
Min. / Max. Voltage	187/253	187/253	187/253	187/253	187/253	187/253
MCA	15	18	22.6	24.2	26.8	34.9
MOP	20	25	35	35	40	55
COMPRESSOR						
Type	Rotary	Rotary	Scroll	Scroll	Scroll	Scroll
Stage	Single	Single	Single	Single	Single	Single
RLA	9.2	10.2	13.0	15.2	17.3	21.5
LRA	43.0	58.0	75.0	112.3	108.0	127.9
OUTDOOR COIL						
Type	Tube & Fin	Tube & Fin	Tube & Fin	Tube & Fin	Tube & Fin	Tube & Fin
Tube Size (O.D)	9/32	9/32	3/16	3/16	3/16	9/32
OUTDOOR FAN MOTOR						
Motor Type	ECM	ECM	ECM	ECM	ECM	ECM
Capacitor(uF)	/	/	/	/	/	/
Horsepower (HP)	1/4	1/4	1/4	1/4	1/4	1/4
Full Load Amps (FLA)	1.0	2.0	2.0	2.0	2.0	2.0
Rated RPM	800	980	980	980	980	980
INDOOR COIL						
Type	Tube & Fin	Tube & Fin	Tube & Fin	Tube & Fin	Tube & Fin	Tube & Fin
Tube Size (O.D)	9/32	9/32	9/32	9/32	9/32	9/32
INDOOR BLOWER MOTOR						
Motor Type	PSC	ECM	ECM	PSC	PSC	ECM
Capacitor(uF)	12	/	/	/	/	/
Horsepower (HP)	1/4	1/2	1/2	3/4	3/4	3/4
Full Load Amps (FLA)	2.5	3.2	4.3	2.9	2.9	6.0
Rated RPM	1050	1050	1050	1050	1050	1050
REFRIGERATION SYSTEM						
Refrigerant Control	Orifice	Orifice	Orifice	Orifice	Orifice	Orifice
Refrigerant Charge (oz.)	93	92	77	106	106	148
OPERATION RANGE						
Cooling(°F)	55-115	55-115	55-115	55-115	55-115	55-115
Heating(°F)	5-86	5-86	5-86	5-86	5-86	5-86
SOUND POWER (DB)						
	80	81	81	80	80	80

DIMENSIONS



MODEL	MPH241H413B	MPH301H413B	MPH361H413B	MPH421H413B	MPH481H413B	MPH601H413B
UNIT DIMENSION AND WEIGHTS						
Height (in.)	24-13/16	24-13/16	24-13/16	33-3/16	33-3/16	33-3/16
Width (in.)	52	52	52	28	28	29-1/8
Depth (in.)	38-1/4	38-1/4	38-1/4	42-1/16	42-1/16	42-1/16
Net Weight (lbs.)	326	346	351	463	463	479



AIRFLOW DATA

Duct Application (208V)

MODEL NUMBER	MOTOR SPEED		SCFM								
			EXTERNAL STATIC PRESSURE-INCHES W.C.[KPA]								
			0[0]	0.1[.02]	0.2[.05]	0.3[.07]	0.4[.10]	0.5[.12]	0.6[.15]	0.7[.17]	0.8[.20]
24	Low-Tap(1)	SCFM	787	744	691	643	/	/	/	/	/
		Watts	187	185	182	152	/	/	/	/	/
		Amps	0.98	0.77	0.75	0.73	/	/	/	/	/
	Mid-Tap(2) (Factory)	SCFM	/	/	/	882	828	751	698	/	/
		Watts	/	/	/	269	262	253	246	/	/
		Amps	/	/	/	1.37	1.34	1.31	1.27	/	/
	High-Tap(3)	SCFM	/	/	/	/	/	964	896	759	621
		Watts	/	/	/	/	/	360	330	307	276
		Amps	/	/	/	/	/	1.78	1.71	1.64	1.57
30	Low-Tap(1)	SCFM	956	908	860	815	771	/	/	/	/
		Watts	1.2	1.27	1.35	1.44	1.52	/	/	/	/
		Amps	114	122	131	141	151	/	/	/	/
	Mid-Tap(2) (Factory)	SCFM	1082	1039	996	958	917	881	831	780	/
		Watts	1.54	1.63	1.73	1.82	1.92	2.01	2.12	2.21	/
		Amps	153	164	175	186	119	209	221	231	/
	High-Tap(3)	SCFM	/	/	/	1102	1066	1031	998	964	916
		Watts	/	/	/	2.34	2.46	2.56	2.66	2.76	2.88
		Amps	/	/	/	248	261	274	286	297	312
36	Low-Tap(1)	SCFM	1082	1039	996	958	917	/	/	/	/
		Watts	1.54	1.63	1.73	1.82	1.92	/	/	/	/
		Amps	153	164	175	186	119	/	/	/	/
	Mid-Tap(2) (Factory)	SCFM	1219	1179	1140	1102	1066	1031	998	964	916
		Watts	2.03	2.14	2.24	2.34	2.46	2.56	2.66	2.76	2.88
		Amps	211	223	235	248	261	274	286	297	312
	High-Tap(3)	SCFM	1350	1321	1283	1248	1214	1181	1147	1115	1084
		Watts	2.63	2.75	2.86	2.97	3.09	3.2	3.32	3.43	3.53
		Amps	283	297	309	322	337	351	365	378	391

AIRFLOW DATA

MODEL NUMBER	MOTOR SPEED		SCFM								
			EXTERNAL STATIC PRESSURE-INCHES W.C.[KPA]								
			0[0]	0.1[.02]	0.2[.05]	0.3[.07]	0.4[.10]	0.5[.12]	0.6[.15]	0.7[.17]	0.8[.20]
42	Low-Tap(1)	SCFM	1545	1507	1463	1418	1366	1307	1239	1144	/
		Watts	487	479	469	458	447	433	418	400	/
		Amps	2.58	2.55	2.52	2.49	2.46	2.42	2.38	2.33	/
	Mid-Tap(2) (Factory)	SCFM	/	/	/	/	1551	1488	1414	1318	1200
		Watts	/	/	/	/	728	712	693	672	644
		Amps	/	/	/	/	4.1	4.05	3.99	3.92	3.84
	High-Tap(3)	SCFM	/	/	/	/	/	/	1570	1499	1380
		Watts	/	/	/	/	/	/	812	787	759
		Amps	/	/	/	/	/	/	4.57	4.49	4.4
		Amps	/	/	/	4.76	4.7	4.63	4.57	4.49	4.4
48	Low-Tap(1)	SCFM	1545	1507	1463	1418	1366	1307	1239	/	/
		Watts	487	479	469	458	447	433	418	/	/
		Amps	2.58	2.55	2.52	2.49	2.46	2.42	2.38	/	/
	Mid-Tap(2) (Factory)	SCFM	1740	1699	1654	1606	1551	1488	1414	1318	1200
		Watts	783	768	756	742	728	712	693	672	644
		Amps	4.27	4.22	4.18	4.14	4.1	4.05	3.99	3.92	3.84
	High-Tap(3)	SCFM	/	/	/	1800	1740	1671	1595	1499	1380
		Watts	/	/	/	874	854	833	812	787	759
		Amps	/	/	/	4.76	4.7	4.63	4.57	4.49	4.4
60	Low-Tap(1)	SCFM	1777	1728	1680	1635	1592	1549	/	/	/
		Watts	2.8	2.9	3	3.1	3.2	3.3	/	/	/
		Amps	323	338	352	365	378	391	/	/	/
	Mid-Tap(2) (Factory)	SCFM	1937	1889	1842	1792	1758	1720	1678	1636	1593
		Watts	3.5	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3
		Amps	412	428	444	457	471	486	499	513	527
	High-Tap(3)	SCFM	2235	2191	2144	2091	2050	2010	1971	1936	1892
		Watts	4.5	5.1	5.3	5.4	5.5	5.6	5.7	5.8	5.8
		Amps	623	642	660	673	689	704	719	734	744

AIRFLOW DATA

Duct Application (208V)

MODEL NUMBER	MOTOR SPEED		SCFM								
			EXTERNAL STATIC PRESSURE-INCHES W.C.[KPA]								
			0[0]	0.1[.02]	0.2[.05]	0.3[.07]	0.4[.10]	0.5[.12]	0.6[.15]	0.7[.17]	0.8[.20]
24	Low-Tap(1)	SCFM		841	795	743	/	/	/	/	/
		Watts	227	224	221	216	/	/	/	/	/
		Amps	2.07	2.07	2.06	2.05	/	/	/	/	/
	Mid-Tap(2) (Factory)	SCFM	/	/	/	988	957	882	767	/	/
		Watts	/	/	/	339	323	307	291	/	/
		Amps	/	/	/	2.31	2.28	2.26	2.24	/	/
	High-Tap(3)	SCFM	/	/	/	/	/	996	967	928	896
		Watts	/	/	/	/	/	412	392	379	361
		Amps	/	/	/	/	/	2.65	2.57	2.52	2.46
30	Low-Tap(1)	SCFM	956	908	860	815	771	/	/	/	/
		Watts	1.2	1.27	1.35	1.44	1.52	/	/	/	/
		Amps	114	122	131	141	151	/	/	/	/
	Mid-Tap(2) (Factory)	SCFM	1082	1039	996	958	917	881	831	780	/
		Watts	1.54	1.63	1.73	1.82	1.92	2.01	2.12	2.21	/
		Amps	153	164	175	186	119	209	221	231	/
	High-Tap(3)	SCFM	/	/	/	1102	1066	1031	998	964	916
		Watts	/	/	/	2.34	2.46	2.56	2.66	2.76	2.88
		Amps	/	/	/	248	261	274	286	297	312
36	Low-Tap(1)	SCFM	1082	1039	996	958	917	/	/	/	/
		Watts	1.54	1.63	1.73	1.82	1.92	/	/	/	/
		Amps	153	164	175	186	119	/	/	/	/
	Mid-Tap(2) (Factory)	SCFM	1219	1179	1140	1102	1066	1031	998	964	916
		Watts	2.03	2.14	2.24	2.34	2.46	2.56	2.66	2.76	2.88
		Amps	211	223	235	248	261	274	286	297	312
	High-Tap(3)	SCFM	1350	1321	1283	1248	1214	1181	1147	1115	1084
		Watts	2.63	2.75	2.86	2.97	3.09	3.2	3.32	3.43	3.53
		Amps	283	297	309	322	337	351	365	378	391

AIRFLOW DATA

MODEL NUMBER	MOTOR SPEED		SCFM								
			EXTERNAL STATIC PRESSURE-INCHES W.C.[KPA]								
			0[0]	0.1[.02]	0.2[.05]	0.3[.07]	0.4[.10]	0.5[.12]	0.6[.15]	0.7[.17]	0.8[.20]
42	Low-Tap(1)	SCFM	/	/	/	/	1554	1495	1429	1340	1230
		Watts	/	/	/	/	527	510	3046	465	432
		Amps	/	/	/	/	2.29	2.22	13.24	2.02	1.88
	Mid-Tap(2) (Factory)	SCFM	/	/	/	/	/	/	/	1503	1384
		Watts	/	/	/	/	/	/	/	566	533
		Amps	/	/	/	/	/	/	/	2.46	2.32
	High-Tap(3)	SCFM	/	/	/	/	/	/	/	/	1548
		Watts	/	/	/	/	/	/	/	/	662
		Amps	/	/	/	/	/	/	/	/	2.88
48	Low-Tap(1)	SCFM	1735	1701	1654	1608	1554	1495	1429	1340	/
		Watts	579	573	561	545	527	510	469	465	/
		Amps	2.52	2.49	2.44	2.37	2.29	2.22	2.15	2.02	/
	Mid-Tap(2) (Factory)	SCFM	/	/	/	1790	1730	1665	1591	1503	1384
		Watts	/	/	/	658	642	614	592	566	533
		Amps	/	/	/	2.86	2.79	2.67	2.57	2.46	2.32
	High-Tap(3)	SCFM	/	/	/	/	/	/	1761	1666	1548
		Watts	/	/	/	/	/	/	732	704	662
		Amps	/	/	/	/	/	/	3.18	3.06	2.88
60	Low-Tap(1)	SCFM	1777	1728	1680	1635	1592	1549	/	/	/
		Watts	2.8	2.9	3	3.1	3.2	3.3	/	/	/
		Amps	323	338	352	365	378	391	/	/	/
	Mid-Tap(2) (Factory)	SCFM	1937	1889	1842	1792	1758	1720	1678	1636	1593
		Watts	3.5	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3
		Amps	412	428	444	457	471	486	499	513	527
	High-Tap(3)	SCFM	2235	2191	2144	2091	2050	2010	1971	1936	1892
		Watts	4.5	5.1	5.3	5.4	5.5	5.6	5.7	5.8	5.8
		Amps	623	642	660	673	689	704	719	734	744

The above airflow data for reference only.

* In any situation, the airflow of the unit should be in the range of 80% to 130% of 400CFM/Ton.

AIRFLOW DATA

- ✓ The air distribution system has the greatest effect on airflow. The duct system is totally controlled by the contractor. For this reason, the contractor should use only industry-recognized procedures.
- ✓ Heat pump systems require a specified airflow. Each ton of cooling requires between 300 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally.
- ✓ Duct design and construction should be carefully done. System performance can be lowered dramatically due to poor duct design.
- ✓ Air supply diffusers must be selected and located carefully. They must be sized and positioned to deliver treated air along the perimeter of the space. If they are too small for their intended airflow, they become noisy. If they are not located properly, they cause drafts. Return air grilles must be properly sized to carry air back to the blower. If they are too small, they also cause noise.
- ✓ The installers should balance the air distribution system to ensure proper quiet airflow to all rooms in the home. This ensures a comfortable living space.
- ✓ An air velocity meter or airflow hood can give a reading of system CFM.
- ✓ During installation, installer should select the air speed according to the actual setting static pressure.



AIRFLOW DATA

Electric Heat Pressure Drop Tables (IN.W.C)

Small Cabinet: 24K, 30K, 36K

STATIC	STANDARD CFM (SCFM)					
	900	1000	1100	1200	1300	1400
5kW	0.05	0.05	0.05	0.05	0.05	0.1
7.5kW	0.05	0.05	0.05	0.05	0.05	0.1
10kW	0.05	0.05	0.05	0.05	0.05	0.1
15kW	/	/	0.1	0.1	0.1	0.1

Large Cabinet: 42K, 48K, 60K

STATIC	STANDARD CFM (SCFM)							
	1500	1600	1700	1800	1900	2000	2100	2200
5kW	0.1	0.1	0.1	0.1	0.15	0.15	0.15	0.15
7.5kW	0.1	0.1	0.1	0.1	0.15	0.15	0.15	0.15
10kW	0.1	0.1	0.15	0.15	0.15	0.15	0.15	0.15
15kW	/	/	0.2	0.2	0.2	0.2	0.2	0.2
20kW	/	/	0.2	0.2	0.2	0.2	0.2	0.25

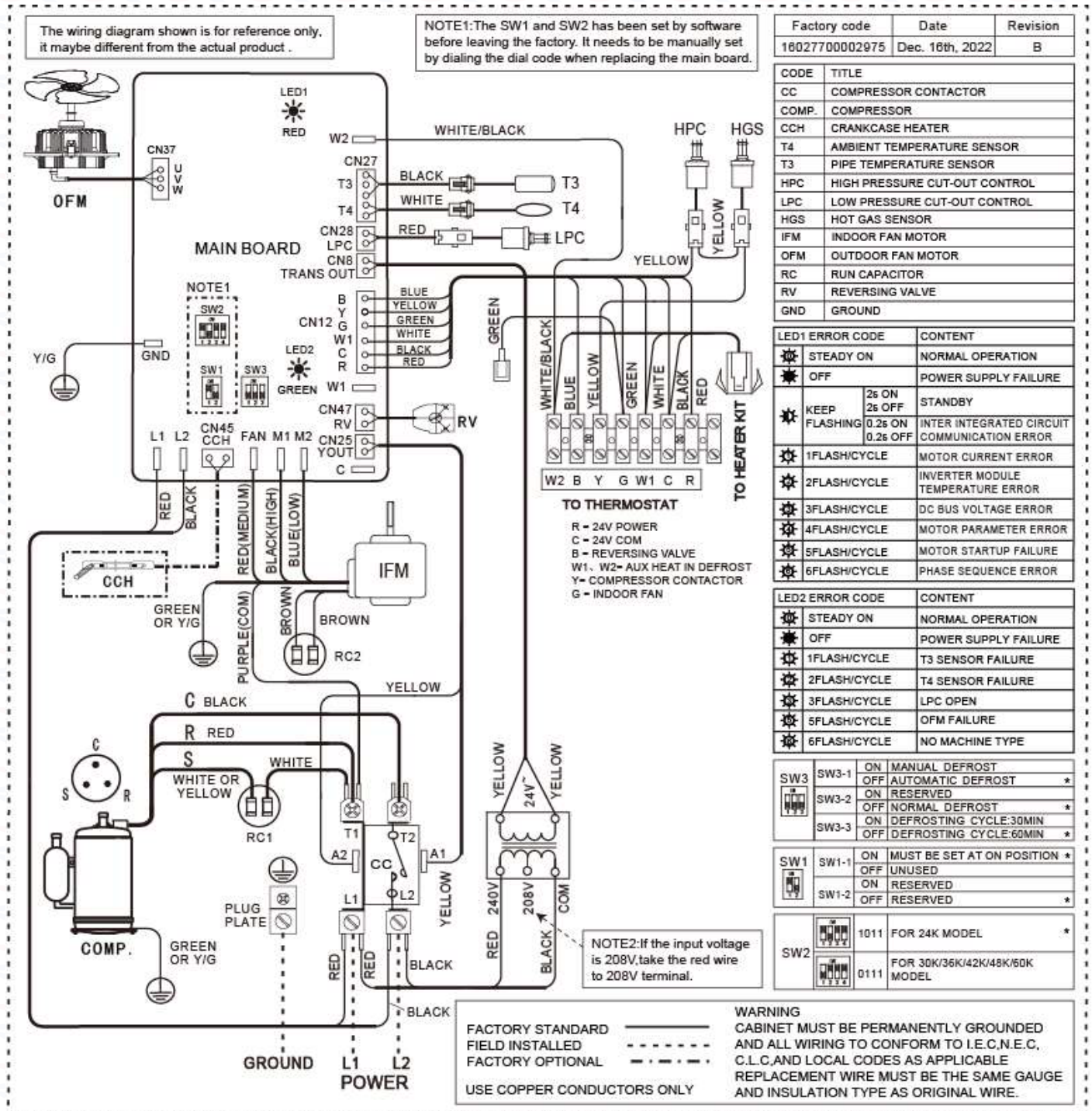
ELECTRIC HEAT KIT DATA

CAPACITY KBTU	HEATER CIRCUIT (WITHOUT UNITS)					
	MODEL	KW	STAGES	AMPS	MCA	MAX FUSE BREAKER AMPS
24	MHK05PB	3.8/5	1	18.1/20.8	23/26	25/30
	MHK07PB	5.6/7.5	1	27.1/31.3	34/40	35/40
	MHK10PB	7.5/10	1	36.1/41.7	46/53	50/60
30	MHK05PB	3.8/5	1	18.1/20.8	23/26	25/30
	MHK07PB	5.6/7.5	1	27.1/31.3	34/40	35/40
	MHK10PB	7.5/10	1	36.1/41.7	46/53	50/60
	MHK15PB	11.3/15	2	54.2/62.5	68/79	70/80
36	MHK05PB	3.8/5	1	18.1/20.8	23/26	25/30
	MHK07PB	5.6/7.5	1	27.1/31.3	34/40	35/40
	MHK10PB	7.5/10	1	36.1/41.7	46/53	50/60
	MHK15PB	11.3/15	2	54.2/62.5	68/79	70/80
42	MHK05PB	3.8/5	1	18.1/20.8	23/26	25/30
	MHK07PB	5.6/7.5	1	27.1/31.3	34/40	35/40
	MHK10PB	7.5/10	1	36.1/41.7	46/53	50/60
	MHK15PB	11.3/15	2	54.2/62.5	68/79	70/80
	MHK20PB	15/20	2	72.3/83.4	91/105	100/110
48	MHK05PB	3.8/5	1	18.1/20.8	23/26	25/30
	MHK07PB	5.6/7.5	1	27.1/31.3	34/40	35/40
	MHK10PB	7.5/10	1	36.1/41.7	46/53	50/60
	MHK15PB	11.3/15	2	54.2/62.5	68/79	70/80
	MHK20PB	15/20	2	72.3/83.4	91/105	100/110
60	MHK05PB	3.8/5	1	18.1/20.8	23/26	25/30
	MHK07PB	5.6/7.5	1	27.1/31.3	34/40	35/40
	MHK10PB	7.5/10	1	36.1/41.7	46/53	50/60
	MHK15PB	11.3/15	2	54.2/62.5	68/79	70/80
	MHK20PB	15/20	2	72.3/83.4	91/105	100/110

WIRING DIAGRAMS

MODEL

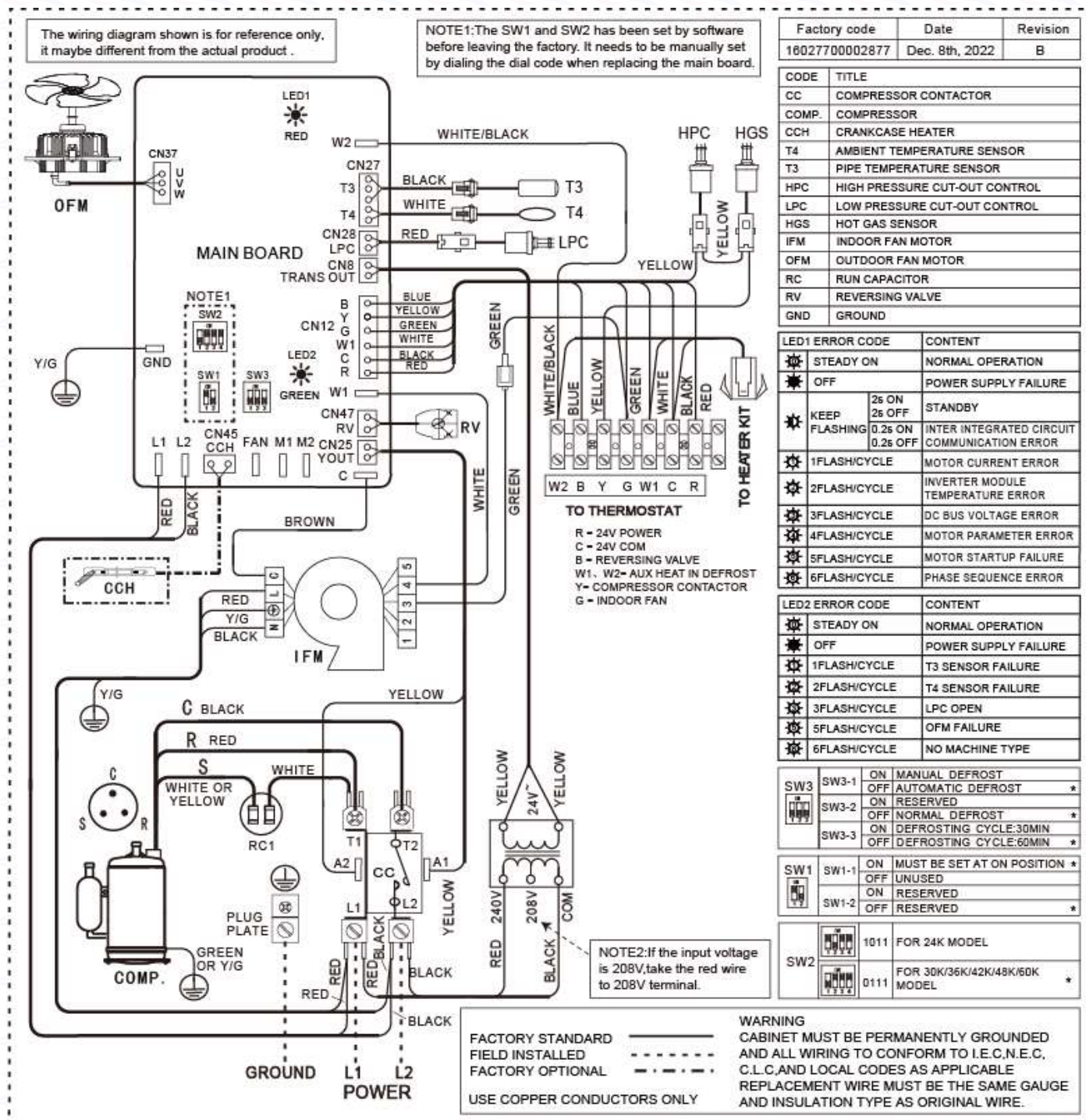
MPH241H413B



WIRING DIAGRAMS

MODEL

MPH301H413B

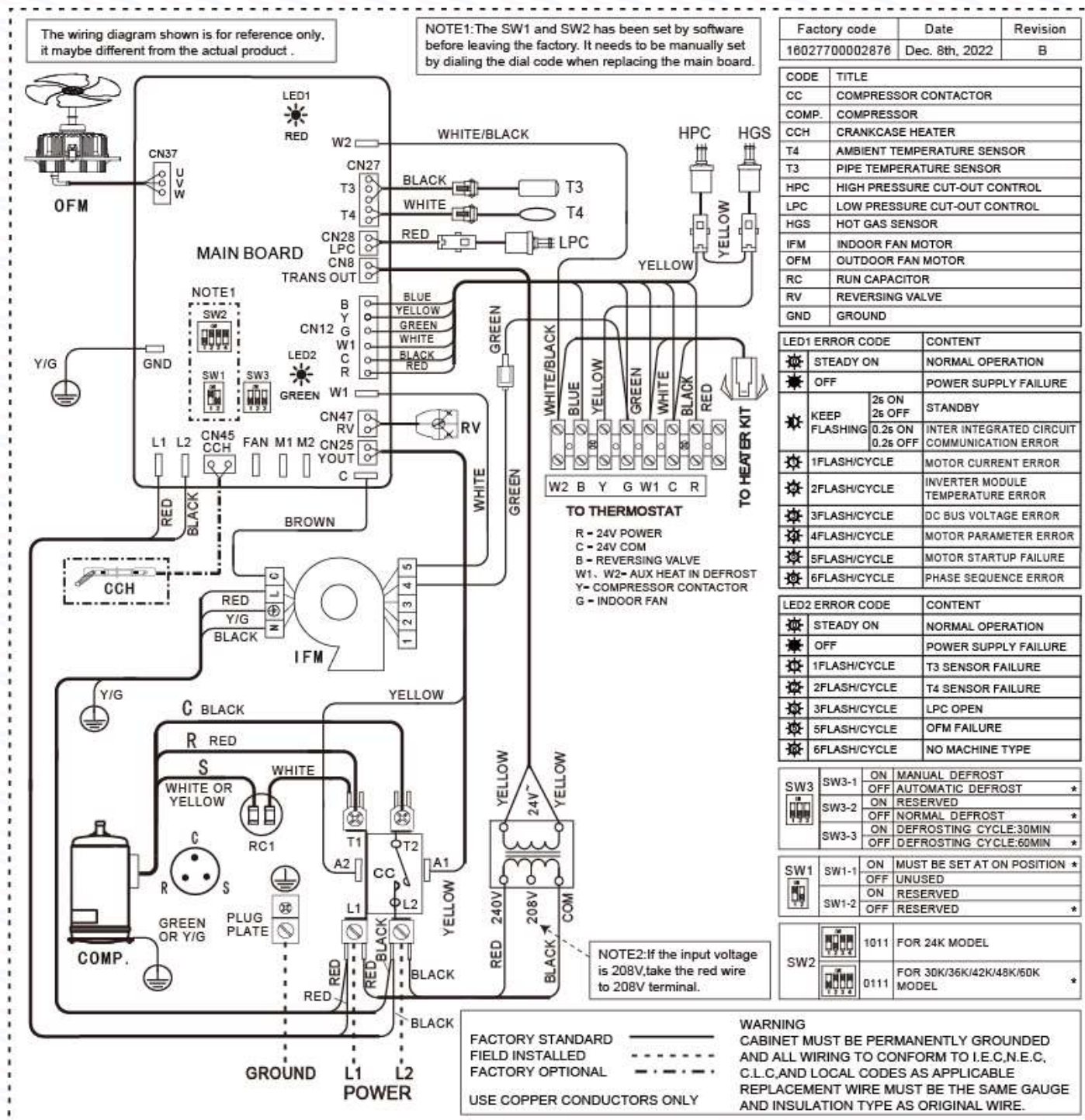


WIRING DIAGRAMS

MODEL

MPH361H413B

MPH601H413B

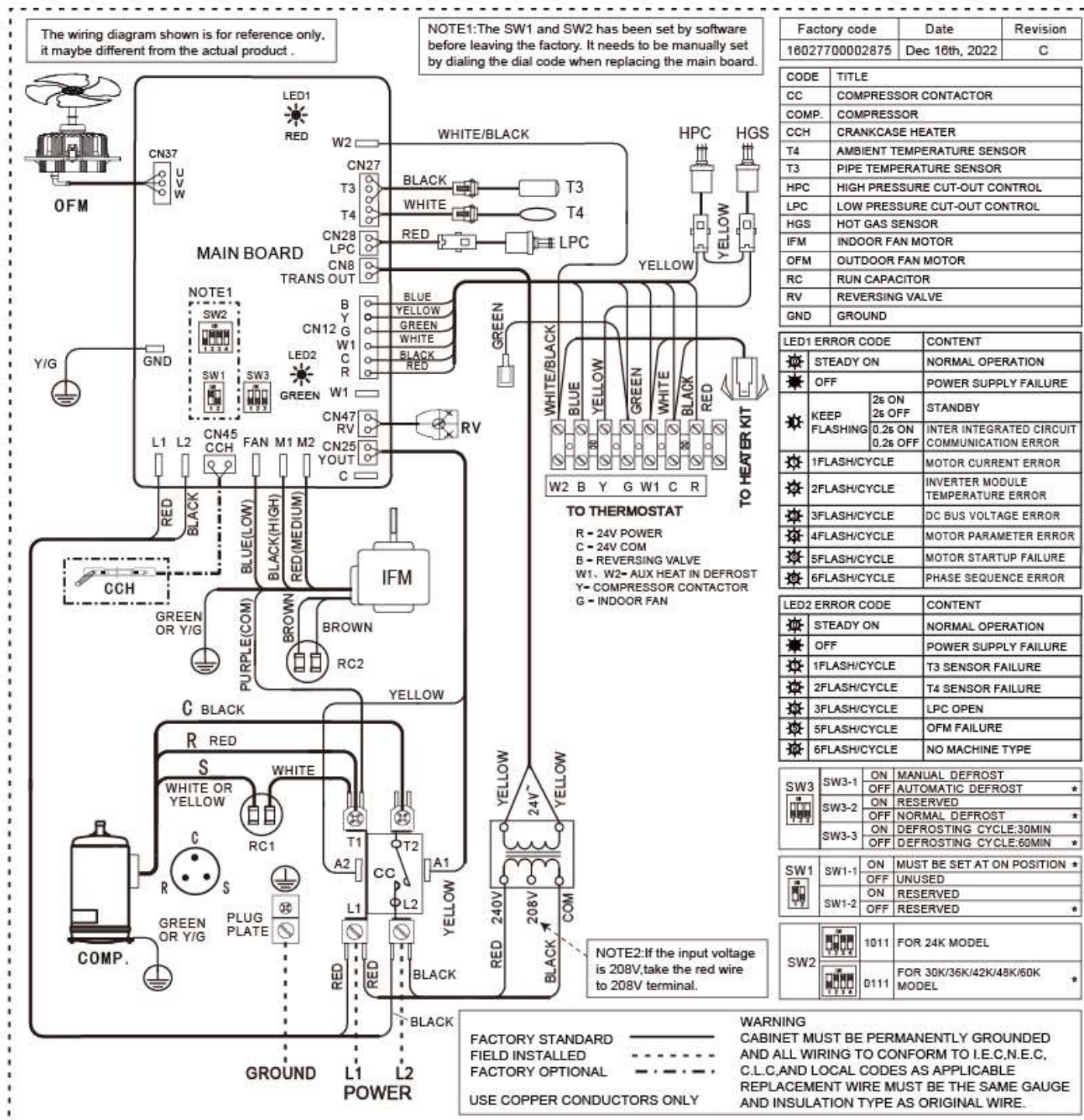


WIRING DIAGRAMS

MODEL

MPH421H413B

MPH481H413B





aireforce.com/mach1

Note: Product specifications change from time to time as product improvements and developments are released and may vary from those in this document.