

COMBO PERFORMANCE SPECIFICATION SUMMARY (Ref. CSA Standard P.9-11)

Testing Agency: Exova
 System Integrator: iFLOW HVAC Inc.
 29 Howden Road
 Toronto, ON
 M1R 3C7
 Date First Issued: May 31, 2016
 Date Reissued: April 17, 2019
 Rationale: To include missing info

Model Number: N/A
 Nameplate Information: 120 Volts N/A Amps
 Nominal Burner Input: 58.5 kW 199,900 Btu/hr
 Fuel Type: Nat. Gas Nat. Gas / Propane / Oil

PERFORMANCE RATING

Thermal Performance Factor (TPF) 0.92
 Annual Electrical Consumption (AE) 2,957 kWh/y

Function-Based Performance Ratings

Efficiency Ratings

Composite Space Heating Efficiency (CSHE) 92 (%)
 Water Heating Performance Factor (WHPF) 0.95
 Recovery Efficiency 96 (%)
 Thermal standby loss - Circ fan off see comments W
 Thermal standby loss - Circ fan on see comments W

Space Heating Part Load Efficiency Ratings

Part Load Factor (PLF)	Net Efficiency	Average Electricity Use	Circulating Blower Electricity Use*
@ PLF 1	86 (%)	621 W	480 W
@ PLF 0.4	94 (%)	611 W	484 W
@ PLF 0.15	90 (%)	228 W	350 W

* measured when circulation blower running

Concurrent Space & DHW Test Results

Water draws at 49 ±3°C with & without concurrent call for heat

Flow (L/min)	Time to reach temperature (minutes)		Time within ±3°C tolerance (minutes)	
	with heating call	without heating call	with heating call	without heating call
3	0.8	0.8	indefinite	indefinite
15	0.3	0.3	indefinite	indefinite

Maximum Capacity Ratings and Related Information

Space heating (all ratings below are at a PLF of 1)
 Capacity 60,996 Btu/hr 17.9 kW
 Airflow 995 SCFM 469 L/s
 ESP (Return) 0.6 "w.c. 150 Pa
 ESP (Supply) 0.6 "w.c. 150 Pa
 Return air temperature 21.9 °C
 Air temperature rise 31.5 °C
 Entering water temperature to coil 73.4 °C
 Water flow rate 2.8 USGPM 10.7 L/min

DHW One-Hour Delivery Rating (OHR)

OHR - no call for space heating 1,444 L
 OHR - concurrent call for space heating 1,459 L

Additional Electrical Ratings

Standby power (P(circ)) 66 W
 Standby power (P(cont)) 13 W
 Daily electricity use for water heating (E_{24h-SUT}) 0.19 kWh
 Annual electricity use for water heating (AE_{DHW}) 68 kWh

Description of Major Components of Packaged Combo

Packaged System Components

Heat Generator (HG) make, model:	Navien, NPE 240A
Air Handler (AH) make, model:	iFLOW, iFL-1660P0 (also applies to iFLH-160000, iFLH-16000W, iFLH-16000D)
Circulating blower motor make, model, size, type:	Genteq, 5SBA39GL, 1/2 HP, Eon ECM
Circulator make / model and location:	Navien, integral to heat generator
Additional controls external to HG and AH:	None
Automatic means for adjusting water temperature while space heating (Y/N):	Y
Related type, make and model number:	Navien 'ComfortAir+' kit, PNBD 000001
Interconnect piping (length, nom.dia., insulation):	20 ft. equivalent length, 3/4" (nominal) PEX, R4 insulation
Other:	Thermostatic mixing valve c/w check valves, Honeywell AM101-US-1, set to 120°F (49°C) for DHW
	Outdoor temperature sensor - included in 'ComfortAir+' kit
	DHW flow switch - included in 'ComfortAir+' kit

Test Agency Comments:

Water heater temperature set to 120°F (49°C) for DHW tests
 Water heater temperature programmed to 165°F (74°C) for space heating (PLF=1).
 Pump exercise sequence: 0.5 minutes every 24-hrs
 Pump exercise sequence does not initiate burner operation
 Circulating blower has a 120 second 'Off' delay
 All controls set to factory default unless otherwise specified
 No storage tank - thermal standby test not required

Filter use during testing	Yes	x	No
Filter rating			MERV
Segregated DHW System	Yes	x	No
Water Circulation	x	Yes	No
DHW Priority	x	Yes	No

Conversions:

249 Pascals = 1" of Water 1 kW = 3413 Btu/h 1 L/s = 2.12 SCFM 1 USG = 3.785 L

Reference Report:

16-06-M0145-Rv1