

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

Testing Agency: <u>Exova</u>	Model Number: <u>N/A</u>
System Integrator: <u>iFLOW HVAC Inc.</u>	
<u>29 Howden Road</u>	
<u>Toronto, ON</u>	Nameplate Information: <u>120 Volts</u> <u>N/A</u> Amps
<u>M1R 3C7</u>	Nominal Burner Input: <u>43.9 kW</u> <u>150,000 Btu/hr</u>
Date First Issued: <u>October 10, 2014</u>	Fuel Type: <u>Nat. Gas</u> <u>Nat. Gas / Propane / Oil</u>
Date Reissued: <u>April 17, 2019</u>	
Rationale: <u>To include missing info</u>	

PERFORMANCE RATING

Thermal Performance Factor (TPF) 0.94
Annual Electrical Consumption (AE) 1,752 kWh/y

Function-Based Performance Ratings

Efficiency Ratings

<u>Composite Space Heating Efficiency (CSHE)</u>	94 (%)
<u>Water Heating Performance Factor (WHPF)</u>	0.96
Recovery Efficiency	97 (%)
Thermal standby loss - Circ fan off	see comments W
Thermal standby loss - Circ fan on	see comments W

Maximum Capacity Ratings and Related Information

Space heating (all ratings below are at a PLF of 1)

Capacity	36,315 <i>Btu/hr</i>	10.6 kW
Airflow	930 <i>SCFM</i>	439 L/s
ESP (Return)	0.2 " w.c.	50 Pa
ESP (Supply)	0.2 " w.c.	50 Pa
Return air temperature		21.6 °C
Air temperature rise		20.1 °C
Entering water temperature to coil		61.8 °C
Water flow rate	3.1 <i>USGPM</i>	11.5 L/min

Space Heating Part Load Efficiency Ratings

Part Load Factor (PLF)	Net Efficiency	Average Electricity Use	Circulating Blower Electricity Use*
@ PLF 1	94 (%)	434 W	294 W
@ PLF 0.4	95 (%)	308 W	284 W
@ PLF 0.15	91 (%)	164 W	286 W

* measured when circulation blower running

DHW One-Hour Delivery Rating (OHR)

OHR - no call for space heating	1,116 L
OHR - concurrent call for space heating	1,094 L

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	1.2	1.2	indefinite	indefinite
15	0.4	0.4	indefinite	indefinite

Additional Electrical Ratings

Standby power (P(circ))	102 W
Standby power (P(cont))	13 W
Daily electricity use for water heating (E _{24h-SUT})	0.18 kWh
Annual electricity use for water heating (AE _{DHW})	66 kWh

Description of Major Components of Packaged Combo

Packaged System Components

Heat Generator (HG) make, model:	Navien, NPE 180A
Air Handler (AH) make, model:	iFLOW, iFL-1435P0 (Also applies to iFLH140000, iFLH14000W, iFLH14000D)
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):	26 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 145°F (63°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 5 second 'On' delay
 Circulating blower has a 30 second ramp to '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:
14-06-M0396-1 Rv2