

## 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>May 4, 2016</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)** 0.96  
**Annual Electrical Consumption (AE)** 2,323 kWh/y

### Function-Based Performance Ratings

#### Efficiency Ratings

<u>Composite Space Heating Efficiency (CSHE)</u>	95 (%)
<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	37,355 Btu/hr	10.9 kW
Airflow	742 SCFM	350 L/s
ESP (Return)	0.6 " w.c.	150 Pa
ESP (Supply)	0.6 " w.c.	150 Pa
Return air temperature		22.3 °C
Air temperature rise		25.9 °C
Entering water temperature to coil		62.5 °C
Water flow rate	3.2 USGPM	12.0 L/min

#### Space Heating Part Load Efficiency Ratings

Part Load Factor (PLF)	Net Efficiency	Average Electricity Use	Circulating Blower Electricity Use*
@ PLF 1	92 (%)	457 W	348 W
@ PLF 0.4	97 (%)	450 W	348 W
@ PLF 0.15	94 (%)	199 W	348 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 <sub>24h-SUT</sub> )	0.18 kWh
Annual electricity use for water heating (AE <sub>DHW</sub> )	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, iFH-1436P0 (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): 10 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 60 second ramp to 'On' delay

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-M0105-2-Rv1