Technical Note

Express 250:
Interpreting No-Load Input Current and Power

Scope

This document shows how to interpret phase current measurements when the Express 250 is idle, and provides a measurement of idle power consumption.

Background

Some customers or installers report very high phase current while the station is idle, typically 4 A to 6 A. This current level would indicate a power consumption of 3 to 5 kW, causing concern. However, the assumed power figure is incorrect.

Measurement Setup

An Express 250 was connected to an AC grid simulator source, allowing voltage and frequency to be programmed. The input current and voltages were entered into a Yokogawa WT1800 precision power analyzer, which used 3 x IT 200-S LEM transducers to sense current (0.02% accuracy).

Measurement Results

The following data was recorded with the Express 250 in an idle state (in which the station shows the AVAILABLE message in green on its LED status display). The test was performed at room temperature during daytime. Values can change slightly depending on the exact content of the LED status display and LED status brightness.

Input Voltage (VAC)	400	480
Frequency (Hz)	50	60
Current (A)	4.1	5.9
Real Power (W)	68.8	72.0
Apparent Power (kVA)	2.8	4.9
Power Factor	0.025	0.015

Instrument Display		

Conclusion

Most of the input current when idle is reactive, due to EMI filter capacitance. This is shown in the apparent power value above. Apparent power is measured as the product of voltage and current, neglecting power factor.

The real power consumption in Watts does include power factor and results in an idle value of approximately 70 W.