Application Note

Voltage Drop Considerations, 240 Vac, M190

The table below provides recommendations for wire size from the junction box at the beginning of the Micro-inverter branch to the main load center based on distance.

External Branch (Home Run) Wiring Maximum Distance in Feet									
	Micro-Inverters per Branch								
Wire	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
14 AWG	129	106	88	72	59	48	37	28	19
12 AWG	205	169	139	115	94	75	59	44	30
10 AWG	327	269	223	183	150	120	94	70	48
8 AWG	521	429	355	292	239	192	150	112	77
6 AWG	825	680	562	463	378	304	238	177	122

Circuit Current Calculation

- Maximum Output Power = 190 Watts AC
- 190 W ÷ 240 V = .80 Amps
- .80 x 15 inverters = 12.0 amps / branch

Overcurrent Protection Calculation

- 12.0 x 1.25 = 15.0 Amps

Conclusions

- Install 1 to 15 Inverters per branch, up to 2850 Watts
- 2 Pole 15 Amp circuit breaker maximum, 14 AWG wire size minimum.

Application Note

Voltage Drop Considerations, 208 Vac, M190

The table below provides recommendations for wire size from the junction box at the beginning of the Micro-inverter branch to the main load center based on distance. The table is in increments of 3 inverters, always round up to the next increment.

External Branch (Home Run) Wiring Maximum Distance in Feet							
	Micro-Inverters per Branch						
Wire	**3**	**6**	**9**	**12**	**15**	**18**	**21**
14 AWG	981	480	306	214	154	111	77
12 AWG	1556	761	485	339	245	176	122
10 AWG	2485	1216	775	541	391	281	195
8 AWG	3961	1938	1235	863	622	448	311
6 AWG	6276	3071	1957	1367	986	710	493

Circuit Current Calculation

- Maximum Output Power = 190 Watts AC
- 190 W ÷ 208 V = .92 Amps
- .92 x 7 inverters per phase = 6.39 amps per phase
- 6.39 x 1.73 = 11.06 amps per leg

Overcurrent Protection Calculation

- 11.06 x 1.25 = 13.82 Amps

Conclusions

- Install 1 to 21 inverters per branch, up to 3990 Watts
- 3 Pole 15 Amp circuit breaker maximum, 14 AWG wire size minimum.