

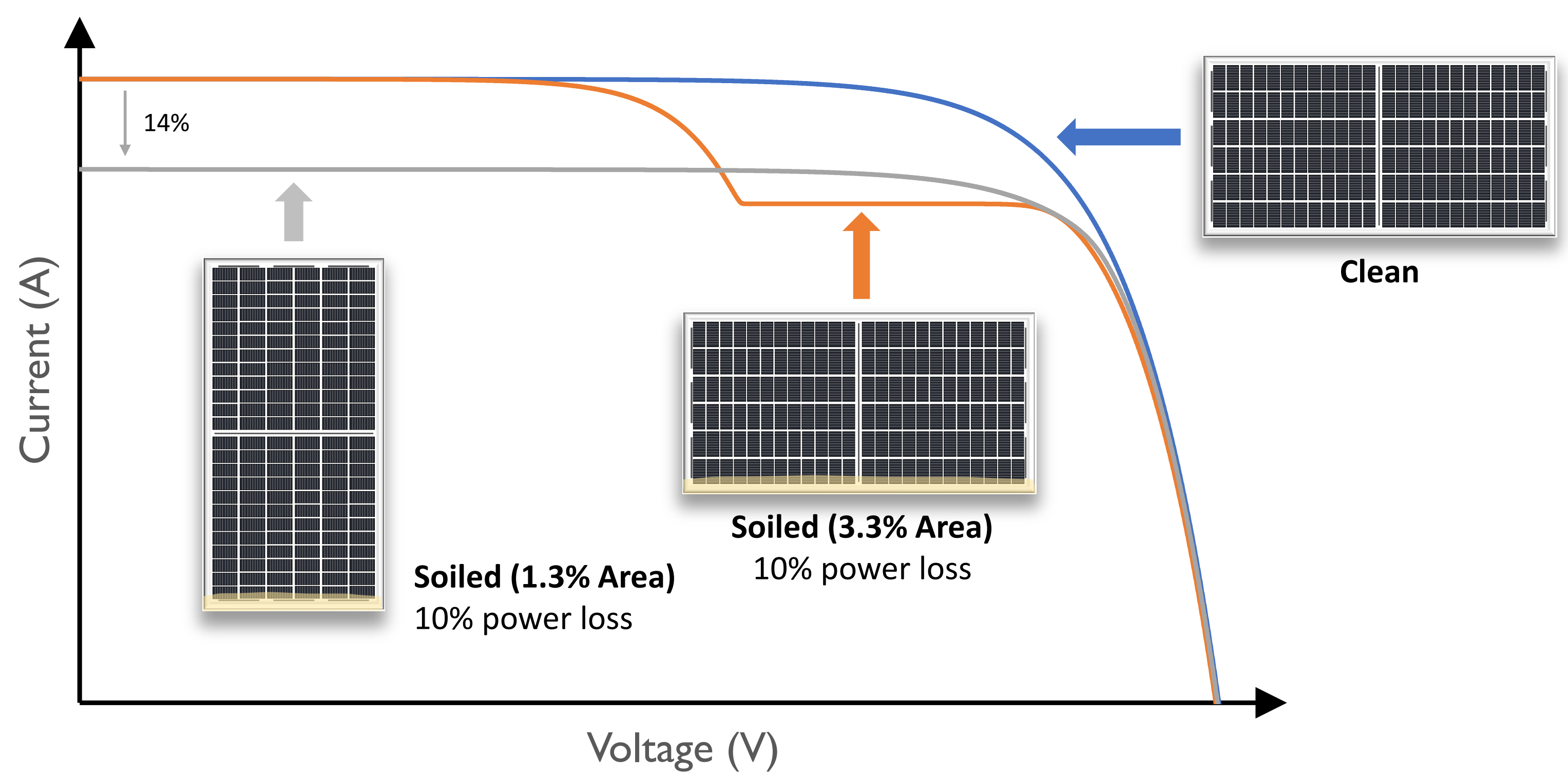
Soiling: How Much Power Am I Losing?

POWER LOSS FROM SOILING CAN GREATLY EXCEED THE AREA COVERAGE FROM DUST

Soiling accumulating at module edges

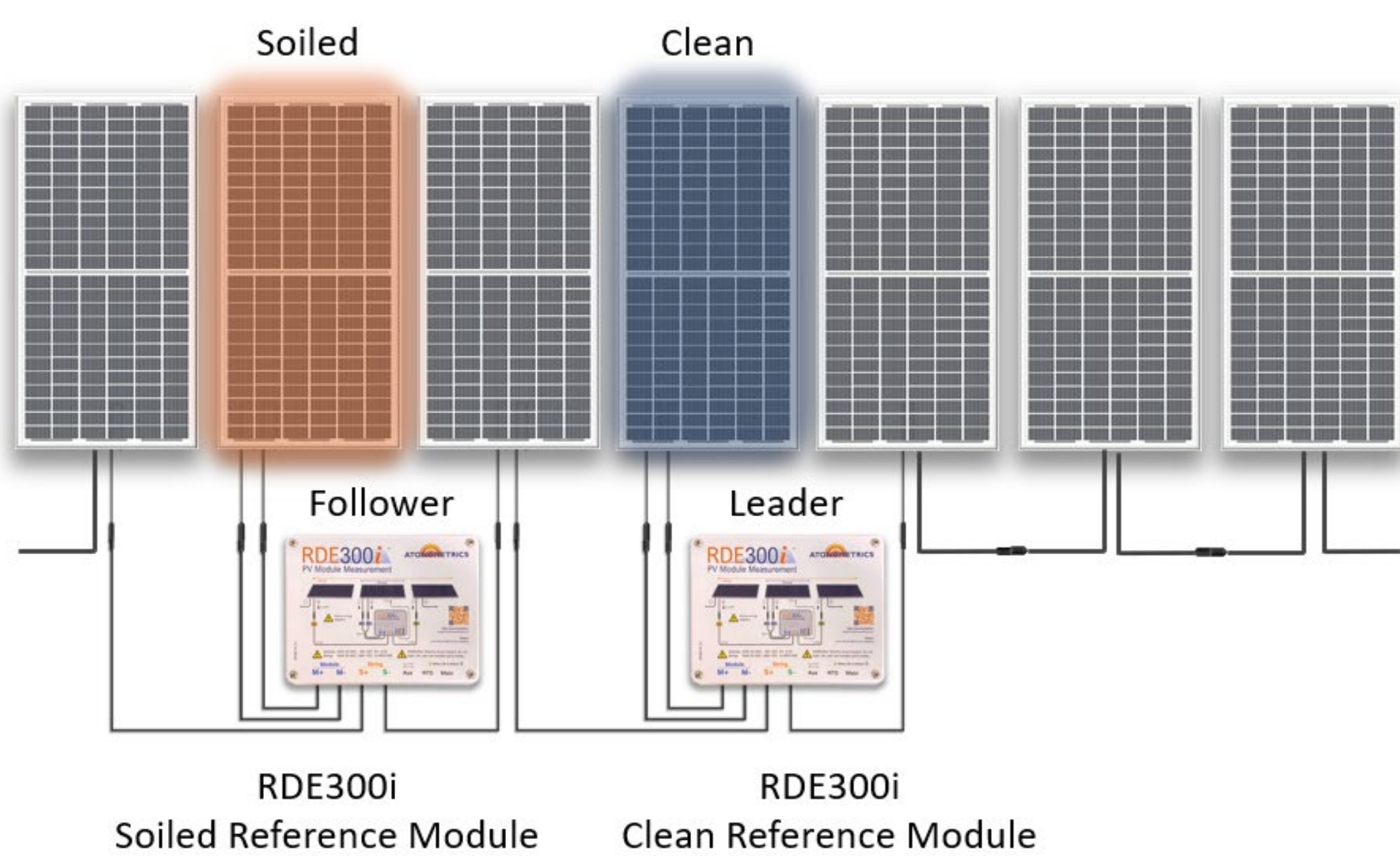


Power loss from non-uniform soiling depends on orientation

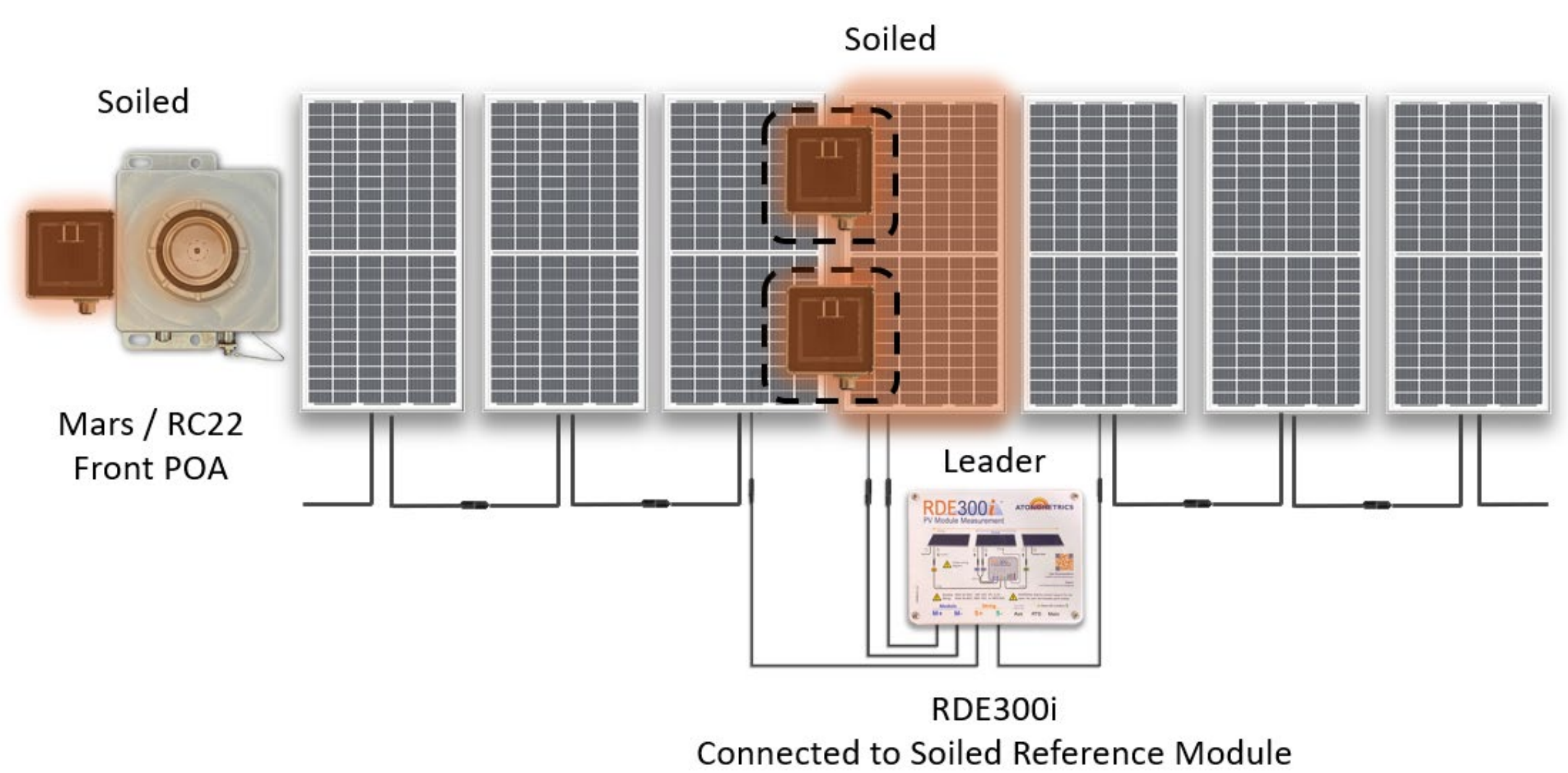


MEASURE SOILING LOSSES BY COMPARING MODULE POWER TO A REFERENCE

Module-Module:
Compare soiled module to clean module



Module-Cell-Optical:
Compare soiled power to ref cell corrected by optical soiling sensor



SOILING RATIO

Soiling Ratio (*SR*) compares a module's Measured Power to its Expected Power under clean conditions:

$$SR = \text{Measured Power} / \text{Expected Power}$$

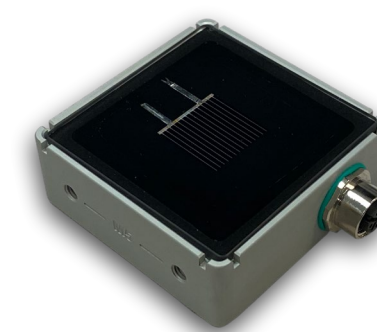
But how is Expected Power determined?

- Module-Module: "Expected Power" determined from Clean module using RDE300i IV measurements
- Module-Cell-Optical: "Expected Power" determined from Total Eff Irradiance using RC22 reference cells and (optionally) Mars optical sensor

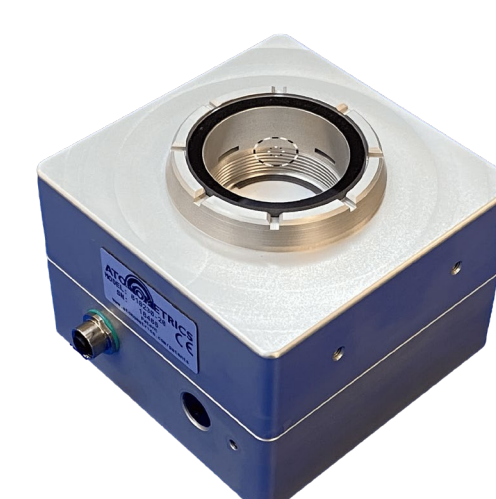
SENSORS



RDE300i: Measure IV curves and module power



RC22: Measure irradiance for reference to calculate expected power



Mars: Measure soiling and transmission loss from dust on glass