16.1 Input

Item	Specifications
Input terminal type	Voltage Plug-in terminal (safety terminal structure) Current • Direct input: Large binding post • Current sensor input (option): BNC connector (insulation type)
Input format	Voltage Floating input, resistive voltage divider Current Floating input, shunt input
Measurement range (Rated value)	Voltage 15 V, 30 V, 60 V, 150 V, 300 V, 600 V Current • DC input • When the crest factor is set to 3 • Common to WT210 and WT230: 0.5 A, 1 A, 2 A, 5 A, 10 A, and 20 A • WT210 only: 5 mA, 10 mA, 20 mA, 50 mA, 100 mA, and 200mA • When the crest factor is set to 6 • Common to WT210 and WT230: 0.25 A, 0.5 A, 1 A, 2.5 A, 5 A, and 10 A • WT210 only: 2.5 mA, 5 mA, 10 mA, 25 mA, 50 mA, and 100 mA • External sensor input (option) • When the crest factor is set to 3 Either "2.5 V, 5 V, and 10 V" or "50 mV, 100 mV, 200 mV" • When the crest factor is set to 6 Either "1.25 V, 2.5 V, and 5 V" or "25 mV, 50 mV, 100 mV"
Input impedance	Voltage Input resistance: Approx. 2 MΩ, input capacitance: Approx. 13 pF Current • DC input • WT230 Input resistance: Approx. 6 mΩ, input inductance: Approx. 0.1 μH • WT210 (when the crest factor is set to 3: 0.5 A, 1 A, 2 A, 5 A, 10 A, and 20 A ranges; when the crest factor is set to 6: 0.25 A, 0.5 A, 1 A, 2.5 A, 5 A, and 10 A ranges) Input resistance: Approx. 6 mΩ + 10 mΩ (max)*, input inductance: Approx. 0.1 μH • WT210 (when the crest factor is set to 3: 5 mA, 10 mA, 20 mA, 50 mA, 100 mA, and 200 mA ranges; when the crest factor is set to 6: 2.5 mA, 5 mA, 10 mA, 25 mA, 50 mA, and 100 mA ranges) Input resistance: Approx. 500 mΩ, input inductance: Approx. 0.1 μH • External sensor input • When the crest factor is set to 3: 2.5 V, 5 V, and 10 V ranges; when the crest factor is set to 6: 1.25 V, 2.5 V, and 5 V ranges Input resistance: Approx. 100 kΩ • When the crest factor is set to 3: 50 mV, 100 mV, and 200 mV ranges; when the crest factor is set to 6: 25 mV, 50 mV, and 100 mV ranges Input resistance: Approx. 20 kΩ
Instantaneous maximum allowable input (1 period, for 20 ms)	Voltage Peak value of 2.8 kV or RMS value of 2.0 kV, whichever is less. Current • DC input • When the crest factor is set to 3: 0.5 A, 1 A, 2 A, 5 A, 10 A, and 20 A ranges; when the crest factor is set to 6: 0.25 A, 0.5 A, 1 A, 2.5 A, 5 A, and 10 A ranges Peak value of 450 A or RMS value of 300 A, whichever is less. • When the crest factor is set to 3: 5 mA, 10 mA, 20 mA, 50 mA, 100 mA, and 200 mA ranges; when the crest factor is set to 6: 2.5 mA, 5 mA, 10 mA, 25 mA, 50 mA, and 100 mA ranges Peak value of 150 A or RMS value of 100 A, whichever is less. • External sensor input Peak value less than or equal to 10 times the rated range.

* Factory default

Item	Specifications
Instantaneous maximum allowable input (for 1 s)	Voltage Peak value of 2.0 kV or RMS value of 1.5 kV, whichever is less. Current • DC input ◦ When the crest factor is set to 3: 0.5 A, 1 A, 2 A, 5 A, 10 A, and 20 A ranges; when the crest factor is set to 6: 0.25 A, 0.5 A, 1 A, 2.5 A, 5 A, and 10 A ranges Peak value of 150 A or RMS value of 40 A, whichever is less. ◦ When the crest factor is set to 3: 5 mA, 10 mA, 20 mA, 50 mA, 100 mA, and 200 mA ranges; when the crest factor is set to 6: 2.5 mA, 5 mA, 10 mA, 25 mA, 50 mA, and 100 mA ranges Peak value of 30 A or RMS value of 20 A, whichever is less. • External sensor input Peak value less than or equal to 10 times the rated range.
Continuous maximum allowable input	Voltage Peak value of 1.5 kV or RMS value of 1.0 kV, whichever is less. Current • DC input ◦ When the crest factor is set to 3: 0.5 A, 1 A, 2 A, 5 A, 10 A, and 20 A ranges; when the crest factor is set to 6: 0.25 A, 0.5 A, 1 A, 2.5 A, 5 A, and 10 A ranges Peak value of 100 A or RMS value of 30 A, whichever is less. ◦ When the crest factor is set to 3: 5 mA, 10 mA, 20 mA, 50 mA, 100 mA, and 200 mA ranges; when the crest factor is set to 6: 2.5 mA, 5 mA, 10 mA, 25 mA, 50 mA, and 100 mA ranges Peak value of 30 A or RMS value of 20 A, whichever is less. • External sensor input Peak value less than or equal to 5 times the rated range.
Continuous maximum common mode voltage (during 50/60 Hz input)	600 Vrms (when using the output connector protection cover) CAT II 400 Vrms (when the output connector protection cover is removed) CAT II
Influence from common mode voltage	When 600 Vrms is applied between the input terminal and case with the voltage input terminals shorted, current input terminals open and external sensor input terminals shorted. • At 50/60 Hz –80 dB or more (±0.01% of range or less) • Up to 100 kHz (reference value) ◦ 15 V, 30 V, 60 V, 150 V, 300 V, 600 V ranges and 0.5 A, 1 A, 2 A, 5 A, 10 A, 20 A ranges $\text{Within } \pm\left\{\frac{\text{(Maximum rated range)}}{\text{(Rated range)}} \times 0.001 \times f\% \text{ of range}\right\}$ The maximum rated range is 600 V for the voltage input terminal and 20 A for the current input terminal. ◦ 5 mA, 10 mA, 20 mA, 50 mA, 100 mA, and 200 mA ranges $\text{Within } \pm\left\{\frac{\text{(Maximum rated range)}}{\text{(Rated range)}} \times 0.0002 \times f\% \text{ of range}\right\}$ The maximum rated range is 200 mA. ◦ External sensor input ranges $\text{Within } \pm\left\{\frac{\text{(Maximum rated range)}}{\text{(Rated range)}} \times 0.01 \times f\% \text{ of range}\right\}$ The "maximum rated range" is 10 V for option /EX1 and 200 mV for option /EX2 (twice these values when the crest factor is set to 6). Except, at least 0.01%. The unit of frequency f is kHz.
Line filter	See "Voltage, Current, and Active Power Measurement" in section 16.3, "Functions."
Frequency filter	See "Frequency Measurement" in section 16.3, "Functions."
A/D converter	Simultaneous conversion of voltage and current inputs. Resolution: 16 bits. Maximum conversion rate: Approx. 20 μs (approx. 51 kHz).