

Instrument ratings

The first important rating is the measurement range. For voltage measurement, this is the maximum voltage that can be applied to the test terminals. This doesn't mean, however, that measurements can always be made safely at that voltage.

Meters also should be marked with a safety category rating, which consists of a rated voltage and a measurement category, such as "600V CAT II." This marking specifies the maximum voltage that can be applied to the instrument for any type of measurement when it's connected in the category location. The latest IEC standard requires a meter to be capable of being set to any function or range with the leads connected to the maximum rated voltage without creating a hazard. Equipment can be dual-rated, for example 1000V CAT II / 600V CAT III. If a meter doesn't have a marked category rating, it's a CAT I device.

Select a meter with a safety rating that exceeds the anticipated application requirements for both the category and voltage. For most industrial work, 600V CAT III will be the minimum acceptable. The latest models from several manufacturers have ratings of 1,000V CAT III/600V CAT IV. Don't forget that these ratings also apply to test leads, clamp-on adapters and any other electrical accessories. The lowest rating on any of these determines the limit for the measurement.

The IEC standard is voluntary, and IEC doesn't monitor compliance. Meters also should carry the listing mark of a nationally recognized testing laboratory, such as UL, ETL or CSA. Listing under UL standard 3111-1 or the newer 61010B-1 ensures that the meter complies with the IEC standard. Other UL standards, or the general terms "UL Listed" or "designed to meet," don't carry the same assurance. The European CE marking doesn't imply that a third party has verified the design. Without third-party listing, there's no way to know if the manufacturer's rating was established in accordance with IEC requirements