

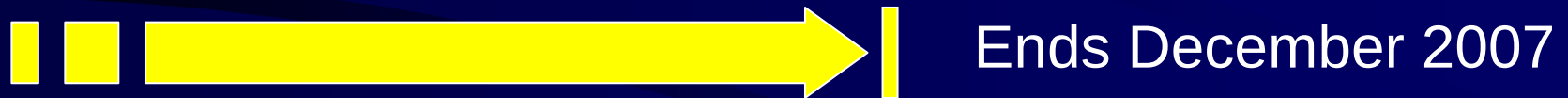
Changes to EN61000-3-2

EN61000-3-2:2000 + A2:2005

Voltech

Timetable of EN61000-3-2 Transition

Current Version: EN 61000-3-2:2000



New Version: EN 61000-3-2:2000 + A2:2005

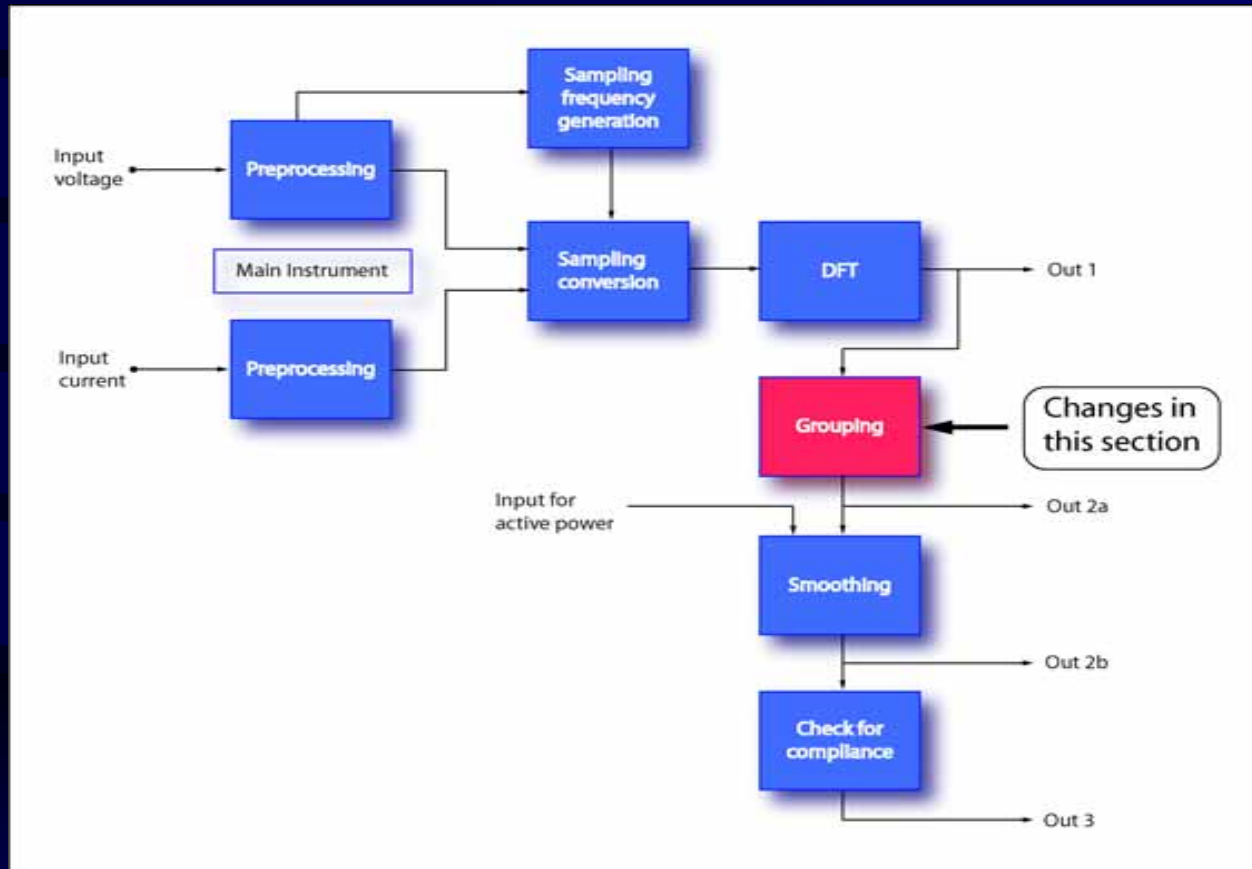


Changes in EN61000-3-2

Overview:

- The major change is outlined by EN61000-4-7:2002.
- This changes the measuring method to include interharmonic groups with a 200ms time window.
- Harmonic currents are valid only for phase conductors—not for the neutral conductor.
- Incandescent lamps with dimmers are now subject to the limits of class A.
- Washing machines: A full program run must be tested.

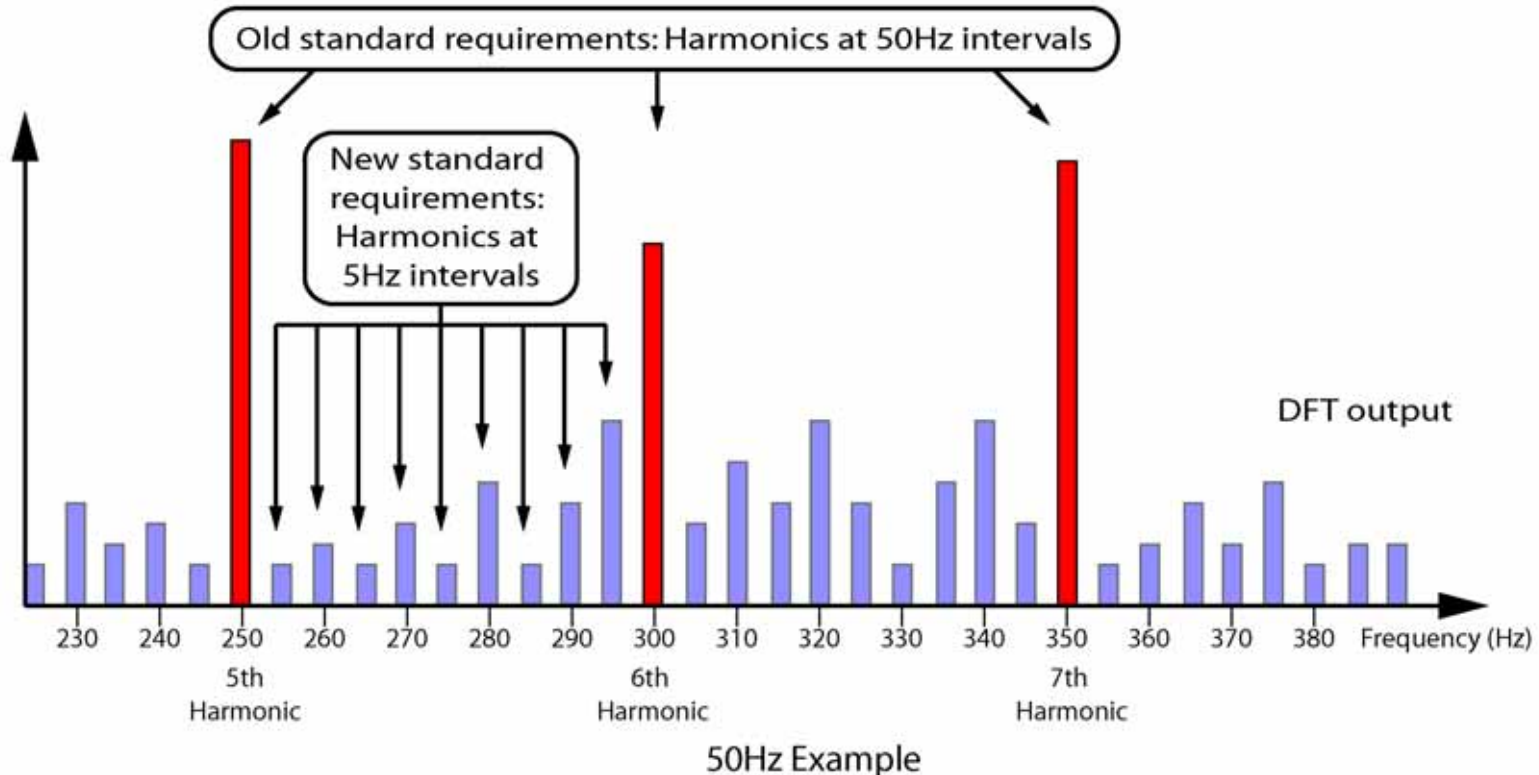
Overview of Measuring System



Changes in the grouping section to capture interharmonics.

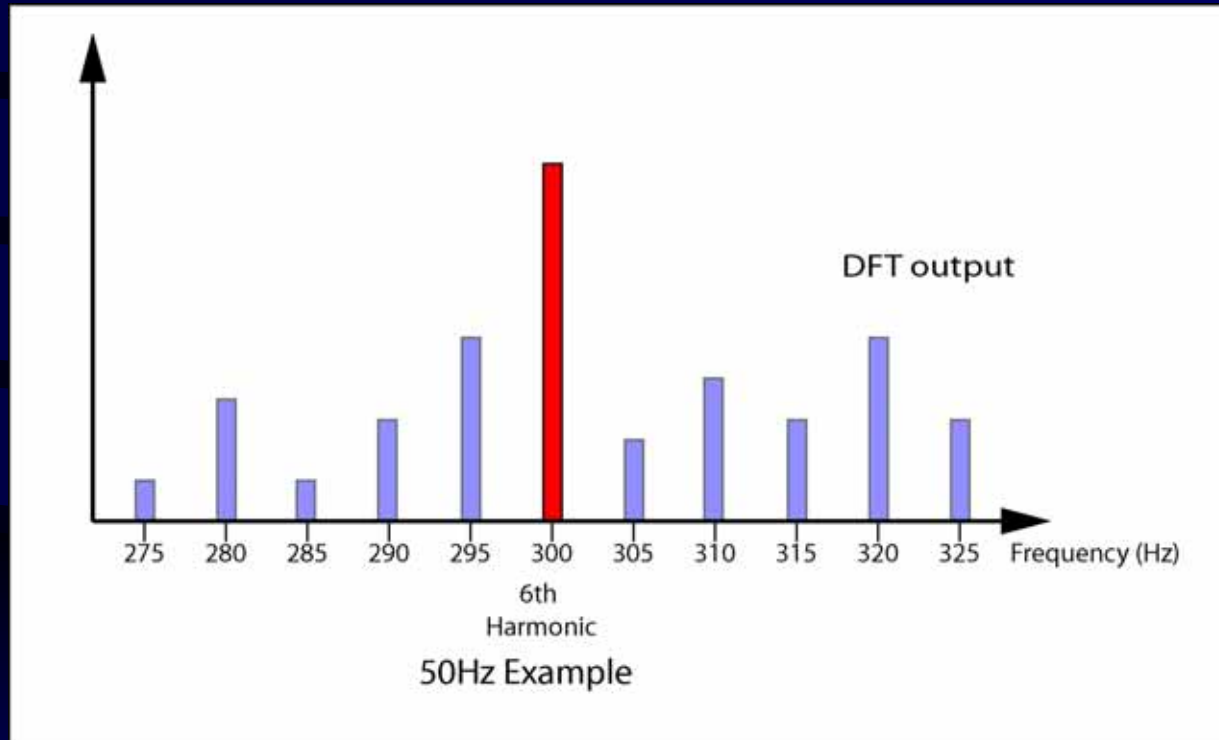
Detail Changes of EN61000-3-2 + A2:2005

- Interharmonics added to harmonic measurements



Detail Changes of EN61000-3-2 + A2:2005

- Interharmonic subgroups



- The new value of the harmonic is equal to the RMS value of the ten interharmonics grouped with it. The first and last values are shared with adjacent harmonics and their values split 50/50.

Detail Changes of EN61000-3-2 + A2:2005

- E.g., $G_{300} = \sqrt{\left(\frac{F_{275}}{2}\right)^2 + (F_{280})^2 + (F_{285})^2 + (F_{290})^2 + (F_{295})^2 + (F_{300})^2 + (F_{305})^2 + (F_{310})^2 + (F_{315})^2 + (F_{320})^2 + \left(\frac{F_{325}}{2}\right)^2}$

50Hz system 6th harmonic

- Therefore the new standard will capture an unstable fluctuation in harmonics. (No place to hide!)
- NB: For 60Hz a similar method for calculation is used but with 12 subharmonics.
- There is no change to the absolute limits from the old standard.

Causes of Interharmonics

Interharmonic components are caused primarily by two sources:

- Variations of the amplitude and/or phase angle of the fundamental component and/or of the harmonic components, for example, inverter drives
- Power electronics circuits with switching frequencies not synchronized to the power frequency, for example, a.c./d.c. supplies and power factor correctors

Causes of Interharmonics

Possible effects are, for example:

- Noise in audio amplifiers
- Additional torques on motors and generators
- Disturbed zero crossing detectors, for example, in dimmers
- Additional noise in inductive coils (magnetostriction)
- Blocking or unintended operation of ripple control receivers

Causes of Interharmonics

Interharmonic components usually vary not only in magnitude but also in frequency. A grouping of the spectral components in the interval between two consecutive components forms an interharmonic group. This grouping provides an overall value for the interharmonic components between two discrete harmonics, which includes the effects of fluctuations of the harmonic components.

Why the Voltech PM6000?

	PM6000
EN61000-4-7:2000 calls for a measuring system with discrete Fourier transform (DFT) analysis.	✓
EN61000-4-7 calls for synchronization accuracy of +/- 0.03%.	✓ 0.02%
EN61000-4-7 calls for crest factor of up to 4.	✓ 20
EN61000-4-7 calls for nominal current input overload times 10 for 1 second.	✓ 250A
Accuracy of voltage and current measurements 10 to 100 times better than standard requires.	✓
20 years of digital power analyzer know-how.	✓