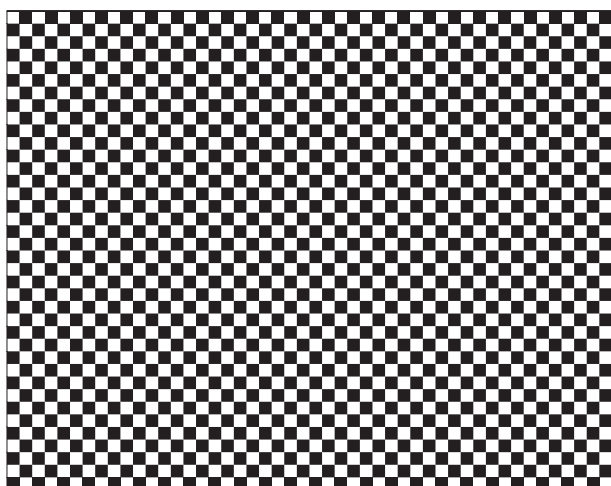# Grid patterns for TC lenses calibration

Any machine vision lens (either telecentric or not) shows some amount of distortion. In addition to "barrel" or "pincushion" distortion, changes in the angle of view or misalignment of component will affect the image symmetry and generate the so called "thin prism" or "keystone" effect.

Imaging and metrology applications very often require to minimize distortion, which can be software corrected by analyzing the image of a precision pattern whose geometrical features are well known.

For this reason Opto Engineering® offers Chrome-on-glass patterns featuring extremely high geometrical accuracy thanks to photolithography techniques.

The range of chessboard-style patterns offer an extensive coverage of most OE Telecentric Lenses FOVs, with geometrical features optimized for software calibration.

part number	compatible telecentric types (Part Numbers ending in)	compatible pattern mounts (CMPH)	dimensions width x height (mm x mm)	thickness (mm)	active area width x height (mm x mm)	squares width & spacing (mm)	dimensional accuracy (micron)
PT004-009	04, 07 and 09	CMPH004-024	33 x 26	3,0	15 x 13	0,20	1,3
PT016-024	16, 24	CMPH004-024	33 x 26	3,0	24 x 31	0,60	1,5
PT036-056	36, 48 and 56	CMPH036-056	66 x 52	3,0	51 x 64	1,35	1,9
PT064-096	64, 72, 80, 85 and 96	CMPH064-096	107 x 83	3,0	105 x 79	2,20	2,4
PT120-240	110, 120, 130, 144, 172, 192, 200, 240	n.a.	229 x 229	3,0	208 x 208	4,00	3,7

Software calibration is accurate if pattern positioning is accurate too.

In order to ease the integration of Calibration Patterns, Opto Engineering® also offers Pattern Holders. Each Calibration Pattern can be easily mounted on its specific holding mechanics. The pattern is assembled on a plate which is held by three magnets: this floating system allows for the adjustment of the pattern phase and center position. Patterns and pattern holders assembled with TC clamping mechanics offer a complete opto-mechanical solution for extremely accurate gauging systems using *CVTClib* calibration software library.

part number	compatible patterns	width (mm)	height (mm)	thickness (mm)	weight (g)
CMPH004-024	PT004-009, PT016-024	45	68,5	18,0	78,0
CMPH036-056	PT036-056	81	123,1	22,5	257,0
CMPH064-096	PT064-096	129	145,5	25,0	611,0

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