A compact waveguide polarization rotator, able to turn the polarization plane by an arbitrary angle, is proposed. Its operational principle is based on a strong electromagnetic coupling between two conjugated quadruple-slot planar-chiral irises in a square waveguide by the below cutoff modes. The physical interpretation for the observed phenomenon is provided based on the analysis of the eigenoscillations of such a $D_4$ symmetrical object considered as an open waveguide resonator. It is demonstrated that there exist two perfect matching points controlled by the iris geometry and width of the narrow gap between two planar chiral components. The reported unit has a bandwidth of several percent with return loss better than 20-30 dB. The conclusions of this work are fully applicable to double-periodical two-layer screens or metasurfaces having such square cells.