

## ECLA EUROPEAN CLASSIFICATION

**H01P** **WAVEGUIDES; RESONATORS, LINES, OR OTHER DEVICES OF THE WAVEGUIDE TYPE** (operating at optical frequencies [G02B](#); aerials [H01Q](#); [N: modulating electromagnetic waves in transmission line, waveguide, cavity resonator or radiation field of aerial [H03C7/02](#)]; networks comprising lumped impedance elements [H03H](#))

### Note

In this subclass, the following expression is used with the meaning indicated :

- "waveguide type" as applied to transmission lines includes only high-frequency coaxial cables or Lecher lines, and as applied to resonators, delay lines, or other devices includes all devices having distributed inductance and capacitance.

<b>H01P1/00</b>	<b>Auxiliary devices</b> (coupling devices of the waveguide type <a href="#">H01P5/00</a> )
H01P1/00C	. [N: Diode mounting means]
H01P1/02	. Bends; Corners; Twists
H01P1/02B	. . [N: in waveguides of polygonal cross-section ( <a href="#">H01P1/06C1C</a> takes precedence)]
H01P1/02B1	. . . [N: in the E-plane]
H01P1/02B2	. . . [N: in the H-plane]
H01P1/04	. Fixed joints ([N: pipe joints <a href="#">F16L</a> ]; line connectors <a href="#">H01R</a> ; cable fittings <a href="#">H02G15/00</a> )
H01P1/04B	. . [N: Hollow waveguide joints]
H01P1/04C	. . [N: Coaxial joints]
H01P1/04D	. . [N: Strip line joints]
H01P1/06	. Movable joints, e.g. rotating joints
H01P1/06B	. . [N: the relative movement being a translation along an axis common to at least two rectilinear parts, e.g. expansion joints]
H01P1/06C	. . [N: the relative movement being a rotation]
H01P1/06C1	. . . [N: with a limited angle of rotation]
H01P1/06C1B	. . . . [N: the axis of rotation being perpendicular to the transmission path, e.g. hinge joint]
H01P1/06C1C	. . . . [N: the axis of rotation being parallel to the transmission path, e.g. stepped twist]
H01P1/06C2	. . . [N: with an unlimited angle of rotation]
H01P1/06C2B	. . . . [N: the energy being transmitted in only one line located on the axis of rotation]
H01P1/06C2C	. . . . [N: the energy being transmitted in at least one ring-shaped transmission line located around the axis of rotation, e.g. "around the mast" rotary joint ( <a href="#">H01P1/06C2D</a> takes precedence; coaxial line with solid inner conductor <a href="#">H01P1/06C2B</a> )]
H01P1/06C2D	. . . . [N: the energy being transmitted in at least one ring-shaped transmission line

located around an axial transmission line; Concentric coaxial systems]

- H01P1/08 . Dielectric windows (coupling devices for transit time tubes [H01J23/36](#))
- H01P1/10 . for switching or interrupting [N: (in systems using reflection or reradiation of radio, acoustic or other waves [G01S7/03C](#))]
- H01P1/11 . . by ferromagnetic devices
- H01P1/12 . . by mechanical chopper
- H01P1/12B . . . [N: Waveguide switches] [N0012]
- H01P1/12C . . . [N: Coaxial switches] [N0012]
- H01P1/12D . . . [N: Strip line switches] [N0012]
- H01P1/14 . . by electric discharge devices (discharge devices [H01J17/64](#))
- H01P1/15 . . by semiconductor devices
- H01P1/16 . for mode selection, e.g. mode suppression or mode promotion; for mode conversion (linking dissimilar lines or devices [H01P5/08](#))
- H01P1/161 . . sustaining two independent orthogonal modes, e.g. orthomode transducer [N: (combining or separating polarisations and frequencies [H01P1/213B](#))]
- H01P1/162 . . absorbing spurious or unwanted modes of propagation
- H01P1/163 . . specifically adapted for selection or promotion of the TE 01 circular-electric mode
- H01P1/165 . for rotating the plane of polarisation
- H01P1/17 . . for producing a continuously rotating polarisation, e.g. circular polarisation
- H01P1/17B . . . [N: using a corrugated or ridged waveguide section] [N0202]
- H01P1/17C . . . [N: using a dielectric element] [N0202]
- H01P1/17D . . . [N: using a conductive element] [N0202]
- H01P1/17E . . . [N: using a magnetic element ([H01P1/175](#) takes precedence)] [N0202]
- H01P1/175 . . using Faraday rotators
- H01P1/18 . Phase-shifters ([H01P1/165](#) takes precedence; coupling devices with variable coupling factor [H01P5/04](#))
- H01P1/18B . . [N: using ferroelectric devices] [N9812]
- H01P1/18C . . [N: Waveguide phase-shifters ([H01P1/18B](#), [H01P1/185](#), [H01P1/19](#) take precedence)] [N0202]
- H01P1/18D . . [N: Coaxial phase-shifters ([H01P1/18B](#), [H01P1/185](#), [H01P1/19](#) take precedence)] [N0202]
- H01P1/18E . . [N: Strip line phase-shifters ([H01P1/18B](#), [H01P1/185](#), [H01P1/19](#) take precedence)] [N0202]
- H01P1/185 . . using a diode or a gas filled discharge tube
- H01P1/19 . . using a ferromagnetic device
- H01P1/195 . . . having a toroidal shape
- H01P1/20 . Frequency-selective devices, e.g. filters ([N: variable impedance transformers, e.g. slug tuners or stub tuners [H01P5/04](#)]; resonators [H01P7/00](#))
- H01P1/20B . . [N: Dielectric waveguide filters ([H01P1/212](#), [H01P1/213](#), [H01P1/215](#), [H01P1/219](#) take precedence)] [N9812]
- H01P1/20C . . [N: Electromagnetic photonic bandgaps [EPB], or photonic bandgaps [PBG] ]

			N1104]
H01P1/20P	. .	[N: Filtering devices for biasing networks or DC returns]	
H01P1/201	. .	Filters for transverse electromagnetic waves( <a href="#">H01P1/212</a> , <a href="#">H01P1/213</a> , <a href="#">H01P1/215</a> , <a href="#">H01P1/219</a> take precedence)	
H01P1/201B	. . .	[N: Coplanar line filters] [N9812]	
H01P1/201C	. . .	[N: Slot line filters; Fin line filters] [N9812]	
H01P1/202	. . .	Coaxial filters (cascaded coaxial cavities <a href="#">H01P1/205</a> )	
H01P1/203	. . .	Strip line filters	
H01P1/203B	. . . .	[N: with dielectric resonator]	
H01P1/203B1	. . . . .	[N: with dielectric resonators as non-metallised opposite openings in the metallised surfaces of a substrate] [N0806]	
H01P1/203C	. . . .	[N: Electromagnetic interstage coupling] [C0806]	
H01P1/203C1	. . . . .	[N: Comb or interdigital filters] [N0806]	
H01P1/203C1B	. . . . .	[N: Multilayer filters] [N0806]	
H01P1/203C2	. . . . .	[N: Non-comb or non-interdigital filters] [N0806]	
H01P1/203C2B	. . . . .	[N: Linear resonators] [N0806]	
H01P1/203C2C	. . . . .	[N: Hairpin resonators] [N0806]	
H01P1/203C2D	. . . . .	[N: Special shape resonators] [N0806]	
H01P1/203D	. . . .	[N: Galvanic coupling between Input/Output] [N0806]	
H01P1/205	. . .	Comb or interdigital filters; Cascaded coaxial cavities ( <a href="#">H01P1/203</a> takes precedence)	
H01P1/205B	. . . .	[N: the coaxial cavity resonators being disposed parall to each other]	
H01P1/205C	. . . .	[N: Comb filters or interdigital filters with metallised resonator holes in a dielectric block] [N0302]	
H01P1/207	. .	Hollow waveguide filters ( <a href="#">H01P1/212</a> , <a href="#">H01P1/213</a> , <a href="#">H01P1/215</a> , <a href="#">H01P1/219</a> take precedence)	
H01P1/208	. . .	Cascaded cavities; Cascaded resonators inside a hollow waveguide structure ( <a href="#">H01P1/205</a> takes precedence)	
H01P1/208B	. . . .	[N: with multimode resonators ( <a href="#">H01P1/208C1</a> takes precedence)]	
H01P1/208C	. . . .	[N: with dielectric resonators]	
H01P1/208C1	. . . . .	[N: multimode] [N9812]	
H01P1/208D	. . . .	[N: Integrated in a substrate] [N0806]	
H01P1/209	. . .	comprising one or more branching arms or cavities wholly outside the main waveguide	
H01P1/211	. . .	Waffle-iron filters; Corrugated structures	
H01P1/212	. .	suppressing or attenuating harmonic frequencies ( <a href="#">H01P1/215</a> takes precedence)	
H01P1/213	. .	combining or separating two or more different frequencies ( <a href="#">H01P1/215</a> takes precedence)	
H01P1/213B	. . .	[N: with combining or separating polarisations]	
H01P1/213C	. . .	[N: using coaxial filters ( <a href="#">H01P1/213B</a> , <a href="#">H01P1/213E</a> take precedence)]	
H01P1/213D	. . .	[N: using strip line filters ( <a href="#">H01P1/213B</a> takes precedence)]	
H01P1/213E	. . .	[N: using comb or interdigital filters; using cascaded coaxial cavities ( <a href="#">H01P1/213B</a> , <a href="#">H01P1/213D</a> take precedence)]	
H01P1/213F	. . .	[N: using hollow waveguide filters ( <a href="#">H01P1/213B</a> takes precedence)]	
H01P1/215	. .	using ferromagnetic material	

- H01P1/217 . . . the ferromagnetic material acting as a tuning element in resonators
- H01P1/218 . . . the ferromagnetic material acting as a frequency selective coupling element, e.g. YIG-filters
- H01P1/219 . . . Evanescent mode filters
- H01P1/22 . . . Attenuating devices ([dissipative terminating devices H01P1/26](#))
- H01P1/22B . . . [N: Waveguide attenuators ([H01P1/23 takes precedence](#))] [N9801]
- H01P1/22C . . . [N: Coaxial attenuators ([H01P1/23 takes precedence](#))] [N9801]
- H01P1/22D . . . [N: Strip line attenuators ([H01P1/23 takes precedence](#))] [N9801]
- H01P1/23 . . . using ferromagnetic material
- H01P1/24 . . . Terminating devices
- H01P1/26 . . . Dissipative terminations
- H01P1/26B . . . [N: the dissipative medium being a liquid or being cooled by a liquid]
- H01P1/26C . . . [N: Waveguide terminations ([H01P1/26B takes precedence](#))] [N0001]
- H01P1/26D . . . [N: Coaxial terminations ([H01P1/26B takes precedence](#))] [N0001]
- H01P1/26E . . . [N: Strip line terminations ([H01P1/26B takes precedence](#))] [N0001]
- H01P1/28 . . . Short-circuiting plungers ([coupling devices with variable coupling factor H01P5/04](#))
- H01P1/30 . . . for compensation of, or protection against, temperature or moisture effects; [N: for improving power handling capability ([H01P1/04](#), [H01P1/08 take precedence](#))]
- H01P1/32 . . . Non-reciprocal transmission devices ([H01P1/02 to H01P1/30 take precedence](#))
- H01P1/36 . . . Isolators
- H01P1/36B . . . [N: Edge-guided mode devices]
- H01P1/365 . . . Resonance absorption isolators
- H01P1/37 . . . Field displacement isolators
- H01P1/375 . . . using Faraday rotators
- H01P1/38 . . . Circulators
- H01P1/383 . . . Junction circulators, e.g. Y-circulators
- H01P1/387 . . . . Strip line circulators
- H01P1/39 . . . . Hollow waveguide circulators
- H01P1/393 . . . using Faraday rotators
- H01P1/397 . . . using non- reciprocal phase shifters ([H01P1/393 takes precedence](#))

### **H01P3/00 Waveguides; Transmission lines of the waveguide type**

- H01P3/00B . . . [N: Coplanar lines]
- H01P3/00B1 . . . [N: Conductor backed coplanar waveguides] [N0901]
- H01P3/02 . . . with two longitudinal conductors
- H01P3/02B . . . [N: Fin lines; Slot lines]
- H01P3/02C . . . [N: Coplanar striplines (CPS)] [N0901]
- H01P3/04 . . . Lines formed as Lecher wire pairs
- H01P3/06 . . . Coaxial lines ([not suitable for handling frequencies considerably beyond the audio](#))

range, [N: coaxial cables in general] [H01B11/18](#))

[N: **Note**

This subgroup is only used for documents disclosing typical HF-features of coaxial cables, e.g. propagation of non-TEM-modes, multimoding, oversized coaxial cables, particular cross-section adapted for HF-propagation ]

- H01P3/08 . . Microstrips; Strip lines
- H01P3/08B . . . [N: Micro-striplines] [N0806]
- H01P3/08B1 . . . . [N: Multilayer dielectric] [N0806]
- H01P3/08B2 . . . . [N: Suspended micro-striplines] [N0806]
- H01P3/08C . . . . [N: Triplate lines] [N0806] [C0901]
- H01P3/08C1 . . . . [N: Suspended triplate lines] [N0806] [C0901]
- H01P3/08D . . . . [N: Stacked transmission lines] [N0901]
  
- H01P3/10 . Wire waveguides, i.e. with a single solid longitudinal conductor
  
- H01P3/12 . Hollow waveguides ([H01P3/20](#) takes precedence)
- H01P3/12B . . [N: integrated in a substrate] [N0806]
- H01P3/12C . . [N: Dielectric loaded (not air)] [N0901]
- H01P3/123 . . with a complex or stepped cross-section, e.g. ridged or grooved waveguides ([H01P3/14](#) takes precedence)
- H01P3/127 . . with a circular, elliptic, or parabolic cross-section
- H01P3/13 . . specially adapted for transmission of the TE<sub>01</sub> circular-electric mode [N: (selection, promotion [H01P1/163](#))]
- H01P3/14 . . flexible
  
- H01P3/16 . Dielectric waveguides, i.e. without a longitudinal conductor
- H01P3/16B . . [N: Non-radiating dielectric waveguides] [N0806]
  
- H01P3/18 . built-up from several layers to increase operating surface, i.e. alternately conductive and dielectric layers
  
- H01P3/20 . Quasi-optical arrangements for guiding a wave, e.g. focusing by dielectric lenses ([quasi-optical devices in general H01Q15/00](#))
  
- H01P5/00** **Coupling devices of the waveguide type** (non-reciprocal devices [H01P1/32](#); for introducing or removing wave energy to or from the discharge in transit-time tubes [H01J23/36](#))
  
- H01P5/02 . with invariable factor of coupling ([H01P5/12](#) takes precedence [N: choke joints [H01P1/04](#), [H01P1/06](#)])
- H01P5/02B . . [N: Transitions between lines of the same kind and shape, but with different dimensions] [N0312]
- H01P5/02B1 . . . [N: between hollow waveguides] [N0312]
- H01P5/02B2 . . . [N: between coaxial lines] [N0312]
- H01P5/02B3 . . . [N: between strip lines] [N0312]
  
- H01P5/04 . with variable factor of coupling

- H01P5/08 . for linking dissimilar lines or devices ([H01P1/16](#), [H01P5/04](#) take precedence; linking lines of the same kind but with different dimensions [H01P5/02](#))
- H01P5/08B . . [N: Transitions between hollow waveguides of different shape, e.g. between a rectangular and a circular waveguide] [C0312]
- H01P5/08C . . [N: Coaxial-line/strip-line transitions]
- H01P5/08D . . [N: Transitions to a dielectric waveguide] [N0401]
- H01P5/10 . . for coupling balanced with unbalanced lines or devices
- H01P5/10B . . . [N: Microstrip transitions to Slotline or finline][N0302]
- H01P5/10C . . . [N: Coplanar line transitions to Slotline or finline][N0302]
- H01P5/10D . . . [N: Transitions to dielectric waveguide][N0302]
- H01P5/103 . . . Hollow-waveguide/coaxial-line transitions
- H01P5/107 . . . Hollow-waveguide/strip-line transitions
  
- H01P5/12 . Coupling devices having more than two ports ([H01P5/04](#) takes precedence)
- H01P5/16 . . Conjugate devices, i.e. devices having at least one port decoupled from one other port
- H01P5/18 . . . consisting of two coupled guides, e.g. directional couplers
- H01P5/18B . . . . [N: the guides being hollow waveguides]
- H01P5/18B1 . . . . . [N: the waveguides being arranged in parallel]
- H01P5/18C . . . . . [N: at least one of the guides being a coaxial line] [C9607]
- H01P5/18D . . . . . [N: the guides being strip lines or microstrips] [N9607]
- H01P5/18D1 . . . . . [N: Edge coupled lines] [N0806]
- H01P5/18D1B . . . . . [N: Lange couplers] [N0901]
- H01P5/18D2 . . . . . [N: Broadside coupled lines] [N0806]
- H01P5/18E . . . . . [N: the guides being dielectric waveguides] [N0001]
- H01P5/19 . . . of the junction type
- H01P5/20 . . . . Magic-T junctions
- H01P5/22 . . . . Hybrid ring junctions
- H01P5/22B . . . . . [N: 180° rat race hybrid rings] [N0806]
- H01P5/22C . . . . . [N: 180° reversed phase hybrid rings] [N0806]
- H01P5/22D . . . . . [N: 90° branch line couplers] [N0806]
  
- H01P7/00** **Resonators of the waveguide type** ([N: variable impedance transformers [H01P5/04](#)]; structurally associated with transit-time tubes and interacting with the discharge therein [H01J23/18](#); [N: generators of electronic oscillations using resonators of this type [H03B5/18](#), [H03B7/14](#), [H03B9/14](#); electronic amplifiers using resonators of this type [H03F3/54](#)]; microwave heating devices [H05B6/64](#))
- H01P7/00D . [N: Helical resonators; Spiral resonators]
- H01P7/02 . Lecher resonators
- H01P7/04 . Coaxial resonators
- H01P7/06 . Cavity resonators

- H01P7/06B . . [N: integrated in a substrate] [N0502]
- H01P7/08 . Strip line resonators
- H01P7/08B . . [N: Microstripline resonators ([H01P7/08E](#) takes precedence)] [N0901]
- H01P7/08C . . [N: Triplate line resonators ([H01P7/08E](#) takes precedence)] [N0901]
- H01P7/08D . . [N: Coplanar waveguide resonators ([H01P7/08E](#) takes precedence)] [N0901]
- H01P7/08E . . [N: Tunable resonators] [N0901]
- H01P7/10 . Dielectric resonators
- H01P7/10B . . [N: Multimode resonators] [N0901]
- H01P9/00** **Delay lines of the waveguide type** (structurally associated with transit-time tubes and interacting with the discharge therein [H01J23/24](#))
- H01P9/00B . [N: Delay equalizers]
- H01P9/00C . [N: Meander lines]
- H01P9/02 . Helical lines
- H01P9/04 . Interdigital lines
- H01P11/00** **Apparatus or processes specially adapted for manufacturing waveguides or resonators, lines, or other devices of the waveguide type** (manufacture of coaxial cables [H01B13/00](#))
- H01P11/00B . [N: Manufacturing waveguides or transmission lines of the waveguide type]
- H01P11/00B1 . . [N: Manufacturing hollow waveguides]
- H01P11/00B2 . . [N: Manufacturing lines with conductors on a substrate, e.g. strip lines, slot lines]
- H01P11/00B3 . . [N: Manufacturing coaxial lines]
- H01P11/00B4 . . [N: Manufacturing dielectric waveguides]
- H01P11/00C . [N: Manufacturing frequency-selective devices (resonators [H01P11/00D](#))]
- H01P11/00D . [N: Manufacturing resonators]