

## Tube Amplifier Interstage Transformer / Line Output Transformer LL1660

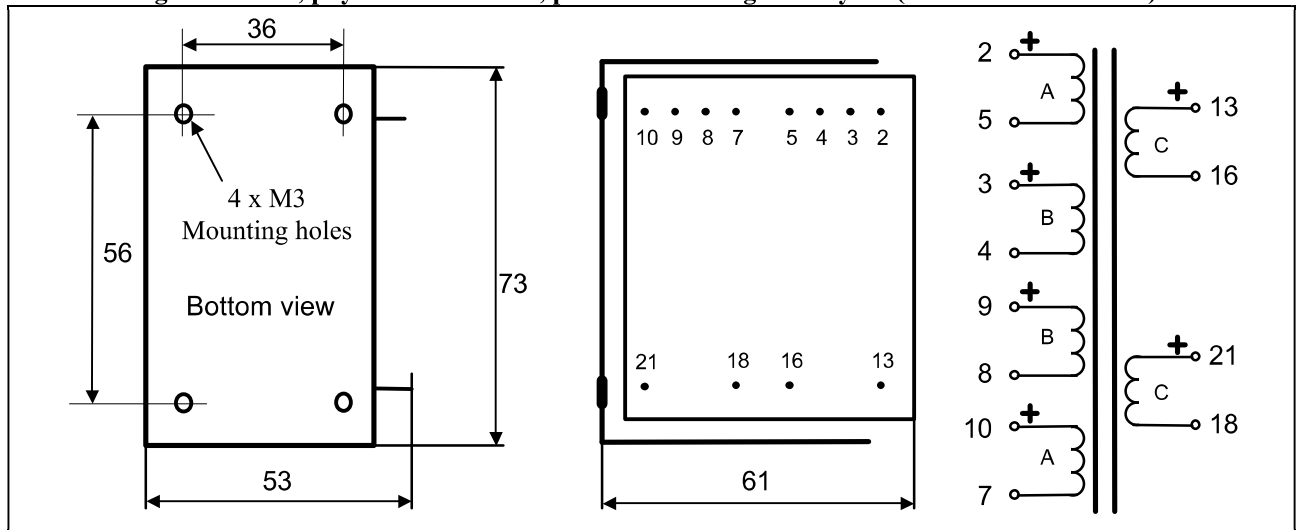
LL1660 is an interstage / line output transformer for tube amplifiers. The transformer is available with different core air gap for PP or SE drives.

The transformer is wound with a special low capacitance winding technique to achieve best high frequency performance. The transformer has a special high flux, low distortion audio C-core of our own production.

The LL1660PP is assembled with a small core air gap to allow for some DC current unbalance.

For the S.E. versions of the LL1660, the core air gap is chosen such that the denoted DC current (18mA for a LL1660/18mA) generates a no signal core flux density of 0.9 Tesla when used with all primaries in series. This leaves a flux density swing of 0.7 T for the signal.

### Winding schematics, physical dimensions, pin and mounting hole layout (all dimensions in mm)



Weight	Turns ratio	Static resistance, winding A	Static resistance, winding B	Static resistance, winding C
0.75 Kg	1+1+1+1 : 2.25+2.25	315 Ω	240 Ω	625 Ω

**Max. current through any single section:**

50 mA

**Isolation between primary and secondary windings / between windings and core:**

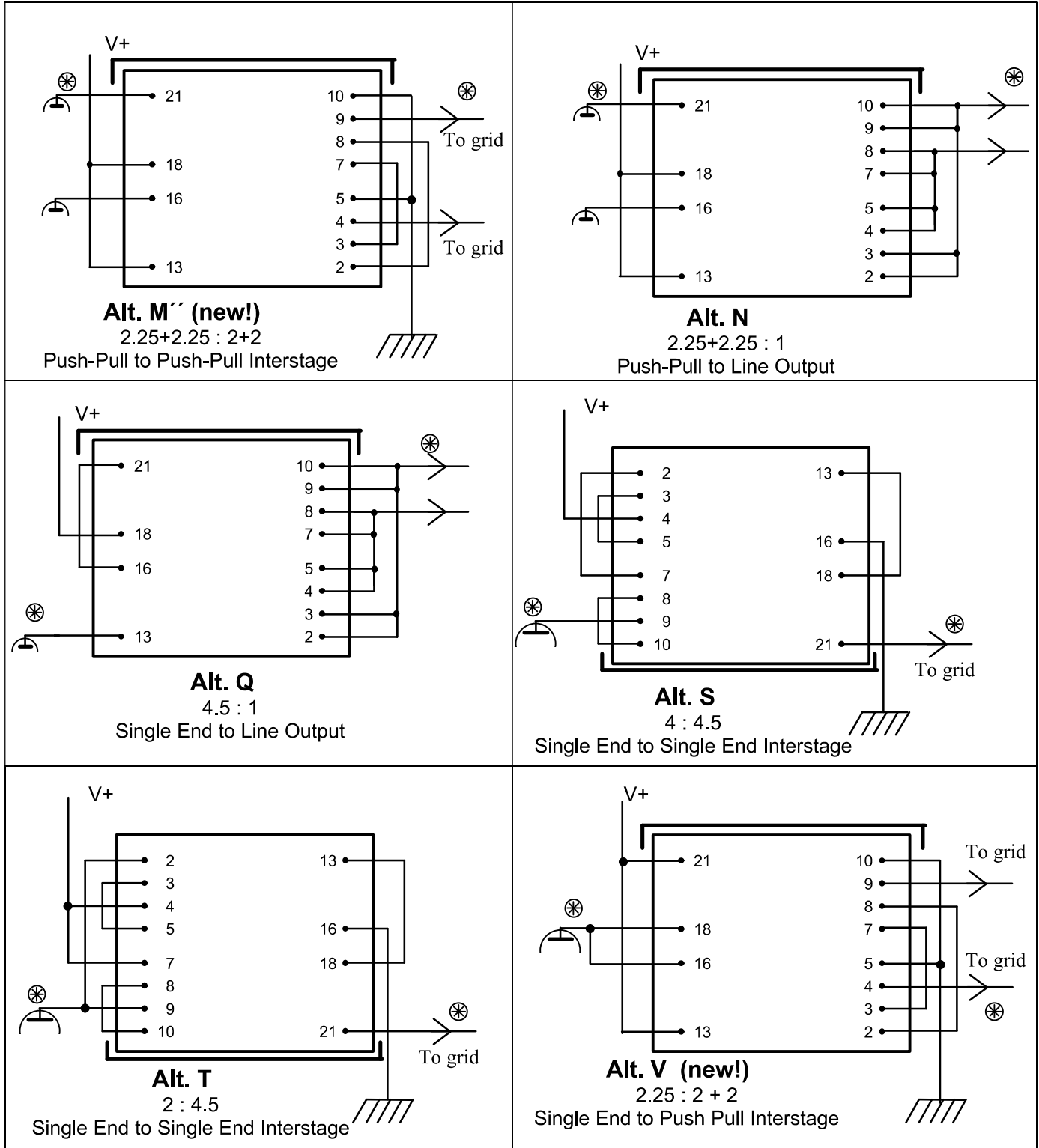
4 kV / 2 kV

Type	LL1660 PP	LL1660 PP	LL1660/18mA	LL1660/10mA
Connection	Alt M'' PP to PP Interst. 2.25+2.25 : 2+2	Alt N PP Line output 2.25+2.25 : 1	Alt Q SE Line Output 4.5 : 1	Alt S SE to SE Interst. 4 : 4.5
Primary DC current for 0.9 Tesla	-	-	16 mA	10 mA
Primary Inductance	290H	290H	100H	130H
Freq. Response (+/-1dB) @ source impedance (*) Secondaries open	20 Hz – 25 kHz 15kΩ	16 Hz – 30 kHz 15kΩ	11 Hz – 35 kHz 3 kΩ	25Hz - 40 kHz 14 kΩ
Max output voltage @ 30 Hz	2 x 260V r.m.s.	130V r.m.s.	57 V r.m.s.	250 V r.m.s.

Type	LL1660/10mA	LL1660/10mA
Connection	Alt T SE to SE Interst. 2 : 4.5	Alt V SE to PP Interst. 2.25 : 2 + 2
Primary DC current for 0.9 Tesla	20 mA	18 mA
Primary Inductance	33H	42H
Freq. Response (+/-1dB) @ source impedance (*) Secondaries open	25 Hz - 30 kHz 3.5kΩ	25 Hz - 30 kHz 3.5kΩ
Max output voltage @ 30 Hz	250 V r.m.s.	220 V r.m.s.

(\*) The source impedances used in the tables indicates a recommended upper limit, unless freq. response can be compromised. At lower source impedance resonance peaking will occur. It can be reduced using secondary load resistors.

**Tube Amplifier Interstage Transformer / Line Output Transformer**  
**LL1660**  
**Connection Alternatives**



⊗ Phase Indicator

Alt. M'' and Alt. V have been introduced to improve balance in PP applications