

Line Output Transformer LL1689

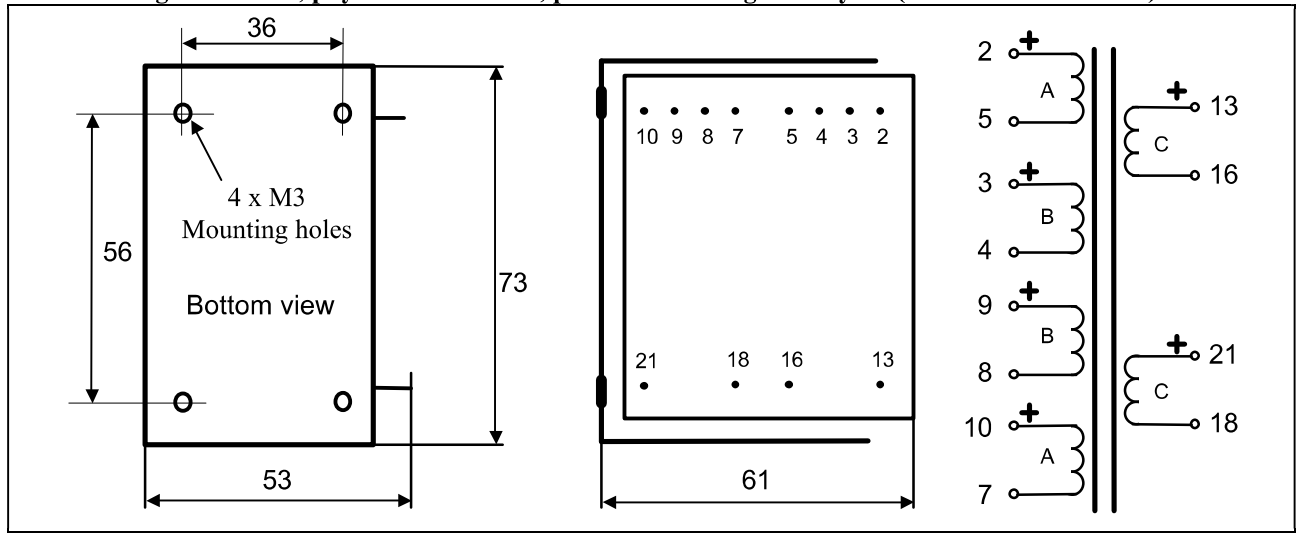
LL1689 is a line output transformer for tube amplifiers. The transformer is available with different core air gap for PP or SE drives.

The transformer primaries are 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 LL1689PP is assembled with a small core air gap to allow for some DC current unbalance.

For the S.E. versions of the LL1689, the core air gap is chosen such that the denoted DC current (18mA for a LL1689/18mA) 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	9+9 : 1+1+1+1	19 Ω	15 Ω	655 Ω

Max. current through any primary ("C") section:

50 mA

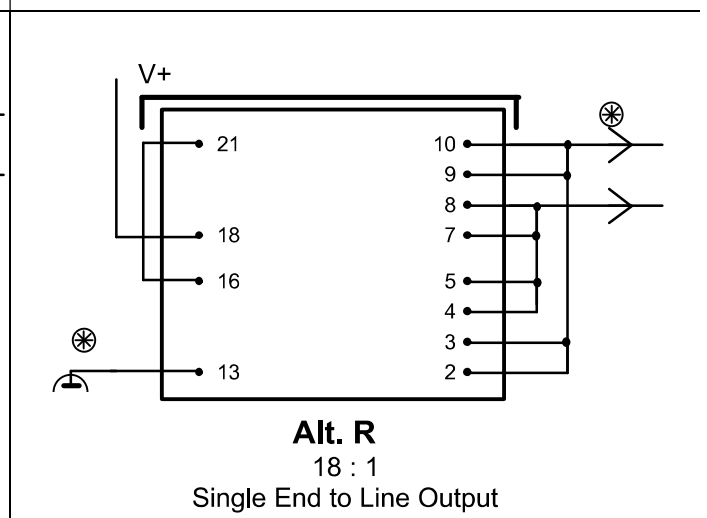
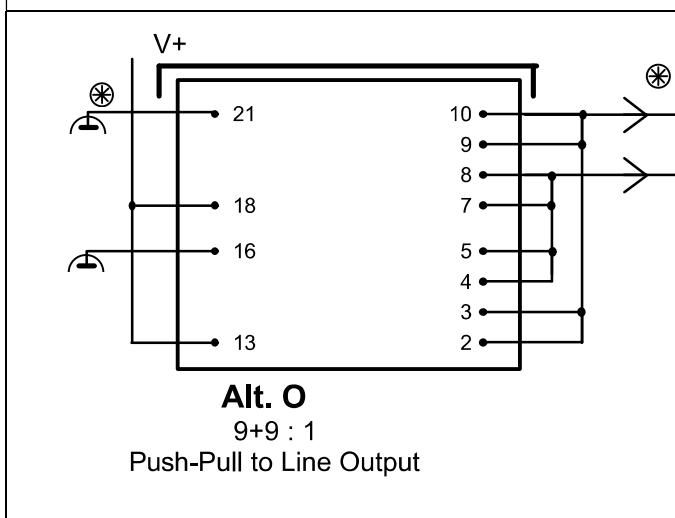
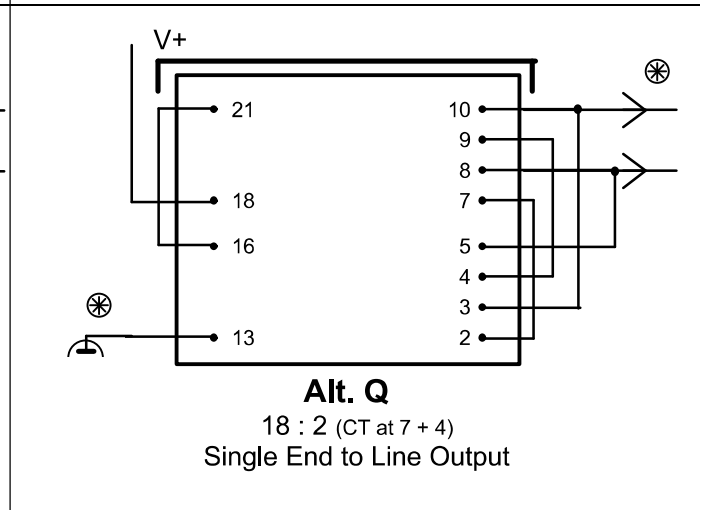
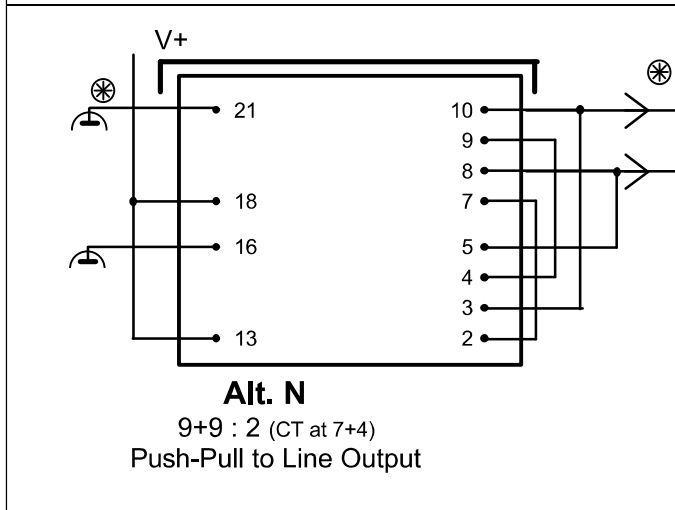
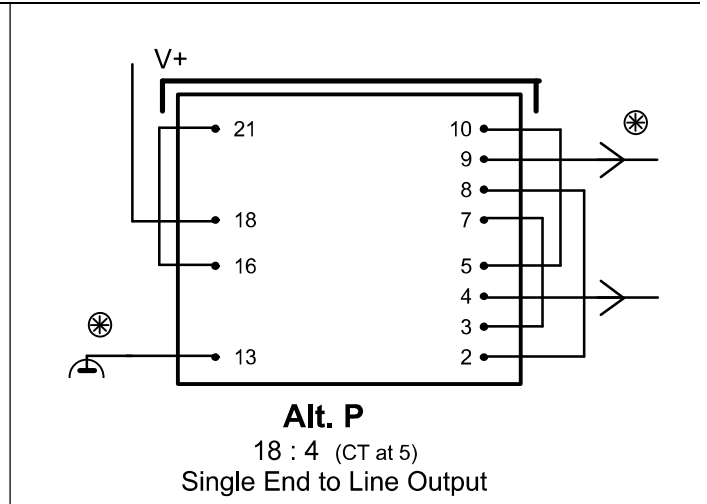
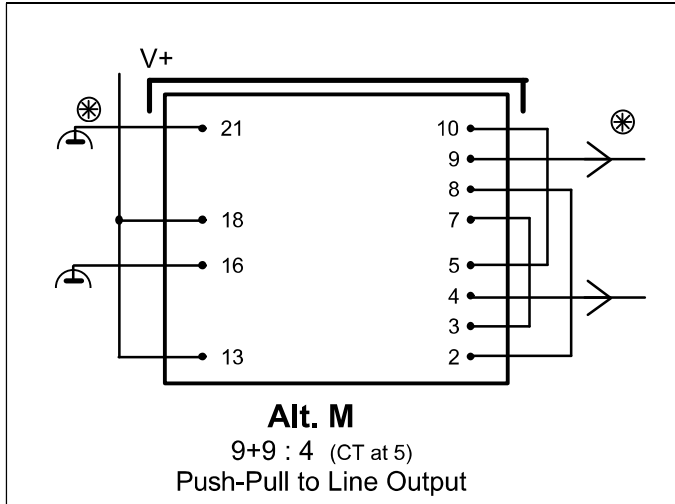
Isolation between primary and secondary windings / between windings and core: 4 kV / 2 kV

Type	LL1689/PP	LL1689/PP	LL1689/PP	LL1689/18mA
Connection	Alt M PP to Line Out. 9+9 : 4	Alt N PP to Line Out. 9+9 : 2	Alt O PP to Line Out. 9+9 : 1	Alt P SE to Line Out. 18 : 4
Primary DC current for 0.9 Tesla	-	-	-	18 mA
Primary Inductance	290 H	290 H	290 H	90H
Freq. Response (+/-1dB) @ source impedance (*) Secondaries open	Hz – kHz 15kΩ	15kΩ	15 kΩ	3 kΩ
Max sec. voltage @ 30 Hz	128V r.m.s.	64V r.m.s.	32V r.m.s.	56 V r.m.s.

Type	LL1689/18mA	LL1689/18mA
Connection	Alt Q SE to Line Out. 18 : 2	Alt R SE to Line Out. 18 : 1
Primary DC current for 0.9 Tesla	18 mA	18 mA
Primary Inductance	90H	90H
Freq. Response (+/-1dB) @ source impedance (*) Secondaries open	3.5kΩ	3.5kΩ
Max output voltage @ 30 Hz	28 V r.m.s.	14 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
LL1689
Connection Alternatives



⊗ Phase Indicator