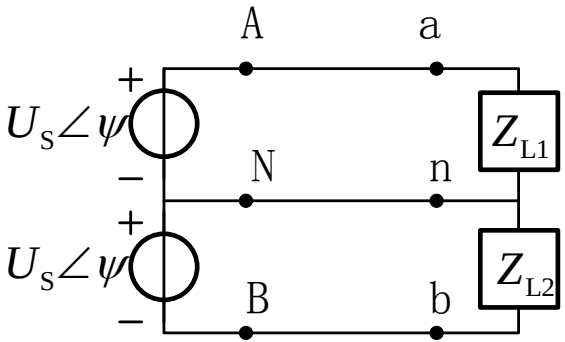
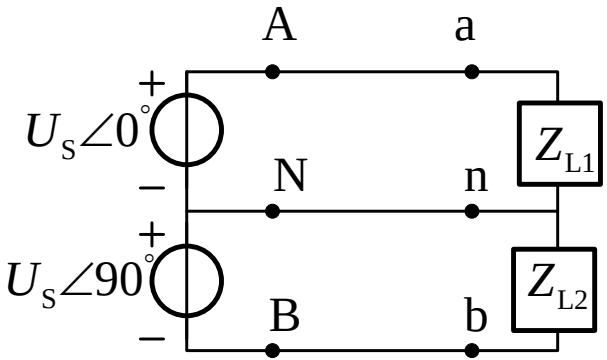
对称三相电压

多相系统

电路或系统中，交流电源工作在相同频率不同的相位下称为多相电源,有多相电源供电的体系称为多相系统。

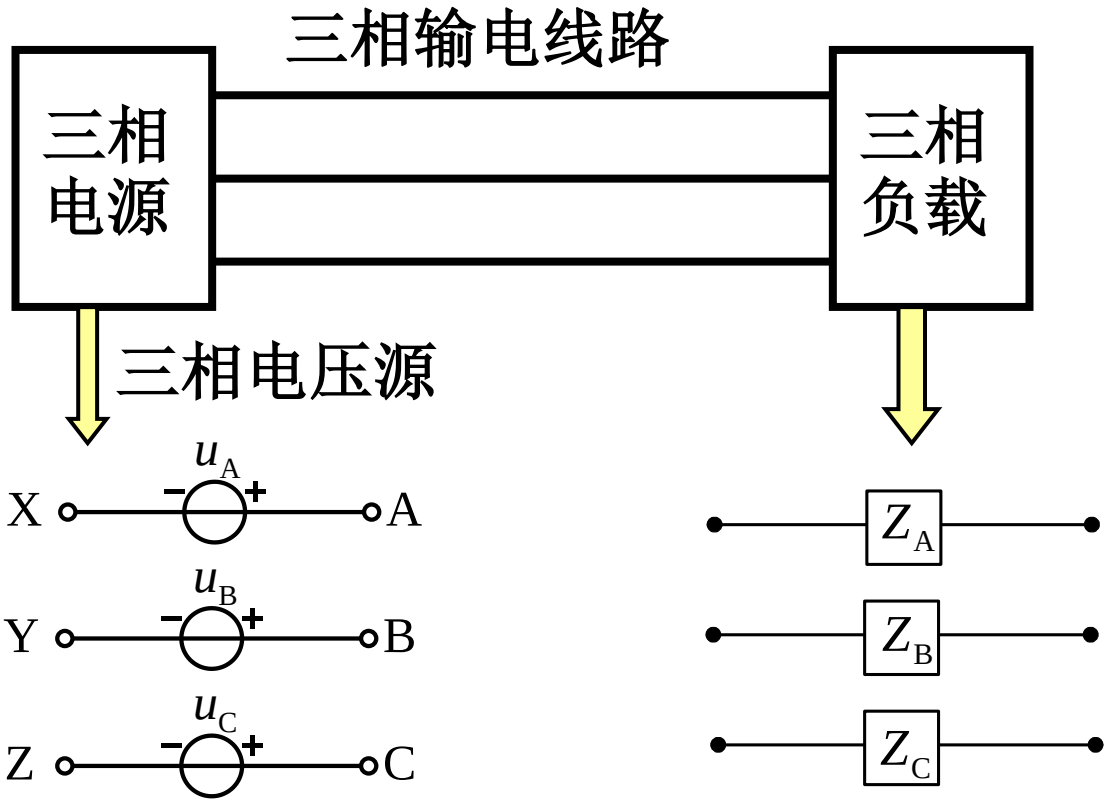


单相三线系统

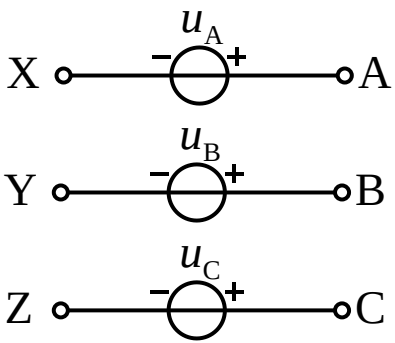


两相三线系统

对称三相电压



对称三相电压



当三相电压 u_A、u_B、u_C 不仅频率、波形相同，幅值相等，而且变动进程彼此相差120°，称为**对称三相电压。**

正 序

$$\left.\begin{aligned} u_A &= \sqrt{2}U\cos(\omega t) \\ u_B &= \sqrt{2}U\cos(\omega t - 120^\circ) \\ u_C &= \sqrt{2}U\cos(\omega t - 240^\circ) \end{aligned}\right\}$$

负 序

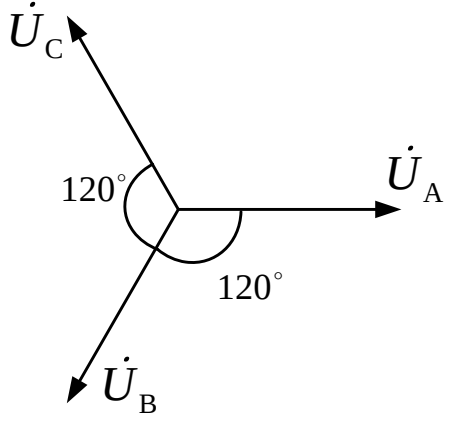
$$\left.\begin{aligned} u_A &= \sqrt{2}U\cos(\omega t) \\ u_B &= \sqrt{2}U\cos(\omega t + 120^\circ) \\ u_C &= \sqrt{2}U\cos(\omega t + 240^\circ) \end{aligned}\right\}$$

对称三相电压

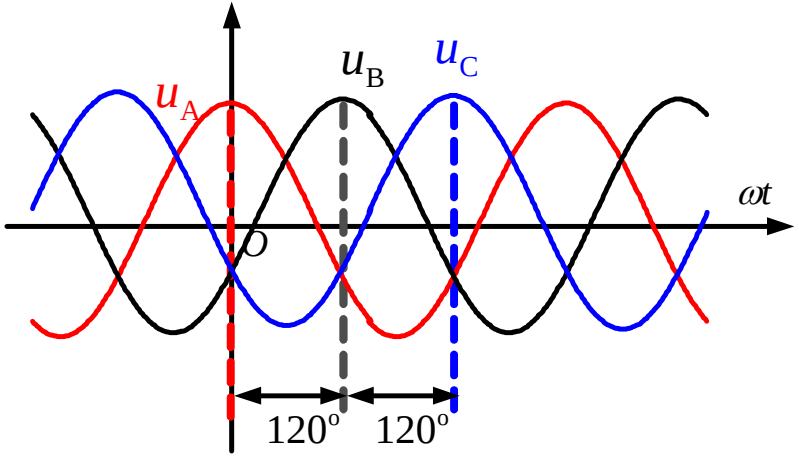
$$\left.\begin{aligned}\dot{U}_A &= U\angle 0^\circ \\ \dot{U}_B &= U\angle -120^\circ \\ \dot{U}_C &= U\angle -240^\circ\end{aligned}\right\}$$

$$\dot{U}_A+\dot{U}_B+\dot{U}_C=0$$

$$u_A+u_B+u_C=0$$



正序相量图



对称三相电压正序波形图

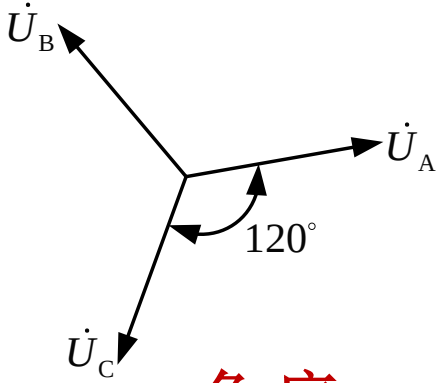
对称三相电压

确定下列电源相序

$$u_A = 200\cos(\omega t + 10^\circ)\text{V}$$

$$u_B = 200\cos(\omega t - 230^\circ)\text{V}$$

$$u_C = 200\cos(\omega t - 110^\circ)\text{V}$$



负 序

已知 $\dot{U}_B = 110\angle 30^\circ\text{V}$ ，对称三相电源相序为正序，试确定 u_A、u_C的相量。

$$\dot{U}_A = 110\angle(30^\circ + 120^\circ) = 110\angle 150^\circ$$

$$\dot{U}_C = 110\angle(30^\circ - 120^\circ) = 110\angle -90^\circ$$