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Nominal T-Method in Medium Line Formulas

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List of 19 Nominal T-Method in Medium Line Formulas

Nominal T-Method in Medium Line

1) Admittance using A Parameter in Nominal T Method

Open Calculator

fx $$Y_t = 2 \cdot \frac{A_t - 1}{Z_t}$$

ex $$0.022051\text{S} = 2 \cdot \frac{1.1 - 1}{9.07\Omega}$$

2) Admittance using D Parameter in Nominal T Method

Open Calculator

fx $$Y_t = 2 \cdot \frac{A_t - 1}{Z_t}$$

ex $$0.022051\text{S} = 2 \cdot \frac{1.1 - 1}{9.07\Omega}$$

3) A-Parameter for Reciprocal Network in Nominal T Method

Open Calculator

fx $$A_t = \frac{1 + (B_t \cdot C)}{D_t}$$

ex $$0.501468 = \frac{1 + (9.66\Omega \cdot 0.25\text{S})}{6.81}$$

4) A-Parameter in Nominal T Method

Open Calculator

fx $$A_t = 1 + \left(Y_t \cdot \frac{Z_t}{2} \right)$$

ex $$1.100224 = 1 + \left(0.0221\text{S} \cdot \frac{9.07\Omega}{2} \right)$$

5) B Parameter in Nominal T Method

Open Calculator

fx $$B_t = Z_t \cdot \left(1 + \left(Z_t \cdot \frac{Y_t}{4} \right) \right)$$

ex $$9.524514\Omega = 9.07\Omega \cdot \left(1 + \left(9.07\Omega \cdot \frac{0.0221\text{S}}{4} \right) \right)$$

6) Capacitive Current in Nominal T Method

Open Calculator

fx $$I_{c(t)} = I_{s(t)} - I_{r(t)}$$

ex $$1.48\text{A} = 16.2\text{A} - 14.72\text{A}$$

7) Capacitive Voltage in Nominal T Method

Open Calculator

fx $$V_{c(t)} = V_{r(t)} + \left(I_{r(t)} \cdot \frac{Z_t}{2} \right)$$

ex $$386.9552\text{V} = 320.2\text{V} + \left(14.72\text{A} \cdot \frac{9.07\Omega}{2} \right)$$

8) Capacitive Voltage using Sending End Voltage in Nominal T Method

Open Calculator

fx $$V_{c(t)} = V_{s(t)} - \left(\frac{I_{s(t)} \cdot Z_t}{2}\right)$$

ex $$326.733\text{V} = 400.2\text{V} - \left(\frac{16.2\text{A} \cdot 9.07\Omega}{2}\right)$$

9) Impedance using Capacitive Voltage in Nominal T Method

Open Calculator

fx $$Z_t = 2 \cdot \frac{V_{c(t)} - V_{r(t)}}{I_{r(t)}}$$

ex $$9.076087\Omega = 2 \cdot \frac{387\text{V} - 320.2\text{V}}{14.72\text{A}}$$

10) Impedance using D Parameter in Nominal T Method

Open Calculator

fx $$Z_t = 2 \cdot \frac{A_t - 1}{Y_t}$$

ex $$9.049774\Omega = 2 \cdot \frac{1.1 - 1}{0.0221\text{S}}$$

11) Losses in Nominal T Method

Open Calculator

fx $$P_{loss(t)} = 3 \cdot \left(\frac{R_t}{2}\right) \cdot \left(I_{r(t)}^2 + I_{s(t)}^2\right)$$

ex $$5404.456\text{W} = 3 \cdot \left(\frac{7.52\Omega}{2}\right) \cdot \left((14.72\text{A})^2 + (16.2\text{A})^2\right)$$

12) Receiving End Angle using Sending End Power in Nominal T Method

Open Calculator

fx $$\Phi_{r(t)} = a\cos\left(\frac{P_{s(t)} - P_{loss(t)}}{V_{r(t)} \cdot I_{r(t)} \cdot 3}\right)$$

ex $$90.3116^\circ = a\cos\left(\frac{8.2\text{W} - 85.1\text{W}}{320.2\text{V} \cdot 14.72\text{A} \cdot 3}\right)$$

13) Receiving End Voltage using Capacitive Voltage in Nominal T Method

Open Calculator

fx $$V_{r(t)} = V_{c(t)} - \left(\frac{I_{r(t)} \cdot Z_t}{2}\right)$$

ex $$320.2448\text{V} = 387\text{V} - \left(\frac{14.72\text{A} \cdot 9.07\Omega}{2}\right)$$

14) Sending End Current in Nominal T Method

Open Calculator

fx $$I_{s(t)} = I_{r(t)} + I_{c(t)}$$

ex $$16.2\text{A} = 14.72\text{A} + 1.48\text{A}$$

15) Sending End Current using Losses in Nominal T Method

Open Calculator

fx
$$I_{s(t)} = \sqrt{\left(\frac{P_{loss(t)}}{\frac{3}{2}} \cdot R_t\right) - \left(I_{r(t)}^2\right)}$$

ex
$$14.48987A = \sqrt{\left(\frac{85.1W}{\frac{3}{2}} \cdot 7.52\Omega\right) - \left((14.72A)^2\right)}$$

16) Sending End Voltage using Capacitive Voltage in Nominal T Method

Open Calculator

fx
$$V_{s(t)} = V_{c(t)} + \left(\frac{I_{s(t)} \cdot Z_t}{2}\right)$$

ex
$$460.467V = 387V + \left(\frac{16.2A \cdot 9.07\Omega}{2}\right)$$

17) Sending End Voltage using Voltage Regulation in Nominal T Method

Open Calculator

fx
$$V_{s(t)} = V_{r(t)} \cdot (\%V_t + 1)$$

ex
$$399.9298V = 320.2V \cdot (0.249 + 1)$$

18) Transmission Efficiency in Nominal T Method

Open Calculator

fx
$$\eta_t = \frac{P_{r(t)}}{P_{s(t)}}$$

ex
$$30.5122 = \frac{250.2W}{8.2W}$$

19) Voltage Regulation using Nominal T Method

Open Calculator

fx $$\%V_t = \frac{V_{s(t)} - V_{r(t)}}{V_{r(t)}}$$

ex $$0.249844 = \frac{400.2V - 320.2V}{320.2V}$$

Variables Used

- $\%V_t$ Voltage Regulation in T
- A_t A Parameter in T
- B_t B Parameter in T *(Ohm)*
- C C Parameter *(Siemens)*
- D_t D Parameter in T
- $I_{c(t)}$ Capacitive Current in T *(Ampere)*
- $I_{r(t)}$ Receiving End Current in T *(Ampere)*
- $I_{s(t)}$ Sending End Current in T *(Ampere)*
- $P_{loss(t)}$ Power Loss in T *(Watt)*
- $P_{r(t)}$ Receiving End Power in T *(Watt)*
- $P_{s(t)}$ Sending End Power in T *(Watt)*
- R_t Resistance in T *(Ohm)*
- $V_{c(t)}$ Capacitive Voltage in T *(Volt)*
- $V_{r(t)}$ Receiving End Voltage in T *(Volt)*
- $V_{s(t)}$ Sending End Voltage in T *(Volt)*
- Y_t Admittance in T *(Siemens)*
- Z_t Impedance in T *(Ohm)*
- η_t Transmission Efficiency in T
- $\Phi_{r(t)}$ Receiving End Phase Angle in T *(Degree)*

Constants, Functions, Measurements used

- Function: **acos**, acos(Number)
  Inverse trigonometric cosine function
- Function: **cos**, cos(Angle)
  Trigonometric cosine function
- Function: **sqrt**, sqrt(Number)
  Square root function
- Measurement: **Electric Current** in Ampere (A)
  Electric Current Unit Conversion
- Measurement: **Power** in Watt (W)
  Power Unit Conversion
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion
- Measurement: **Electric Resistance** in Ohm (Ω)
  Electric Resistance Unit Conversion
- Measurement: **Electric Conductance** in Siemens (S)
  Electric Conductance Unit Conversion
- Measurement: **Electric Potential** in Volt (V)
  Electric Potential Unit Conversion

Check other formula lists

- **End Condenser Method in Medium Line Formulas**
- **Nominal Pi-Method in Medium Line Formulas**
- **Nominal T-Method in Medium Line Formulas**

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