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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

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

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

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

2) Admittance using D Parameter in Nominal T Method

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

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

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

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

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

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d_img.jpg\)](#)

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



4) A-Parameter in Nominal T Method

[Open Calculator !\[\]\(4729e517bc6a7cd81c8025b9646574fb_img.jpg\)](#)

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

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

5) B Parameter in Nominal T Method

[Open Calculator !\[\]\(e474458956c9a37fbf9586ddb60a7fa1_img.jpg\)](#)

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

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

6) Capacitive Current in Nominal T Method

[Open Calculator !\[\]\(4fe57c3593bf1b21d272ae7ac8dfaf77_img.jpg\)](#)

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

$$ex \quad 1.48A = 16.2A - 14.72A$$


7) Capacitive Voltage in Nominal T Method

[Open Calculator !\[\]\(2bae76de5ebbd5c4d7d47162f1673734_img.jpg\)](#)

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

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



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

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

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)


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

9) Impedance using Capacitive Voltage in Nominal T Method 

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

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

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

10) Impedance using D Parameter in Nominal T Method 

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

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

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

11) Losses in Nominal T Method 

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

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

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



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



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

[Open Calculator](#)

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

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



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

[Open Calculator](#)

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

14) Sending End Current in Nominal T Method



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

[Open Calculator](#)


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



15) Sending End Current using Losses in Nominal T Method [Open Calculator !\[\]\(eafc244b53721dd1ec133f0772f70fc7_img.jpg\)](#)

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

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

16) Sending End Voltage using Capacitive Voltage in Nominal T Method [Open Calculator !\[\]\(10f8862fc183b400327470ea85afe9ae_img.jpg\)](#)


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

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

17) Sending End Voltage using Voltage Regulation in Nominal T Method [Open Calculator !\[\]\(35dc653d59570f8f891c312eeece91a2_img.jpg\)](#)

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

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

18) Transmission Efficiency in Nominal T Method [Open Calculator !\[\]\(b538fe54c1f3a7343e37e85cc2d00497_img.jpg\)](#)

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

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



19) Voltage Regulation using Nominal T Method

[Open Calculator !\[\]\(feabb98897b440bc8695a03336a6e2df_img.jpg\)](#)

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

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









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**, $\text{acos}(\text{Number})$
Inverse trigonometric cosine function
- **Function:** **cos**, $\text{cos}(\text{Angle})$
Trigonometric cosine function
- **Function:** **sqrt**, $\text{sqrt}(\text{Number})$
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 ($^{\circ}$)
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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