

TABLE 1-4 Instantaneous and time-harmonic forms of Maxwell's equations and continuity equation in differential and integral forms

Instantaneous	Time harmonic
Differential form	
$\nabla \times \mathbf{H} = -\mathbf{M}_i - \frac{\partial \mathbf{B}}{\partial t}$	$\nabla \times \mathbf{E} = -\mathbf{M}_i - j\omega \mathbf{B}$
$\nabla \times \mathbf{D} = \mathbf{J}_i + \mathbf{J}_c + \frac{\partial \mathbf{B}}{\partial t}$	$\nabla \times \mathbf{H} = \mathbf{J}_i + \mathbf{J}_c + j\omega \mathbf{D}$
$\nabla \cdot \mathbf{D} = \rho_{ev}$	$\nabla \cdot \mathbf{D} = \rho_{ev}$
$\nabla \cdot \mathbf{B} = \rho_{mv}$	$\nabla \cdot \mathbf{B} = \rho_{mv}$
$\nabla \cdot \mathbf{J}_{ic} = -\frac{\partial \rho_{ev}}{\partial t}$	$\nabla \cdot \mathbf{J}_{ic} = -j\omega \rho_{ev}$
Integral form	
$\oint_C \mathbf{H} \cdot d\ell = - \iint_S \mathbf{M}_i \cdot d\mathbf{s} - \frac{\partial}{\partial t} \iint_S \mathbf{B} \cdot d\mathbf{s}$	$\oint_C \mathbf{E} \cdot d\ell = - \iint_S \mathbf{M}_i \cdot d\mathbf{s} - j\omega \iint_S \mathbf{B} \cdot d\mathbf{s}$
$\oint_C \mathbf{D} \cdot d\ell = \iint_S \mathbf{J}_i \cdot d\mathbf{s} + \iint_S \mathbf{J}_c \cdot d\mathbf{s} + \frac{\partial}{\partial t} \iint_S \mathbf{B} \cdot d\mathbf{s}$	$\oint_C \mathbf{H} \cdot d\ell = \iint_S \mathbf{J}_i \cdot d\mathbf{s} + \iint_S \mathbf{J}_c \cdot d\mathbf{s} + j\omega \iint_S \mathbf{D} \cdot d\mathbf{s}$
$\iint_S \mathbf{D} \cdot d\mathbf{s} = Q_e$	$\iint_S \mathbf{D} \cdot d\mathbf{s} = Q_e$
$\iint_S \mathbf{B} \cdot d\mathbf{s} = Q_m$	$\iint_S \mathbf{B} \cdot d\mathbf{s} = Q_m$
$\iint_S \mathbf{J}_{ic} \cdot d\mathbf{s} = -\frac{\partial Q_e}{\partial t}$	$\iint_S \mathbf{J}_{ic} \cdot d\mathbf{s} = -j\omega Q_e$

Advanced Engineering Electromagnetics (Second Edition), Balanis, Wiley, 2012, ISBN-10: 0470589485, ISBN-13: 978-0470589489.