

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC
60834-1**

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**Matériels de téléprotection des
réseaux d'énergie électrique –
Performances et essais –**

**Partie 1:
Systèmes de commande**

**Teleprotection equipment of power systems –
Performance and testing –**

**Part 1:
Command systems**



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Protection scheme	Maximum actual transmission time T_{ac} ms		Channel quality		Noise duration T_B ms	Security P_{uc}		Dependability P_{mc}
	Analogue	Digital	Analogue S/N dB	Digital BER		Analogue	Digital	
Blocking	15	10	6	10^{-6}	Continuous	N/A	N/A	$<10^{-3}$
Blocking	15	10	Worst case		200	$<10^{-3}$	$<10^{-4}$	N/A
Permissive underreach	20	10	6	10^{-6}	Continuous or pulsed	N/A	N/A	$<10^{-2}$
Permissive underreach	20	10	Worst case		200	$<10^{-4}$	$<10^{-7}$	N/A
Permissive overreach	20	10	6	$<10^{-6}$	Continuous or pulsed	N/A	N/A	$<10^{-3}$
Permissive overreach	20	10	Worst case		200	$<10^{-3}$	$<10^{-7}$	N/A
Intertripping	40	10	6	$<10^{-6}$	Continuous or pulsed	N/A	N/A	$<10^{-4}$
Intertripping	40	10	Worst case		200	$<10^{-6}$	$<10^{-8}$	N/A

NOTE – The maximum actual transmission times quoted refer to applications for EHV systems. Longer times may be allowable for lower voltage systems. Longer times may also occur at reduced bandwidths. (See 3.3.1).
N/A: Not applicable.

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Figure 21 – Performance guidance figures for various teleprotection schemes