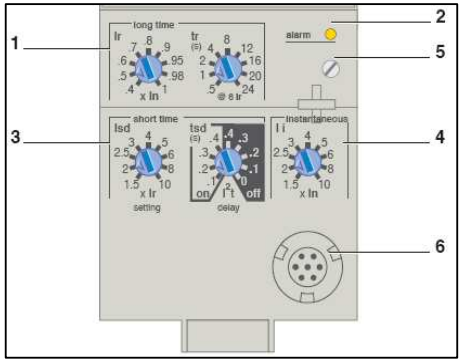
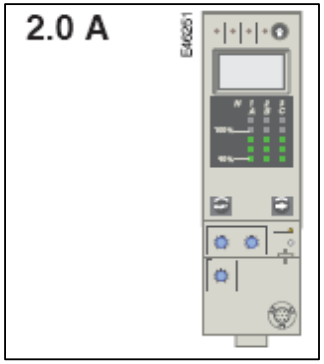
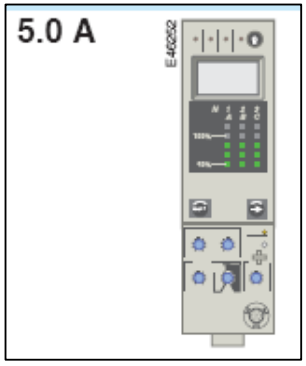
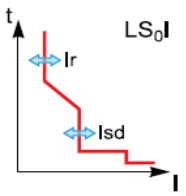
ELECTRONIC Circuit Breakers
NS, NT with Micrologic 2.0 and 5.0A

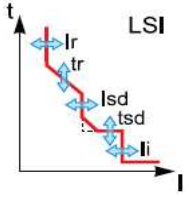






1 *long-time threshold and tripping delay*
2 *overload alarm (LED)*
3 *short-time pick-up and tripping delay*
4 *instantaneous pick-up*
5 *fixing screw for long-time rating plug*
6 *test connector*

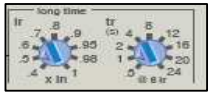




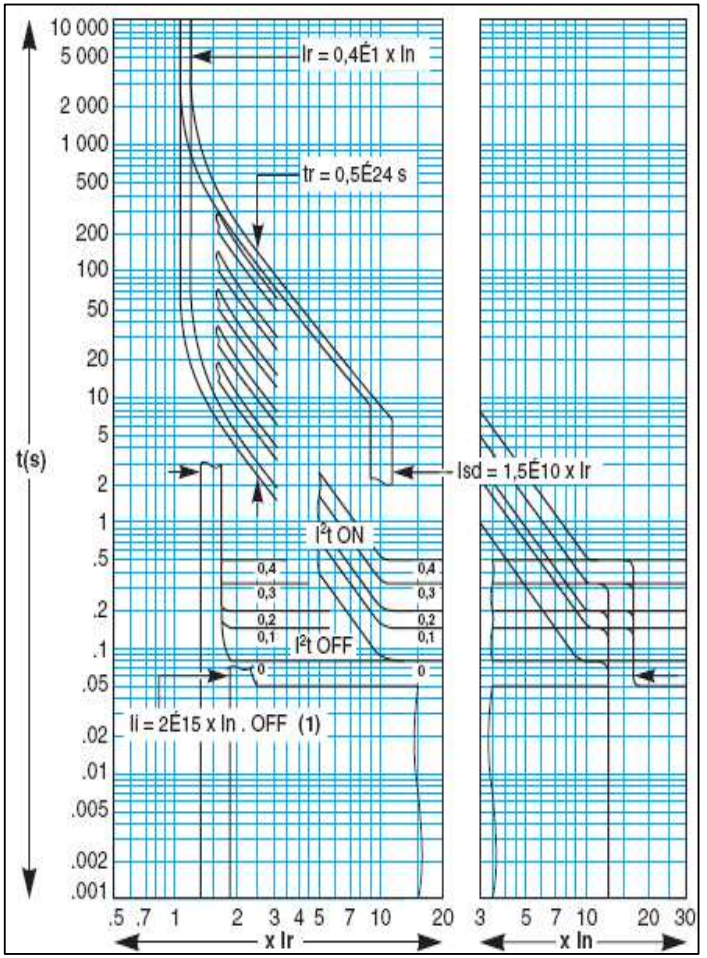
Long Time Current Setting (Ir)

Long Time Current Rating = Ir x (In) Circuit Breaker Nominal Rating

Long Time Settings Ir = 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95,0.98, 1



Breaker	Long Time Current Setting (Ir)								
Rating	**1**	**0.98**	**0.95**	**0.9**	**0.8**	**0.7**	**0.6**	**0.5**	**0.4**
(In)	Thermal Current Rating (A)								
630	630	617	599	567	504	441	378	315	252
800	800	784	760	720	640	560	480	400	320
1000	1,000	980	950	900	800	700	600	500	400
1250	1,250	1,225	1,188	1,125	1,000	875	750	625	500
1600	1,600	1,568	1,520	1,440	1,280	1,120	960	800	640



Example trip curve

Short time tripping threshold (Isd)

Short time settings Isd (Im) = 1.5, 2, 3, 4, 5, 6, 8,10 x long time setting

Short time tripping threshold = In x Ir x Isd for the Circuit Breaker

Rated Voltage to earth (Vac) = 230

Thermal Current Rating (A) (Ir x In)	Short Time Setting (**Isd**)									Earth fault loop impedance for 0.4 seconds (Upper Limit)								
	1.5	**2**	**2.5**	**3**	**4**	**5**	**6**	**8**	**10**	**Im @ 1.5** ohms	**Im @ 2** ohms	**Im @ 2.5** ohms	**Im @ 3** ohms	**Im @ 4** ohms	**Im @ 5** ohms	**Im @ 6** ohms	**Im @ 8** ohms	**Im @ 10** ohms
	Pick-up current (A) + - 10%																	
252	378	504	630	756	1,008	1,260	1,512	2,016	2,520	0.553	0.415	0.332	0.277	0.207	0.166	0.138	0.104	0.083
315	473	630	788	945	1,260	1,575	1,890	2,520	3,150	0.443	0.332	0.266	0.221	0.166	0.133	0.111	0.083	0.066
320	480	640	800	960	1,280	1,600	1,920	2,560	3,200	0.436	0.327	0.261	0.218	0.163	0.131	0.109	0.082	0.065
378	567	756	945	1,134	1,512	1,890	2,268	3,024	3,780	0.369	0.277	0.221	0.184	0.138	0.111	0.092	0.069	0.055
400	600	800	1,000	1,200	1,600	2,000	2,400	3,200	4,000	0.348	0.261	0.209	0.174	0.131	0.105	0.087	0.065	0.052
441	662	882	1,103	1,323	1,764	2,205	2,646	3,528	4,410	0.316	0.237	0.190	0.158	0.119	0.095	0.079	0.059	0.047
480	720	960	1,200	1,440	1,920	2,400	2,880	3,840	4,800	0.290	0.218	0.174	0.145	0.109	0.087	0.073	0.054	0.044
500	750	1,000	1,250	1,500	2,000	2,500	3,000	4,000	5,000	0.279	0.209	0.167	0.139	0.105	0.084	0.070	0.052	0.042
504	756	1,008	1,260	1,512	2,016	2,520	3,024	4,032	5,040	0.277	0.207	0.166	0.138	0.104	0.083	0.069	0.052	0.041
560	840	1,120	1,400	1,680	2,240	2,800	3,360	4,480	5,600	0.249	0.187	0.149	0.124	0.093	0.075	0.062	0.047	0.037
567	851	1,134	1,418	1,701	2,268	2,835	3,402	4,536	5,670	0.246	0.184	0.148	0.123	0.092	0.074	0.061	0.046	0.037
600	900	1,200	1,500	1,800	2,400	3,000	3,600	4,800	6,000	0.232	0.174	0.139	0.116	0.087	0.070	0.058	0.044	0.035
617	926	1,234	1,543	1,851	2,468	3,085	3,702	4,936	6,170	0.226	0.169	0.136	0.113	0.085	0.068	0.056	0.042	0.034
625	938	1,250	1,563	1,875	2,500	3,125	3,750	5,000	6,250	0.223	0.167	0.134	0.112	0.084	0.067	0.056	0.042	0.033
630	945	1,260	1,575	1,890	2,520	3,150	3,780	5,040	6,300	0.221	0.166	0.133	0.111	0.083	0.066	0.055	0.041	0.033
640	960	1,280	1,600	1,920	2,560	3,200	3,840	5,120	6,400	0.218	0.163	0.131	0.109	0.082	0.065	0.054	0.041	0.033
700	1,050	1,400	1,750	2,100	2,800	3,500	4,200	5,600	7,000	0.199	0.149	0.119	0.100	0.075	0.060	0.050	0.037	0.030
720	1,080	1,440	1,800	2,160	2,880	3,600	4,320	5,760	7,200	0.194	0.145	0.116	0.097	0.073	0.058	0.048	0.036	0.029
750	1,125	1,500	1,875	2,250	3,000	3,750	4,500	6,000	7,500	0.186	0.139	0.112	0.093	0.070	0.056	0.046	0.035	0.028
760	1,140	1,520	1,900	2,280	3,040	3,800	4,560	6,080	7,600	0.183	0.138	0.110	0.092	0.069	0.055	0.046	0.034	0.028
784	1,176	1,568	1,960	2,352	3,136	3,920	4,704	6,272	7,840	0.178	0.133	0.107	0.089	0.067	0.053	0.044	0.033	0.027
800	1,200	1,600	2,000	2,400	3,200	4,000	4,800	6,400	8,000	0.174	0.131	0.105	0.087	0.065	0.052	0.044	0.033	0.026
875	1,313	1,750	2,188	2,625	3,500	4,375	5,250	7,000	8,750	0.159	0.119	0.096	0.080	0.060	0.048	0.040	0.030	0.024
900	1,350	1,800	2,250	2,700	3,600	4,500	5,400	7,200	9,000	0.155	0.116	0.093	0.077	0.058	0.046	0.039	0.029	0.023
950	1,425	1,900	2,375	2,850	3,800	4,750	5,700	7,600	9,500	0.147	0.110	0.088	0.073	0.055	0.044	0.037	0.028	0.022
960	1,440	1,920	2,400	2,880	3,840	4,800	5,760	7,680	9,600	0.145	0.109	0.087	0.073	0.054	0.044	0.036	0.027	0.022
980	1,470	1,960	2,450	2,940	3,920	4,900	5,880	7,840	9,800	0.142	0.107	0.085	0.071	0.053	0.043	0.036	0.027	0.021
1,000	1,500	2,000	2,500	3,000	4,000	5,000	6,000	8,000	10,000	0.139	0.105	0.084	0.070	0.052	0.042	0.035	0.026	0.021
1,125	1,688	2,250	2,813	3,375	4,500	5,625	6,750	9,000	11,250	0.124	0.093	0.074	0.062	0.046	0.037	0.031	0.023	0.019
1,188	1,782	2,376	2,970	3,564	4,752	5,940	7,128	9,504	11,880	0.117	0.088	0.070	0.059	0.044	0.035	0.029	0.022	0.018
1,250	1,875	2,500	3,125	3,750	5,000	6,250	7,500	10,000	12,500	0.112	0.084	0.067	0.056	0.042	0.033	0.028	0.021	0.017
1,280	1,920	2,560	3,200	3,840	5,120	6,400	7,680	10,240	12,800	0.109	0.082	0.065	0.054	0.041	0.033	0.027	0.020	0.016
1,440	2,160	2,880	3,600	4,320	5,760	7,200	8,640	11,520	14,400	0.097	0.073	0.058	0.048	0.036	0.029	0.024	0.018	0.015
1,520	2,280	3,040	3,800	4,560	6,080	7,600	9,120	12,160	15,200	0.092	0.069	0.055	0.046	0.034	0.028	0.023	0.017	0.014
1,568	2,352	3,136	3,920	4,704	6,272	7,840	9,408	12,544	15,680	0.089	0.067	0.053	0.044	0.033	0.027	0.022	0.017	0.013
1,600	2,400	3,200	4,000	4,800	6,400	8,000	9,600	12,800	16,000	0.087	0.065	0.052	0.044	0.033	0.026	0.022	0.016	0.013

The value of Earth Loop Impedance (Zs) for a circuit breaker may be calculated by dividing the current required to trip at the required tripping time into the phase to earth voltage of the system.

Current required for tripping may be found by consulting the tripping curve or tables provided.

A calculation may be used where the earth fault loop impedance (Zs) can not be consulted.

Tripping current for disconnection time upto 0.4 seconds may be obtained from the circuit breaker trip unit setting.

$$Zs = \frac{\textbf{Voltage Phase to earth}}{\textbf{In x Ir x Isd x 1.1}}$$

Where :-
In = rating of the circuit breaker
Io = long time dial setting (Coarse)
Ir = long time dial setting (Fine)
Isd = short time dial setting
1.1 = +10% tolerance for the Isd short time Pick-up current setting