



It may be noted that a 100kA fault at upstream side can be reduced to a mere 5kA level at the end of a 150m long 70 sq.mm cable.

Calculation of the Short-circuit Current in a Supply System

In a supply system, the further away from the transformer, the higher the impedance. As such, the lower the value is for the short-circuit current. Each length of conductor or device in the circuit provides an impedance which reduces the short-circuit current. To calculate the maximum level possibility of the short-circuit current, all the impedances lying between the transformer and the MCCB must be considered, be it with formula or simple diagram.

Rapid Determination of Fault Currents

The following monogram provides a simple method of determining the fault current at any distance of cable from a transformer. To determine the fault current at the end of a line through monogram for a cable with a cross section of 3 x 95 mm² and at a length of 60 m is as follows:

- The upstream (source) fault current, e.g. 50 kA,
- e.g. If, length of cable = 60 m
- Cable cross section = 3 x 95 mm²
- Fault current at source = 50 kA

Then, from the 80 m column in Table C, follow towards the cable size, and then down to Table D to the upstream fault current, at the intersection reads the current value, that is 12 kA.

Table C

Length of Cable (m)	Copper Cable Cross-section (mm ²)									
	6	4	2.5	1.5	6	4	2.5	1.5	6	4
1.2	6	4	2.5	1.5						
1.5	6	4	2.5	1.5						
2	10	6	4	2.5	1.5					
3	16	10	6	4	2.5	1.5				
4	25	16	10	6	4	2.5				
6	35	25	16	10	6	4				
8	50	35	25	16	10	6				
12	70	50	35	25	16	10				
15	95	70	50	35	25	16	10			
20	120	95	70	50	35	25	16	10		
30		120	95	70	50	35	25	16		
45		185	150	120	95	70	50	35	25	
60			150	120	95	70	50	35	25	
80				185	150	120	95	70	50	35
120								120	95	70
150									120	95

Table D

Upstream Fault Current (kA)	Short-circuit Current (415V)										
	9.9	9.7	9.6	9.3	9	8.6	7.8	7	6.4	4.85	4.47
10	9.9	9.7	9.6	9.3	9	8.6	7.8	7	6.4	4.85	4.47
15	14.6	14	13.7	13	12	11	9.6	9	7.3	5.2	4.75
20	19	18	17	15.6	14.4	12.8	10	9.0	7.7	5.35	4.85
25	22	21.4	20	17.6	16	13.8	11.1	9.3	7.9	5.4	4.9
30	27	24	22	19.2	17	14.6	11.5	9.5	8.0	5.45	4.95
50	39	32	27.7	22	19.2	15.8	12	9.8	8.2	5.5	5
60	43	34	29	23	19.6	16	12.2	9.9	8.25	5.5	5
70	47	36	30	23.5	20	16.2	12.3	10	8.3	5.5	5
100	53	38	32	24	20	16.4	12.5	10	8.3	5.5	5