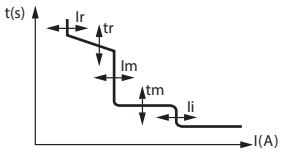
Settings of the microprocessor protection units

MP4 LSI

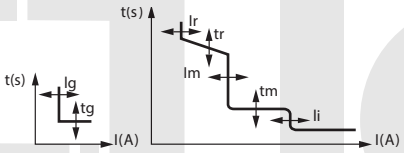
Ir, tr, Im, tm, Ii adjustment on front panel



- **Long time delay protection against overloads**
  Ir from 0.4 to 1 x In (6 + 6 steps) on two selectors (0.4 ÷ 0.9, by steps of 0.1 and 0.0 ÷ 0.1, by steps of 0.02)
- **Long delay protection operation time**
  tr - at 6 x Ir (4 + 4 steps) tr = 5-10-20-30 s (MEM ON) 30-20-10-5 s (MEM OFF)
- **Short time delay protection against short circuits**
  Im from 1.5 to 10 x Ir (9 steps) Im = 1.5-2-2.5-3-4-5-6-8-10 x Ir
- **Short time delay protection operation time**
  tm from 0 to 0.3 s (4 + 4 steps) tm = 0-0.1-0.2-0.3 s (t = cost), 0.3-0.2-0.1-0.01 s (I ^{2}t = constant)
- **Instantaneous protection against very high short circuits**
  Ii from 2 to 15 x In or Icw (9 steps) Ii = off-2-3-4-6-8-10-12-15 x In or Icw
- **Neutral protection:** IN = I-II-III-IV x Ir (0-50-100-100 %)

MP4 LSIg

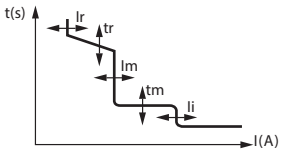
Ir, tr, Ii, Ig, tg, Im, tm, adjustment on front panel



- **Long time delay protection against overloads**
  Ir from 0.4 to 1 x In (6 +6 steps) on two selectors (0.4 ÷ 0.9, by steps of 0.1 and 0.0 ÷ 0.1, by steps of 0.02)
- **Long delay protection operation time**
  tr - at 6 x Ir (4 + 4 steps) tr = 5-10-20-30 s (MEM ON) 30-20-10-5 s (MEM OFF)
- **Short time delay protection against short circuits**
  Im from 1.5 to 10 x Ir (9 steps) Im = 1.5-2-2.5-3-4-5-6-8-10 x Ir
- **Short time delay protection operation time**
  tm from 0 to 0.3 s (4 + 4 steps) tm = 0-0.1-0.2-0.3 s (t=constant), 0.3-0.2-0.t01 s (I ^{2}t=constant)
- **Instantaneous protection against very high short circuits**
  Ii from 2 to 15 x In or Icw (9 steps) Ii = OFF-2-3-4-6-8-10-12-15 x In or Icw
- **Earth fault current**
  Ig from 0.2 to 1 x In (9 steps) Ig = 0.2-0.3-0.4-0.5-0.6-0.7-0.8-1 x In, OFF)
- **Time delay on earth fault tripping**
  tg from 0.1 to 1 x In (4 steps) Tg = 0,1-0,2-0,5-1 s (both t = constant and I^{2}t = constant)
- **Neutral protection:** IN = I-II-III-IV x Ir (0-50-100-100 %)

MP6 LSI

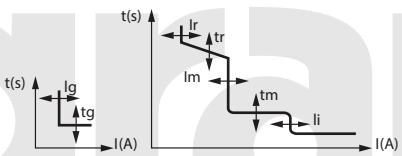
Ir, tr, Im, tm, Ii adjustment on front panel



- **Long time delay protection against overloads**
  Ir from 0.4 to 1 x In (7 steps) Ir = 0.4-0.5-0.6-0.7-0.8-0.9-1 x In
- **Long delay protection operation time**
  tr - at 6 x Ir (4 steps) tr = 5-10-20-30 s (both MEM ON and MEM OFF)
- **Short time delay protection against short circuits**
  Im from 1.5 to 10 x Ir (9 steps) Im = 1.5-2-2.5-3-4-5-6-8-10 x Ir
- **Short time delay protection operation time**
  tm from 0.03 to 1 s (11 steps) tm = 0.03-0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8-09-1 s (both t = constant and I ^{2}t = constant)
- **Instantaneous protection against very high short circuits**
  Ii from 2 to 15 x In or Icw (9 steps) Ii = 2-3-4-6-8-10-12-15 x In or Icw
- **Neutral protection:** IN = I-II-III-IV x Ir (0-50-100-100 %)

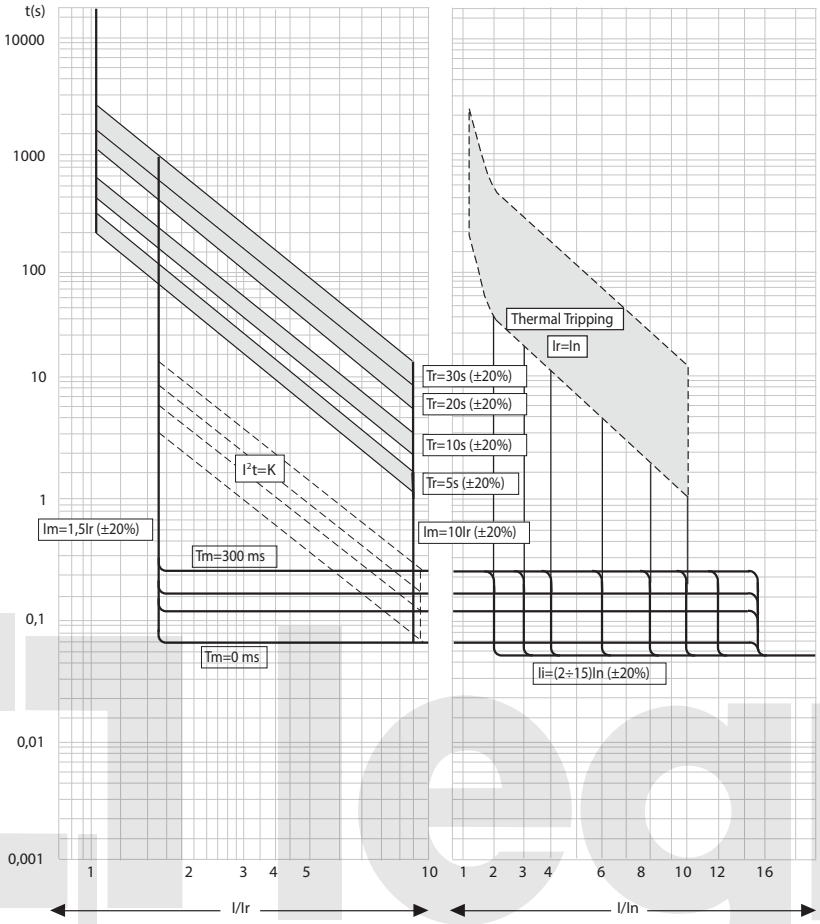
MP6 LSIg

Ir, tr, Ii, Ig, tg, Im, tm, adjustment on front panel



- **Long time delay protection against overloads**
  Ir from 0.4 to 1 x In (7 steps) Ir = 0.4-0.5-0.6-0.7-0.8-0.9-1 x In
- **Long delay protection operation time**
  tr - at 6 x Ir (4 steps) tr = 5-10-20-30 s (both MEM ON and MEM OFF)
- **Short time delay protection against short circuits**
  Im from 1.5 to 10 x Ir (9 steps) Im = 1.5-2-2.5-3-4-5-6-8-10 x Ir
- **Short time delay protection operation time**
  tm from 0.03 to 1 s (11 steps) tm = 0.03-0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8-09-1 s (both t = constant and I ^{2}t = constant)
- **Instantaneous protection against very high short circuits**
  Ii from 2 to 15 x In or Icw (9 steps) Ii = 2-3-4-6-8-10-12-15 x In or Icw
- **Earth fault current**
  Ig from 0.2 to 1 x In (9 steps) Ig = 0.2-0.3-0.4-0.5-0.6-0.7-0.8-1 x In, OFF
- **Time delay on earth fault tripping**
  tg from 0.1 to 1 x In (4 steps) Tg = 0,1-0,2-0,5-1 s (both t = constant and I^{2}t = constant)
- **Neutral protection:** IN = I-II-III-IV x Ir (0-50-100-100 %)

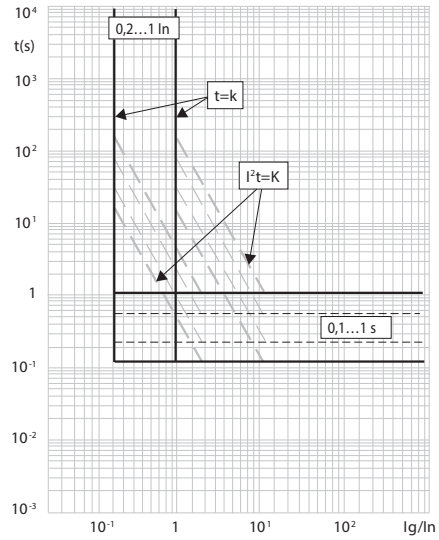
Selective time-current tripping characteristic for MP4 protection units



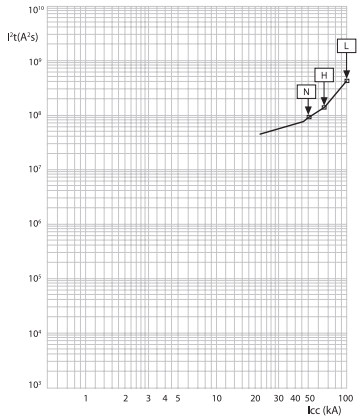
If short-circuit current is higher than Icw value or Ii is setted at Icw position, tripping time is equal to 30ms

Ir = long time setting current
Tr = long time delay
Im = short time setting current
Tm = short time delay
If = istantaneous intervention current

Ground fault tripping curve for MP4 LSIg protection unit



Let through energy characteristics



Icc (kA) = estimated short circuit symmetrical current (RMS value)
I²t (A²s) = pass-through specific energy