

### Ground-fault protection on Micrologic 6.0 A/E

■ A ground fault in the protection conductors can provoke local temperature rise at the site of the fault or in the conductors.

The purpose of the ground-fault protection function is to eliminate this type of fault.

■ There are two types of ground-fault protection.

Type	Description
Residual	<ul style="list-style-type: none"> <li>■ The function determines the zero-phase sequence current, i.e. the vector sum of the phase and neutral currents.</li> <li>■ It detects faults downstream of the circuit breaker.</li> </ul>
Source Ground Return	<ul style="list-style-type: none"> <li>■ Using a special external sensor, this function directly measures the fault current returning to the transformer via the earth cable.</li> <li>■ It detects faults both upstream and downstream of the circuit breaker.</li> <li>■ The maximum distance between the sensor and the circuit breaker is 10 m.</li> </ul>

■ Ground-fault and neutral protection are independent and can therefore be combined.

### Ground-fault pick-up $I_g$ and tripping delay $t_g$

The pick-up and tripping-delay values can be set independently and are identical for both the residual and "source ground return" ground-fault protection functions.

Micrologic control unit		6.0 A/E										
Pick-up	$I_g = I_n (*) \times \dots$ accuracy $\pm 10\%$	A	B	C	D	E	F	G	H	I		
	$I_n \leq 400\text{ A}$	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1		
	$400\text{ A} < I_n \leq 1200\text{ A}$	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1		
	$I_n > 1200\text{ A}$	500 A	640 A	720 A	800 A	880 A	960 A	1040 A	1120 A	1200 A		
Time delay (ms) at $10 I_n (*)$	settings	$I^t$ OFF	0	0.1	0.2	0.3	0.4	$I^t$ ON	0.1	0.2	0.3	0.4
	$I^t$ ON or $I^t$ OFF	$t_g$ (max resettable time)	20	80	140	230	350	$t_g$ (max break time)	80	140	200	320

\*  $I_n$ : circuit-breaker rating

### Earth-leakage protection on Micrologic 7.0 A

■ The earth-leakage protection function primarily protects people against indirect contact because an earth-leakage current can provoke an increase in the potential of the exposed conductive parts. The earth-leakage pick-up value  $I_{\Delta n}$  is displayed directly in amperes and the tripping delay follows a constant-time curve.

- An external rectangular sensor is required for this function.
- This function is inoperative if the long-time rating plug is not installed.
- $I_{\Delta n}$  protected against nuisance tripping.
- $\hat{I}_{DC}$ -component withstand class A up to 10 A.

### Pick-up value $I_{\Delta n}$ and tripping delay $\Delta t$

Micrologic control unit		7.0 A										
Pick-up	$I_{\Delta n}$ accuracy 0 to -20 %	0.5	1	2	3	5	7	10	20	30		
Time delay (ms)	settings											
	$\Delta t$ (max resettable time)	60	140	230	350	800	$\Delta t$ (max break time)	140	200	320	500	1000