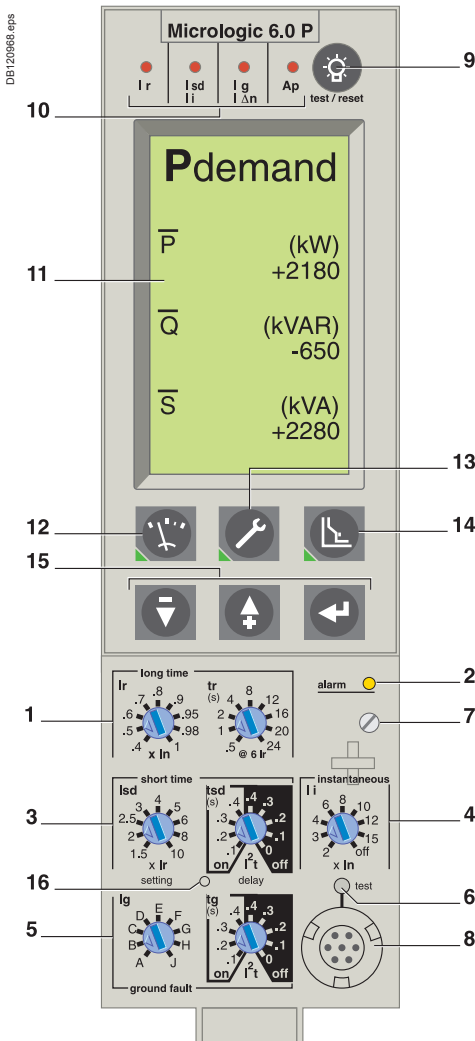


Micrologic P control units include all the functions offered by Micrologic A. In addition, they measure voltages and calculate power and energy values. They also offer new protection functions based on currents, voltages, frequency and power reinforce load protection in real time.



- 1 Long-time current setting and tripping delay.
- 2 Overload signal (LED).
- 3 Short-time pick-up and tripping delay.
- 4 Instantaneous pick-up.
- 5 Earth-leakage or earth-fault pick-up and tripping delay.
- 6 Earth-leakage or earth-fault test button.
- 7 Long-time rating plug screw.
- 8 Test connector.
- 9 Lamp + battery test and indications reset.
- 10 Indication of tripping cause.
- 11 High-resolution screen.
- 12 Measurement display.
- 13 Maintenance indicators.
- 14 Protection settings.
- 15 Navigation buttons.
- 16 Hole for settings lockout pin on cover.

## Protection.....



### Protection settings

The adjustable protection functions are identical to those of Micrologic A (overloads, short-circuits, earth-fault and earth-leakage protection).

#### Fine adjustment

Within the range determined by the adjustment dial, fine adjustment of thresholds (to within one ampere) and time delays (to within one second) is possible on the keypad or remotely using the COM option (BCM ULP).

#### IDMTL (Inverse Definite Minimum Time lag) setting

Coordination with fuse-type or medium-voltage protection systems is optimised by adjusting the slope of the overload-protection curve. This setting also ensures better operation of this protection function with certain loads.

#### Neutral protection

On three-pole circuit breakers, neutral protection may be set using the keypad or remotely using the COM option (BCM ULP), to one of four positions: neutral unprotected (4P 3d), neutral protection at 0.5 Ir (4P 3d + N/2), neutral protection at Ir (4P 4d) and neutral protection at 1,6 Ir (4P 3d + 1,6N). Neutral protection at 1,6 Ir is used when the neutral conductor is twice the size of the phase conductors (major load imbalance, high level of third order harmonics).

On four-pole circuit breakers, neutral protection may be set using a three-position switch or the keypad: neutral unprotected (4P 3d), neutral protection at 0.5 Ir (4P 3d + N/2), neutral protection at Ir (4P 4d). Neutral protection produces no effect if the long-time curve is set to one of the IDMTL protection settings.

### Programmable alarms and other protection

Depending on the thresholds and time delays set using the keypad or remotely using the COM option (BCM ULP), the Micrologic P control unit monitors currents and voltage, power, frequency and the phase sequence. Each threshold overrun is signalled remotely via the COM option (BCM ULP). Each threshold overrun may be combined with tripping (protection) or an indication carried out by an optional M2C or M6C programmable contact (alarm), or both (protection and alarm).

### Load shedding and reconnection

Load shedding and reconnection parameters may be set according to the power or the current flowing through the circuit breaker. Load shedding is carried out by a supervisor via the COM option (BCM ULP) or by an M2C or M6C programmable contact.

### M2C / M6C programmable contacts

The M2C (two contacts) and M6C (six contacts) auxiliary contacts may be used to signal threshold overruns or status changes. They can be programmed using the keypad on the Micrologic P control unit or remotely using the COM option (BCM ULP).


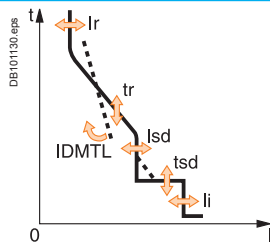
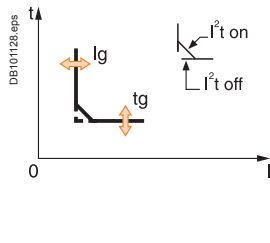
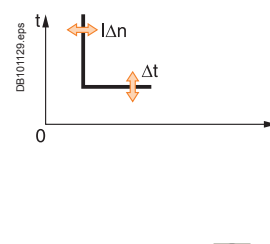
### Communication option (COM)


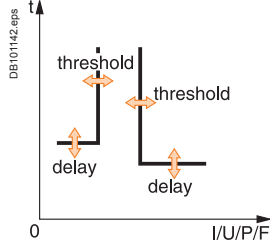
The communication option may be used to:


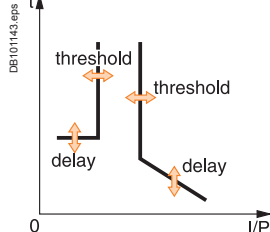
- remotely read and set parameters for the protection functions
- transmit all the calculated indicators and measurements
- signal the causes of tripping and alarms
- consult the history files and the maintenance-indicator register.
- maximeter reset.

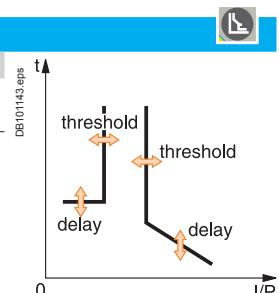
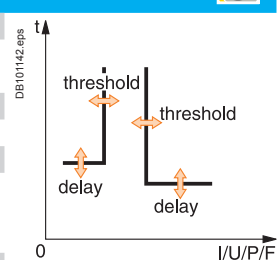
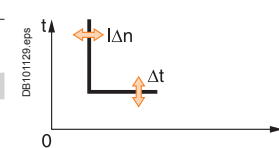
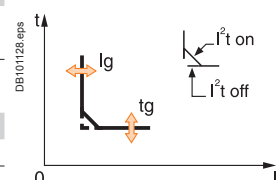
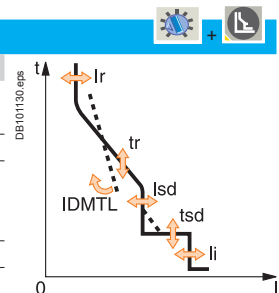
An event log and a maintenance register, stored in control-unit memory but not available locally, may be accessed in addition via the COM option (BCM ULP).

**Note:** Micrologic P control units come with a non-transparent lead-seal cover as standard.

Protection			Micrologic 5.0 / 6.0 / 7.0 P											
Long time (rms)			Micrologic 5.0 / 6.0 / 7.0 P											
Current setting (A)	$I_r = I_n \times \dots$		0.4	0.5	0.6	0.7	0.8	0.9	0.95	0.98	1			
Tripping between 1.05 and 1.20 x $I_r$			Other ranges or disable by changing long-time rating plug											
Time setting		tr (s)	0.5	1	2	4	8	12	16	20	24			
Time delay (s)	Accuracy: 0 to -30 %	$1.5 \times I_r$	12.5	25	50	100	200	300	400	500	600			
	Accuracy: 0 to -20 %	$6 \times I_r$	0.7 <sup>(1)</sup>	1	2	4	8	12	16	20	24			
	Accuracy: 0 to -20 %	$7.2 \times I_r$	0.7 <sup>(2)</sup>	0.69	1.38	2.7	5.5	8.3	11	13.8	16.6			
IDMTL setting	Curve slope		SIT	VIT	EIT	HVFuse	DT							
Thermal memory			20 minutes before and after tripping											
(1) 0 to -40 % - (2) 0 to -60 %														
Short time (rms)														
Pick-up (A)	$I_{sd} = I_r \times \dots$		1.5	2	2.5	3	4	5	6	8	10			
Accuracy: $\pm 10$ %														
Time setting tsd (s)	Settings	$I^2t$ Off	0	0.1	0.2	0.3	0.4							
		$I^2t$ On	-	0.1	0.2	0.3	0.4							
Time delay (ms) at 10 $I_r$ ( $I^2t$ Off or $I^2t$ On)	tsd (max resettable time)		20	80	140	230	350							
	tsd (max break time)		80	140	200	320	500							
Instantaneous														
Pick-up (A)	$I_i = I_n \times \dots$		2	3	4	6	8	10	12	15	off			
Accuracy: $\pm 10$ %														
Time delay			Max resettable time: 20 ms Max break time: 50 ms											
Earth fault			Micrologic 6.0 P											
Pick-up (A)	$I_g = I_n \times \dots$		A	B	C	D	E	F	G	H	J			
Accuracy: $\pm 10$ %	$I_n \leq 400$ A		0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1			
	$400 \text{ A} < I_n < 1250$ A		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1			
	$I_n \geq 1250$ A		500	640	720	800	880	960	1040	1120	1200			
Time setting tg (s)	Settings	$I^2t$ Off	0	0.1	0.2	0.3	0.4							
		$I^2t$ On	-	0.1	0.2	0.3	0.4							
Time delay (ms) at $I_n$ or 1200 A ( $I^2t$ Off or $I^2t$ On)	tg (max resettable time)		20	80	140	230	350							
	tg (max break time)		80	140	200	320	500							
Residual earth leakage (Vigi)			Micrologic 7.0 P											
Sensitivity (A)	$I_{\Delta n}$		0.5	1	2	3	5	7	10	20	30			
Accuracy: 0 to -20 %														
Time delay $\Delta t$ (ms)	Settings		60	140	230	350	800							
	$\Delta t$ (max resettable time)		60	140	230	350	800							
	$\Delta t$ (max break time)		140	200	320	500	1000							

Alarms and other protection			Micrologic 5.0 / 6.0 / 7.0 P											
Current			Threshold					Delay						
Current unbalance	$I_{unbalance}$		0.05 to 0.6 leverage					1 to 40 s						
Max. demand current	$I_{max\ demand}$ : $I_1, I_2, I_3, I_N$		0.2 $I_n$ to $I_n$					15 to 1500 s						
Earth fault alarm			$I_{\neq}$					10 to 100 % $I_n$ <sup>(3)</sup>					1 to 10 s	
Voltage														
Voltage unbalance	$U_{unbalance}$		2 to 30 % x $U_{average}$					1 to 40 s						
Minimum voltage	$U_{min}$		100 to $U_{max}$ between phases 1.2 to 10 s											
Maximum voltage <sup>(4)</sup>	$U_{max}$		$U_{min}$ to 1200 between phases 1.2 to 10 s											
Power														
Reverse power	$rP$		5 to 500 kW					0.2 to 20 s						
Frequency														
Minimum frequency	$F_{min}$		45 to $F_{max}$					1.2 to 5 s						
Maximum frequency	$F_{max}$		$F_{min}$ to 440 Hz					1.2 to 5 s						
Phase sequence														
Sequence (alarm)	$\Delta\emptyset$		$\emptyset 1/2/3$ or $\emptyset 1/3/2$					0.3 s						

Load shedding and reconnection			Micrologic 5.0 / 6.0 / 7.0 P											
Measured value			Threshold					Delay						
Current	$I$		0.5 to 1 $I_r$ per phases					20 % $I_r$ to 80 % $I_r$						
Power	$P$		200 kW to 10 MW					10 to 3600 s						
(3) $I_n \leq 400$ A 30 %														
400 A < $I_n$ < 1250 A 20 %														
$I_n \geq 1250$ A 10 %														
(4) For 690 V applications, a step-down transformer must be used if the voltage exceeds the nominal value of 690 V by more than 10 %.														
<b>Note:</b> all current-based protection functions require no auxiliary source.														
Voltage-based protection functions are connected to AC power via a voltage measurement input built into the circuit breaker.														



(3)  $I_n \leq 400$  A 30 %  
 $400 \text{ A} < I_n < 1250$  A 20 %  
 $I_n \geq 1250$  A 10 %

(4) For 690 V applications, a step-down transformer must be used if the voltage exceeds the nominal value of 690 V by more than 10 %.

**Note:** all current-based protection functions require no auxiliary source.  
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