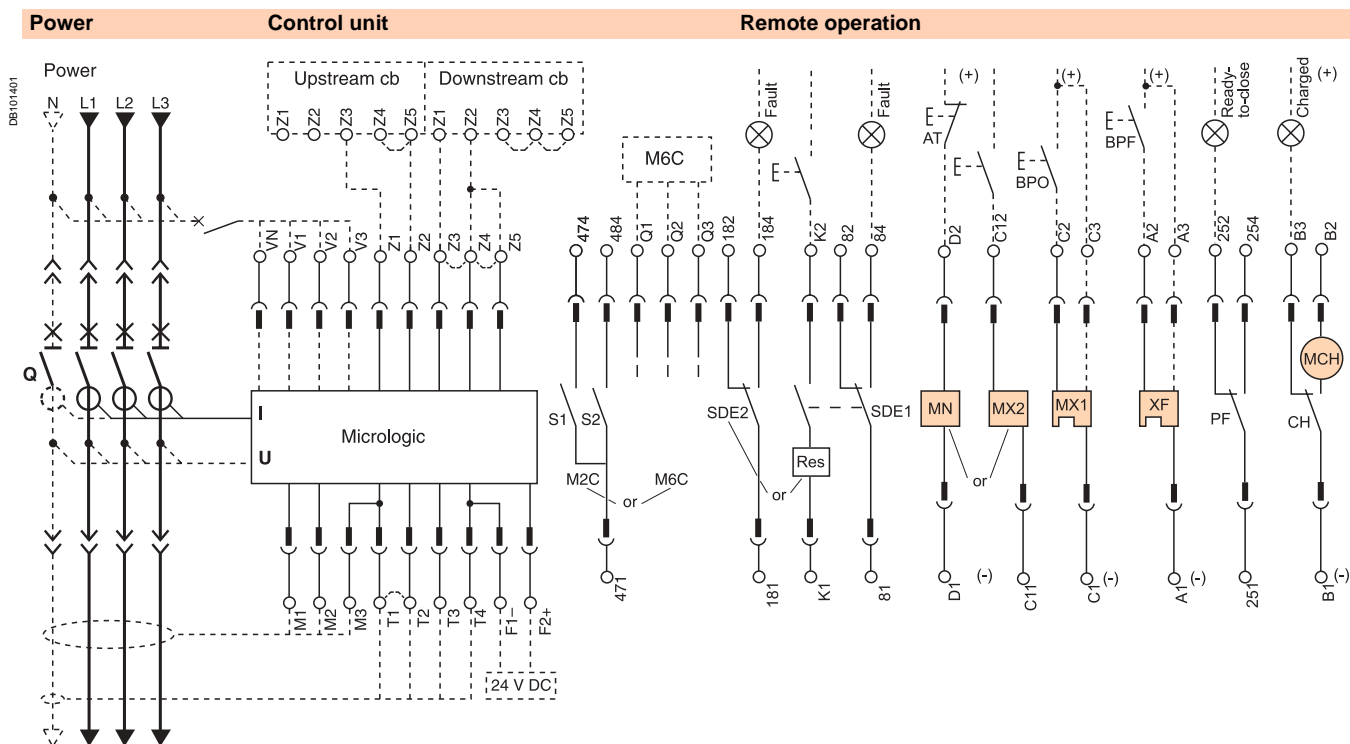























































<i>Presentation</i>	<i>6</i>
<i>Functions and characteristics</i>	<i>13</i>
<i>Dimensions and connection</i>	<i>59</i>
Masterpact NT06 to NT16	88
Fixed and drawout devices	88
Masterpact NW08 to NW63	90
Fixed and drawout devices	90
Masterpact NT and NW	92
Communications option 24 V DC external power supply	92
Earth-fault and earth-leakage protection	
Neutral protection	
Zone selective interlocking	94
<i>Installation recommendations</i>	<i>97</i>
<i>Additional characteristics</i>	<i>121</i>
<i>Catalogue numbers, spare parts and order form</i>	<i>127</i>

The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.



	Control unit											
Terminal block marking	Com		UC1		UC2		UC3		UC4 / M2C		M6C	
							 F2+ 		 V3 		 484 	
	E5	E6	Z5	M1	M2	M3			/		/	
							 VN 		 V2 		 474 	
	E3	E4	Z3	Z4	T3	T4			/		/	
							 F1 – 		 V1 		 471 	
	E1	E2	Z1	Z2	T1	T2			/		/	

Remote operation										
SDE2	/	Res	SDE1	MN	/	MX2	MX1	XF	PF	MCH
										
184	/	K2	84	D2	/	C12	C2	A2	254	B2
182			82				C3	A3	252	B3
										
181	/	K1	81	D1	/	C11	C1	A1	251	B1

A	P	H	Control unit
■	■	■	Com : E1-E6 communication
■	■	■	UC1 : Z1-Z5 zone selective interlocking Z1 = ZSI OUT SOURCE Z2 = ZSI OUT ; Z3 = ZSI IN SOURCE Z4 = ZSI IN ST (short time) Z5 = ZSI IN GF (earth fault) M1 = Vigi module input (Micrologic 7)
■	■	■	UC2 : T1, T2, T3, T4 = external neutral M2, M3 = Vigi module input (Micrologic 7)
■	■	■	UC3 : F2+, F1- external 24 DC power supply VN external voltage connector (must be connected to the neutral with a 3P circuit breaker)
■	■	■	UC4 : External Voltage Connector (PTE option) or M2C : 2 programmable contacts (external relay) ext. 24 V DC power supply required. or M6C : 6 programmable contacts to be connected to the external module M6C) ext. 24 V DC power supply required.

Remote operation									
SDE2 : fault-trip indication contact or Res : remote reset									
SDE1 : fault-trip indication contact (supplied as standard)									
MN : undervoltage release or MX2 : shunt release									
MX1 : shunt release (standard or communicating)									
XF : closing release (standard or communicating)									
PF : ready-to-close contact									
MCH : electric motor									

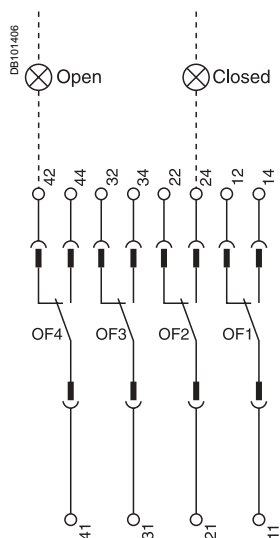
Note : when communicating MX or XF releases are used, the third wire (C3,A3) must be connected even if the communication module is not installed.

A : digital ammeter.

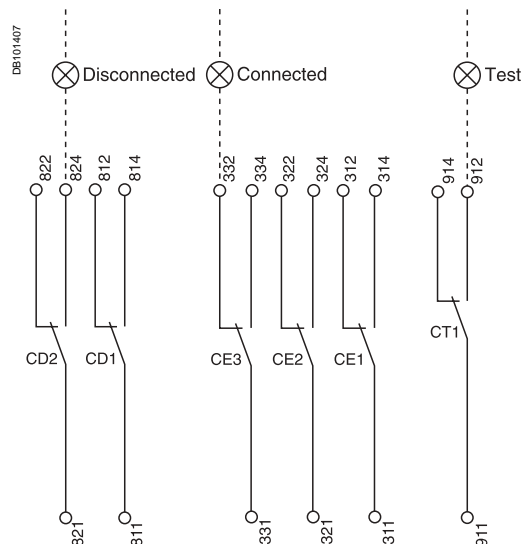
P : A + power meter + additional protection.

H : P + harmonics.

Indication contacts



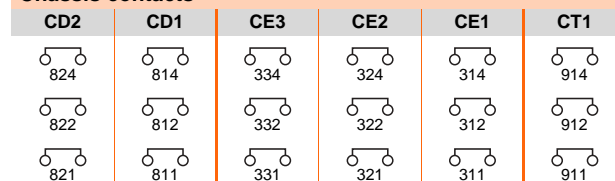
Chassis contacts



Indication contacts



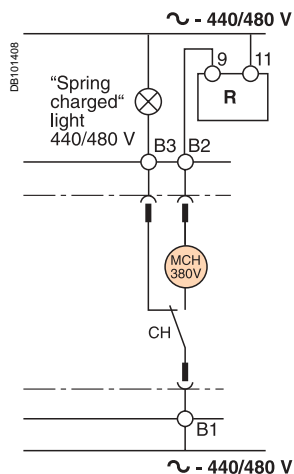
Chassis contacts



Indication contacts

OF4 / OF3 / OF2 / OF1 : ON/OFF indication contacts.

(*) Spring charging motor 440/480 V AC
(380 V motor + additional resistor).



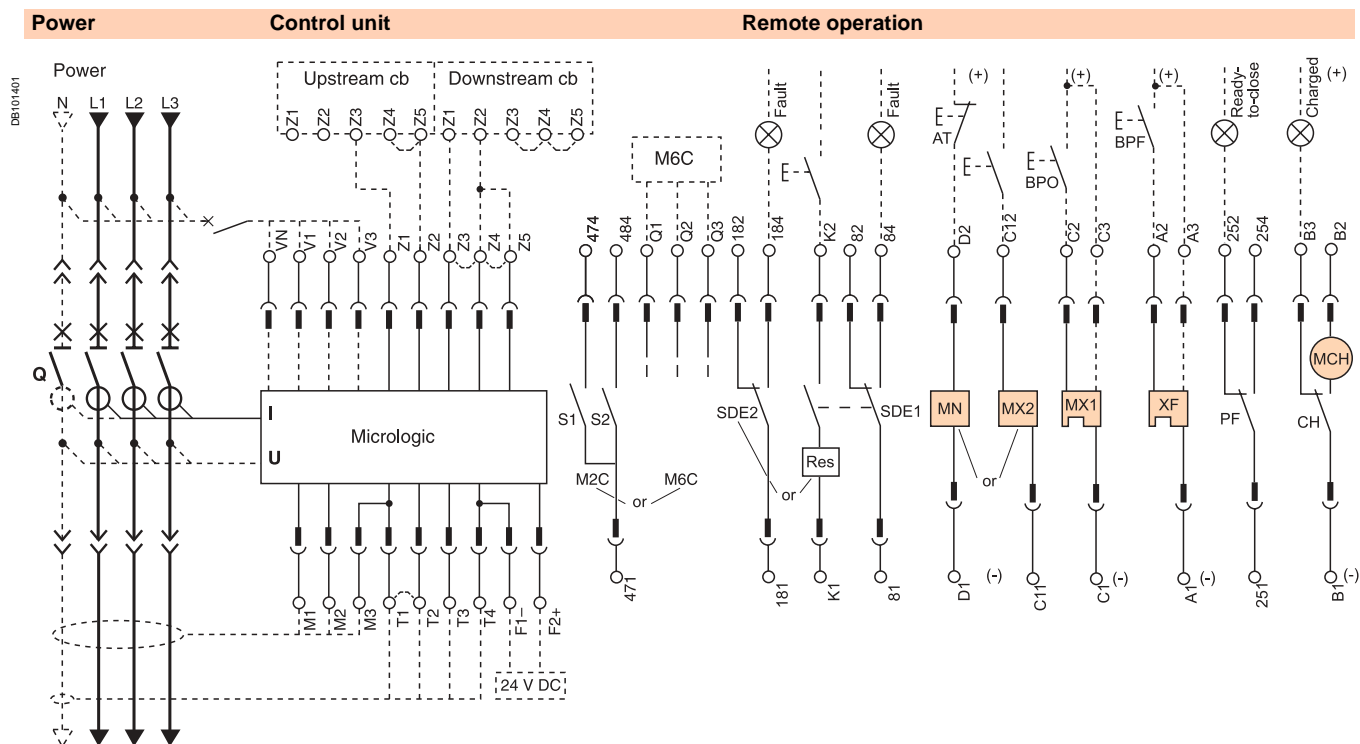
Chassis contacts



































































CD2 : disconnected position contacts
CD1 : position contacts
CE3 : connected position contacts
CE2 : position contacts
CE1 : position contacts
CT1 : test position contacts

Key:

- drawout device only.
- SDE1, OF1, OF2, OF3, OF4 supplied as standard.
- interconnected connections (only one wire per connection point).

The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.



	Control unit										Remote operation											
Terminal block marking	Com		UC1		UC2		UC3		UC4		M2C / M6C		SDE2 / Res		SDE1	MN / MX2		MX1	XF	PF	MCH	
																						
	E5	E6	Z5	M1	M2	M3	F2+	V3	484	/	Q3	184	/	K2	84	D2	/	C12	C2	A2	254	B2
																						
	E3	E4	Z3	Z4	T3	T4	VN	V2	474	/	Q2	182			82			C3	A3	252	B3	
																						
	E1	E2	Z1	Z2	T1	T2	F1 –	V1	471	/	Q1	181	/	K1	81	D1	/	C11	C1	A1	251	B1

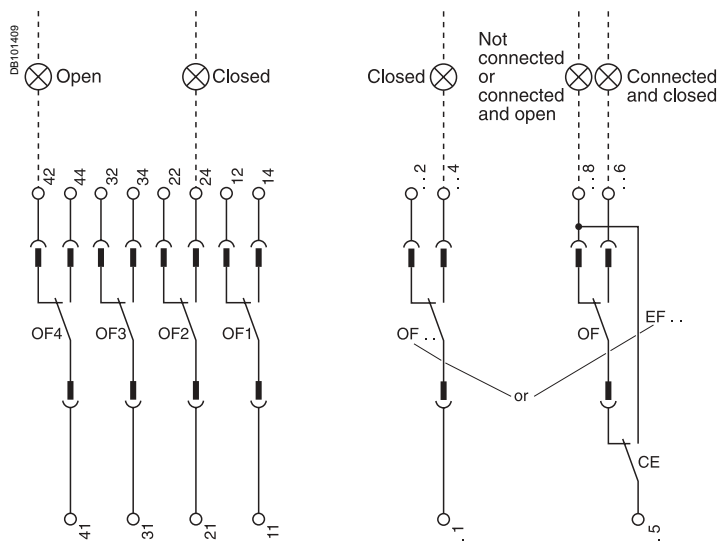
A	P	H	Control unit	Remote operation
■	■	■	Com : E1-E6 communication	SDE2 : fault-trip indication contact or Res : remote reset
■	■	■	UC1 : Z1-Z5 zone selective interlocking Z1 = ZSI OUT SOURCE Z2 = ZSI OUT ; Z3 = ZSI IN SOURCE Z4 = ZSI IN ST (short time) Z5 = ZSI IN GF (earth fault) M1 = Vigi module input (Micrologic 7)	SDE1 : fault-trip indication contact (supplied as standard)
■	■	■	UC2 : T1, T2, T3, T4 = external neutral M2, M3 = Vigi module input (Micrologic 7)	MN : undervoltage release or MX2 : shunt release
■	■	■	UC3 : F2+, F1- external 24 DC power supply VN external voltage connector (must be connected to the neutral with a 3P circuit breaker)	MX1 : shunt release (standard or communicating)
■	■	■	UC4 : External Voltage Connector (PTE option)	XF : closing release (standard or communicating)
■	■	■	M2C : 2 programmable contacts (internal relay) ext. 24 V DC power supply required or M6C : 6 programmable contacts (to be connected to the external module M6C) ext. 24 V DC power supply required	PF : ready-to-close contact MCH : electric motor
				Note : when communicating MX or XF releases are used, the third wire (C3,A3) must be connected even if the communication module is not installed.

A : digital ammeter.

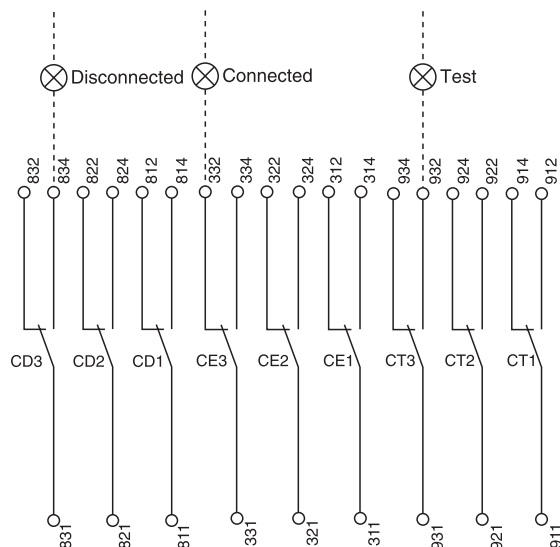
P : A + power meter + additional protection.

H : P + harmonics.

Indication contacts



Chassis contacts



Indication contacts

OF4	OF3	OF2	OF1	OF24	OF23	OF22	OF21	OF14	OF13	OF12	OF11
44	34	24	14	244	234	224	214	144	134	124	114
42	32	22	12	242	232	222	212	142	132	122	112
41	31	21	11	241	231	221	211	141	131	121	111
or				EF24	EF23	EF22	EF21	EF14	EF13	EF12	EF11
				248	238	228	218	148	138	128	118
				246	236	226	216	146	136	126	116
				245	235	225	215	145	135	125	115

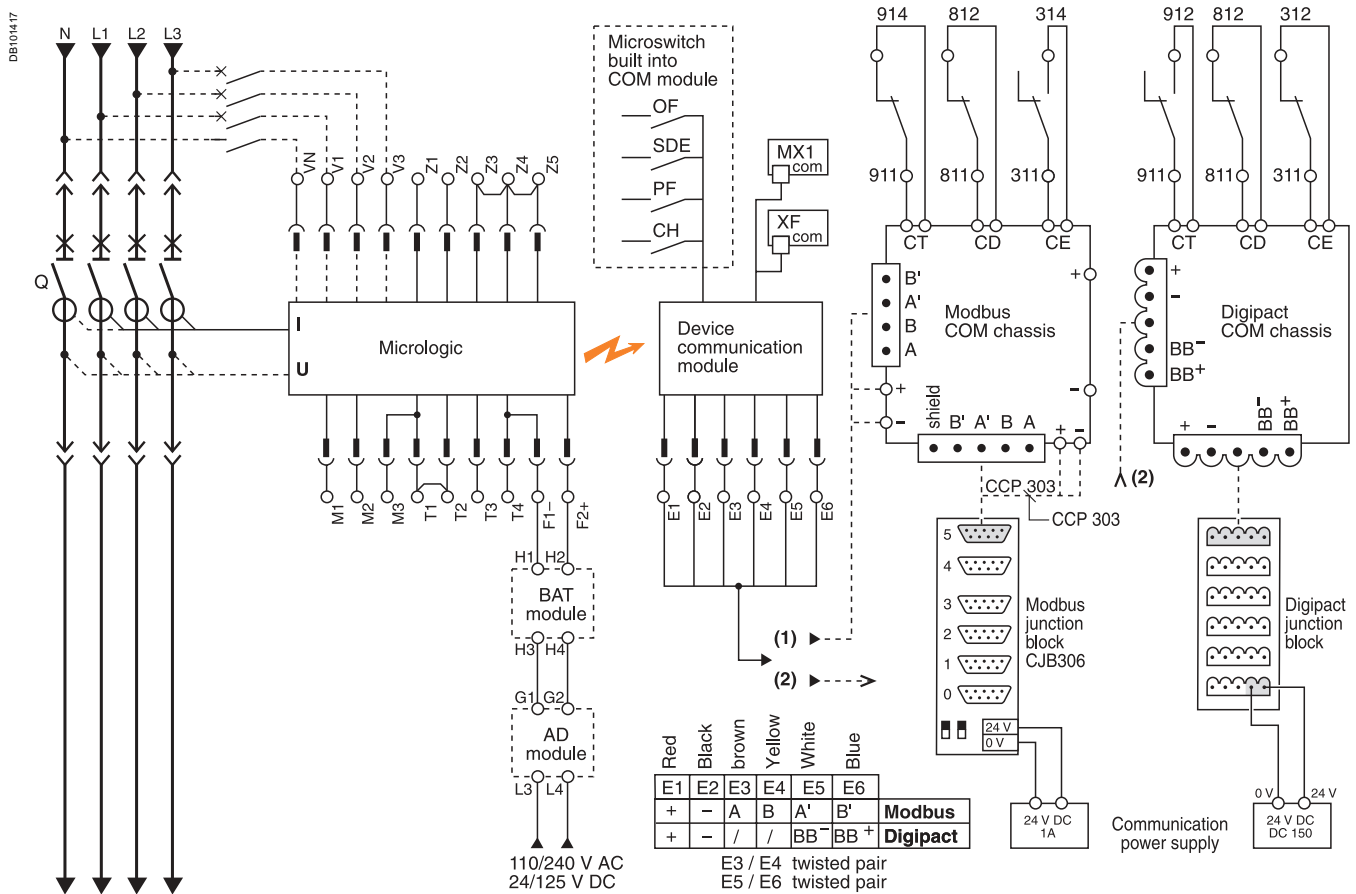
Chassis contacts

CD3	CD2	CD1	CE3	CE2	CE1	CT3	CT2	CT1
834	824	814	334	324	314	934	924	914
832	822	812	332	322	312	932	922	912
831	821	811	331	321	311	931	921	911
or			or					
CE6	CE5	CE4				CE9	CE8	CE7
364	354	344				394	384	374
362	352	342				392	382	372
361	351	341				391	381	371

Masterpact NT and NW

Communications option 24 V DC external power supply

Connection of the communications option



None of the control-unit protection functions require an auxiliary source. However, the 24 V DC external power-supply (AD module) is required for certain operating configurations as indicated in the table below.

Circuit breaker	Closed	Open	
Voltage measurement inputs	Powered	Powered	Not powered
M2C, M6C programmable contacts option	Yes	Yes	Yes
Protection function	No	No	No
Display function	No ⁽³⁾	No ⁽⁴⁾	Yes
Time-stamping function	No	No	Yes ⁽⁵⁾
Circuit-breaker status indications and control via communications bus	No	No	No
Identification, settings, operation and maintenance aids via communications bus	No ⁽³⁾	No ⁽⁴⁾	Yes

(1) Drawout device equipped with Modbus chassis COM.

(2) Drawout device equipped with Digipact chassis COM.

(3) Except for Micrologic A control units (if current < 20 % I_n).

(4) Except for Micrologic A control units.

(5) Time setting is manual and can be carried out automatically by the supervisor via the communications bus.

The communications bus requires its own 24 V DC power source (E1, E2). This source is not the same as the 24 V DC external power-supply module (F1-, F2+).

In case of using the 24 V DC external power supply (AD module), maximum cable length between 24 V DC (G1, G2) and the control unit (F1-, F2+) must not exceed 10 meters.

The BAT battery module, mounted in series upstream of the AD module, ensures an uninterrupted supply of power if the AD module power supply fails.

The voltage measurement inputs are standard equipment on the downstream connectors of the circuit breaker.

External connections are possible using the PTE external voltage measurement input option. With this option, the internal voltage measurement inputs are disconnected and terminals VN, V1, V2, V3 are connected only to the control unit (Micrologic P and H only). The PTE option is required for voltages less than 220 V and greater than 690 V (in which case a voltage transformer is compulsory). For three-pole devices, the system is supplied with terminal VN connected only to the control unit (Micrologic P and H).

When the PTE option is implemented, the voltage measurement input must be protected against short-circuits. Installed as close as possible to the busbars, this protection function is ensured by a P25M circuit breaker (1 A rating) with an auxiliary contact (cat. no. 21104 and 21117). This voltage measurement input is reserved exclusively for the control unit and must not ever be used to supply other circuits outside the switchboard.

Masterpact NT and NW

Communications option 24 V DC external power supply

Examples using the COM communications option

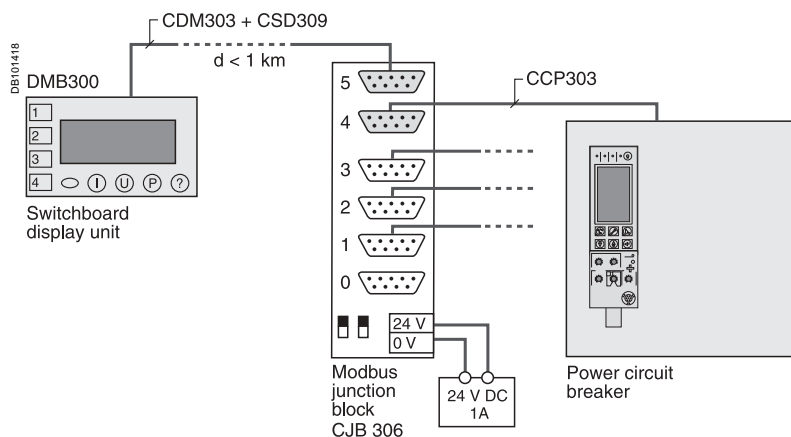
Switchboard display unit

This architecture provides remote display of the variables managed by Micrologic control units equipped with the eco COM Modbus module.

- I (Micrologic A)
- I, U, P, E (Micrologic P)
- I, U, P, E, THD (Micrologic H)

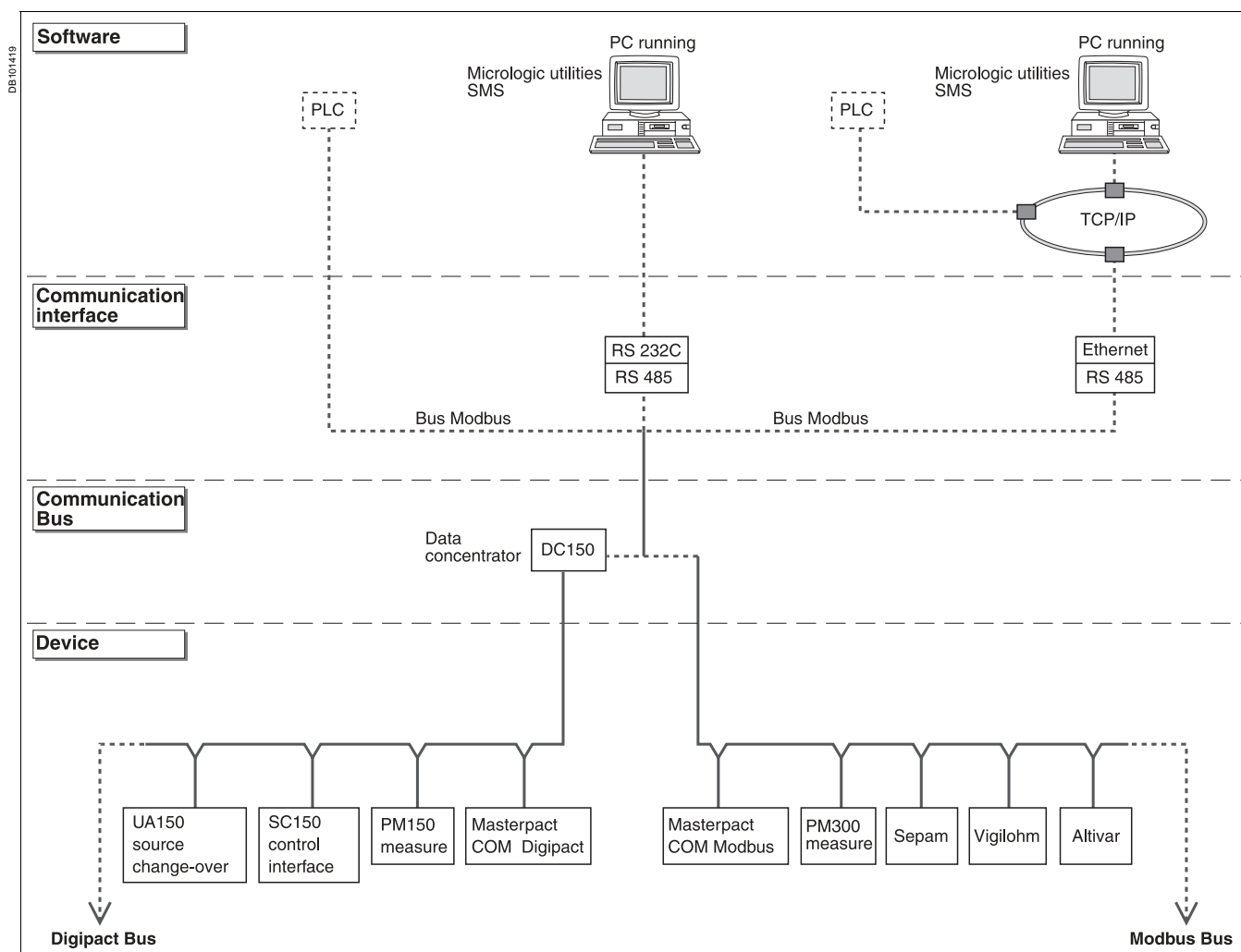
No programming is required.

For Micrologic A control unit (if current < 20 % I_n), it is recommended to use the 24 V DC external power supply (AD module).



Communicating switchboard

This configuration provides remote display and control of Masterpacts equipped with the Modbus or Digipact COM module. The Digipact bus can be combined with the Modbus bus.



Masterpact NT and NW

Earth-fault and earth-leakage protection

Neutral protection

Zone selective interlocking

External sensor (CT) for residual earth-fault protection

Connection of current-transformer secondary circuit for external neutral

Masterpact equipped with a Micrologic 6 A/P/H:

- shielded cable with 2 twisted pairs
- T1 twisted with T2
- T3 twisted with T4

- shielding connected to GND on one end only
- maximum length 10 meters

- cable cross-sectional area 0.4 to 1.5 mm²
- recommended cable: Belden 9552 or equivalent.

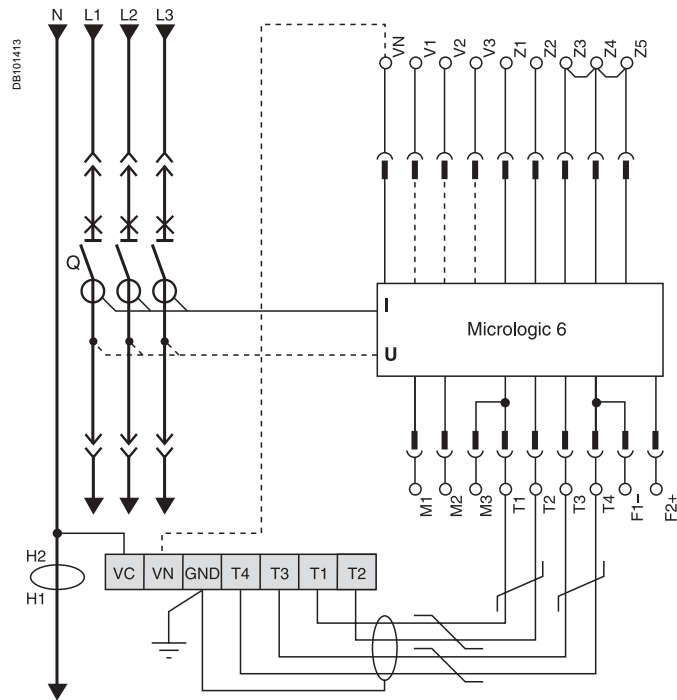
If supply is via the top, follow the schematics.
If supply is via the bottom, control wiring is identical; for the power wiring, H1 is connected to the source side, H2 to the load side.

For four-pole versions, for residual earth-fault protection, the current transformer for the external neutral is not necessary.

If the 2000/6300 current transformer is used:

- signals T1 and T2 must be wired in series
- signals T3 and T4 must be wired in parallel.

Connection for signal VN is required only for power measurements (3 Ø, 4 wires, 4CTs).

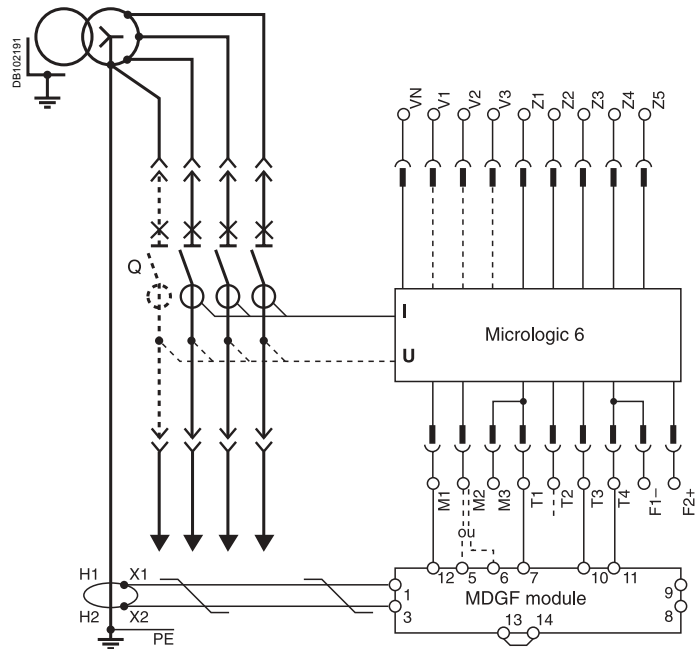


External transformer for source ground return (SGR) earth-fault protection

Connection of the secondary circuit

Masterpact equipped with a Micrologic 6 A/P/H:

- unshielded cable with 1 twisted pair
- maximum length 150 meters
- cable cross-sectional area 0.4 to 1.5 mm²
- terminals 5 and 6 may not be used at the same time
- use terminal 5 for NW08 to 40
- use terminal 6 for NW40b to 63
- recommended cable: Belden 9409 or equivalent.



Masterpact NT and NW

Earth-fault and earth-leakage protection

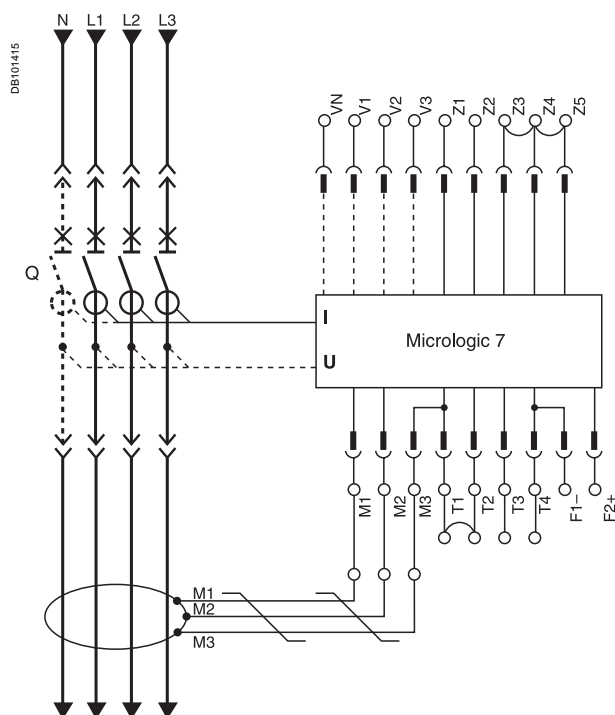
Neutral protection

Zone selective interlocking

Earth-leakage protection

Connection of the rectangular-sensor secondary circuit

Use the cable shipped with the rectangular sensor.



Neutral protection

- three pole circuit breaker:
 - Masterpact equipped with Micrologic P or H
 - the current transformer for external neutral is necessary (the wiring diagram is identical to the one used for the residual earth-fault protection)
- four pole circuit breaker:
 - Masterpact equipped with Micrologic A, P or H
 - the current transformer for external neutral is not necessary.

Zone selective interlocking

Zone-selective interlocking is used to reduce the electrodynamic forces exerted on the installation by shortening the time required to clear faults, while maintaining time discrimination between the various devices.

A pilot wire interconnects a number of circuit breakers equipped with Micrologic A/P/H control units, as illustrated in the diagram above.

The control unit detecting a fault sends a signal upstream and checks for a signal arriving from downstream. If there is a signal from downstream, the circuit breaker remains closed for the full duration of its tripping delay. If there is no signal from downstream, the circuit breaker opens immediately, regardless of the tripping-delay setting.

Fault 1.
Only circuit breaker A detects the fault. Because it receives no signal from downstream, it opens immediately, regardless of its tripping delay set to 0.3.

Fault 2.
Circuit breakers A and B detect the fault. Circuit breaker A receives a signal from B and remains closed for the full duration of its tripping delay set to 0.3. Circuit breaker B does not receive a signal from downstream and opens immediately, in spite of its tripping delay set to 0.2.

Note: the maximum permissible distance between two devices is 3000 m. A downstream circuit breaker can "control" up to ten upstream circuit breakers.

