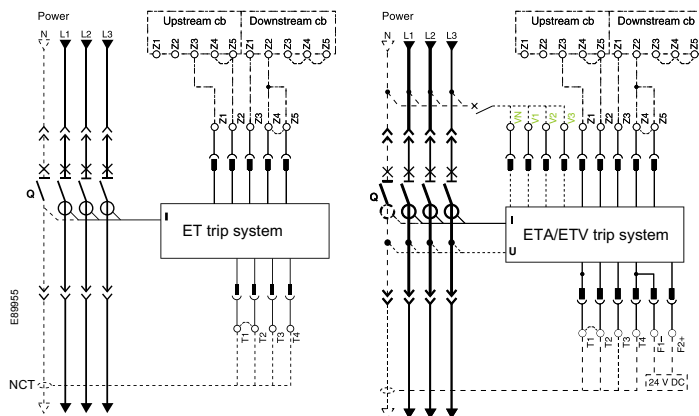


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<i>Functions and characteristics</i>	<b>A-1</b>
<i>Installation recommendations</i>	<b>B-1</b>
<i>Dimensions and connection</i>	<b>C-1</b>
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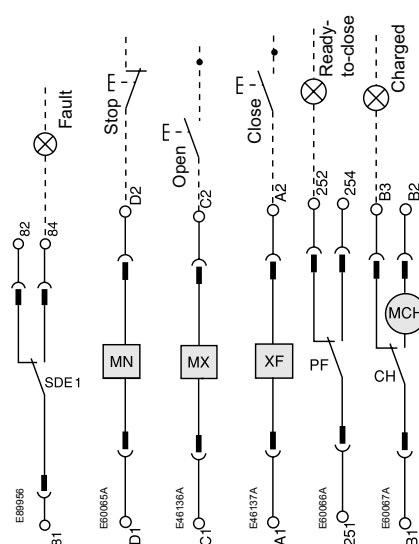
The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.

### Power



Note: V1...VN Voltage connections are available in ETV trip system.

### Remote operation



### ET trip system

UC1	UC2	
○ Z5		
○ Z3	○ Z4	○ T3
○ Z1	○ Z2	○ T1
		○ T2

### ETA/ETV trip system

UC1	UC2	UC3
○ Z5		○ F2+
○ Z3	○ Z4	○ T3
○ Z1	○ Z2	○ T1
		○ T2
		○ VN
		○ F1-

### Remote operation

SDE	MN	MX	XF	PF	MCH
○ 84	○ D2	○ C2	○ A2	○ 254	○ B2
○ 82		○ C3	○ A3	○ 252	○ B3
○ 81	○ D1	○ C1	○ A1	○ 251	○ B1

### ET/ETA/ETV trip system

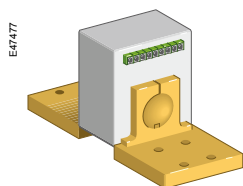
**UC1 :**  
Z1-Z5 zone selective interlocking  
Z1=ZSI OUT SOURCE  
Z2=ZSI OUT ; Z3 = ZSI IN SOURCE  
Z4 =ZSI IN ST (short time)  
Z5 =ZSI IN GF (earth fault)

**UC2 :**  
T1, T2, T3, T4=external neutral

**UC3 :**  
F2+, F1-: external 24 V DC power supply  
VN: external voltage connector (must be connected to the neutral CT with a 3P circuit breaker equipped with ETV trip system)

### Remote operation

**SDE:** Fault-trip indication contact (supplied as standard)  
**MN:** Undervoltage release  
**MX:** Shunt release (standard for Electrical breaker)  
**XF:** Closing release (standard for Electrical breaker)  
**PF:** "Ready to close" contact  
**MCH:** Gear motor (standard for Electrical breaker)



External sensor (CT).

### External sensors ( Neutral CT)

External sensor for earth-fault protection

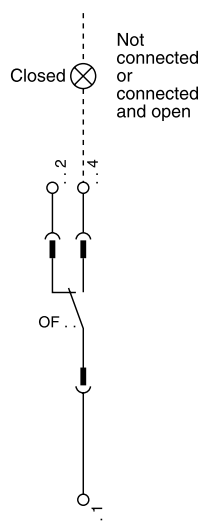
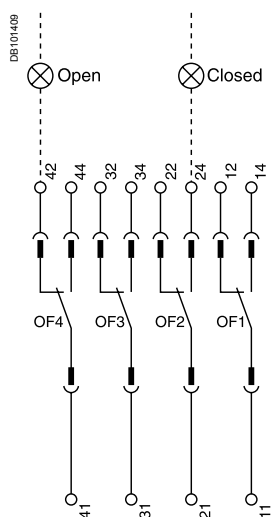
The sensors, used with the 3P circuit breakers, are installed on the neutral conductor for:

1. Residual type earth-fault protection(ET/ETA/ETV 6G trip system)

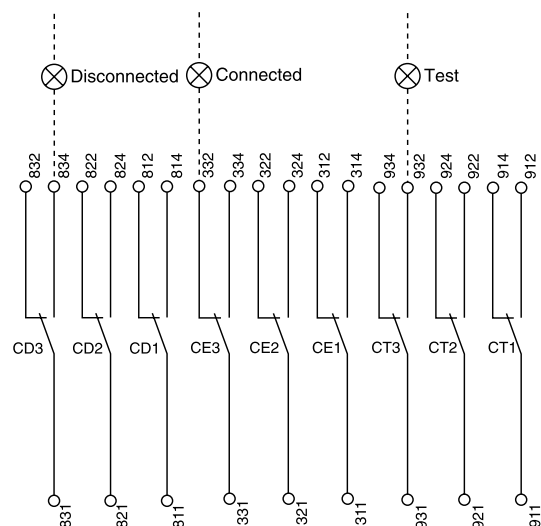
The rating of the sensor (CT) must be compatible with the rating of the circuit breaker:

1. MVS08 to MVS20: CT 400/2000;
2. MVS25 to MVS40: CT 1000/4000;

## Indication contacts



## Chassis contacts



## Indication contacts

OF4	OF3	OF2	OF1	OF14	OF13	OF12	OF11
44	34	24	14	144	134	124	114
42	32	22	12	142	132	122	112
41	31	21	11	141	131	121	111

Standard

Optional

## 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

Optional

## Indication contacts

OF4	Standard
OF3	ON/OFF
OF2	Indication contacts
OF1	

OF 14	Optional
OF 13	ON/OFF
OF 12	Indication contacts
OF 11	

## Chassis contacts

CD3 Disconnected	CE3 Connected	CT3 Test
CD2 Position	CE2 Position	CT2 Position
CD1 Contacts	CE1 Contacts	CT1 Contacts

Key:

Drawout device only

SDE1, OF1, OF2, OF3, OF4 supplied as standard

Interconnected connections  
(only one wire per connection point)

# EasyPact MVS

## Earth-fault protection

## Neutral Protection

### External sensor (CT) for residual earth-fault protection

#### Connection of current-transformer secondary circuit for external neutral

EasyPact MVS equipped with a ET/ETA/ETV 6G:

- Shielded cable with 2 twisted pairs
- T1 twisted with T2
- Maximum length 4 meters
- Cable cross-sectional area 0.4 to 1.5 mm<sup>2</sup>
- Recommended cable: Belden 9552 or equivalent

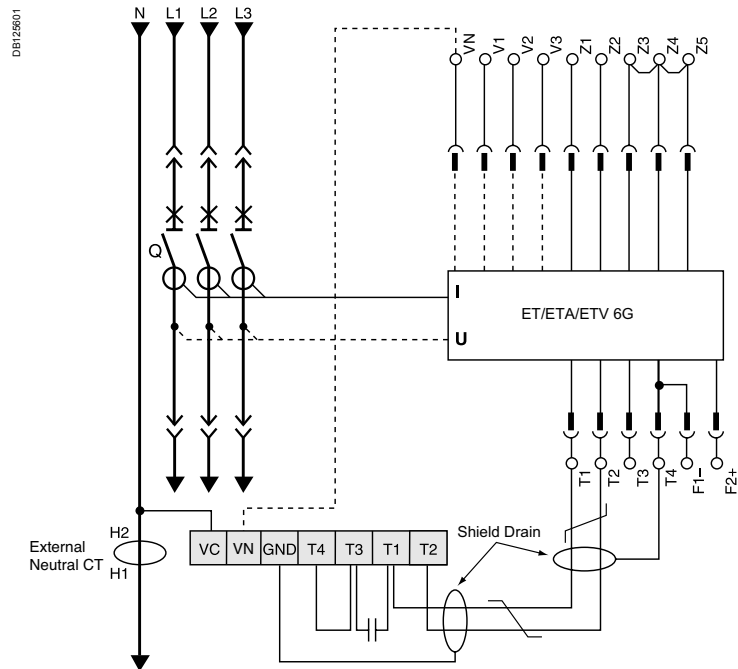
For proper wiring of neutral CT, refer to instruction Bulletin 48041-082-03 shipped with it.

Do not remove factory-installed jumper between T1 and T2 unless neutral CT is connected.

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.



### Neutral protection

- Three pole circuit breaker:
  - Neutral protection is impossible
- Four pole circuit breaker:
  - The current transformer for external neutral is not necessary

# Zone Selective Interlocking

## 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 ET range of trip system, 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.**

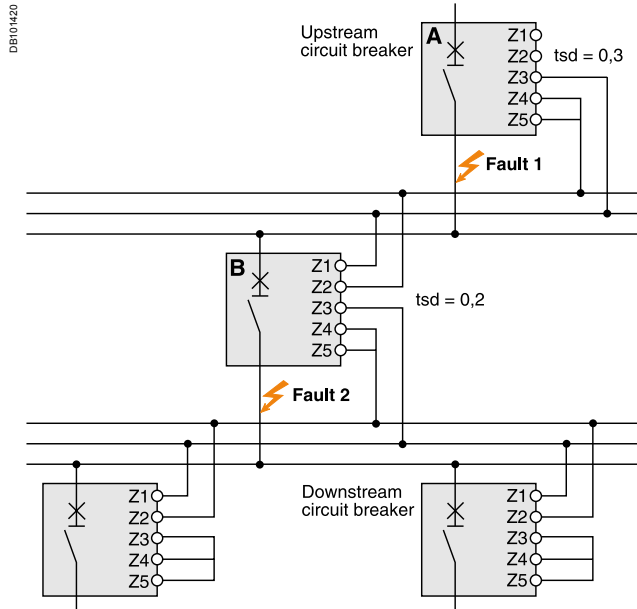
Only circuit breaker A detects the fault. Because it receives no signal from downstream, it opens immediately, regardless of its tripping delay set to 0.3.

**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.

### Wiring

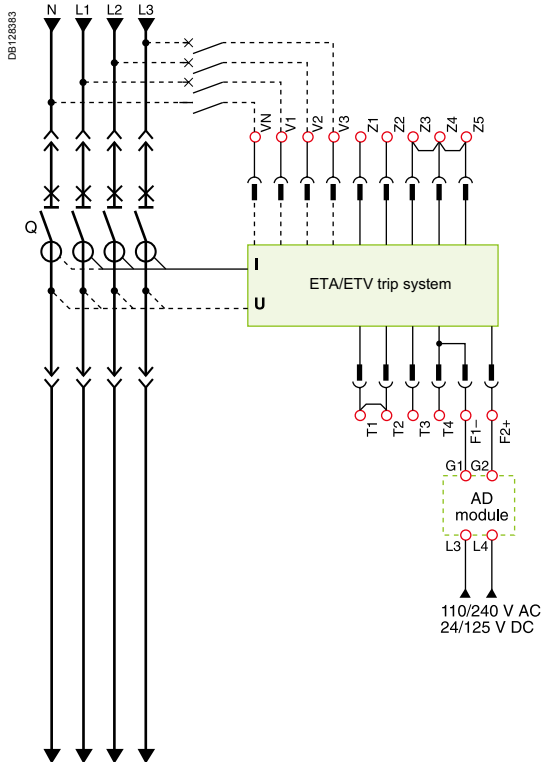
- Maximum impedance:  $2.7 \Omega / 300 \text{ m}$
- Capacity of connectors:  $0.4 \text{ to } 2.5 \text{ mm}^2$
- Wires: single or multicore
- Maximum length: 3000 m
- Limits to device interconnection:
  - The common ZSI - OUT (Z1) and the output ZSI - OUT (Z2) can be connected to a maximum of 10 upstream device
  - A maximum of 100 downstream devices may be connected to the common ZSI - IN (Z3) and to an input ZSI - IN CR (Z4) or GF (Z5)



# EasyPact MVS

## 24 V DC external power supply

### AD module



- The 24 V DC external power-supply (AD module) for the ET Trip system (F1- F2+) is not required for basic protections LSIG
- With ETA/ETV, it is recommended to connect 24 V DC external power-supply (AD module) to the Micrologic control unit (F1- F2+) in order to keep available the display and the energy metering, even if  $I_n < 20\%$

**Note:** 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 internal voltage taps are connected to the bottom side of the circuit breaker.

### Connection

The maximum length for each conductor supplying power to the trip unit is 10 m.

#### Do not ground F2+, F1-, or power supply output:

- The positive terminal (F2+) on the trip unit must not be connected to earth ground
- The negative terminal (F1-) on the trip unit must not be connected to earth ground
- The output terminals (- and +) of the 24 V DC power supply must not be grounded

#### Reduce electromagnetic interference:

- The input and output wires of the 24 V DC power supply must be physically separated as much as possible
- If the 24 V DC power supply wires cross power cables, they must cross perpendicularly. If this is not physically possible, the power supply conductors must be twisted together
- Power supply conductors must be cut to length. Do not loop excess conductor