

## Installation standards

### France

- NF C 15 100 of April 1995, section 443 and 534: "The installation of surge arresters is recommended for overhead LV supplies".
- Surge Arrester Installation Guide UTE C15-443 of July 1996.

### International

- IEC 61024-1-1 (1993) and guide 1-2 (May 1998): protection of structures against lightning.
- IEC 60364-4-443 and 5-534 (03/1999 and 11/1997): electrical installation of buildings.
- IEC 61312-1 (1995): protection against electromagnetic lightning surges.

## Surge arrester communication tools



**Product file**  
Ref.: M9DT07 or  
Ref.: M9DT78 CD-Rom  
with HTML contents



**Promotional document**  
Ref.: M9DP29 PRD / PF / PE (NF)  
Ref.: M9DP41 PRD / PF / PE (IEC)  
Ref.: M9DP42 PRD / ST (IEC)



**Calculation chart**  
Ref.: M9DP39 PRD / PF / PE (NF)  
Ref.: M9DP40 PRD / PF / PE (IEC)



**Choice software**  
Ref.: M9AO52 PRD / PF / PE (NF)  
Ref.: M9AO53 PRD / PF / PE (IEC)  
Ref.: M9AO54 PRD / ST (IEC)



**multimedia - Pre-AO**  
Ref.: M9AO55 PRD / PF / PE (IEC)  
Ref.: M9AO56 PRD / ST (IEC)



**LV Modular Surge Arresters technical guide**  
Ref.: M9GT02 PRD / PF / PE (IEC)  
Ref.: M9GT03 PRD / ST (IEC)



**Technical collection**  
Lightning and the protection of installations  
Ref.: MD1 FBR1F



**Cahier technique no. CT 179**  
"Voltage surges and surge arresters in LV, co-ordination of isolation in LV"

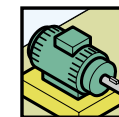
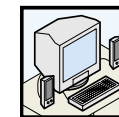
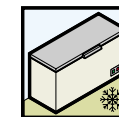
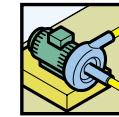
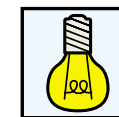


**Poster and press release**  
See Product file Cat. no.: M9DT07

## Lightning Protection Solutions



## Application sheet tertiary: agricultural building



## How to protect a livestock agricultural building against the effects of lightning?

### Your needs

This milk producing installation with fifty some heads includes a "stable", with a stock of hay, a **milk processing room** fitted out with **semi-automatic milking machines**, a **pasturisation and refrigeration unit** for conservation of the bacteriological qualities and taste of milk. The aim of devices for the protection against lightning is to limit the risks linked to fire and to protect equipment in order to **guarantee product conformity** with health and veterinary standards. This operation also includes a house that is fitted out with computer management equipment.

### Environment

- This livestock farm:
  - is located in the mountains and has a high lightning density; moreover it is surrounded by very tall trees that attract lightning,
  - is supplied by a low voltage three-phase + neutral overhead line,
  - has a TN-S earthing system.
- The local lightning density is high ( $N_g \geq 1.6$ )
- The equipment to be protected is expensive ( $\geq 500,000$  Frs), and has:
  - a high impulse withstand voltage ( $U_{choc} \geq 4$  kV) for devices of the **motor, pump, compressor and lighting** type,
  - a reduced impulse withstand voltage ( $U_{choc} \leq 1.5$  kV) for **computer equipment** such as PC and printer
- Protection of the power network against atmospheric voltage surges is ensured using modular surge arresters of the PRD type
- The telephone installation includes a telephone fax and a minitel in connection with the local co-op and thus requires protection against lightning of the PRC series type.

## Partnerships

To determine lightning strike density  $N_g$  (or keraunic level  $N_k$ ) of your installation, contact the national meteorology departments.

## Service offer

### Schneider Services

Schneider Electric offers professionals in the field of electricity and their customers, a whole range of services that accompany all the product and system offers:

- Preliminary lightning risk studies (as in the Order dated 28 January 1993)
- MV and LV installation assessment
- Preventive and corrective maintenance
- Technical and troubleshooting assistance

### Institut Schneider de Formation

The ISF is available to you for customer training in Cergy-Pontoise, Grenoble, in your region or within your company:

- "Basic Modules" product sessions
- "Surge arrester installation" sessions
- Technical seminar days: "Lightning Protection"

## Sales contact

For information concerning the protection of your electrical installations against lightning, please contact your local Schneider agency:



### Schneider Electric

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telex: merge 320 842 F

As standards and equipment evolve from time to time, always ask for confirmation of the information given in this publication.  
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## Solutions Schneider and electric block diagram

■ Since the operation entails several buildings, it is important to foresee the interconnection of the earthing systems in order to obtain good equipotential bonding and to guarantee the efficiency of surge arrester protection devices

■ The main distribution cabinet (MSB) which is installed in the agricultural building's workshop has an incoming surge arrester with an  $I_{max} = 65 \text{ kA}$ . Other secondary surge arresters are installed in sub-division enclosures in the home, stable and milk production units.

## Role of surge arrester protection

■ Run off the lightning current to the ground, guaranteeing a level of protection  $U_p$  that is compatible with the electric equipment to be protected

■ Limit the rise in the earth's voltage and the induced magnetic field.

## Wiring recommendations

■ Make sure that frames and earths are equipotentially bonded in each building and that they are interconnected

■ Reduce loop surfaces of supply cables.

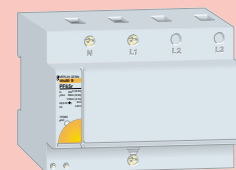
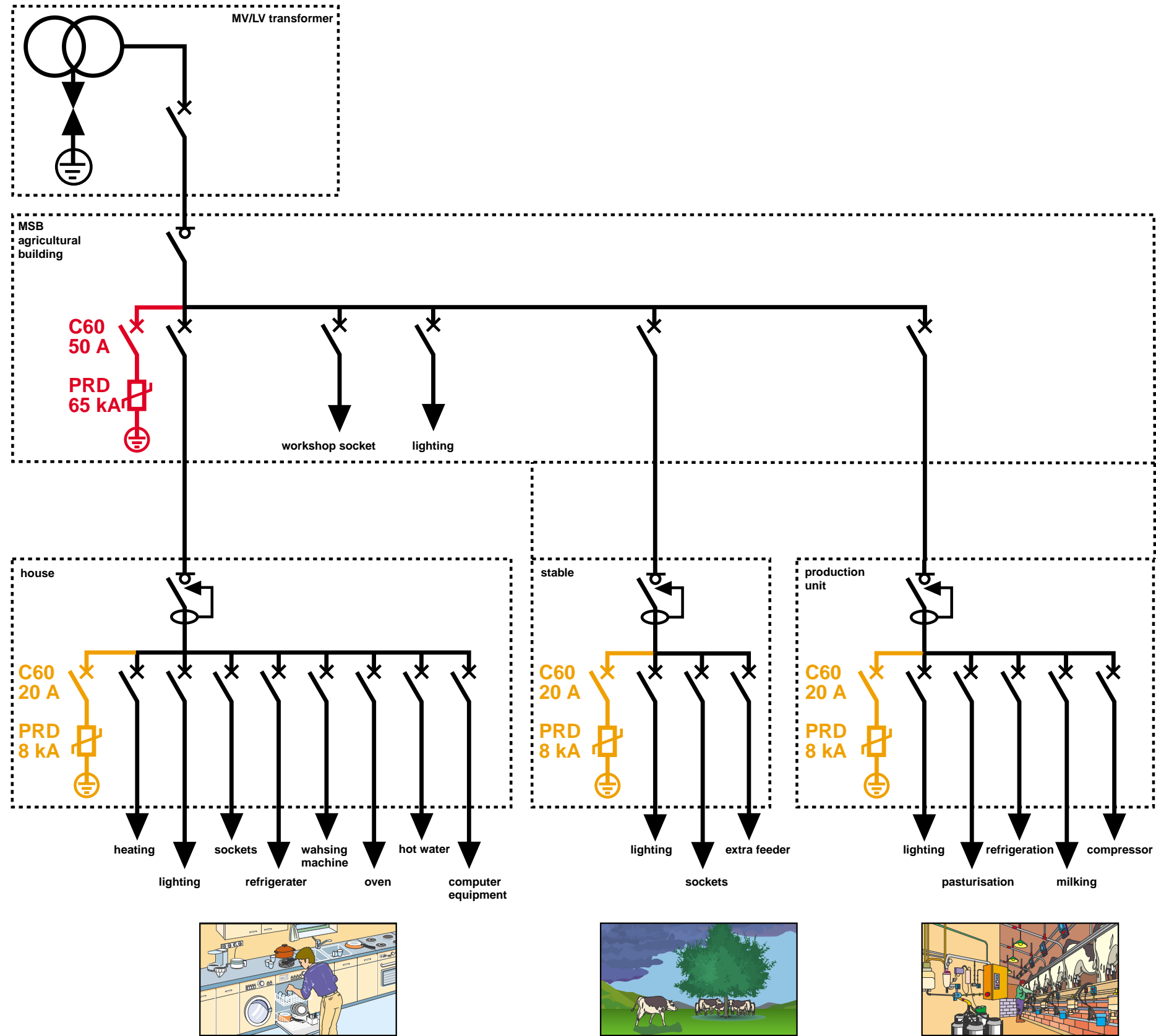
## Installation recommendations

■ Install an incoming surge arrester with an  $I_{max} = 65 \text{ kA}$

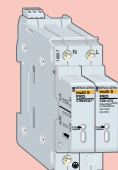
■ A disconnection circuit-breaker associated with each surge arrester is to be foreseen

■ An RCCB of the "si" type should be foreseen for nuisance tripping

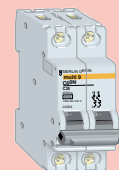
■ Install a surge arrester of the PRC series type on the telephone line.



PF65/PF65r



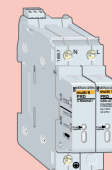
PRD65/PRD65r



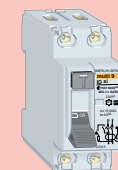
C60/C120  
disconnection circuit-breaker



PF8



PRD8



ID "si" super-immunised  
residual current  
circuit-breaker



PRC series

Secondary protection LV

Communication networks protection