

User Manual

Explosion-safe air conditioning split system Type series AR-051



II 3 G Ex ic nAC h IIC T3 Gc
II 3 G Ex ic nA h IIC T4 Gc

outdoor unit
indoor unit

Indoor unit



Outdoor unit



This User Manual applies to all combinations of explosion-safe and non-explosion-safe outdoor and indoor units.



1. Safety Instructions

The air conditioning split unit series AR-051 is an explosion-safe product suitable for use in hazardous areas with explosion hazard from flammable gases, vapors and mist, classified as Zone 2.

This manual must be read and understood for safe use of the air conditioning split unit. All warnings and instructions must be followed.

- Installation must be carried out by personnel trained and qualified in explosion safety taking the instructions mentioned on the equipment and in this manual into consideration. Local regulations that apply to the installation must be followed.
- Only connect this equipment to the correct voltage and mains frequency for which it is designed. Refer to original equipment manufacturers specification or the specifications as mentioned on the OEM's product label as attached to the unit.
- Isolate electrical power to the air conditioning split unit before electrical installation.
- The plastic cover of the indoor unit can be electrostatically charged. Only use a damp cloth to clean the cover. Do not use solvents.
- For installing external power supplies (mains and connection from indoor unit to outdoor unit) at the connection box only use certified cable glands and blind plugs that are suitable for its use. For example ATEX II 2 G 'Ex e II' cable glands can be used.
- Either decommission the air conditioning split unit or do not use it when it is damaged.
- During installation of the air conditioning split unit national safety regulations must be observed.
- Only use the air conditioning split unit under the environmental conditions for which it is specified. Deviating environmental conditions can contribute to damage to the equipment and may lead to possible danger to the life of the user.
- Do not use the air conditioning split unit at temperatures deviating from the specified ambient temperature range.
- An electrical isolating switch must be installed in the vicinity of the outdoor unit which is explosion-safe in accordance with the classification of its environment.
- Pre-fuse the electric power supply in accordance with the power consumption of the air conditioning system.
- The air conditioning split unit must not be opened in hazardous classified locations unless the environment has been known to be non-hazardous or power is switched off.
- Repairs may only be carried out by the manufacturer or by a person appointed by the manufacturer.
- Modifications to the equipment or changes to the design are not permitted.
- The product may only be used for the function for which it is designed and shall be maintained in a good and clean condition.
- An operating manual for the explosion safe AR-051 series air conditioners is provided by the original equipment manufacturer. Functionality is not changed by conversion of the unit to explosion-safe.

If these instructions are not followed the explosion safety of the equipment cannot be guaranteed. The equipment could then endanger the life of the user and could cause the ignition of an explosive atmosphere. Consequently, Artidor as the manufacturer will waive any responsibility.

2. Description

The air conditioning split system consists of an outdoor unit and an indoor unit with remote control. In function the system refrigerates air. The indoor unit contains a heat exchanger which is connected to the outdoor unit using special tubing. The outdoor unit provides a continuous flow of cold fluid which decreases the temperature of the heat exchanger, which in its turn absorbs the energy of the air, resulting in a room air temperature decrease. The remote control enables the user to operate the indoor unit.

The outdoor unit consists of a sheet steel enclosure and contains a heat exchanger, a hermetically sealed compressor, one on more valves for controlling the refrigerant, an electrically driven fan assembly, electronics PCB and NTC temperature sensors. The sheet steel enclosure is partly part of the protection degree against ignition applied.

The indoor unit consists of a heat exchanger, an electrically driven fan assembly, electronics PCB and NTC temperature sensors all covered by a non-metallic hood. The infra-red remote control contains electronics (PCB) with a display and membrane pushbuttons all housed in a non-metallic housing containing two (2) 1,5 V DC AAA dry cell batteries.

The ambient temperature allowed for the apparatus is -20 °C to +45 °C.

3. Characteristics

The characteristics can be summarized as follows:

- Equipped with a connection box with cable glands and connection terminals;
- Manufactured on the basis of European Directive 2014/34/EU (ATEX 114);
- Suitable for use in gas hazardous areas classified as zone 2;
- Explosion safety category and protection against ignition applied (typical):
outdoor unit: II 3 G Ex ic nAC h IIC T3 Gc
indoor unit: II 3 G Ex ic nA h IIC T4 Gc
- Protection degree against ingress of water and dust IP54;

4. CE - Marking

The modification of the equipment to explosion-safe does not affect the conformity to the European Directives as declared by the original equipment manufacturer in the original Declaration of Conformity.

With regard to explosion safety the air conditioning unit has been designed and manufactured on the basis of the essential health and safety requirements of European Directive 2014/34/EU (ATEX 114) relating to Group II Category 3 G. Harmonized European construction standards have been applied fulfilling the essential requirements of the directive.

5. Application

The series AR-051 explosion-safe air conditioning units have been designed for and are suitable for use in hazardous classified areas due to flammable gases, vapors and mist. Because they are explosion-safe and certified on the basis of Group II Category 3 G of the ATEX directive they are suitable for use in explosion hazardous areas classified as zone 2.

If use in special environmental conditions is required, please contact the manufacturer Artidor Explosion Safety B.V.

6. Technical Data

Explosion safety category:	ATEX II 3 G
European directives:	2014/30/EU (EMC) and 2014/34/EU (ATEX 114)
Protection against ignition:	Ex ic nAC h IIC T3 Gc (outdoor unit) Ex ic nA h IIC T4 Gc (indoor unit) Ex ic IIC T6 Gc (remote control)
Standards applied:	EN 60079-0:2012 / A11:2013, EN 60079-11:2012, EN 60079-15:2010, EN 80079-36:2016 and EN 80079-37:2016
Certification document:	Unit assessment certificate
Ambient temperature:	-20 °C to +45 °C
Sealed against moisture and dust:	IP54 according to EN 60529
Material housing indoor unit:	Sheet steel frame and non-metallic cover
Material housing outdoor unit:	Sheet steel plating
Connection terminals:	Phoenix UK5N and USLKG5 4 mm ² Ex e terminals
Earth connection:	External, M6, stainless steel

7. Marking and warning on the equipment

Labels are attached to the air conditioning AR-051 for marking purposes. The specific marking label depends on the applicable model of the air conditioning system and will be created according to the unit assessment certificate. All necessary warnings are marked.



Example of an outdoor unit label

8. Installation instructions

General

- Installation of explosion-safe equipment such as this product must be carried out by personnel specially trained and qualified to do this, following the relevant requirements of the installation standard EN 60079-14.
- For the installation and use of this product the relevant safety regulations and also the generally recognized latest state of the technology apply. Also follow the national regulations and legal requirements relating to electrical connections to the electricity grid.
- Isolate power prior to installation.

All models are fitted with a connection box with cable glands & terminals

- Follow the instructions as stated under the previous heading 'General'.
- Ensure that the cable gland fits the individual cable used with respect to clamping size and type of cable. If not then apply a suitable cable gland and make sure that it is approved for its application.
- Connect an external earth wire to the external earth boss and ensure that this is sufficiently connected to electrical ground.
- The electrical power supply must be connected as described in the OEM installation manual. The original connection terminals are replaced by terminals in a connection box. Marking of the original terminals is copied to the terminals in the connection box. Power terminals are marked by label 'Power In'.
- The electrical connection from outdoor unit to indoor unit and to the wired remote control must be connected as described in the OEM installation manual. The original connection terminals are replaced by terminals in a connection box. Marking of the original terminals is copied to the terminals in a connection box. Terminals for Indoor unit are marked as "To Indoor unit #".
- Additionally, an earth wire must be connected to the PE connection terminal.
- Remove the external insulation from the cable over a sufficient length.
- Feed the cable into the connection compartment and fix the cable gland into place.
- Connect the connection wires and follow the instructions as given in this manual in chapter (13) "Instructions for connecting to the Ex e connection terminals".
- Tighten all screws of all connection terminals and close the cover.

9. Opening of the housing

The unit contains no components that need direct access in normal operation. The following warning is marked: "The air conditioning unit is modified to explosion-safe meeting ATEX requirements II 3 G. No serviceable parts inside. Refer to qualified personnel as substitution of parts may impair the suitability for use in hazardous areas."

The housing may only be opened under non-hazardous safe conditions. To do this follow the instructions as described under the following heading 'Repair'.

The compartment that contains the connection terminals is accessible to the user by unscrewing the four cover screws. Opening is only permitted when the power supply has been switched off and the area has been known to be non-hazardous.

10. Maintenance

For the maintenance of the AR-051 air conditioning units the requirements as stated in EN 60079-17 apply.

If the air conditioning unit and the connection cable are no longer in good condition or are very dirty or damaged they must be repaired or cleaned immediately.

The power supply to the air conditioning units must be switched off and may only be restored after the maintenance has been carried out and approved.

For the advised maintenance cycles of the air conditioning unit we refer to the operation manual provided by the original equipment manufacturer.

The batteries of the infra-red remote control may only be replaced by batteries of the same size and type as provided with the original product.

11. Repair

Repairs to the AR-051 air conditioning unit may only be executed by applying original parts that are assessed, converted and marked by Artidor. Repairs may only be carried out by qualified skilled workers who have been trained in accordance with EN 60079-19. Applying of non-assessed, non-converted, non-marked parts may lead to injury to persons and damage to equipment.

If non-original parts are used or repairs are carried out in an incompetent manner, the explosion-safety of the air conditioning unit can no longer be guaranteed. Therefore it is preferred that the air conditioning unit will be returned to the manufacturer or its representative for repair.

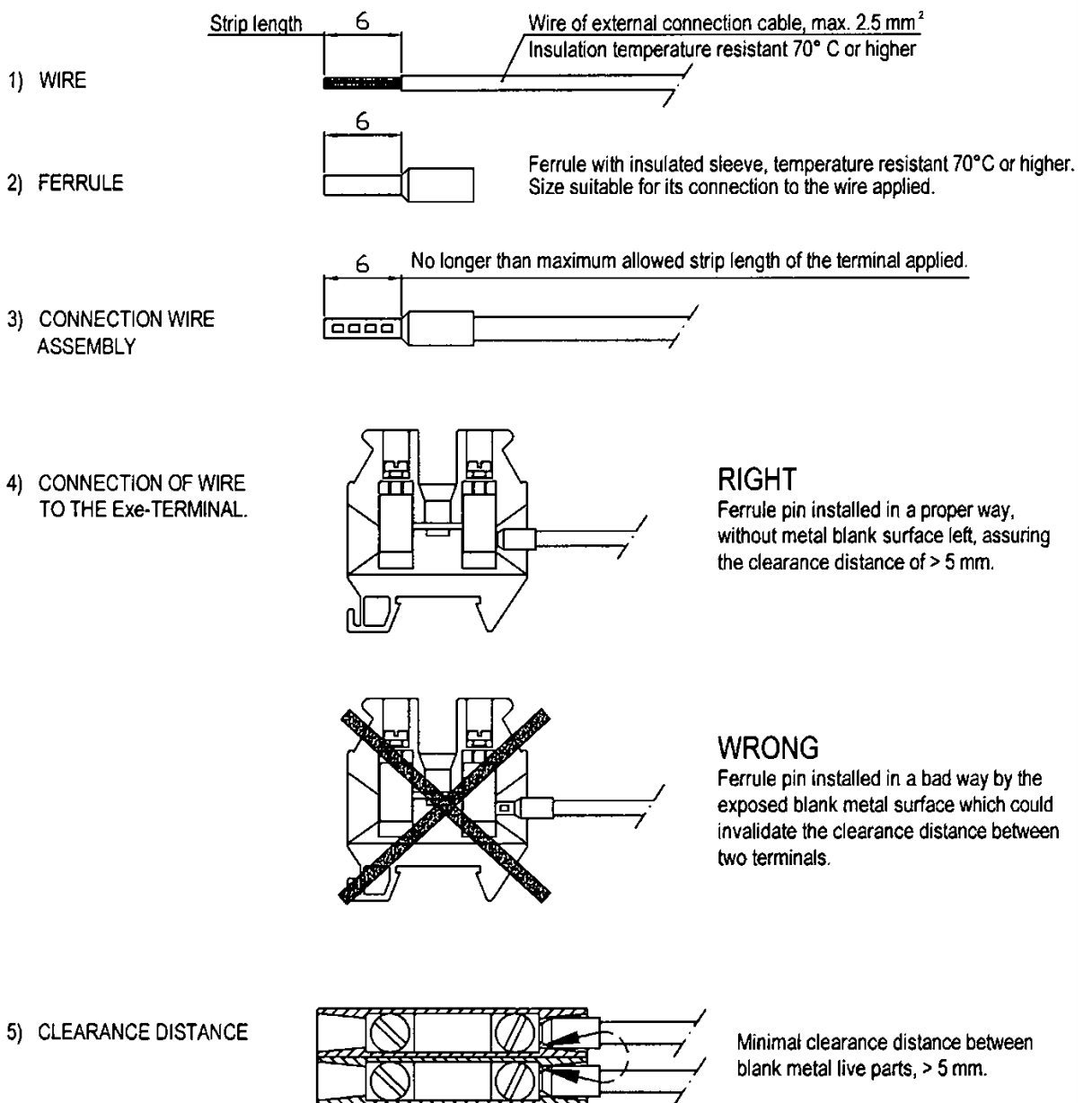
If the housing is opened care must be taken of the following:

- The housing must not be opened unless power is switched off prior to repair.
- The housing must not be opened unless the area has been known to be non-hazardous.
- If opened, the AR-051 air conditioning unit shall be dismantled in a logical sequence.

12. Removal / re-use

For processing regarding disposal or reuse of the product and its packaging, national disposal and environmental laws and legislation must be taken into consideration.

13. Instructions for connection of the Ex e connection terminals



EU Declaration of Conformity



We

ARTIDOR Explosion Safety B.V.
Emopad 38, 5663 PB Geldrop, The Netherlands

herewith declare that the
Explosion-safe air conditioning type series

AR-051/*

labelled with the distinctive community mark including the code of the
protection degree against ignition and temperature class:

  II 3 G Ex ic nAC h IIC T3 Gc outdoor unit
II 3 G Ex ic nA h IIC T4 Gc indoor unit

produced under the ARTIDOR Quality Assurance system in accordance with
ISO 9001:2015 and annex VIII of Directive 2014/34/EU

is in conformity with the relevant Union harmonization legislation:

2009/125/EC
EcoDesign

2014/30/EU
Concerning electromagnetic compatibility

2014/34/EU
Concerning equipment and protective systems intended
for use in potentially explosive atmospheres,

and that the following standards regarding explosion safety have been applied:

EN 60079-0:2012 / A11:2013
EN 60079-11:2012
EN 60079-15:2010
EN 80079-36:2016
EN 80079-37:2016

This declaration of conformity is issued under the sole responsibility of the manufacturer

Geldrop, 1 December 2017

Signed



M. Moolenaar
Managing Director and EX Authorized Person

Artidor Explosion Safety B.V. - Emopad 38, 5663 PB Geldrop - The Netherlands
Phone: +31 (0)40 78 73 911 - E-mail: sales@artidor.com - www.artidor.com

This document can be subject to change without notice.