Operating instructions

FRIAMAT 6 110V

FRIATEC

aliaxis

Table of Content

1. About this document

1.1. Objective and target group of these instructions

These instructions describe all the necessary work steps, measures and precautions in order to ensure safe and professional handling of the product.

These instructions are intended for the following target group:

- People who will transport, commission and operate the product
- Operators and/or owners

1.2. About these operating instructions

INFO

- Read these operating instructions carefully before assembly and use.
- Observe all applicable documents.
- The operator must keep these operating instructions for the lifetime of the product.
- Follow the described sequence of operations.

1.3. Symbols used

The following flags and symbols are used in this document:

DANGER

This warning describes an imminent danger.

▶ Failure to observe it will result in death or serious injury.

WARNING

This warning describes a possible imminent danger.

▶ Failure to observe it may result in death or serious injury.

⚠ CAUTION

This warning describes a possible imminent danger.

▶ Failure to observe it may result in minor to moderate injuries.

HINT

This warning describes a danger that may result in damage to property.

▶ Measures to avoid damage to property are described here.

INFO

This note provides information on the following topics:

- Application tips
- Additional information

1.4. Representation for the menu navigation

The navigation to the menu items is shown in abbreviated form in the following chapters:

[Menu] > [Name of the menu item].

Example

Call up the menu item:

Main menu > basic settings > date and time

Execute the following steps in order to navigate to the menu item for date and time:

1. Press the menu function key. The main menu will be displayed.
2. Utilise the direction keys to navigate to the menu item for basic settings in the main menu.
3. Press the confirmation function key or OK key. The menu items under basic settings will be displayed.
4. Navigate to the date and time menu items with the direction keys.
5. Press the confirmation function key or OK key. The date and time menu will be displayed.

1.5. Applicable relevant documents

The following documents apply in connection with these instructions:

- Mini scanner operating instructions
- 1D/2D scanner operating instructions
- Fittings assembly instructions

1.6. Updates to these instructions

The technical information contained in these operating instructions is reviewed regularly to make sure it is up to date. The date of the last revision is specified on the document. Updated instructions are available online at

http://www.aliaxis.de/en/services/downloads

2. Safety

The FRIAMAT 6 110V fusion unit corresponds to the state of the art and is built according to recognised safety standards and equipped with the necessary protective devices. The fusion unit has been tested for function and safety before delivery.

There is a hazard of danger to the health of the operator in the event of incorrect operation or misuse. Material damage to the device or to other material assets of the operator can additionally occur or the performance of the fusion unit can be reduced.

2.1. Designated, intended use

INFO

The FRIAMAT 6 110V fusion unit must never be left unattended during operation!
During a fusion progress, the operator must always remain within sight of the fitting and the equipment.

INFO

The usage of the FRIAMAT 6 110V fusion unit is exclusively for fusion fittings made of HDPE!

The FRIAMAT 6 110V fusion unit has been designed for a maximum fusion voltage of 48 V and is intended for fusion the following fittings:

- FRIALEN safety fittings with pressure pipes made of HDPE (SDR 17-7)
- FRIALEN large pipe technology with pressure pipes made of HDPE (SDR 17-7)
- FRIAFIT fittings with pipes made of HDPE (SDR 17-33)
- Fittings from other manufacturers with a barcode which fulfils one of the following requirements:
  - 24-digit (according to ISO 13950: 2007-03)
  - 2D barcodes (according to ISO 12176-5)

- 26/40-digit (according to ISO 12176-4)
- 30-digit (according to ISO 12176-3)

The FRIAMAT 6 110V fusion unit has been designed for industrial applications. This comprises the voltage power supply with generators and standard mains voltage.

Designated intended use also includes compliance with the following instructions:

- Notes and information in these operating instructions
- Power specifications and technical data of the fusion unit (refer to Chapter 14. Technical Data)
- Power specifications and technical data for the fittings which are to be fused (refer to Chapter 14. Technical Data)
- General and manufacturer-specific processing, workmanship provisions and regulations for fusion fittings
- Valid provisions and regulations on accident prevention, environment and disposal
- Relevant safety provisions
- All country-specific standards, laws, guidelines and directives

2.2. Non-permitted utilisation

Do not utilise the following fusion units or fittings:

- Damaged fusion units
- Fusion units whose lead seal has been broken open
- Fittings without a barcode
- Generators which do not comply with the EMC regulations

2.3. Bluetooth® function

The FRIAMAT 6 110V fusion unit is equipped with a Bluetooth® interface. Utilising the Bluetooth® is currently only permitted in the following countries:

Austria	Denmark	Greece	Lithuania	Romania
Belgium	Estonia	Hongkong	Luxembourg	Slovakia
Bulgaria	Finland	Hungary	Malta	Slovenia
Croatia	France	Ireland	Netherlands	Spain
Cyprus	Germany	Italy	Poland	Sweden
Czech Republic	Great Britain	Latvia	Portugal	

In all other countries the use of the Bluetooth® function is not permitted.

2.4. Structural alterations to the product and spare parts

Conversions, alterations and modifications to the FRIAMAT 6 110V fusion unit are not permitted for safety reasons.
All warranty claims will become invalid for FRIAMAT 6 110V fusion units whose lead seals have been broken.

2.5. Obligations of the owner

- To always ensure that the personnel fulfil the following requirements:
  - Personnel are trained in the proper use and handling of the device.
  - Personnel have read and understood the instructions and safety information.
- Make these instructions available to the personnel.

INFO

The FRIAMAT 6 110V fusion unit is not intended for use by persons (including children!) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the FRIAMAT 6 110V fusion unit by a person responsible for their safety!

2.6. Obligations of the operator

The operator is responsible in the area of operation with regard to any third parties.

2.7. Staff training

People working with the FRIAMAT fusion unit require the following knowledge:

- Contents of these instructions
- Handling the device (after training)

2.8. Standards and guidelines

The device complies with the following standards and directives:

- IEC 60335-1
- IEC 60335-2-45
- ISO 12176-2 Electrofusion
- ISO 12176-3 Operator badge
- ISO 12176-4 Traceability
- ETSI EN 301 489-1 V2.2.3
- ETSI EN 301 489-17 V3.2.4

2.9. Safety measures at the installation location

- Always protect the connecting cable and fusion cable against sharp edges.
- Protect the device against heavy mechanical loads.
- Never immerse the device in water. The device is splash-proof.

2.10. Behaviour in case of emergency

- Switch the fusion unit off with the main switch.
- Disconnect the fusion unit from the power supply.

2.11. Safety measures for operating modes

2.11.1. Mains supply operation

- When utilising outdoors: Equip the plug sockets with a residual current protection device (RCPD).
- Follow the regulations regarding a residual current protection device.

2.11.2. Generator operation

- Always ensure that the generator is one which is approved for commercial utilisation and applications on construction sites.
- Only utilise generators which operate at frequencies within the range of 44 – 66 Hz.
- Always follow the generator operating instructions.
- Utilise a minimum of a 30 A time-delay fuse as generator fuse/mains supply fuse.
- Never operate with any additional loads on the same generator during fusion.

Nominal generator power

The required nominal generator power always depends on the following factors:

- Power requirement for the largest fitting which is to be utilised
- Connection conditions
- Environmental circumstances
- Generator type and/or its regulating, control characteristics

Since generators of different model series often indicate different regulating or control characteristics, the suitability of a certain generator cannot be guaranteed, even when the generator achieves the required nominal power according to the technical data sheet.
In case of doubt e.g. with new procurement, please contact Aliaxis Deutschland GmbH.

2.11.3. Extension Cables

- If extension cables are utilised, then always ensure that the cable cross-section is sufficient for the respective application:

Cable length	Cable cross section
Up to 50 m (160 feet)	5 mm^2 (AWG 10/3)
Up to 100 m (320 feet)	8 mm^2 (AWG 8/3)

- Only utilise the extension cable when it is fully unwound and stretched out.

2.12. Residual risks

2.12.1. Energised parts

Electric shock caused by contact with energised parts.

- Do not open the FRIAMAT fusion unit.
- Never leave the device unattended during the fusion procedure.
- Always have any housings, connecting cables and extension cables, which indicate damage, exchanged immediately. Do not continue to operate the device in such cases.
- Always disconnect the mains cable before executing any repair work or maintenance work.
- Always only have any servicing, maintenance and repairs executed by Aliaxis Deutschland GmbH or authorised service stations.
- Only connect the device to the approved operating voltage which is specified on the rating plate.
- If required, provide a residual current protection device (RCPD).
- Never remove, bridge or disable safety devices.
- Remedy any faults detected immediately.

2.12.2. Fire hazard and explosion hazard

Fire hazard and explosion hazard caused by ignition of highly flammable materials or explosive atmosphere.

- Always keep the FRIAMAT fusion unit away from flammable liquids/gases.
- Never utilise in potentially explosive atmospheres (e.g. in areas where flammable gases, solvent vapours or combustible dusts can occur).
- Never leave the device unattended during the fusion procedure.

2.13. Property damage

Dust, dirt and moisture can damage sensitive parts on the FRIAMAT fusion unit.

- Always protect the scanner's reading window against dirt and scratches.
- Always ensure that the protective cap for the data interface is positioned in place.

3. Product description

3.1. Function description

The fitting parameters will be transmitted to the fusion unit by reading the barcode in with a barcode scanner. Based on this data, the microprocessor-controlled FRIAMAT 6 110V fusion unit is able to regulate and control the energy metering fully automatically and determines the fusion time, taking into account the ambient temperature.

3.2. Device structure

Image 1: Description for components based on the FRIAMAT 6 110V

Position	Designation
1	Main switch
2	Fusion cable with barcode scanner
3	Front film with display and function keys
4	Service interface (USB) with protection cap
5	Ventilation slits (air outlet)
6	Mains supply cable
7	Adapter pouch
8	Ventilation slits (air intake)

3.3. Function keys

Image 2: Description for the operating and control components based on FRIAMAT 6 110V

Position	Designation	Description
1	Function keys	Access to function key symbols which are shown on the display
2	Direction keys	Movement of the cursor in the menu in the directions for left, right, up, down
3	OK key	Confirms a procedure
4	START key	Starts the fusion procedure Confirms the messages which are shown on the display
5	STOP key	Aborts the fusion procedure Exit the menu item Abort an input procedure (without saving it)

3.4. Display

3.4.1. Display structure

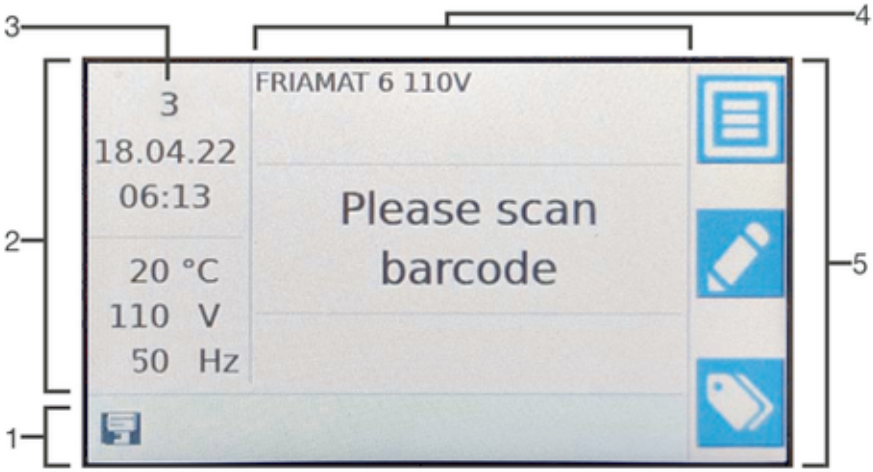

Image 3: Description for the display based on the FRIAMAT 6 110V

Position	Designation	Description
1	Function status symbols	▪ Functions which are available at this point in time. ▪ Notice for next maintenance.
2	Display for environmental information	▪ Important environmental information (date, time, ambient temperature, voltage and frequency).
3	Number of protocol entries	▪ This count number corresponds to the number of protocol entries and indicates the current number of protocol records for the fusions.
4	Main window	▪ All entries and information within the individual menus.
5	Function key symbols	▪ Symbols for functions which will be activated when the corresponding blue function keys are pressed. The displayed symbols switch over depending on the menu selection, (refer to Chapter 3.4.2. Function key symbols).

3.4.2. Function key symbols

Symbol	Designation	Description
	Menu	Call up the main menu.
	Entry input/ emergency input	Calls up a virtual keyboard. Manual input possibility for a barcode e.g. when this cannot be read.
	ID data	For calling up the input mask for ID data, picking and sorting number, seam number and GPS data.
	Confirmation	According to the context involved: OK, confirm, acquire, save, select a menu item.
	Abort	Terminate an input procedure. Close a dialogue without saving it.
	Back	Back to menu, in one process, in one input (without amendments).
	Continue	Continue in a process, next step or next input.
	Delete back	Delete the previous character in the virtual keyboard (emergency input).
	Recycling bin	Delete the picking and sorting number.
	Information data	For calling up the information data mask and entering information text. Enter information text, comment and subcontractor.
	Details / search	For calling up detailed information or for search terms (e.g. country of operation).

3.4.3. Function status symbols

Symbol	Description
	Documentation is switched on.
	Entry for seam number is possible.
	Traceability barcodes can be entered.
	Entry for pipe number is possible.
	Entry for pipe length is possible.
	USB stick is connected.
	Maintenance appointment: Notice for the next maintenance due (in days).
	Bluetooth® coupling is active.

3.5. Rating plate

The rating plate contains the following details:

- Device-specific information regarding the FRIAMAT 6 110V fusion unit

- Unique device number

3.6. Reading device

3.6.1. Scanner

The mini-scanner reads in 1D barcodes.

The 1D/2D scanner (optional) reads in 1D barcodes and 2D barcodes according to ISO 12176-5.

3.7. USB data interface with protective cap

The USB data interface serves as a service interface for software updates and for data transfer with the FRIAMAT fusion unit. The protection cap protects the USB data interface against dirt, soiling and moisture.

3.8. Temperature probe

The temperature probe located on the fusion cable records the ambient temperature during the fusion procedure. The device can determine the fusion time in conjunction with the fitting parameters.

3.9. Acoustic signal

The FRIAMAT fusion unit confirms certain operating sequences with a signal tone. These signals have the following meanings:

Number of signal tones	Meaning
One time	Reading in the barcode is successful.
Two times	Fusion procedure is completed.
Three times	Voltage supply is too low or too high.
Five times	Error message: ▪ Observe display indication.

The signal tone volume can be set in the main menu (refer to Chapter 8.2.3. Set signal tone volume).

3.10. Fan

The fan enables reliable operation and working conditions in continuous use and when fusion large dimensions. The fan is switched on and switched off depending on the temperature detection inside the FRIAMAT fusion unit.

The fan switches on at the following times:

- Depending on the device status after it has been switched on

- During a fusion
- Between fusions
- After a fusion

Always leave the device switched on after a fusion so that the fan can reduce the temperature of the fusion unit. This applies in particular to series fusions, machining or processing of fittings with high power requirements.

3.11. FRIAMAT preCHECK function

Fusion (standard procedure)

Before each fusion, the FRIAMAT 6 110V fusion unit will execute the FRIAMAT preCHECK function. The fusion unit utilises the fitting parameters, the current device status and the ambient temperature in this process in order to calculate whether the next fusion can be executed completely to the end. The fusion can only be started after the FRIAMAT preCHECK function. Performance-related fusion interruptions are therefore prevented.

Multiple-phase fusion with 2D barcodes (ISO 12176-5)

One refers to multiple-phase fusion when 2 to 9 fusion phases are executed. This means that up to 9 fusions can be executed on one fitting / component without having to implement a break. Multiple fusions/fusion phases can be executed without having to read out the barcode again with the 2D barcode.

When utilising the 2D barcode with multi-phase fusions:
The FRIAMAT preCHECK function is **switched off**.

When utilising the 2D barcode with only one fusion:
The FRIAMAT preCHECK function is **switched on**.

INFO

Fusion termination during multiple-phase fusion due to strong heating in case of multiple-phase fusion without FRIAMAT preCHECK function, the device can heat up considerably at very high continuous power. The fusion process is usually interrupted by the fusion unit in order to prevent damage to the device due to overheating. Such a fusion process is then not concluded. The fusion process must be repeated after the fusion joint has cooled down again completely.

- Only utilise the device in a cooled down status. This generally prevents the fusion from breaking off.
- Always follow the fitting manufacturer's processing and machining instructions when repeating fusion processes.

3.12. Bluetooth® interface

The Bluetooth® interface establishes the connection to a smartphone and the WorkFlow App.

3.13. Maintenance Interval

The maintenance interval stored in the FRIAMAT fusion unit (as-delivered status: 12 months) will only be activated with the first fusion procedure.

The leading maintenance appointment is shown in the display and can differ from the service sticker which is attached to the fusion unit.

For additional information regarding the subject of maintenance intervals, refer to Chapter 13.2. Maintenance, testing and inspection intervals.

3.14. Device registration, customer portal and software update

INFO

At **www.aliaxis.de/en** the footer under the heading "GTC" / "Data protection" contains the following terms and conditions and notices and they can be viewed and printed out in their currently valid version:

- General Terms and Conditions of Use and Data Protection Notice for the Customer Portal.
- Special Terms and Conditions of Use for the "FRIAMAT Software Update" module.

Device Registration and Customer Portal

The FRIAMAT fusion unit can be registered independently of the activation dialogue (refer to Chapter 7.2. Activating and registering the device) in the device display via the customer portal of Aliaxis Deutschland GmbH (www.aliaxis.de/portal). The device will not be activated during registration and no activation PIN is generated.

Software update

The "FRIAMAT Software Update" module provides the possibility to receive new device-specific information and innovations by email for registered fusion units, as well as to download available software updates.

After registration of the device in the "FRIAMAT Software Update" module, update notifications and additional, ongoing device-specific information and innovations for the registered FRIAMAT fusion units will be sent by email from Aliaxis Deutschland and its affiliated companies to the email address which are stored in the user account of the customer portal.

The user can download software updates and install them on the device themself (refer to Chapter 9.5. Install software update).

3.15. Data transfer

3.15.1. Output Formats

The following output formats are available:

- CSV
- JSON

3.15.2. Designating the transferred data

Designating the subdirectories

The transferred data will be created in subdirectories on the USB stick according to the following pattern:

F+Device number

Example: FR 24 3 0123

Designating the subdirectories: F2430123

Designating the data

Data file names will be formed from the current date and a two-digit number counting up from 0.

Example: 2nd printout (02) on 30.10.2023 (2023_10_N02)
Designating the data: 2023_10_30_N02.csv

3.15.3. Software for additional data processing

CSV data files, JSON data files: e.g. Acrobat Reader® or Microsoft® Excel.

4. User menu

Call up the user menu via the menu function button.

4.1. Menu tree

Some individual menu items can be blocked or not visible due to the settings.

Menu	Level 1	Level 2	Level 3	Reference
Main menu				
	Basic settings			
		Documentation		Switch on/switch off documentation
		Date and time		Set the date and time
		* System language *		Select the system language
		Protocol language		Select protocol language
		Volume		Set signal tone volume
		Bluetooth®		Switch on/switch off Bluetooth®
		Coupled Bluetooth®devices		Manage coupled Bluetooth® devices
		Country of operation		Select country of operation
		Update		Install software update
		Factory settings		Resetting the device to factory settings
	Fusion sequence [1)]			
		Operator pass [1)]		Switch on/switch off "device disabling" function
		Traceability		
			Traceability active	Traceability active
			Pipe number	Pipe number
			Pipe length	Pipe length
			Fitting ID	Fitting ID
		Information data		
			Information text	Information text
			Comment	Comment
			Scraper device	Scraper device
			Subcontractor	Subcontractor
		ID data		
			Sorting and picking number	Sorting and picking number
			Seam number	Seam number

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Menu	Level 1	Level 2	Level 3	Reference
			GPS data	GPS data
	Data [1)]			
		Transmit		Transmit data
		Delete		Delete data
	Information			View device information
		Device information		
			Device number	
			SW HMI	
			SW PU	
			Maintenance date	
		Device function		
		Licenses		
Menu emergency entry				Enter barcode digits manually (emergency entry)
ID data menu				Enter ID data
	Sorting and picking number			
	Seam number			
	GPS 1-3			

[1)] Only visible when documentation is switched on and initial data record is saved.

5. Setting up and connection

5.1. Preparatory activities

Always ensure the following criteria before every use:

- Fusion device is undamaged.
- Planned fusion application corresponds to the intended use of the fusion device.
- All parts are correctly assembled.
- All assembled parts fulfil all the conditions in order to ensure proper operation of the device.
- When utilising outdoors: The fusion unit must be protected against rain and moisture.
- The temperature probe on the fusion cable end piece and the fitting, which is to be fused, are both exposed to the same ambient temperatures.

- An unfavourable machining or processing situation is e.g. the fusion cable end piece is located in the blazing sun and the fitting is located in the shade.

- Input voltage corresponds to the input voltage range for which the device is designed for (refer to Chapter 16. Technical Data).

5.2. Setting up and connecting the device

⚠ CAUTION

Overheated cable

▶ Always unwind the cables (unit connection, fusing cable and extension cables) completely and utilise them as stretched out.

⚠ CAUTION

Overheated fusing plug connector due to soiled contacts

▶ Always inspect the fusing plug connector and contact sockets of the fitting for soiling and clean them when necessary before connecting the fusing plug connector and fitting.
▶ Always protect the fusing plug connector against soiling.
▶ When a deposit has formed on the fusing plug connector which cannot be removed completely, then always exchange the fusing plug connector.

INFO

Insufficient power supply due to soiled or damaged fusing plug connector
Defective fused joint

- Only utilise the original fusing plug connector (Article No. 624529).
- Always ensure that the fusing plug connector is clean and undamaged.

1. Set up the fusion unit on level ground.
2. Prepare the fusion fitting and pipes for the fusion process according to the assembly instructions.
3. Position the contact pins of the fitting in such a way that they are accessible for connecting the fusion plug.
4. For mains supply connection or generator connection:
   Insert mains supply cable plug into the connection socket in order to the establish power supply connection.
5. Utilise extension cables when necessary. Always observe the safety precautions when utilising extension cables (refer to Chapter 2.11.3. Extension Cables).

6. With generator operation:

    a. Always observe the safety precautions for generation operation (refer to Chapter 2.11.2. Generator operation).
    b. Start up the generator and allow it to warm up for 30 seconds.
    c. If necessary, adjust the idling voltage and limit it to the voltage which is specified in the technical data.

7. Switch the device on at the main switch.
8. Connecting the fusion plug to the contact pins of the fitting: Plug in the fusion plug completely, i.e. via the entire length of the internal contact length of the contact plug.

6. Switching the device on and off

Switching on:

- Switch the fusion unit on with the main switch.

Switching off:

1. Wait until the device has cooled down when the fan is still running.
2. Switch the device off with the main switch.

7. Initial commissioning

7.1. Acquire basic settings

1. Switch the fusion unit on with the main switch.
2. Select the system language.
3. Acquire the following settings with FRIAMAT 6 110V fusion unit:

    a. Protocol language
    b. Country of operation

4. The activation dialogue will be displayed.

INFO

All settings can be amended at any time in the Main Menu > Basic Settings menu item.

7.2. Activating and registering the device

INFO

Aborting the activation
Activation can be skipped with the abort key and implemented at a later time. The prompt message will appear again after each switching on process until the activation has been implemented.

INFO

Using the entered personal data
The personal email address, which has been entered in the activation dialogue of the device, will be utilised and stored by Aliaxis Deutschland in order to send information about the availability of new software updates and device updates to the owner of the email address easily and quickly.

- Please enter an email address which is consistent and does not contain any staff-related data.

Prerequisites

- Internet-capable input device e.g. smartphone.
- External App for capturing QR codes when a smartphone or tablet is utilised and the operating system is older than Android Version 9.0 / Apple iOS 11.
- The activation dialogue with the QR Code will be indicated on the display.

1. Navigate to the activation page on the Internet-capable input device:
   - Open via the QR Code:
     Capture the QR Code with the smartphone camera.
     Tip on the displayed URL Link on the smartphone.
   - Via the input for the URL in the smartphone/on PC:
     Enter the following URL in the browser: https://aliaxis.de/sw-update.
2. Enter the device number, company and email address in the input mask.
3. Confirm the entries. A 4-digit activation PIN will be sent to the specified email address.
4. Enter the 4-digit activation PIN in the device via the display in the activation dialogue.

INFO

When changing owners

- Always inform the new owner about the update options and the use of the 'FRIAMAT Software Update' module in the customer portal at www.aliaxis.de/en.
- Always inform Aliaxis Deutschland about the change of ownership.
- Resetting to factory or default settings (refer to Chapter 8.2.4. Resetting the device to factory settings) and deleting fusion data when necessary.

8. Menu operation

8.1. Operate menu

8.1.1. Entering via the virtual keyboard or numeric keypad

1. Select numbers or letters from the displayed numeric keypad or keyboard with the direction keys.
2. Confirm entry with the OK key.

8.1.2. Acquiring entries or settings

Save entry / amendment	Press confirmation function key.
Abort entry / amendment	Press abort function key.
Delete digit(s)	Press function key for back / delete.
Exit menu / cancel procedure	Press function key for back or STOP key.

8.2. Acquire device settings

8.2.1. Set the date and time

1. Call up the menu item:
   Main menu > basic setting > date and time
2. Enter date with virtual keyboard.
3. Enter time with virtual keyboard.

8.2.2. Select the system language

1. Call up the menu item:
   Main menu > basic setting > system language
2. Select the language(s) from the list which should be displayed in the display text.

8.2.3. Set signal tone volume

1. Call up the menu item:
   Main menu > basic setting > volume
2. Set signal tone volume to loud or quiet.

8.2.4. Resetting the device to factory settings

1. Call up the menu item:
   Main menu > basic setting > factory settings
2. Reset the device to the factory settings.

8.2.5. Select protocol language

1. Call up the menu item:
   Main menu > basic setting > protocol language
2. Select protocol language from the list.

8.2.6. Select country of operation

1. Call up the menu item:
   Main menu > basic setting > country of operation
2. Select a country from the list for where the device is to be utilised.

8.2.7. Manage coupled Bluetooth® devices

1. Call up the menu item:
   Main menu > basic setting > coupled Bluetooth® devices
   All Bluetooth® devices, which were previously coupled with the device, will be shown.
2. Delete the Bluetooth® devices from the list in order to prevent them from reconnecting with the smartphone.

8.3. Manage functions

8.3.1. Switch on/switch off documentation

1. Call up the menu item:
   Main menu > basic setting > documentation
2. Switch on or switch off documentation.
   If the function is switched on, then the following symbol will appear in the display:

- 

8.3.2. Switch on/switch off Bluetooth®

The Bluetooth function is switched off in the as-delivered status.

1. Call up the menu item:
   Main menu > basic setting > Bluetooth®
2. Bluetooth® function switched on or switched off.
   If the function is switched on, then the following symbol will appear in the display:

- 

8.3.3. Traceability active

1. Call up the menu item:
   Main menu > fusion sequence > traceability > traceability active
2. Switch on or switch off traceability function.
   If the function is switched on, then the following symbol will appear in the display:

- 

8.3.4. Switch on/switch off “device disabling” function

1. Call up the menu item:
   Main menu > fusion sequence > operator pass
2. Switch on or switch off the function.
   If the function is switched on, then the device can only be unlocked by reading in the operator pass.

8.4. Manage data capture

8.4.1. Traceability data

The query for the traceability data during the fusion process can be defined in the traceability menu item.

8.4.1.1. Pipe number

1. Call up the menu item:
   Main menu > fusion sequence > traceability > pipe number
2. Switch on or switch off the query for an individual pipe number for the pipe which is to be fused.
   If the function is switched on, then the following symbol will appear in the display:

- 

8.4.1.2. Pipe length

1. Call up the menu item:
   Main menu > fusion sequence > traceability > pipe length
2. Switch on or switch off the query for the pipe length for the pipe which is to be fused.
   If the function is switched on, then the following symbol will appear in the display:

- 

8.4.1.3. Fitting ID

1. Call up the menu item:
   Main menu > fusion sequence > traceability > fitting ID
2. Switch on or switch off the query for the fitting identification data.
   When the function is switched on, then the fitting ID will be shown in the display during the fusion process.

8.4.2. Information data

The query for information data during the fusion process can be defined in the information data menu item.

8.4.2.1. Information text

1. Call up the menu item:
   Main menu > fusion sequence > information data > information text
2. Switch on or switch off the query for the information text.

8.4.2.2. Comment

1. Call up the menu item:
   Main menu > fusion sequence > information data > comment
2. Switch on or switch off the query for a comment.

8.4.2.3. Scraper device

1. Call up the menu item:
   Main menu > fusion sequence > information data > scraper device
2. Switch on or switch off query for data (e.g. device number) for implemented scraper device.

8.4.2.4. Subcontractor

1. Call up the menu item:
   Main menu > fusion sequence > information data > subcontractor
2. Switch on or switch off the query for the subcontractor.

8.4.3. ID data

The request for ID data in the ID data menu and during the fusion process can be defined in the ID data menu item.

8.4.3.1. Sorting and picking number

1. Call up the menu item:
   Main menu > fusion sequence > ID data > sorting and picking number
2. Switch on or switch off the query for sorting and picking number.

8.4.3.2. Seam number

1. Call up the menu item:
   Main menu > fusion sequence > ID data > seam number
2. Switch on or switch off the query for the seam number.

8.4.3.3. GPS data

1. Call up the menu item:
   Main menu > fusion sequence > ID data > GPS data
2. Switch on or switch off the query for the GPS data.

8.5. Manage capture data

8.5.1. Transmit data

1. Call up the menu item:
   Main menu > data > transfer
2. Select which data should be transferred via the export filter mask.
3. Select output format (refer to Chapter 3.15.1. Output Formats).
   A request for connecting a USB stick on the USB connection port will appear in the display.
4. Connect a USB stick.
5. Press confirmation function key.
   Export will be started.
   A progress bar will be displayed.
   The data will be written to a subdirectory in the selected output format (refer to Chapter 3.15.2. Designating the transferred data).
6. If necessary, process the data further with appropriate software (refer to Chapter 3.15.3. Software for additional data processing).

8.5.2. Delete data

1. Call up the menu item:
   Main menu > data > delete data
2. Delete individual or all saved data.

8.6. Reading in an operator pass

When an operator pass is initially read in, then all fusions performed from this point on will be saved under the code of the operator pass which has been read in. When another operator pass is read in, then the device switches over accordingly.

By reading in the same operator pass again, the device can be subsequently disabled in order to protect it against unauthorised use.

For more information regarding disabling and enabling the device, refer to Chapter 9.3. Disabling and enabling the device.

9. Fusion procedure

INFO

The FRIAMAT 6 110V fusion unit must never be left unattended during operation!
During a fusion progress, the operator must always remain within sight of the fitting and the equipment.

9.1. Read in barcode

9.1.1. Utilise the reading device

9.1.1.1. Utilising the scanner

INFO

Soiling and scratching on the reading window
Barcode cannot be read out anymore when the reading window is soiled or scratched.

- Always protect the reading window against soiling and scratches.

1. Aim the scanner's reading window onto the fitting's barcode.
2. Press the read-in button.
   A red light band will appear which captures the barcode.
3. Align the scanner to be as close as possible so that the light band crosses the centre of the barcode.
   When an acoustic signal sounds, then the barcode has been read in successfully.
   When no acoustic signal sounds: Repeat the procedure with an altered position of the scanner (distance to the barcode, position of the light band).
4. If the scanner fails: Enter the fusion parameters by using the emergency entry mode (refer to Chapter 9.1.3. Enter barcode digits manually (emergency entry)).

9.1.2. Scan in the barcode with the reading device

INFO

Utilising a barcode from another type of fitting
Fusing aborted or faulty fusing result

- Only read in the barcode which is adhered on the fitting.
- If the barcode is missing or damaged: Read in the barcode of an identical fitting model (same manufacturer, same batch). In case of doubt: Contact the fitting manufacturer.

1. Read in the barcode with mini scanner or 1D/2D scanner (for 2D barcode).
   When scanning was successful, then an acoustic signal sounds and the display "Pipe processed?" appears.
   If no acoustic signal sounds:
   a. Repeat the procedure.
   b. Enter barcode digits using the emergency entry mode (refer to Chapter 9.1.3. Enter barcode digits manually (emergency entry)).

For more information about utilising the reading devices, refer to Chapter 9.1.1. Utilise the reading device.

9.1.3. Enter barcode digits manually (emergency entry)

1. Press emergency entry function button.
   No digits will be displayed with initial usage.
   The last barcode, which was entered manually, will be displayed when used again.
2. Enter digits (refer to Chapter 8.1.1. Entering via the virtual keyboard or numeric keypad).
3. Save the entry with the confirmation function key
   or
   Acquiring other actions (refer to Chapter 8.1.2. Acquiring entries or settings).
   If the sequence of digits is correct, then the same display will appear as when the barcode is read in with scanner.

9.2. Executing the fusion procedure

9.2.1. Enter ID data

INFO

Entering sorting and picking numbers, seam numbers and GPS data is only possible under the following prerequisites:

- Documentation is switched on.
- Functions for "Sorting and picking number" / "Seam number" / "GPS data" are switched on (refer to Chapter 8.4.3. ID data).

If required, ID data can be entered in the ID data menu before each fusion:

1. Press ID data function key.
2. Enter ID data (sorting and picking number, seam number or GPS data) for the upcoming fusion.

9.2.2. Start fusion

CAUTION

Escape of plastic melt during fusion
Burns to the skin and eyes

▶ For your general safety, always keep at least one metre (3 feet) away from the fusion joint during the fusion process.
▶ Ensure that joints are not tensioned.

HINT

Fusing failure due to insufficient power supply
Defective fused joint

▶ Never connect any additional consumers during fusing.

INFO

Aborting the fusion procedure
The fusion procedure can be interrupted at any time by pressing the STOP key. The fusion process can be repeated.

- Let the fusion joint cool down.
- If necessary, remedy the source of the error.
- Always follow the fitting manufacturer's instructions.

INFO

The FRIAMAT preCHECK function is always switched off during multiple-phase fusion.

- Only utilise the device in a cooled down status in order to prevent unwanted fusion interruptions.

1. Enter the ID data when required (refer to Chapter 9.2.1. Enter ID data).
2. Read in the fusion barcode for the fitting.
3. When traceability is activated: Enter traceability data (refer to Chapter 9.2.4. Enter Traceability data).
4. Confirm the “pipe processed?” display with the START key or with the CONTINUE key. The fitting data will be displayed.
5. Inspect and confirm the fitting data.
6. When information data query is switch on: Enter information data (refer to Chapter 9.2.3. Enter information data).
7. Press the START key to start the fusion procedure.

The following indications appear in the display during the fusion procedure:

Display	Procedure
“Testing and inspecting”	▪ The ambient temperature will be measured and the resistance of the connected fitting must be tested. ▪ Testing the connected fitting and the FRIAMAT preCHECK function will be executed. ▪ If the test result is positive, then fusion starts automatically.
Fusion progress (details in seconds)	▪ Fusion will be executed.
“Fusion successful” with “Fusion target value” and "Fusion time actual" display	▪ Fusion procedure is ended.

9.2.3. Enter information data

Prerequisite

- Fusion barcode is read in.
- The “pipe processed?” query will be shown in the display.

1. Enter the information data (e.g. information text, comment, subcontractor) with the virtual keyboard.
2. Read in the barcode of the scraper device or enter it manually via the function key (entry/ emergency entry key) (refer to Chapter 9.1.3. Enter barcode digits manually (emergency entry)).

9.2.4. Enter Traceability data

	▪ Read in the fusion barcode for the fitting.
	▪ Read in traceability barcode from Component 1. ▪ Enter pipe number. ▪ Enter pipe length.
	▪ Read in traceability barcode from Component 2. ▪ Enter pipe number. ▪ Enter pipe length.

9.2.5. Conclude the fusion procedure

Prerequisite

- Fusion procedure is ended.
- The display shows "Fusion successful" with "Fusion time target" and "Fusion time actual".

1. Note the fusion parameters on the pipe/fitting in order to prevent double fusions.
2. Confirm the display indication with the OK key (alternatively START key, STOP key).
   The fusion procedure is concluded.
   The device is ready for the next fusion.

With generator operation

After completion of the fusion work:

1. Disconnect the mains supply cable plug of the generator.
2. Switch off the generator.

9.3. Disabling and enabling the device

The device is equipped with the following disabling possibilities to protect it against unauthorised use:

- Manual disabling
  By reading in the same operator pass again, the device can be manually disabled.
- Automatic disabling
  The device will be automatically disabled when an operator pass is read in and a date amendment occurs; this means that the device will be disabled on the next day.

When a device is disabled, then the following message appears in the display:

“!!! PLEASE ENTER VALID OPERATOR PASS !!!”.

9.3.1. Disable the device manually

1. Read in the current operator pass.
   The “DISABLE DEVICE?” query will be shown.
2. The following actions are possible:

   a. Confirm the query: Press confirmation function key.
   b. Abort procedure: Press abort function key.

9.3.2. Enable the device

1. Read in the operator pass.
   The valid operator pass will be shown in the display.
2. Confirm the details and information in the display with the confirm function key.

9.4. Coupling up the smartphone

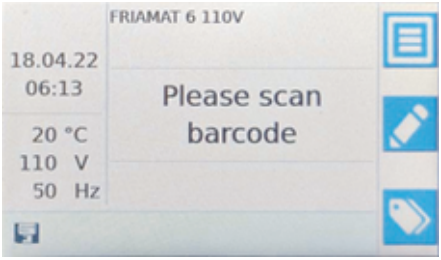

Image 4:

Prerequisites

- Bluetooth® function is activated (refer to Chapter 8.3.2. Switch on/switch off Bluetooth®).
- WorkFlow App is installed on the smartphone.
- The device is located in input mode (refer to figure).

Image 5:

1. Start the WorkFlow App.
2. Start pairing in the App.
3. When initially pairing with the smartphone:
   Enter the 6-digit PIN code in the smartphone within 30 seconds, which will be subsequently shown in the display of the device.

Successful pairing will be confirmed by the device:

- Display for the function status symbol, Bluetooth® in main menu.
- 2 short acoustic signals.

The coupled smartphone will be displayed in the coupled menu item. Bluetooth® device (refer to Chapter 8.2.7. Manage coupled Bluetooth® devices).

9.5. Install software update

INFO

When the update cannot be installed on the device, then immediately contact the authorised service station or the local service partner or Aliaxis Deutschland (refer to Chapter 15. Authorised service stations).

Prerequisites

- A commercially available computer with USB port and Internet access.

- USB stick which is formatted in FAT 32 with up to 256 GB.

1. Call up the customer portal via a browser: www.aliaxis.de/portal
2. Navigate to the "FRIAMAT Software Update” module in the customer portal.
3. Download the update.
   Every update comprises a data package with several files in which the following information is provided:
   Instructions for executing the update, information about system prerequisites, hardware prerequisites for downloading and transferring.
4. Always follow the instructions for executing the update.
5. Always ensure the system and hardware prerequisites.
6. Copy the data files from the computer to a USB stick.
7. Calling up the menu item in the display:
   Main menu basic setting, update
8. Connect a USB stick.
9. Follow the instructions for the update.
10. Follow the instructions on the display.
11. After a successful update, please switch the device OFF and ON again.

9.6. Let the sequential number be displayed

- Press ID data function key.
  The display shows the sequential number for the next fusion which is to be executed.

This number is assigned to the respective active sorting and picking number. The sequential number starts with 1 for the 1st fusion. It is automatically incremented by the device. The number cannot be amended.

If a sorting and picking number has been utilised, then all fusions will be assigned to the same sequential number, which also counts up.

9.7. View device information

Information about the device is displayed under information via the following menu items:

Menu item	Display
Device information	▪ TYPE ▪ DEVICE NUMBER ▪ SW HMI ▪ SW PU ▪ MAINTENANCE DATE
Device function	▪ Device functions ▪ Functions which the device is prepared for
Licenses	▪ License information

10. Error Messages

HINT

Unknown error message or warning in the display
Should the FRIAMAT fusion unit output an error message or warning that is not listed in the following table and that cannot be explained or remedied despite the plaintext description, contact the service hotline of the Aliaxis Deutschland GmbH, Tel. +49 621 486-1533!

Error messages, fault messages or warnings will be shown in the device display.

- In order to display the plain text description: Press the upper function key.

10.1. Error messages, fault messages on the display

No.	Text in display	Meaning / causes	Assistance
01	Wrong barcode	Incorrect / false barcode	▪ Utilise new barcode of same batch ▪ Correct manually entered barcode
02	Temperature out of range	Ambient temperature exceeds the permissible range	▪ Implement measures in order to ensure the ambient temperature e.g. create a tent over, or shield, the fusion area
03	Resistance outside of tolerance	Electrical resistance of the fitting exceeds the tolerance	▪ Inspect contacting for tight fit, soiling or dirt ▪ Clean the contacts ▪ Exchange the fitting
04	Fitting's wire turn short circuited	Short circuit in the wire winding of the fitting	▪ Exchange the fitting and return it to the fitting manufacturer for inspection
05	Fitting's wire turn interrupted	Current flow interrupted	▪ Inspect the fusion plug connection on the fitting ▪ Exchange the fitting and return it for examination
06	Voltage outside of tolerance	Impermissible deviation for fusion voltage	▪ Notify the authorised service station

No.	Text in display	Meaning / causes	Assistance
08	Operating voltage out of range	Operating voltage during fusion is outside the permissible range. Extension cable too long or cross-section too small	▪ Inspect voltage and connection conditions of the generator
09	Frequency out of range	Frequency during fusion is outside the permissible range	▪ Inspect generator voltage frequency
10	Fusion stop	Fusion aborted by pressing the STOP button	--
12	Device overheated	Protection function which prevents device overheating	▪ Let the device cool down. The fans assist in lowering the device temperature when the device is switched on
13	Operating voltage failure	Supply voltage interrupted (e.g. power failure during fusion) or too low	▪ Inspect connection conditions
14	Power too low	Power consumption of the fitting is very small or too low: The device cannot provide such small power	▪ Contact the Service Hotline
15	Power exceeded	Power consumption of the fitting exceeds the capacity of the device	▪ Contact the Service Hotline
17 – 19	System error	--	▪ Contact the Service Hotline
23	Generator error	Generator not suitable for the fusion operation	▪ Contact the Service Hotline
30	Fan is blocked or defective	--	▪ Contact the Service Hotline

No.	Text in display	Meaning / causes	Assistance
32	Temperature sensor fault	One of the temperature sensors in the device is defective	▪ Contact the Service Hotline
34	Temperature limit reached	One of the temperature sensors notifies a high heating up level in the device	▪ Let the device cool down. The fans assist in lowering the device temperature when the device is switched on
50	USB interface fault	Data transfer not possible	▪ Contact the Service Hotline
70	Communication fault	Disrupted data transfer within the device	▪ Contact the Service Hotline

10.2. Information and warning information on the display

Text in display	Note, information / assistance
Attention! Double fusion!	An additional fusion has been started on the same fitting. When a fitting should be double fused: ▪ Disconnect the contact plugs of the fusion unit from the fitting after the first fusion is completed. ▪ Allow the fitting to cool down (refer to the fitting manufacturer's machining and processing instructions).
Let the device cool down	Protection function which prevents device from overheating. ▪ Let the device cool down. ▪ Leave the device switched on so that the fan can assist with cooling.
Fusion stop	Fusion was aborted by pressing the STOP button.
End of fusion	Fusion has been completed.
Checks	Inspect the fitting data and FRIAMAT preCHECK function.
Voltage ... V; Frequency ... Hz	▪ Re-regulate the generator. ▪ Acknowledge with the STOP button.
Maintenance date exceeded	Have the device maintained (Aliaxis Deutschland GmbH or authorised service station).
FRIAMAT preCheck deactivated	The FRIAMAT preCheck function has been switched off when utilising the 2D barcode according to ISO 12176-5 with multiple-phase fusions.

11. Transport and storage

The FRIAMAT 6 110V fusion unit is delivered in a sturdy transport crate.

- Always store and transport the device in this transport crate in order to protect it against moisture.
- Permissible temperature range: -20°C to +70°C / -4°F to +158°F.

12. Care and maintenance

12.1. Device maintenance

- The fusion unit must be maintained at least once a year by Aliaxis Deutschland GmbH or one of the authorised service stations.

According to the international valid standard ISO 12176-2 Plastics pipes and fittings - Equipment for fusion jointing polyethylene systems - Part 2: Electrofusion, in this case Clause 7.1, an electrofusion device must only maintain the required operating accuracy at maximum and minimum ambient temperature for at least 12 months without the requirement for adjustment of the control unit.

In order to also ensure, beyond these 12 months, that the operating accuracy is maintained during the entire warranty period (refer to Chapter 12.3. Warranty) and it is also consistently given beyond that, therefore the FRIAMAT 6 110V fusion unit must always be serviced or maintained at least once a year.

It must be inspected within the framework of this maintenance work for whether the FRIAMAT 6 110V fusion unit still fulfils the required operating accuracy or it must be, when necessary, re-calibrated.

12.2. Maintenance, testing and inspection intervals

What?	When?	Who?
Cleaning the barcode scanner	Daily	Operator
Controlling for damage	Daily	Operator
Inspect and test function	Before every use	Operator
Inspect contacts, if necessary clean or exchange them	Before every use	Operator
Device maintenance	Annually	▪ Aliaxis Deutschland GmbH ▪ Authorised service stations

12.3. Warranty

The warranty period for the FRIAMAT 6 110V fusion unit is 24 months.

13. Disposal

The European Directive 2012/19/EU (WEEE - Waste Electrical Devices and Electronic Equipment) regulates the disposal of used electrical and electronic products. The WEEE Directive was implemented in 2005 with the ElektroG for the German disposal market. Accordingly, used electrical devices and electronic equipment must always be disposed of correctly and/or recycled properly.

- Always dispose of the device in accordance with European Directive 2012/19/EU (WEEE - Waste Electrical Devices and Electronic Equipment).
- Always observe additional country-specific provisions, regulations, standards and directives.

Possible locations, bodies for proper disposal:

- Aliaxis Deutschland GmbH
- Authorised service stations

14. Technical Data

Technical Data		FRIAMAT 6 110V
Input voltage range		Nominal 95 V – 138 V
Frequency range		44 Hz...66 Hz
Current consumption		AC 30 A maximum
Power		3.5 kW
Generator nominal power for fittings	d 20 – d 160 mm	~ AC 2.4 kW
	d 180 – d 900 mm	~ AC 5.0 kW
Device fuse		30 A sluggish
Housing		Protection category IP 54 / DIN EN 60529 Protection Class I / DIN EN 60335-1
Connection cable		5 m with plug

Technical Data	FRIAMAT 6 110V
Fusion cable	4 m with fitting connection plug Ø 4 mm
Code type	▪ Barcode 128 or 2D Data Matrix (Aztec Format) according to ASTM F-2897-21 ▪ Barcode 2/5 overlapped (interleaved) according to ANSI HM 10.8 M-1983 and ISO CD 13950 ▪ Barcode 128 a/b/c according to ISO 12176-4 2D code (QR; Aztec; Data Matrix) according to ISO 12176-5
Working temperature range	-20°C ... +50°C / -4°F ... +122°F *
Fusion current monitoring	Short circuit maximum 110A Short circuit 1.70 x I nominal Interruption 0.25 x I nominal
Fusion voltage	Maximum AC 48 V
Interface	USB Bluetooth Low Energy V4.2 (CE, FCC, IC certified)
Protocol format	CSV, JSON
Protocol memory	20,000 protocols
Display languages	In alphabetical order; English, French, Portuguese, Spanish
Dimensions (W x D x H)	260 x 500 x 340 mm
Weight	Approximately 19 kg
Scope of delivery	Operating manual Transport crate
Approval / Quality	ISO 9001

* Always observe the information relating to the working temperature range when fusion fittings from other manufacturers.

15. Authorised service stations

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Current overview for service stations worlwide: https://www.aliaxis.de/en/services/tools-service

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