

Operating Instructions

FRIAMAT® Fusion Units



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1. Safety

1.1 Dangers

The fusion units of the FRIAMAT® Family are constructed using state of the art technology and in accordance with recognised safety rules, and are fitted with the appropriate protective equipment. In addition to this the fusion units of the FRIAMAT® Family are entitled to carry the TÜV GS Test Symbol as a result of tests in line with the German Equipment Safety Law.

The fusion units of the FRIAMAT® Family have been checked for function and for safety before being delivered. Incorrect operation or misuse, however, can mean potential danger to

- the health of the operator,
- your FRIAMAT® model or other property of the user,
- the efficient operation of your FRIAMAT® model

All personnel who are in any way involved with the commissioning, operation, maintenance or repair of the FRIAMAT® must

- be suitably qualified and
- comply precisely with these operating instructions.

This affects YOUR safety !

1.2 Safety hints and tips

This operating instruction employs the following SYMBOLS with WARNING NOTES:



DANGER ! Describes an impending threat of danger !

Non-compliance with this instruction can result in severe damage to health and property.



WARNING ! Describes a dangerous situation !

Non-compliance with this instruction can cause slight injuries or damage to property



IMPORTANT ! Designates user tips and other useful information

1.3 Use in accordance with the requirements

The fusion units of the FRIAMAT® Family are exclusively for use in the fusion of

- FRIALEN Safety Fittings with HD-PE pressure pipes (SDR 17-7) and
- FRIAFIT Sewage Fittings with HD-PE sewage pipes (SDR 17 - 32)

Your FRIAMAT® model can also be used with fittings from other manufacturers as long as they have been provided by the manufacturer with a bar code 2/5 interleaved to ANSI HM 10.8 M - 1983 or ISO CD 13950/08.94.

Using in according with the requirements also includes observing

- all the directions in this Operating Instruction and also
- the guidelines from the DVGW Code of Practice, from the DVS, the UVV and the appropriate national and local regulations.



IMPORTANT ! Any other usage does not comply with the requirements !

FRIATEC AG accepts no liability for use which does not comply with the requirements:

- Modifications or alterations are not permitted for safety reasons
- The fusion units of the FRIAMAT® Family must only be opened by an electrical specialist
- Fusion with fusion units of the FRIAMAT® Family whose lead seals are broken will render all claims for warranty and liability null and void.

Other examples of uses which contravene the requirements:

- use as a battery charger
- use as a power supply for heaters of any type

1.4 Sources of Danger

- Damaged connection leads and extension cables must be replaced immediately
- Do not either remove safety devices or put them out of action
- Eliminate known faults immediately
- Do not leave your FRIAMAT® model unattended
- Keep away from flammable liquids / gases
- Do not operate in an Ex-environment

1.5 Permitted users

Only trained personnel may work with your FRIAMAT® model. The operator is responsible for third parties in the working area. The user must:

- make the operating instruction available to the operator and
- satisfy himself that the latter has read and understood them

1.6 Dangers from electrical power

- Do not use any damaged connecting cables
- Check the connection leads for damage
- Pull out the power supply plug before all care and maintenance work !
- Only have servicing, maintenance and repairs carried out by authorised service centres
- Only connect the fusion units of the FRIAMAT® Family to the supply voltage stated on the rating plate



WARNING ! Distribution points on the construction site: Comply with the regulations on circuit breakers

Outdoors (on construction sites) sockets must be fitted with earth leakage circuit breakers. If using generators the DVGW Work Sheet GW 308 and VDE 0100 Part 728 must be complied with. The generator output rating required is dependent on the power requirements for the largest fitting being used, on connection conditions, ambient conditions and the actual generator type (its control characteristics). Since generators from different model ranges exhibit very different control characteristics the suitability of a generator cannot always be guaranteed by the specified rated output alone.

In the event of doubt (e.g. when purchasing new) ask the authorised service centre or request the “**Positive Generator List**” from FRIATEC AG.

Only use generators whose operating frequency lies within the range from 45 - 66 Hz.

First start the generator and let it run for half a minute. Set the off-load voltage if necessary and limit it to the voltage specified in the technical data. !
Generator (mains) fuse max. 16 A (slow acting)



IMPORTANT ! Before starting the fusion process always check the input voltage for your FRIAMAT® model from the Technical Data (See Section 2.1 and 4.7)

If using an extension cable make sure the cross section is adequate:

- 2.5 mm² up to 50 m and
- 4 mm² up to 100 m length.

Always unroll the cable fully before use. ! Do not connect any other equipment to the same generator whilst fusion is taking place ! At the end of the fusion operation first disconnect the power cable to the generator and then shut off the generator.



DANGER ! Risk to life ! Never open your FRIAMAT® model whilst it is connected to the power supply !

The fusion units of the FRIAMAT® Family are must only be opened by specialist personnel from a recognised service centre !

1.7 Emissions

The (equivalent) continuous noise level from all fusion units of the FRIAMAT® Family is below 70 dB(A). When working in a quiet environment the effect of the signal tone on the “Loud” setting is very loud. For this reason the signal tone is adjustable (loud / quiet)

1.8 Safety precautions on site



IMPORTANT ! All the fusion units of the FRIAMAT® Family are splash proofed. They must not be, however, dipped in water.

1.9 Signal equipment

The fusion units of the FRIAMAT® Family confirm certain operating processes with an acoustic signal tone (1, 2, 5 tones or a continuous tone). These signals have the following meanings:

Signal tone x 1 means:	Confirmation of reading in a bar code
Signal tone x 2 means:	Fusion process ended.
Signal tone x 3 means:	Supply voltage too low / too high.
Signal tone x 5 means:	Warning - Fault. Look at the display !

1.10 Emergencies

In an emergency switch the master switch to “OFF” immediately and disconnect your FRIAMAT® model from the power supply ! The fusion units of the FRIAMAT® Family can be stopped by:

- operating the master switch
- pulling out the power supply plug

2. Technical data / Transport / Commissioning

2.1 Technical data

	FRIAMAT®	FRIAMAT®E	FRIAMAT®L	FRIAMAT®LE
Input voltage range	AC 200 V.-. 260 V	AC 200 V.-. 260 V	AC 200 V.-. 260 V	AC 200 V.-. 260 V
Frequency range	44 Hz... 66 Hz	44 Hz... 66 Hz	44 Hz... 66 Hz	44 Hz... 66 Hz
Current consumption	AC 16 A max.	AC 16 A max.	AC 16 A max.	AC 16 A max.
Power	3.5 kW	3.5 kW	3.0 kW	3.0 kW
Generator rated output 1~ d20 - d160 d180 - d630 (mechanical governor) d180 - d630 (electronic governor)	AC 2.4 kW AC 4.0 kW AC 4.0 kW	AC 2.4 kW AC 4.0 kW AC 5.0 kW	AC 2.4 kW *	AC 2.4 kW *
Equipment fuse	16 A slow acting	16 A slow acting	16 A slow acting	16 A slow acting
Casing	Enclosure class IP 54 DIN 40 050 Protection class I DIN 57 700	Enclosure class IP 54 DIN 40 050 Protection class I DIN 57 700	Enclosure class IP 54 DIN 40 050 Protection class I DIN 57 700	Enclosure class IP 54 DIN 40 050 Protection class I DIN 57 700
Connection cable	5 m with contoured plug	5 m with contoured plug	5 m with contoured plug	5 m with contoured plug
Fusion cable	4 m with Ø 4 mm fittings plug	4 m with Ø 4 mm fittings plug	4 m with Ø 4 mm fittings plug	4 m with Ø 4 mm fittings plug
Bar code	Code 2/5 interleaved to ANSI HM 10.8M - 1983, ISO CD 13950/08.94	Code 2/5 interleaved to ANSI HM 10.8M - 1983, ISO CD 13950/08.94	Code 2/5 interleaved to ANSI HM 10.8M - 1983, ISO CD 13950/08.94	Code 2/5 interleaved to ANSI HM 10.8M - 1983, ISO CD 13950/08.94
Working temperature range	-20 °C ... +50 °C**	-20 °C ... +50 °C**	-20 °C ... +50 °C**	-20 °C ... +50 °C**
Fusion current monitoring	Short circuit 110 A Open circuit $0.25 \times I_N$	Short circuit 110 A Open circuit $0.25 \times I_N$	Short circuit 110 A Open circuit $0.25 \times I_N$	Short circuit 110 A Open circuit $0.25 \times I_N$
Printer interface	Parallel (D-Sub 25)	-	Parallel (D-Sub 25)	-
Fusion voltage	max. AC 48 V	max. AC 48 V	max. AC 48 V	max. AC 48 V
Dimensions W x D x H	370x280x480 mm	370x280x480 mm	350x260x450 mm	350x260x450 mm
Weight	19 kg	19 kg	14 kg	14 kg
Weight with transport box	23 kg	23 kg	18 kg	18 kg

*: The FRIAMAT®L / LE is only suitable for domestic connections and distribution pipes up to d110, plus saddle components of all sizes

** : When fusing fittings from other manufacturers always take heed of the details given on the working temperature range.

2.2 Transport / storage / despatch

Your FRIAMAT® model is delivered in a transport box. There are no particular requirements for unpacking, or for (temporary) storage in the transport box. Storage temperature - 20 °C to + 70 °C



**WARNING ! Do not damage the front face of your FRIAMAT® model !
Always despatch in the transport box.**

2.3 Setting up / connection

If protected from rain and wet your FRIAMAT® model can be set up and operated out of doors.

- Set up the FRIAMAT® on level ground (as near horizontal as possible).
- Ensure that generator is fused with a 16 A minimum (slow acting) fuse.
- Plug the mains plug into the mains socket or connect to the generator.
- If necessary use an extension cable, ensuring that the cross section is adequate (see section 2.1 “Technical Data”).
- Always comply with the operating instructions for the generator.



WARNING ! Always unroll the cable before use

2.4 Putting into service



WARNING ! Charring ! Dirty contacts can char the plug.

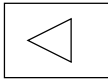
The contact surfaces of the fitting and the fusion plug must always be clean.

- Remove any existing deposits thoroughly
- Protect the plug from contamination, replacing it if necessary
- Check the fusion plugs and contact sockets on the fitting for dirt, and only then make the connection

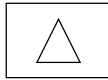
3. Basic Settings

3.1 Explanation of the function buttons

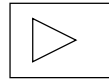
The fusion units of the FRIAMAT® Family have 6 function buttons. Please take note of the diagram below and the basic explanation of the buttons,



START



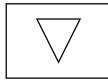
INFO



STOP



SET



MENU



RES

START: The START button is green in colour. It is used to start a fusion process, to confirm messages and to call up / select menu functions. The START button also moves the cursor in the display to the left when entering characters (e.g. entering notes, date).

STOP: The STOP button is red in colour. It is used to cancel a fusion process, in some menus to select menu functions and generally to end menu functions. The STOP button also moves the cursor in the display to the right when entering characters (e.g. entering notes, date).

INFO: The INFO button is yellow or grey in colour depending on the model. It is used to call up current information (voltage / frequency, date / time, ambient temperature, fusion operator, language) or to scroll through the individual menus. When entering characters (e.g. entering notes, date) the setting of the required character is made with the INFO button.

SET: The SET button is grey in colour. It is used to save settings.

MENU: The MENU button is yellow or grey in colour depending on the model. It is used to call up the main menu and to scroll through the individual menus. When entering characters (e.g. entering notes, date) the setting of the required character is made with the MENU button.

RES: The RES button is grey in colour. It is used to cancel an input process.

3.2 Date and time

There are two ways of setting date and time.

1. Through the main menu:

Go into the main menu by pressing the MENU button. Now press the MENU button as many times as it takes for the “Set Date / Time” setting menu to appear in the display. To set the date / time press the START button. “FRIAMAT” and the designation of your model will appear in the top line of the display, whilst the date and time will appear in the bottom line. The first character will flash. With the INFO / MENU button you can move one day forward / back. With the START / STOP button you can move left or right. With the SET button you can confirm and save the new Date / Time, and with the RES button you can break off without saving. After pressing the SET or RES button, press the STOP button at the end to cancel the menu selection.

2. Reading in the TIMER bar code

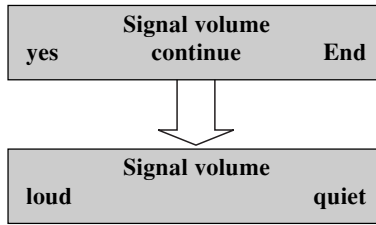
“FRIAMAT” and the designation of your model will appear in the top line of the display, whilst the date and time will appear in the bottom line. The first character (Day) will flash. With the INFO / MENU button you can move one day forward / back. With the START / STOP button you can move left or right. With the SET button you can confirm and save the new Date / Time, and with the RES button you can break off without saving.

FRIAMAT		
01.Jul	1999	14:34

3.3 Setting the signal volume

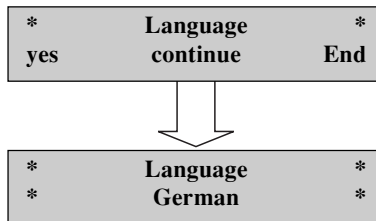
Go into the main menu by pressing the MENU button. Now press the MENU button as many times as it takes for the “Signal Volume” setting menu to appear in the display. To set the signal volume press the START button.

“Signal Volume” will appear in the top line of the display, whilst “loud” will appear on the left in the bottom line and “quiet” on the right. By pressing the START / STOP button you can adjust the signal volume to loud / quiet. Press the STOP button at the end to cancel the menu selection.



3.4 Setting the language

Go into the main menu by pressing the MENU button. Now press the MENU button as many times as it takes for the “* Language *” setting menu to appear in the display (Meaning of the star : See IMPORTANT note in this section). To set the language press the START button. “* Language *” will appear in the top line of the display, whilst the actual language set will appear in the bottom line. Two stars will flash on the right and left to show that you are in the language setting menu. To change the language select the language you require with the INFO / MENU button. Press the SET button to end and save the settings. You can press the RES button to end without saving. Press the STOP button at the end to end the menu selection.



IMPORTANT ! The setting of the language only refers to the one shown in the display. The language of the documentation (Report) remains English



IMPORTANT ! In the language setting menu two stars appear, left and right, in the upper line. These are used to allow the language setting menu to be recognised when for example the language has accidentally been set wrongly.

4. Operation

4.1 Construction / components

The electronics in your FRIAMAT® model are housed in a splash-proof casing. The carrying frame is also used to hold the cables. The fusion units of the FRIAMAT® Family are designed for a maximum fusion voltage of 48 V. The supply and fusion voltage are isolated from each other by a safety transformer.

4.2 Functional principles

Only electrofusion fittings with a bar code can be fused with the fusion units of the FRIAMAT® Family : Each fitting is assigned a sticker with a bar code. This contains the information to ensure that fusion is carried out properly. The computerised command system of your FRIAMAT® model:

- is completely automatic in regulating and checking the metering of the electrical power
- determines the fusion time depending on the ambient temperature. The temperature probe in the fusion cable continuously determines the ambient temperature.

4.3 Fusion operating procedure

So that the FRIALEN Safety Fittings and the FRIAFIT Sewage Fittings will be properly processed it is essential to adhere to the FRIALEN operating instructions.

The same applies to fittings from other manufacturers.

4.4 Preparation



IMPORTANT ! Unroll the cable completely !

This applies to mains, fusion and, if applicable, extension leads. The contact surfaces of the fitting and of the fusion plugs must be clean; dirty contacts can cause overheating and charring of the plug. If necessary remove any existing deposits cleanly

Always protect the plug from contamination. If there is a deposit which cannot be completely removed, the fusion plugs must be replaced.

- Prepare the fitting and pipes for fusion in accordance with the assembly instructions
- Ensure that the contact pins on the fitting are accessible for connection of the fusion plugs
- Connect up the power supply (mains or generator)
- If using a generator start it up first and allow to warm up for 30 seconds
- Switch on the master switch (1)
- Connect the fusion plugs to the contact pins on the fitting

4.5 Reading in the bar code



IMPORTANT ! It is not acceptable to read in the bar code label from another sort of fitting instead. After ending the read-in process the reader wand must be replaced in the reader wand pouch immediately to avoid damage and contamination to the tip of the wand.

If there is a bar code label stuck onto the fitting this should always be used. If the bar code label on the fitting being fused is illegible due to damage, **an identical fitting from the same** manufacturer with a legible bar code label should be used.

Hold the reader wand slightly slanting and slightly inclined (like a pencil) and place it on the fitting in front of the bar code. Now move the reader wand quickly across the whole label and a little beyond. The reading can be done from left to right or from right to left. When this has been done correctly the machine will confirm it with a signal tone. If the reading in is not successful first time try again, if necessary at a different angle or speed.

4.6 Starting the fusion process



IMPORTANT ! If there is a malfunction in the fusion process hot molten PE can be expelled in rare cases.

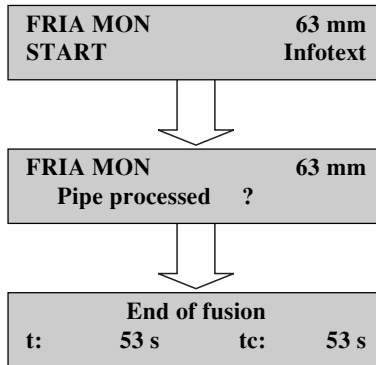
So:

Keep at a safe distance of at least 1 m from the fusion point during the fusion process ! Do not connect any other equipment during the fusion process !

The fusion process can be broken off at any time by pressing the STOP button. When the fused area has cooled down (and the source of the fault eliminated if necessary) the fusion process can be repeated (depending on the fitting manufacturer; please comply with the instructions for use from the fitting manufacturer in question).

Operating steps: (see also the visual representation on the next page):

1. Press the START button to initiate the fusion process
2. If applicable confirm the display “Pipe processed ?” with the START button. Next there will be an automatic display of the ambient temperature and a resistance check on the connected fitting. The fusion process will start. In the display you can follow the duration of the fusion process (the complete fusion time will be displayed and counted down to zero in seconds).
3. Display “End of fusion” means: fusion process finished, ready for the next fusion. The displays “t:” and “tc:” mean required and actual fusion time and these must agree.
4. Make a note of the fusion parameters onto the pipe / fitting. This will also avoid fusing twice
5. To initiate a new fusion process press the START button.



4.7 Display voltage and frequency

Before or after the fusion: To display the voltage and frequency press the INFO button. The STOP button will take you back to the basic setting.

During fusion: Pressing the INFO button will display the voltage and frequency, after 3 seconds the unit will automatically go back to the basic setting.

Voltage:	221.3 V
Frequency:	50.01 Hz



WARNING !

Your FRIAMAT® model is designed for an input voltage range of 200 - 260 volts. If you are working in the range from 150 - 200 volts or 260 - 320 volts the actual voltage and frequency will automatically appear on the display. You can ignore this warning note by pressing the STOP button and carry on working but there is a risk that you will damage the electronics of your FRIAMAT® model. If the input voltage range is under 150 volts or above 320 volts the actual voltage and frequency will likewise appear on the display. In this case, however, the warning indication will remain until you have regulated the input voltage back into the recommended range and have acknowledged with the STOP button.

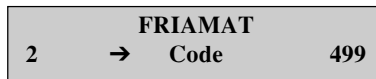
5. Auxiliary function (only for documentation units)

5.1 Documentation

Your FRIAMAT® model is supplied with the documentation deactivated (switched off). The “Documentation” function is used to save the technical fusion parameters. These can in each case be assigned to a commission number and/or to an operator pass.

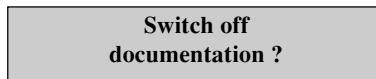
5.1.1 Switching on

This function is activated or deactivated by reading in a DOCUMENTATION bar code (see plastic card in the accessories pouch). When the function is activated the display will show the sequential number on the left and the number of fusions which can still be stored on the right (and if applicable, above these the appropriate commission number.)



5.1.2 Switching off

The DOCUMENTATION function can be deactivated by reading in the DOCUMENTATION bar code again. The safety question of whether this is required can be acknowledged by pressing the START button or rejected by pressing the STOP button (breaking off with the STOP button will bring about a return to the previous state).



5.2 Operator's Pass



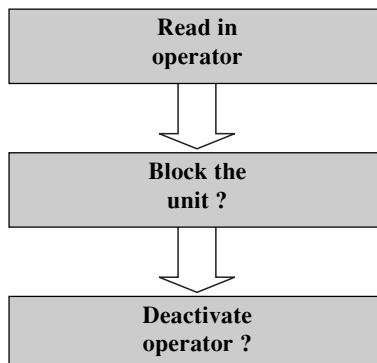
IMPORTANT ! The operator pass can only be read in with the documentation switched on

Your FRIAMAT® model can be set for use with an operator pass by reading in the bar code from an operator pass. The operator pass can be ordered from FRIATEC. When a user code has been read in for the first time all fusions which are then carried out will be saved under the code for this operator pass. If another operator pass is read in your FRIAMAT® model will be switched over to suit.

Your FRIAMAT® model can be cleared for use without an operator pass by reading in the USER OFF bar code (see plastic card in the accessories pouch). The question “Deactivate operator?” then appears. This can be confirmed by pressing the START button or the process can be broken off by pressing the STOP button.



IMPORTANT ! By means of the operator pass your FRIAMAT® model can be blocked to protect it from unauthorised use. . After reading in the current operator pass again the query will appear “Block the unit?”. This can be confirmed by pressing the START button or the process can be broken off by pressing the STOP button. Your FRIAMAT® model will be automatically blocked when the code for an operator pass is on file and time-wise a change of date takes place i.e. your FRIAMAT® model will be blocked on the next day.



In both cases (manual or automatic blocking) the note “Read in Operator” will appear in the display. Your FRIAMAT® model can be cleared for use by reading in an operator pass

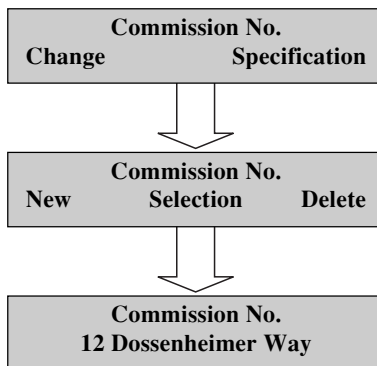
5.3 Commission Numbers

For simple administration of up to 20 different commission numbers your FRIAMAT® model has a commission number specification menu.

5.3.1 Specifying and saving a commission number

Go into the main menu by pressing the MENU button. Now press the MENU button as many times as it takes for the “commission no.” setting menu to appear in the display. To get into the “Change/Specify commission nos.” setting menu press the START button. By pressing the STOP button you will go into the specification setting menu in which you can enter and save up to 20 commission nos. If you press the START button the current commission no. will appear. The first character of the commission no. will flash. This can be increased by pressing the INFO button or decreased by pressing the MENU button. With the START / STOP button you can move left or right within the commission no. With the SET button the commission no. set will be saved and taken into the Specification Menu, and with the RES button you can break off the process without saving.

Another method for getting into the “Change/Specify Commission Nos.” setting menu is to read in the COMMISSION CODE (see plastic card in the accessories pouch).



5.3.2 Selecting saved commission numbers

As described in Section 5.3.1, go into the “Change/Specify commission nos.” setting menu.

By pressing the STOP button you will go into the commission no. specification menu. If you press the INFO / MENU button the stored commission nos. will be displayed.

The displayed commission no. is selected by pressing the START or SET button. The process can be broken off using the STOP or RES button. Pressing the STOP button again will take you back to the basic setting.

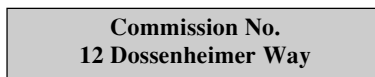


5.3.3 Deleting saved commission numbers

As described in Section 5.3.1, go into the “Change/Specify commission nos.” setting menu. By pressing the STOP button you will go into the commission no. specification menu. If you press the STOP button you will go into the Deletion menu.

The displayed Commission No. will be deleted from the commission no. specification menu by pressing the START button. Pressing the STOP button will display the next commission no. The fusions which have been saved under this commission no. will be retained together with the commission no., but the commission no. will no longer be available in the commission no. specification menu.

To leave the Deletion menu press the STOP button as many times as it takes to get back to the basic setting.



5.3.4 Altering currently set (activated) commission numbers

As described in Section 5.3.1, go into the “Change/Specify commission nos.” setting menu.

After you press the START button the currently set commission no. will appear. The first character will flash. This can be increased by pressing the INFO button or decreased by pressing the MENU button. With the START / STOP button you can move left or right within the commission no. With the SET button the commission no. set will be saved, and with the RES button you can break off the process without saving. By pressing the STOP button again you can go back to the basic setting.



IMPORTANT ! The altered commission no. will not be available in the commission no specification menu.

<p>Commission No. 12 Dossenheimer Way</p>

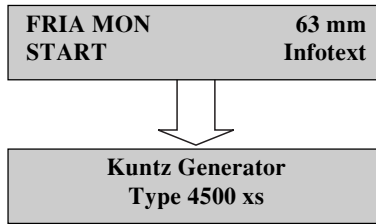
5.3.5 Deactivating Commission Nos.

The “Commission No” option will be deactivated by reading in the COMMISSION OFF CODE (see plastic card in the accessories pouch).

FRIAMAT			
2	→	Code	498

5.4 Info-text

With the documentation switched on there is a facility to assign an individual additional text (2x16 characters) to each individual fusion process in the report. After reading in the fitting bar code press the INFO / MENU button. The last text entered will appear. The first character will flash. This can be increased by pressing the INFO button or decreased by pressing the MENU button. With the START / STOP button you can move left or right within the Info text. With the SET button the Info-text set will be saved and with the RES button you can break off the entry process.



IMPORTANT ! The additional text has to be newly entered for each fusion as otherwise no text will appear in the report. If the **START** button is pressed directly after reading in the fitting bar code no additional text will be appended to the fusion.

5.5 Fusion Report

5.5.1 Print / delete the whole content of the memory



IMPORTANT ! Only printers with a parallel interface can be used. No printers must be connected during the fusion process.

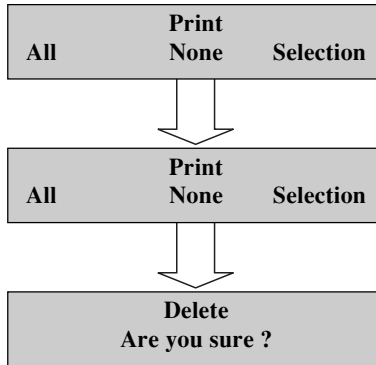
The fusion report stored in the memory can be printed out. For this the printer or the Memory Box (optional) has to be connected to the fusion unit. The printer must be set to "ON-LINE".

Go into the "Print" setting menu via the Main Menu. Alternatively you can get into this menu by reading in the PRINT code (see plastic card in the accessories pouch). After this there will be a query on whether individual, all or no fusions should be printed out. A complete print-out arranged in commission number order is started by pressing the START button. A new page is started for each commission number.

When the complete print-out has finished there will be a query as to whether the report memory should be deleted. If you want to delete all data press the START button: the query "Are you sure?" will appear.

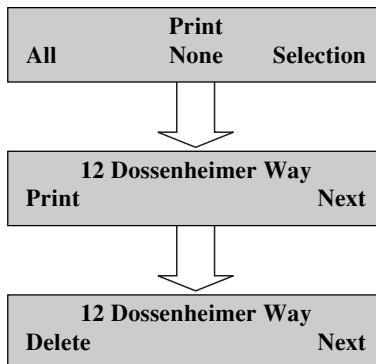


IMPORTANT ! If the **START** button is pressed the data will be irretrievably deleted ! If the **STOP** button is pressed the data will not be deleted !



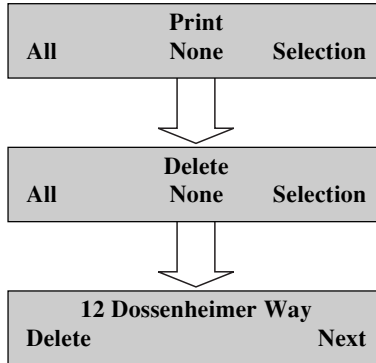
5.5.2 Printing out and deleting individual commission numbers

Go into the “Print” setting menu as described in Section 5.5.1. Pressing the STOP button will display the first commission number. The commission number displayed can be printed by pressing the START button and then the query will appear on whether the data is to be deleted. Pressing the START button will delete the data, pressing the STOP button will bypass the delete function and the next commission no. will be displayed. This procedure can be broken off with the RES button.



5.5.3 Deleting data without printing out the reports.

Go into the “Print” setting menu as described in Section 5.5.1. By pressing the INFO button bypass the Print Menu and go directly into the Delete Menu. The deletion of all or individual data is carried out as already described in Section 5.5.1. and 5.5.2.



6. Maintenance / taking out of service

We recommend that you have your FRIAMAT® model serviced once a year (see list of all authorised Service Stations in section 8.2.). Include all connection adapters for checking at the maintenance intervals.

6.1 Warranty

The warranty period for the fusion units of the FRIAMAT® Family is 24 months provided that your FRIAMAT® model undergoes a paid service within the first 14 months. Otherwise the warranty period will be 12 months.

6.2 Care and Maintenance instructions

WHAT ?	WHEN ?	WHO ?
Clean the reader wand and check for damage	Daily	Operator
Check the function	Weekly	Operator
Clean the contacts	Weekly	Operator
Factory Maintenance	Annually	Authorised Service Centres (see section 8.2)

6.3 Checking the reader wand

If the reading is not confirmed after reading in a bar code several times the reader wand can be checked by reading in the TEST code (see plastic card in the accessories pouch). "TEST CODE" will appear in the display for 4 seconds.

6.4 Taking out of service



IMPORTANT ! The fusion units of the FRIAMAT® Family contain various components which make it necessary to ensure that it is disposed of properly. Your FRIAMAT® model can be disposed of at the factory or at one of the Authorised Service Centres

7. Operating faults

7.1 Faults when reading in the bar code

If the reading in is not confirmed by an acoustic signal the reader wand should be checked for dirt or physical damage. If the reader wand is defective there is still the facility to carry out the fusion using the Emergency Input Mode (see below).

7.2 Emergency Input

Go into the "Emergency Input" setting menu via the Main Menu. "Emergency Input" will appear in the top line of the display, whilst in the bottom line you will see "Yes" on the left, "Continue" in the centre and "End" on the right. When the START button is pressed "Code" and 24 characters will appear, with the first character flashing. This can be increased by pressing the INFO button or decreased by pressing the MENU button. With the START / STOP button you can move left or right within the Emergency Input menu. The figures to be entered should be read off the bar code of the fitting being fused. After entering the numbers for the bar code you have to confirm the entry by pressing the SET button - by pressing the RES button you can break off the process. The fusion process is started by pressing the START button.

Code:	36	18	09	01	06		
	38	35	08	99	05	47	00

7.3 Overheating

If used continuously for long periods your FRIAMAT® model could overheat. To avoid damage to the unit a temperature monitor has been fitted, and on the basis of this your FRIAMAT® model will calculate, before the fusion process, whether the temperature rise anticipated due to the fusion process is acceptable. If the calculated temperature does not lie within the permitted range the message “Allow the unit to cool down” will appear on the display.

Since the power consumption of various electrofusion fittings will differ there may be a possibility of fusing a different fitting.

7.4 Fusion interruption

If the fusion is broken off because, e.g. the power supply has been interrupted during a fusion run, the fusion can be repeated after removing the cause of the problem and after allowing the fitting to cool down completely (this is dependent on the fitting manufacturer; always comply with the instructions for use from the fitting manufacturer in question).

7.5 Fault messages / Warning messages

If irregularities occur during the fusion process then your FRIAMAT® model will show suitable fault messages in the display

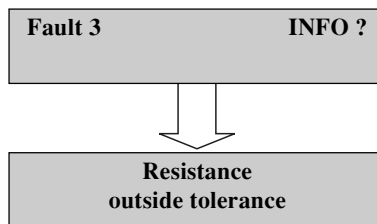
Fault messages

No.	Text in display	Meaning / causes	Remedy
1	-	-	-
2	Temperature outside range	Ambient temperature outside the permitted range	If necessary set up a tent
3	Resistance outside tolerance	Electrical resistance of the fitting is outside the tolerance	Check contacts for firm seating / dirt Clean contacts if necessary If necessary replace fitting
4	Fitting winding short circuit	Short circuit in the wire winding of the fitting	Replace fitting, send in for examination
5	Fitting winding open circuit	Current flow interrupted	Check the connection of the fusion plug on the fitting. If OK replace the fitting and send in for examination
6	Voltage outside tolerance	Unacceptable deviation of the fusion voltage	Inform Authorised Service Centre
7 a..z	Fault in the operating system	Malfunction in the FRIAMAT® hardware or software	Make a note of the fault classification (a...z) and inform Authorised Service Centre
8	Mains voltage outside range	Mains voltage outside the permitted range during fusion	Extension cable too long or its cross section too small. Check the voltage and connection conditions of the generator
9	Frequency outside range	Frequency outside the permitted range during fusion	Check the frequency of the generator voltage
10	Fusion interrupted	Fusion broken off by pressing the STOP button	-

More Fault messages

No.	Text in display	Meaning / causes	Remedy
11	-	-	-
12	-	-	-
13	Mains failure	Supply voltage interrupted or too low	Check connection conditions
14	-	-	-
15	Power rating exceeded	Power consumption of the fitting exceeds the rating of the FRIAMAT®	-

An example of what is shown on the display:



By pressing the INFO button you will get information on the fault in plain language

Warning messages :

Text in display	Instruction / Remedy
Faulty or damaged bar code	Use a new bar code from an identical fitting or correct the manually entered code
Memory full	Print out the log
Memory empty	If the memory is empty no printout is possible
Printer not ready	Check whether the output device (printer, Memory Box, PC with FRIATOOL II) is connected correctly

More warning messages :

Text in display	Instruction / Remedy
Let the unit cool down	Protective function which prevents overheating of the equipment. Switch off the unit and allow it to cool down until the warning message is no longer displayed after switching on.
Service date exceeded	Inform Authorised Service Centre. Have the equipment serviced.
Voltage V; Frequency Hz	Readjust generator then acknowledge with the STOP button (See Section 4.7)
No text, just a continuous acoustic tone	Supply voltage too low
N.B. Double fusion	If a fitting is to be fused twice the contact plugs of the fusion unit must be pulled off the fitting after the first fusion and the fitting allowed to cool down (see the instructions for use from the fitting manufacturer)

8. Appendix

8.1 Recommended accessories (options)

- Memory Box to transfer fusion data
- FRIATOOL II for electronic processing of the fusion data
- Operator pass
- Scanner
- Remote start pass
- Fusion cable extension
- Infrared remote control

8.2 Authorised Service Centres world-wide

FRIATEC AG

Niederlassung Mannheim
Steinzeugstraße
D-68229 Mannheim
Tel.: 0621 / 486-1533
Fax: 0621 / 486-2030

FRIATEC AG
Niederlassung Wittenberg
Waldstraße
D-06886 Wittenberg
Tel.: 0 34 91 / 61 53 22
Fax: 0 34 91 / 61 53 12

Axel Jülicher GmbH
Hahnenstraße 19
D-28309 Bremen
Tel.: 04 21 / 87 8-0
Fax: 04 21 / 87 8 11

Hansen & Reinders
GmbH & Co. KG
Manderscheidtstraße 48
D-45141 Essen
Tel.: 02 01 / 89 10 90
Fax: 02 01 / 21 62 10

Friedrich Rütz
Reinbeker Redder 102
D-21031 Hamburg
Tel.: 0 40 / 7 39 21 60
Fax: 0 40 / 7 30 40 41

FRIATEC GmbH
Birostraße 13
A-1230 Wien
Tel.: 00 43 / 61 057
Fax: 00 43 / 61 057 5

Bohenschäfer
Westberger Weg 86a
D-59065 Hamm
Tel.: 0 23 81 / 6 42 43
Fax: 0 23 81 / 6 08 41

KS - Kirsch
Schweißtechnik
Reetzerstraße 12
D-31515 Wunstorf
Tel.: 0 50 31 / 90 96 23
Fax: 0 50 31 / 7 72 37

DIWA Schweißtechnik GmbH
Heidelberger Straße 11
D-01189 Dresden
Tel.: 03 51 / 4 01 65 37
Fax: 03 51 / 4 01 65 17

Meyer Elektronik
Elmendorfer Straße 9-10 A
D-26160 Bad Zwischenahn
Tel.: 04 40 3 / 97 15-0
Fax: 04 40 3 / 97 15 17

FRIATEC S.A.R.L.
Z.A. La Grande Borne
F-77140 Darvault/Nemours
Tel.: 00 33 1 64 45 23 33
Fax: 00 33 1 64 45 23 20

FRIATEC S.A.U.
Cuesta del Rio, s/n
E-28860 Paracuellos del
Jarama/Madrid
Tel.: 00 34 9 6 58 22 50
Fax: 00 34 9 6 58 27 53

TUMAB
Box 50
S-26821 Svalöv
Tel.: 00 46 4 18 16 385
Fax: 00 46 4 18 41 193 9

VIGOTEC SA
Industrielaan 15
B-1740 Ternat
Tel.: 00 32 2 58 27 11 0
Fax: 00 32 2 58 22 0 32

FRIATEC s.r.o.
V Korytech 23
CZ-10600 Praha 10
Tel.: 00 42 0 2 72 76 03 36
Fax: 00 42 0 2 72 76 45 69

FRIATEC s.r.o.
Nitrianska 2
SK-91700 Trnava
Tel.: 00 42 18 05 55 14 626
Fax: 00 42 18 05 55 13 307

MIVA spol. S.r.o.
Teplicská cesta 10
SK-05201 Spisska Nova ves
Tel.: 00 42 96 54 21 590
Fax: 00 42 96 54 21 590

FRIATEC Incorporated
426 Fairforest Way
Greenville, SC 29609/USA
Tel.: 18 64 28 68 800
Fax: 18 64 23 42 050

IBERGAS-Comercio
Cabo Ruivo
P-1800 Lisboa
Tel.: 00 35 1 1 8 68 72 06 18
Fax: 00 35 1 1 8 68 45 71

Scanotherm
Møllebakken 4
DK-6091 Bjert
Tel.: 00 45 75 57 29 66
Fax: 00 45 75 57 24 95

FRIATEC B.V.
Steenpad 5
NL-4797 Willemstad
Tel.: 00 31 168 47 36 51
Fax: 00 31 168 73 2 00

FRIATEC Sp.z.o.o.
ul. Gdanska 40
PL-70660 Szczecin
Tel.: 00 48 91 46 23 245
Fax: 00 48 91 46 23 245

FRIATEC-KFT
To 4.3.
H-2045 Torokbalint
Tel.: 00 36 23 33 78 41
Fax: 00 36 23 33 78 42

FRIATEC S.R.L.
Via Aldo Moro, 10
I-20080 Carpiano
Tel.: 00 39 2 98 50 90 34
Fax: 00 39 2 98 85 90 33

FRIATEC Plasmec Pty. Ltd.
24 Appel Road
Kramerville, Sandton
RSA-2144 Wendywood
Tel.: 00 27 11 444 13 21
Fax: 00 27 11 444 28 40

IPS Pty. Ltd.
Locked Bag 106
AUS-Kingsgrove NSW 2208
Tel.: 00 61 25 54 39 77
Fax: 00 61 25 02 25 61

Jar Tai Trading Ltd.
8 Lane 402, Ming-Sheng Rd.
Taichung / Taiwan
Tel.: 00 88 64 32 25 005
Fax: 00 88 65 32 20 911

Ukrgasifikazia Yug
3, Pedagogicheskaya Ul.
270009 Odessa / Ukraine
Tel.: 00 38 04 82 68 54 83
Fax: 00 38 04 85 68 40 05

Elektrakip
ul. Kabuschkina 80
BY-220118 Minsk
Tel.: 00 37 00 17 22 40 95 38
Fax: 00 37 00 17 22 45 67 67

T S J
Techniques in Safe Jointing
Av. General Paz 62
RA-1702 Ciudadela
Buenos Aires
Tel.: 00 54 14 88 94 87
Fax: 00 54 16 57 45 02

Akfel Mühendislik
Ic Ve Dis. Tic Ltd. Sti
Bagdat Cad. Hasan Amir SK.
Dursoy is Merkezi No. 4/13
TR-81030 Kiziltoprak Istanbul
Tel.: 00 90 21 64 14 87 78
Fax: 00 90 21 64 14 87 80

ETA Plus Ltd.
49 Cottle Park Drive
NZ-Lower Hutt
Tel.: 00 64 58 90 145
Fax: 00 64 58 90 146

STR Marketing Ltee.
P.O. Box 98
Port Louis / Mauritius
Tel.: 00 23 02 12 99 72
Fax: 00 23 02 12 99 98

UAB DS1
Gedimino g 30
4050 Trakai / Litauen
Tel.: 00 37 03 85 23 16
Fax: 00 37 03 85 11 33

Benapartner Sdn Bhd
No. 25, Jalan TPJ 8/1
Taman Perindustrian Jaya
47200 Subang Selangor
Darul Ehsan / Malaysia
Tel.: 00 60 37 54 54 66
Fax: 00 60 37 54 54 67

S U I
Southern Gas Co. Ltd.
State Life Building No.3
Dr. Ziauddin Ahmed Road No. 318
75530 Karachi / Pakistan
Tel.: 00 92 25 73 134
Fax: 00 92 25 73 074

Caldervale Technology Ltd.
Grange Road,
Batley
GB-WF 17 6LN West Yorkshire
United Kingdom
Tel.: 00 44 19 24 42 25 70
Fax: 00 44 19 24 42 25 85

Plant & Site Ltd.
Gatehouse Warehousing
2 Harper Lane
Shenley
GB-Wd7 9 HA, St.Albans Herts
United Kingdom
Tel.: 00 44 17 27 82 66 93
Fax: 00 44 17 27 82 27 31

Ferdinand Wehrli
Schulgasse 174
CH-8215 Hallau
Tel.: 00 41 / 5 26 81 18 87
Fax: 00 41 / 5 26 81 18 87

FRIATEC Rheinhütte do Brasil
Av. Manoel Inácio Peixoto 2150
BRA-36770 Cataguases MG
Tel.: 00 55 32 69 46 207
Fax: 00 55 32 69 46 241



FRIATEC Aktiengesellschaft
Technical Plastics Division
P.O.B. 7102 61 · D-68222 Mannheim
Phone (06 21) 486 - 0
Fax (06 21) 4791 96
Internet: <http://www.friatec.de>
e-mail: info-frialeen@friatec.de

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