



Electro Fusion Control Unit

PF – digimatic data PF – digimatic Time Data



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Table of contents

1	Introduction	3
1.1	Maintenance periods	3
2	Scope of application and technical data	4
2.1	Scope of application	4
2.2	Input of welding parameters	4
2.3	Range of fitting dimensions	4
2.4	Technical data	5
2.5	Data Recording	6
3	Important safeguards	7
4	Controls and Plugs	8
5	Power Connection	9
5.1	Generator suitability	10
6	Starting a welding process	11
6.1	Preparation	11
6.2	Welding with the FUSAMATIC [®] -Mode	12
6.3	Welding with Manual-Mode	14
7	Other functions	16
7.1	Function menu	16
7.2	Letter Input Field	16
7.3	Entering a commission number	17
7.4	Adjusting the display contrast	18
7.5	Printing and transferring reports	18
7.6	System configuration	21
8	Trouble shooting	23
8.1	Replacing Welding Terminals	23
8.2	Adapter	24
8.3	Start messages	24
8.4	Error messages	25
9	Conformity Declaration	27

Please note the safeguards in chapter 3

1 Introduction

Dear customer,

we thank you for the confidence in our product and wish you a contented work with it.

The present instructions manual includes, beside the description of the use of the devices, important notes for your safety and the scope of application. Therefore, you should read carefully the present instructions manual before the first use of the device. In case of failure or interruption of the workflow read the appropriate chapter of this manual. Self-evidently we are ready to assist you at any time:

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All notes and technical specification in this instructions manual were prepared with all necessary care. The manufacturer keeps the right to make technical changes at the device, which are not directly included into the present instructions manual.

1.1 Maintenance periods

Please note, that the bought product is a technically demanding machine for field application. In accordance to the applicable standards like DVS 2208-1, BGV A2, ISO 12176-2 and most national and international standards, these machines have to be subjected to a periodical maintenance. The maintenance period is 12 month. When the machine is used quite often the maintenance should be carried out more often.

During the maintenance the machine will be upgraded to the current technical state. Additionally you get a 3-month function guarantee for the maintained device.

The maintenance and the related checks are important for you safety and the continuous working reliability of the control unit. Therefore the maintenance and all necessary repairs, have to be carried out by the manufacturer or a authorised service point.

2 Scope of application and technical data

2.1 Scope of application

The electro fusion control units of type **Digimatic (Time) Data** are exclusively for the electro fusion of thermoplastic pipes (e.g. made of PE-HD, PE80, PE100 or PP) by use of electro fusion fittings with an welding voltage lower than 48V . The control units are conform to the standard DVS 2208-1 as well as the ISO 12176-2, which refer to the standards applicable for the electro fusion fittings to be used.

It is not allowed to use the electro fusion controllers, to which the present instruction manual refers to, for an application not covered by the above stated terms. The manufacturer is not liable for the use of the machine out of the scope of application.

2.2 Input of welding parameters

The electro fusion controllers of type **Digimatic (Time) Data** provide the following means for entering the welding parameters:

MANUAL Input of welding parameters:

The given welding parameters on the fitting can be entered into the electro fusion controllers.

	Welding Time:	Welding Voltage:
Digimatic:	1-9999sec	8-48V
Digimatic Time:	1-9999sec	40V fixed

FUSAMATIC-System:

By reading out the reference resistance in the connector pins of the FUSAMATIC-Fitting the control unit automatically takes over the welding data of the fitting.

Note: Not all **Digimatic (Time) Data** control units provide the FUSAMATIC-system. Please, ask your local provider for further information. Control Units without FUSAMATIC-system carry two black PVC caps over the welding terminals. FUSAMATIC-Controllers provide one red and one black PVC cap.

2.3 Range of fitting dimensions

For which range of fitting dimensions a electro fusion control unit can be used depends essentially on the power consumption to the used fittings itself. Since the power consumption of the fittings are different for different fitting manufacturers, a general statement concerning this point is hardly to make. In case of doubt, each single case has to be checked separately. For electro fusion control units of the type **Digimatic (Time) Data** the following general statement can be made, with the assumption, that all welding processes were made one after the other, i.e. that the control unit is able to cool down during the preparation time of the next fitting:

Use for dimension **20-355mm** without any limit.

From a diameter for **400mm and higher** there must be provided longer off-times to ensure a cooling down of the control unit (Error message "Device too hot"). Before processing fittings in this dimension range, you have to check that the welding current of the fitting does not exceed the maximum output current of the control unit.

All above made statements refer to an ambient temperature of 20°C.

2.4 Technical data

Technical Data – Technische Daten	Digimatic (Time) Data
ISO 12176-2 Class - Klassifizierung	P ₂ 3 U S ₁ V AK D X
Input Voltage - Eingangsspannung	230V ~/AC, (185V-300V)
Input Current - Eingangsstrom	16A
Input Frequency - Eingangsfrequenz	50Hz (40-70Hz)
Output Voltage - Ausgangsspannung	8-48V (Time: 40V only)
Output Current - Ausgangsstrom	60A (max.: 80A)
Power Consumption - Leistungsaufnahme	3200VA
Temperature Range - Arbeitstemperatur	-10°C - +50°C
Protection Class - Gerätesicherheit	IP54, Class 2
Weight incl. Cables - Gewicht inkl. Kabel	18kg
Main Supply Cable - Netzkabel	4,5 m (Euro-Plug – Euro-Stecker)
Welding Cable - Schweißkabel	5m (fixed – fest)
Welding Terminals - Anschlußkontakt	4,7mm (opt. 4,0mm)
Display - Display	4 x 20 Characters (alphanum.), background lighting 4 x 20 Zeichen (alphanumerisch), Hintergrundbeleuchtung
Dimension - Abmessungen	440mm x 380mm x 320mm
Monitoring Functions - Überwachungsfunktionen	
Input - Eingang	Voltage / Current / Frequency Spannung / Strom / Frequenz
Output - Ausgang	Voltage / Resistance / Contact / Short circuit / Current Monitoring Spannung / Widerstand / Kontakt / Kurzschluß / Stromüberwachung
Other - Sonstige	System / Working Temperature / Service System / Arbeitstemperatur / Wartung
Error Messages - Fehlermeldung	Plain Text / Acoustic Signal Klartext im Display / Dauerwarnton
Enclosed Parts - Lieferumfang	Control Box, Transport Box, Adapter 4.7/4.0mm, Instructions Manual Gerät, Transportbox, Adapter 4.7/4.0mm, Bedienungsanleitung

Technical Data for 110V Control Units

Technical Data – Technische Daten	Digimatic (Time) Data
Input Voltage - Eingangsspannung	110V ~/AC, (90V-150V)
Input Current - Eingangsstrom	40A
Input Frequency - Eingangsfrequenz	50Hz (40-70Hz)

2.5 Data Recording

The **Digimatic (Time) Data** Control units provide the following data recording functions:

Data Recording - Protokollierung	Digimatic (Time) Data
Number of Reports - Anzahl der Protokolle	250
Interface - Schnittstelle	Serial (DIN Plug) - <i>Seriell (DIN Stecker)</i>
Recorded Data - Protokolierte Daten	
General Data – <i>Allgemeine Daten</i>	Commission Number (20 digits alphanumerical) Welder Name / Report Number <i>Kommissionsnummer mit 20 alphanumerischen Stellen Schweißernamen / Protokoll Nummer</i>
Fusion Data - <i>Schweißdaten</i>	Voltage / Current / Nominal and Actual Welding Time / Mode / Resistance / Error Messages with 10 Voltage-Current Values <i>Spannung / Strom / Arbeit / Ist- und Sollzeit / Modus / Widerstand / Fehlermeldung mit 10 Spannungs- und Stromwerten</i>
Device Data - <i>Gerätedaten</i>	Serial Number / Inventory Number / Date of last Service / Working Hours / System Configuration <i>Geräte Nummer / Inventarnummer / Datum der letzten Wartung / Betriebsstunden / Systemeinstellung</i>
Data Transfer - Datenübertragung	
Serial Printer - Serieller Drucker	Serial Printer Cable - <i>Serielles Drucker-kabel (2_0615_001)</i>
Parallel Printer - Paralleler Drucker	Printer Converter - <i>Druckerkonverter (4_1000_001)</i> Parallel Printer Cable - <i>Paralleles Drucker-kabel (4_1000_001)</i>
PC	Datamatic Plus Software (4_2000_002)
Memory Box - Datenspeicher	Memomatic (4_1000_001)

3 Important safeguards

Before turning on the welding device, please, read this operating instructions as well as the relevant safety and processing directions carefully.

Warning! With the use of electric tools you have to note the following basic safety direction to protect against electric shock, injury and fire.

1. Keep your working area in order !

Disorder involves a certain danger.

2. Consider the influence of environment !

Do not expose electro tools to rain. Do not use electro tools in wet or damp surroundings or in the neighbourhood of combustible liquids or gases.

3. Protect yourself against electric shock !

Avoid body contact with grounded components (e.g. radiators, metal pipes) or live cables. Do not carry the device, with the finger on the power switch. Pull out the plug when you do not use the tool or when changing the adapters and attachments.

4. Keep unauthorized people and children away !

Do not allow other people touch the device or cables – keep them away from your working place.

5. Store up your device safely !

Unused machines should be kept in a dry and locked room, inaccessible for children and unauthorized people.

6. Use permitted accessories only!

Do only use accessories, especially current sources and lengthening cables, that are stated in the operating instructions or recommended by us. The use of attachments, that are not stated in the operating instructions, involves a certain danger for you. Do only use permitted and marked lengthening cables outdoors.

7. Do not expose the cables to avoidable loads !

Do not carry the machine with the cable and do not use the cable to pull out the plug. Protect the cables against heat, oil and sharp edges.

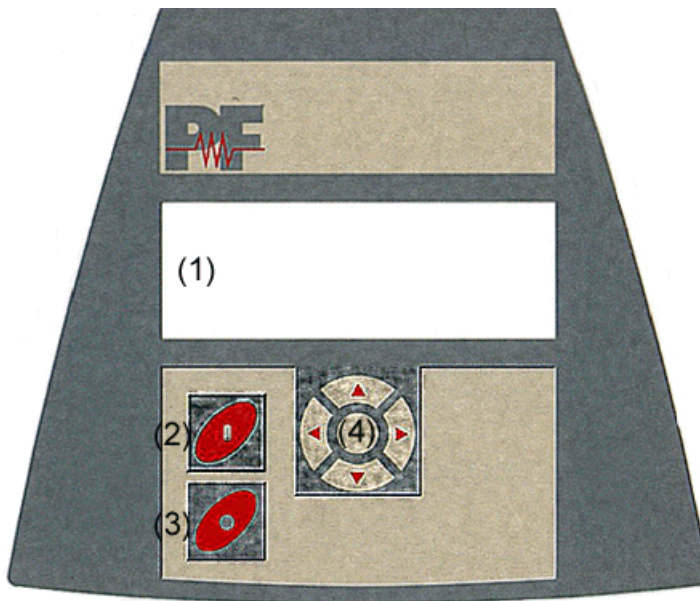
8. Lock after your tools carefully !

Keep your device clean. Follow the servicing instructions and the instructions for changing the tools. Keep oil and grease away from the straps.

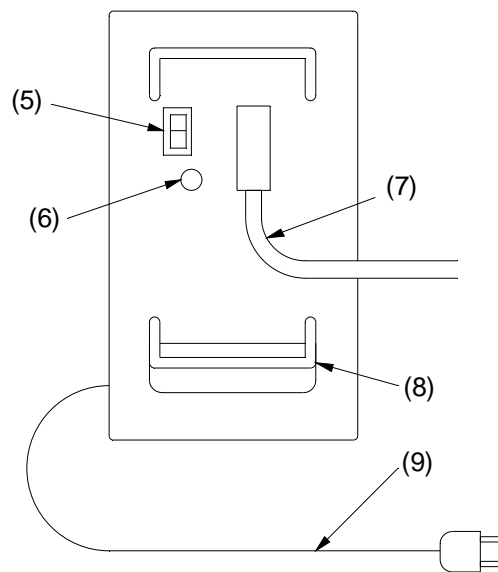
9. Check your device for damages !

Check your tools before every use for damages and function of the protection devices and machine parts. All parts have to be mounted in the right way. They have to fulfil all conditions for a impeccable running of the tool. Damaged protection devices and machine parts have to be repaired or replaced by an authorized service point.

4 Controls and Plugs



- (1) DISPLAY
- (2) START (green)
- (3) STOP (red)
- (4) CURSOR KEYS (● Select key)



- (5) Power Switch
- (6) Printer Port
- (7) Welding Cable
- (8) Cable Holder
- (9) Power Supply Cable

5 Power Connection

The connecting conditions of EVU, the VDE-directions, the accident prevention regulations, DIN/CEN-regulations as well as national regulations have to be considered.

Electro Fusion Control Units have to be used by operators, which are trained and authorised conform the national and international standards and directives, only. The operator has to supervise the electro fusion control box during the whole fusion process.

The electro fusion control unit has to be used within the following ranges:

Parameter	230V Control Units	110V Control Units
Input Voltage:	185V – 300V (AC)	90V – 150V (AC)
Input Frequency::	40Hz – 70Hz	40Hz – 70Hz
Ambient Temperature:	-10°C – +50°C	-10°C – +50°C
Max. Output Power:	3600W	3600W

Caution: 110V Control Units shall not be used at 230V power supply and vice versa.

When operating on a electric distributor or the main power supply of nominal 230V, a min. 16 Amps slow fuse comprising a *residual current-operated protective device* (RCCB) should be used (110V: min. 32Amps).

Extension Cables:

To extend the power supply cable you have to follow the following rules:

Cable length	Cross Section (230V)	Cross Section (110V)
Up to 20m	3 x 1.5mm ²	3 x 4mm ²
20 to 50m	3 x 2.5mm ²	3 x 4mm ²
50-100m	3 x 4mm ²	-

It is not allowed to extend the welding cable!

Important notes for the use of generators:

- **First start generator, then plug in the device.**
- **No other machine or device shall be connected to the generator**
- The idle running voltage should be regulated to 240V – 260V (AC) at nominal 230V (nominal 110V: 120V – 130V (AC)).
- Plug out welding device before turning off the generator.
- The usable generator power will decrease by 10% per 1000m height.
- Check the fuel level before starting the welding process.

5.1 Generator suitability

The Electro Fusion Controllers of type **Digimatic (Time) Data** provide the following means to increase the generator suitability:

- Wide tolerance for input voltage and Input frequency.
- Display of current input voltage and frequency.
- Soft-Start for limitation of the generator load.

Despite this characteristics, the generators to be used have to fulfil the following requirements and recommends, in order to avoid damaged of the control unit and to ensure that the internal monitoring function of the control unit will not interrupt the welding process:

- suitable to drive inductive loads and phase cut systems
- no-load voltage adjustable to 240V – 260V at nominal 230V (nominal 110V: 120V – 130V (AC)).
- output current of 18 Amps at one phase at nominal 230V (nominal 110V: 36Amps).
- stable output voltage and engine speed, also at fast alternating loads
- synchronous generators with mechanical speed control preferred
- voltage peaks must no exceed 800V

Min. required generator output power 230V, 50Hz, 1-phase

Diameter	Output Power
20-75 mm	2kW
90-160 mm	3,2kW
180-710mm	4.5kW (mechanically controlled) 5kW (electronically controlled)

For generators with insufficient control performance or voltage control it has to be selected 3-3.5 times higher output power than the stated ones to achieve an undisturbed operation. Electronically controlled generators tent to oscillate with the control of the welding process, which can lead to high output voltage peaks. Please, test suitability before using that kind of generators.

Manufactures like HONDA, EISEMANN, GEKO, FISCHER, PANDA and KIRSCH provide generators performed especially for this kind of application.

Caution: 110V Control Units shall not be used at 230V power supply and vice versa.

6 Starting a welding process

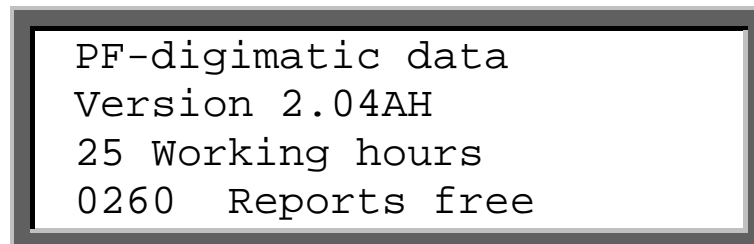
6.1 Preparation

Before starting you have to carry out the following steps in the given order:

1. Check the device, cables and adapters visually. If necessary you have to replace them.
2. Plug in Detachable welding cables.
3. Unroll welding, power and extension cables completely.
4. Switch of the Power Switch of the control unit.
5. **Start the generator before you plug in the control unit. Wait until the generator output voltage has stabilized.**
6. Plug in the power cable of the control unit.
7. Switch on the power switch.

Caution: 110V Control Units shall not be used at 230V power supply and vice versa.

After this procedure, the control unit signals its readiness with two bleeps. In addition the display backlight is turned on automatically. The following display message appears:



```
PF-digimatic data
Version 2.04AH
25 Working hours
0260 Reports free
```

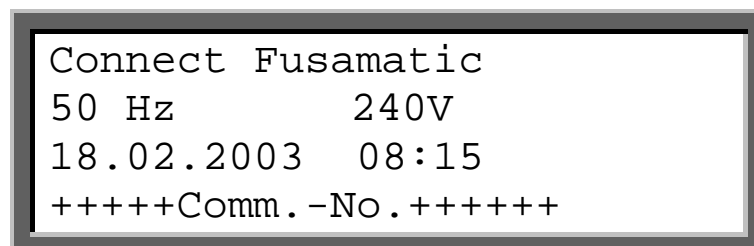
Line 1 and 2 show the type and version of the control unit.

Line 3 shows the total amount of working hours of the control unit.

Line 4 shows the total amount of free fusion reports in the internal memory. In the case that the amount of free reports is smaller than 50, the lowest row of the display keeps flashing. Press the red **STOP**-key to confirm the rare memory space. The reports should be transferred to a PC or printer at the first opportunity. There is the danger of data loss if the memory control option is deactivated.

If there occurred any error or change of the system configuration at the last weld before turning off the device, this will be indicated by a message in the display once again. After pressing the red **STOP**-key you are able to carry out a new welding process.

As long as no fitting is connected, no welding process can be started.



```
Connect Fusamatic
50 Hz 240V
18.02.2003 08:15
+++++Comm. -No.+++++
```

Line 1 prompts you to connect a fitting

Line 2 shows the input frequency and voltage. In case of generator use check that the voltage is at about 240-260V at nominal 230V (nominal 110V: 120V – 130V (AC)).

Line 3 shows time and data

Line 4 shows the currently active job number (commission number)

Welding Terminals:

- The contacts of the welding connector and the fitting plug must be clean – dirty or coated contacts can lead to overheating and burn at the connectors.
- Generally the terminals have to be protected against dirt. If there is a coating or loss of stick force on the connectors they have to be replaced.
- Use Adapters to connect certain fitting types. Adapters wear out with the time and have to be checked before every use.

Connect the welding terminals of the control unit to the pins of the fitting. Take care on a firm and proper fit.

FUSAMATIC-System

The welding with the **FUSAMATIC®-Mode** is only possible with FUSAMATIC®-fittings. The Option **FUSAMATIC** of the system configuration has to be enabled.

6.2 Welding with the FUSAMATIC®-Mode

Pay attention to the installation instructions of the fitting, special instructions (ISO, DVGW, DVS), European and national directions as well as the laying instructions!

As long as no fitting is connected, no welding process can be started. Connect the welding terminals of the control unit to the pins of the fitting. Take care on a firm and proper fit.

The welding with the FUSAMATIC®-Mode is only possible with FUSAMATIC®-fittings. The Option **FUSAMATIC** of the system configuration has to be enabled.

You have to pay attention for the right connection between the welding connectors and the fitting plugs. **The red terminal must be put on the fitting pin which is marked with the red ring.** Thus the welding device can detect the fitting type and its welding parameters. It will switch to the FUSAMATIC®-Mode automatically. This will be indicated by the following message:

```
START
Nom. time:  0200s
FUSAMATIC   40V
```

Line 1 prompts you to confirm the shown welding parameters.

Line 2 Shows the welding time.

Line 3 shows the fitting type and welding voltage.

Line 4 shows error messages respectively.

You have to compare the shown parameters with the parameters stated on the fitting. In the case that these deviate or if a **Contact error** is indicated in the lowest row of the display, a faulty or invalid reference resistance is read. Disconnect the welding terminals from the fitting plugs. Check the connectors of the fitting and welding cable for dirt or coating. If the fitting causes another **Contact error** or differing parameters, it is defect. Replace it.

If no **Contact Error** occurs, you can confirm the correctness of the welding parameters by pressing the green **START**-key. The following message will remind you of your duty to fix and prepare the pipes according to the general guidelines:

```
Is the pipe scraped ?
```

If you have any doubt about the right preparation, you can break off the procedure by actuating the red **STOP**-key. Otherwise confirm the proper preparation by pressing the green **START**-key.

The welding device starts the welding process automatically. **To avoid danger for your health, do not touch the fitting or cables during the welding process.**

The display shows the actual and nominal welding time:

```
Act. time: 0099sec  
Nom. time: 0200sec  
FUSAMATIC 40V
```

Line 1 shows the running welding time.

Line 2 shows the target welding time

Line 3 shows the fitting type and the nominal welding voltage.

Line 4 shows error messages respectively.

The welding process will stop automatically when the actual time reaches the nominal time. This will be indicated by two bleeps and the following message:

```
Act. time: 0200s  
Nom. time: 0200s  
Report Number 1  
18.02.2003 08:15
```

Line 1 shows the stop time.

Line 2 shows the target welding time.

Line 3 shows the report number in relation to the current job number

Line 4 shows the date and time or error messages respectively.

After stopping the welding process the data will be stored into the internal memory of the device. Disconnect the welding connectors to go back to the start message.

6.3 Welding with Manual-Mode

Pay attention to the installation instructions of the fitting, special instructions (ISO, DVGW, DVS), European and national directions as well as the laying instructions!

If you want to enter the parameters of a FUSAMATIC®-Fitting manually, you have to connect it with the wrong poling of the welding connectors.

In this case as well as in the case of using any other kind of fitting the welding device will switch to the Manual-Mode. The following message shows the entry fields of the welding parameters:

```
Weld voltage
U (V)=    40 V
t (s)=   0020 s
```

Line 1 shows the parameter to be entered (here Welding voltage)

Line 2 shows the welding voltage.

Line 3 shows the welding time.

The digit which is marked by the cursor (flashing position) can be changed by using the \blacklozenge buttons. With pressing the \blacktriangleleft \blacktriangleright buttons, the cursor will move to in the corresponding direction.

Note: You have to use the welding parameters stated on the fitting or given by the fitting manufacturer. You are not allowed to use other parameters, since incorrect welding parameters can lead to explosion of the fitting.

Note: The Digimatic Time Data control unit does not allow the input of a welding voltage different than 40V.

Confirm the entered welding voltage by actuating the green **START**-button.

Now the cursor jumps to the entry field of the welding time:

```
Weld time
U (V)=    40 V
t (s)=   0020 s
```

The value will be entered the same way as described above. After the confirmation with the green **START**-button the welding parameters will be shown once again.

```
Start
Nom. time :    20 s
Weld voltage  40 V
```

Line 1 prompts you to confirm the shown welding parameters.

Line 2 Shows the target welding time.

Line 3 shows the welding voltage.

Line 4 shows error messages respectively .

Check carefully the correctness of the parameters before confirming them by pressing the green **START**-key.

The following message will remind you of your duty to fix and prepare the pipes according to the general guidelines:

```
Is the pipe scraped ?
```

If you have any doubt about the right preparation, you can break off the procedure by actuating the red **STOP**-key. Otherwise confirm the proper preparation by pressing the green **START**-key.

The welding device starts the welding process automatically. **To avoid danger for your health, do not touch the fitting or cables during the welding process.**

The display shows the actual and nominal welding time:

```
Act. time:      0009sec  
Nom. time:      0020sec  
Weld voltage 40V
```

Line 1 shows the running welding time.

Line 2 shows the target welding time

Line 3 shows the fitting type and the nominal welding voltage.

Line 4 shows error messages respectively.

The welding process will stop automatically when the actual time reaches the nominal time. This will be indicated by two beeps and the following message:

```
Act. time:      0020s  
Nom. time:      0020s  
Report Number  1  
18.02.1998  08:15
```

Line 1 shows the stop time.

Line 2 shows the target welding time.

Line 3 shows the report number in relation to the current job number

Line 4 shows the date and time or error messages respectively.

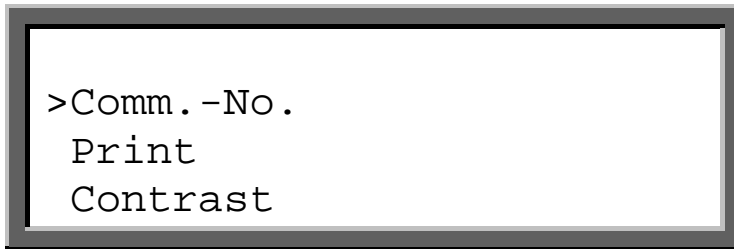
After stopping the welding process the data will be stored into the internal memory of the device. Disconnect the welding connectors to go back to the start message.

7 Other functions

7.1 Function menu

After connecting the control unit to the power supply and switching on, wait until the machine indicates it readiness by two beeps . Then aboard all error messages by pressing the red **STOP**-button.

Now, press the select key ● to get into the function menu:



The function menu contains all available functions. The cursor > indicated the selectable function.

- ◆ Moves the selection cursor up and down
- Selects the function indicated by the cursor <.

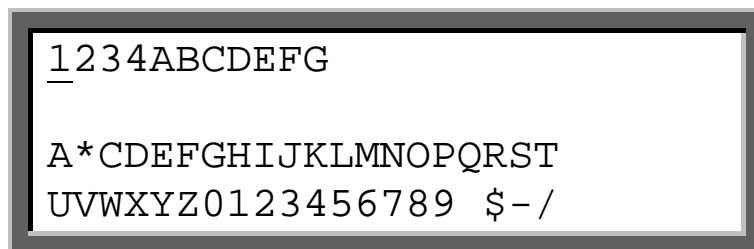
The following table shows all available functions:

Function	Description	Page
Comm. No.	Entering a commission number	17
Print	Printing and transferring reports	18
Contrast	Adjusting the display contrast	18
System Config.	System Configuration	21

7.2 Letter Input Field

For the manual input of data, as for example Commission number, Inventory-Number, and so on, the *Letter Input Field* will be shown in the display. In any case the handling of this field is the same. Because of that, it will be described here in detail.

The *Letter Input Field* will look as follows:



Line 1 and 2 (*Input field*) show the already entered letters. Sometimes there will be shown an initial string. The flashing or underlined digit shows the actual position, where a selected letter will be inserted.

Line 3 and 4 (*Letter Field*) show the letters that can be chosen and entered into the *Input Field*. Here the actual letter to be selected is covered by an asterisk *.

1) Entering a string of letters

The letters will be entered at the position of the flashing or underlined digit in the *Input Field*. Move the asterisk * by using the cursor keys ◀ ▶ under the letter, that you would like to enter and select it by pressing the select key ●. The chosen letter will be entered and the mark will move to the next digit of the Input Field. Enter all digits of the wanted string one after the other.

2) Editing a string of letters

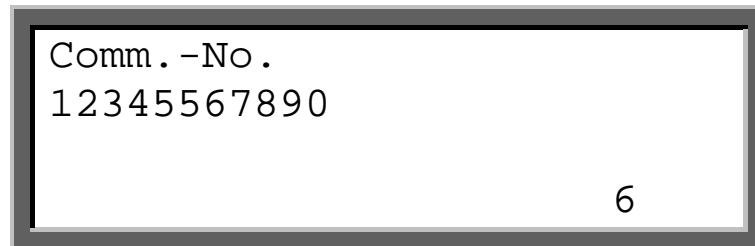
If you want to correct a certain digit of a string, move the asterisk * out of the *Letter Field* by using the ▲-key. Now you can move the flashing position of the *Input Field* with the ◀ ▶-keys under the wanted digit of the present string. Then press the select key ● ones to let appear the asterisk back in the *Letter Field*. Now you can enter the new letter to the marked digit as described in 1).

Always confirm your input by pressing the green **START**-key. You can abort the letter input function with the red **STOP**-key. In this case your input will not be used for the following process.

7.3 Entering a commission number

The commission number (Job Number) is a 20 digit alphanumeric string which should specify the construction site or commission under, which the joint are made.

You have the possibility to enter a commission number optionally or to generate a list of commission numbers for later use by the **comm.- no.** function of the **function menu**:



Comm. -No.
12345567890
6

Line 1 describes the content of the Display (Comm.-No.)

Line 2 shows the currently active commission number

Line 4 shows the amount of reports already stored under this commission number.

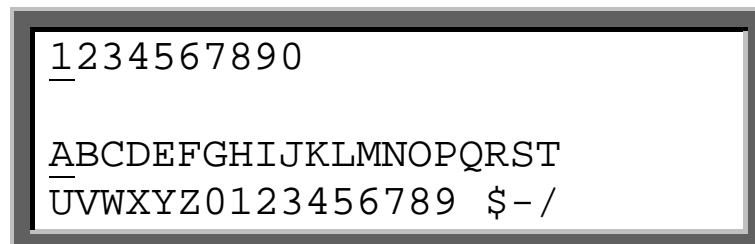
Here you get two ways for the further procedure:

1) Choosing a commission number from a list

By the use of the cursor keys ◀ ▶, you will be able to scroll through all stored commission numbers. To select the shown commission number for the further procedure you have to confirm it with the green **START**-key.

2) Generating a new commission number

If you would like to generate a new commission number, press the select key ●. The chosen commission number will appear together with the letter input field:



1234567890
ABCDEFGHIJKLMNOPQRST
UVWXYZ0123456789 \$- /

Now you can edit the present commission number. Confirm the edited commission number by pressing the green **START**-key. The entered commission number will be taken as a new entry in the commission number list. By pressing the red **STOP**-key, the read commission number will be rejected.

To generate a commission number list repeat the steps 2) or 3).

To take the shown commission number for the following process actuate the green **START**-key.

7.4 Adjusting the display contrast

By selecting the **contrast** function of the **function menu** you can adjust the display contrast to your needs:



The shown value is only given for your orientation. It can show numbers from 100 to 250. At high values the belong to strong contrast.

◆ Increases or decreases the value / contrast. If the value reaches 250 is switches back to 100.

Adjust the contrast to a value where you can read the display best. Note, that the display should be readable also if you look at it under certain angles. Confirm you adjustment with the green **START**-key.

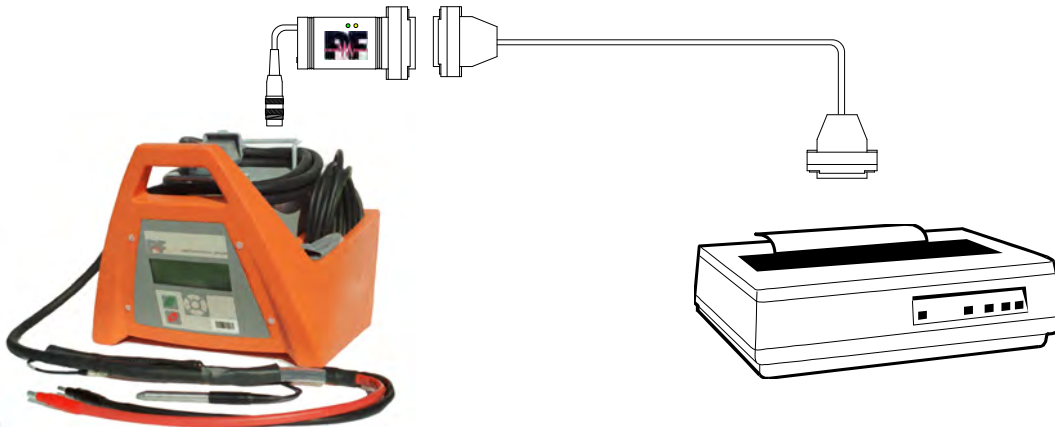
The display will ask you "**Are you sure?**". You can confirm the correctness of your choice by pressing the green **START**-key or cancel the function by using the **STOP**-key.

7.5 Printing and transferring reports

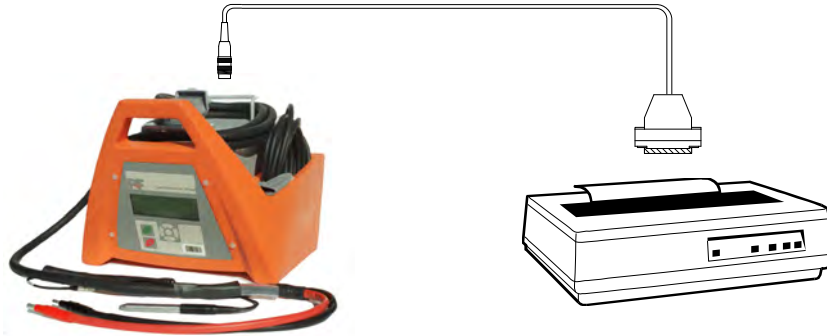
With this function group you will be enables to print or transfer the fusion reports to a printer or PC.

7.5.1 Accessories for printing reports

Parallel Printer: Use Serial/Parallel Converter (order code: 3_1000_002).



Serial Printer: Use the printer cable (order code: 2_0615_001).



The serial printer must support the following preferences:

Mode	serial, RS232 (V24)
Baud rate	1200Baud
Parity	none
Data bits	8
Stop bits	2
Transfer protocol	XON/XOFF

PC-Software Datamatic (4_2000_001): With our PC-software Datamatic (plus) you will be enabled to transfer data from the PF-control boxes with data recording function to your PC.

Memory Box (3_1000_002 Memomatic): With this useful accessory you can take reports from different machines and print them later on to the parallel office print or transfer them to the Software PF-Datamatic.

7.5.2 Start printing

For printing the reports you need the accessories show in the previous section. Connect them as shown on the pictures and follow the steps below.

After selecting the **print function** of the **function menu** the following display message shows the functions for printing



- > Is the cursor for marking the active function.
- ◆ Move the cursor upwards and downwards.
- Selects the active function.

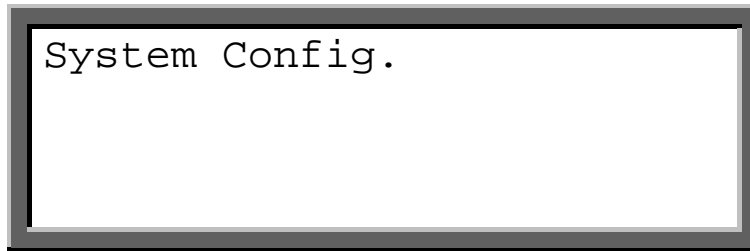
Choose **Printer**, if you use

- a normal office printer (A4 format).
- the Software Datamatic (Plus).
- the Software EasyPrint.

Choose **Mini-Printer**, if you use a Mini-Printer.

Please, ensure that the printer is connected before you choose this one printer type. The data transfer will be indicated by the message "**Transmitting Data**".

After transferring the fusion records, the display will show:



Press the green **START**-button, if you want to print the system configuration.

Press the red **STOP**-button, if you do not want to print the system configuration.

After the transfer the display will ask, if the whole memory should be erased "**All erase ?**". Check first if the printout or data transfer was complete before confirming the erasing of the reports by pressing the select key ●. For safety reasons the display will prompt again "**Are you sure?**" press the green **START**-key to confirm.

To avoid general failures you should not interrupt the power supply or switch off the control box, while the display is still indication "Erasing Data" or "Saving Data"

If you do not want to erase the reports, press the red **STOP**-key.

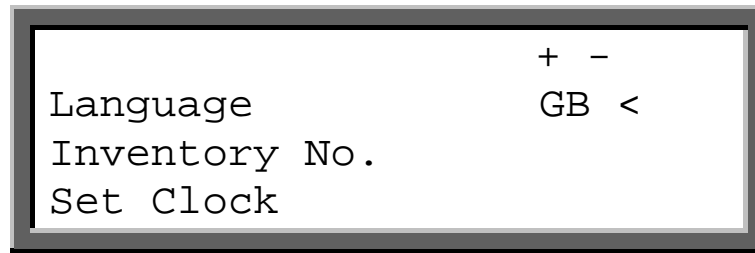
7.5.3 Receiver not ready

If this message will be show permanently you should check the following:

- Check if there is the right connection between the printer and the Control Box.
- Check that the printer is plugged in.
- Check that the printer is switched on.
- Switch the printer off and on one time.
- Check the configuration of the printer .
- Check that the printer is switched **OnLine**.
- Feed the printer with paper.

7.6 System configuration

To show the system configuration menu, you have to select the **System config.** function:



- < cursor, which indicates the active option.
- ◆ moves the cursor up and down.
- selects the active option.
- * shows the option state (+ = ON , - = OFF)
- ◀ ▶ changes the option state

After changing the settings press the green **START**-button and confirm the following „**Are you sure?**“ message with the green **START**-button. If you wouldn't like to take over your changes press the red **STOP**-button.

The following options and functions are available:

Option	Description	Value	Page
Language	Function for changing the display language	Country Code	22
Inventory No.	Function for changing the inventory number	8 digits. alpha-num.	23
Set Clock	Function for setting up the clock		22
Memory Control	Option Memory Control	ON/OFF	23
Welder Name	Option Request of Welder Name	ON/OFF	23
Daylight Time	Automatic Daylight Saving Correction	ON/OFF	22
FUSAMATIC	Dis-/ enabling the FUSAMATIC system	ON/OFF	
Mini-Printer XON	Software handshake for MINI-Printer	ON/OFF	

7.6.1 Change language

After selecting the language function from the system configuration menu the display will show a list of language indicators.



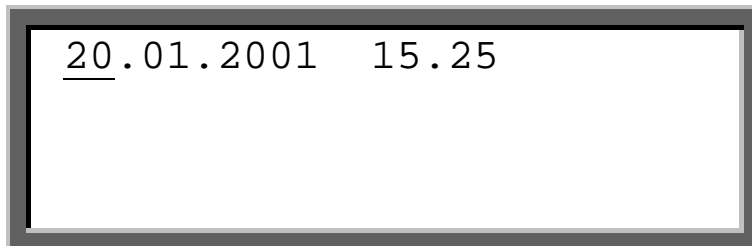
The indicators stand for: GB = English, SE = Swedish, ES = Spanish, IT = Italian, DK = Danish, PT = Portuguese, DE = German, FR = French, PL = Polish, TR = Turkish, RO = Romanian, etc. Please note that only 7 languages are available.

- > Represents the cursor, which marks the present current language.
- ◆ Move the cursor upwards or downwards through the available languages.
- Selects the marks language

The display will ask you “**Are you sure?**”. You can confirm the correctness of your choice by pressing the green **START**-key or cancel the function by using the **STOP**-key.

7.6.2 Set clock

After selecting the set clock function from the system configuration menu the display will show current time and date:



You always change the flashing or underlined digit.

- ◆ Will increase or decrease the respective value.
- ◀ ▶ Move the marking to the digit you want to change.
- Finishes your changes.

The display will ask you “**Are you sure?**”. You can confirm the correctness of your choice by pressing the green **START**-key or cancel the function by using the **STOP**-key.

The display will ask you “**Are you sure?**”. You can confirm the correctness of your choice by pressing the green **START**-key or cancel the function by using the **STOP**-key.

7.6.3 Daylight time Option

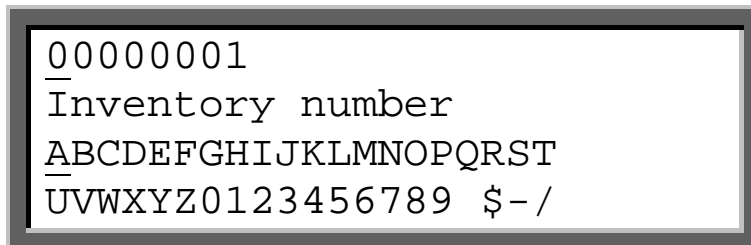
With this option you can enable the automatic change of daylight time for summer and winter time (ON). The enabled option causes that the request **Set daylight time** will appear in the display after turning on the device from the March 21st or October 21st. If you confirm this message by pressing the green **START**-key the clock will be set to the summer or winter time (± 1 hour). If you press the red **STOP**-key, the time changing will be rejected and the message will appear at the next turning on of the device again.

7.6.4 Memory control Option

If you have activated (ON) the memory control option, the device will refuse the any kind of welding process in the case that the internal memory is filled up. By this you can prevent a data loss. If the memory control is deactivated (OFF) the oldest stored reports will be overwritten.

7.6.5 Input of inventory number

After selecting the inventory number function from the system configuration menu the display will show the letter input field.



Enter your wanted inventory number. Confirm the entered inventory number by pressing the green **START**-key.

7.6.6 Welder name Option

If you have activated (ON) the welder name option, the device will demand the input of a welder name or identification, each time the machine is switched on. Use the letter input field to enter a welder identification.

8 Trouble shooting

8.1 Replacing Welding Terminals

The welding plugs should be checked frequently. If necessary they can easily be replaced in no time.

1. Switch off the device and disconnect it from the mains supply or generator!
2. Slip off the PVC-cap over the welding terminal.
3. Hold the front part of the brass contact with a pipe wrench and screw the welding terminal with a 8mm-wrench out of the brass contact.
4. The red welding cable has to be equipped by a welding terminal with detection tip! You have to use welding terminals that are delivered by PF only!
5. Screw the new welding terminal tight into the brass contact and slip the PVC-cap over the welding terminal. Pay attention, that the PVC-cap is slipped over so far, that the welding terminal is left blank for about 15mm.

1_0200_001	Welding Terminal 4.7mm, standard
1_0200_003	Welding Terminal 4.0mm, standard
2_0200_003	Welding Terminal 4.7mm, Fusamatic (with detection tip)
2_0200_004	Welding Terminal 4.0mm, Fusamatic (with detection tip)
1_0410_004	PVC-Cap, red
1_0410_003	PVC-Cap, black

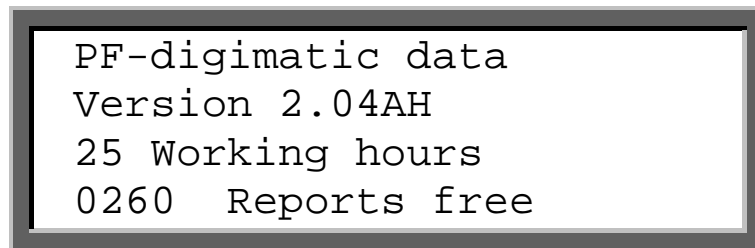
8.2 Adapter

For different fitting types different adapters are needed. In the following table you will find a selection of available adapters:

1_0300_009	Adapter 4.7/4.7 angle
1_0300_001	Adapter 4.7/4.0 angle
1_0300_004	Adapter 4.0/4.7 angle
1_0300_011	Adapter 4.0/4.0 angle
1_0200_005	FUSAMATIC-Adapter 4.7/4.7
1_0200_006	FUSAMATIC-Adapter 4.7/4.0
1_0200_007	FUSAMATIC-Adapter 4.0/4.7
1_0300_010	Adapter 4.0/4.7, straight
1_0300_003	Adapter 4.7/GF (lose ends)
1_0300_014	Adapter 4.0/GF (lose ends)
1_0300_002	Adapter 4.7/FF-flat
1_0300_012	Adapter 4.0/FF-flat
1_0300_008	Adapter 4.7/FF-pin
1_0300_013	Adapter 4.0/FF-pin

8.3 Start messages

After switching on the device the following message appears on the display:



Row 1 and 2 show the *type* and *firmware revision* of the control box.

Row 3 counts the total *amount of working hours* (summed up fusion times).

Row 4 indicated the total *number of free reports* of the data recording system. In the case that the amount of free reports is smaller than 50, the letters of this row will flash. Press the red **STOP**-key to confirm the rare memory space. The reports should be printed out, because there is the danger of data loss if the memory control option is deactivated.

After ten seconds the above shown display will disappear.

In the following there could be shown system messages like *error messages* of previous welding cycles or *service notes*, which can be aborted by pressing the red **STOP-key.**

8.4 Error messages

Error messages will be indicated by a bleep. A permanent bleep can be interrupted by pressing the red **STOP**-key.

Error	Cause	Reaction
Clock error	Internal clock does not work properly.	Set clock. Maybe the battery has to be changed.
Code error	Faulty input.	Move the reading pen with a constant velocity over the barcode.
	Barcode defect or error of code structure.	
Contact error	Invalid FUSAMATIC [®] -detection-resistor.	Clean contacts. Replace fitting if necessary.
Current high	Output current is more than 15% higher than the starting current.	Shortcut of fitting coil or welding cable.
Current low	Interrupt of the welding current.	Welding is faulty!
	Current drops down about 15-20% for at least 3s.	Welding is faulty!
Device too hot	Temperature of transformer is too high	Let the device cool down for about 45 min.
Emergency cut-out	Welding was interrupted by pressing the STOP -key.	Welding is faulty!
Frequency error	Input frequency out of working range (40-70Hz).	Check Generator.
Input voltage high	Input voltage >300V at 230V nom. Input voltage >150V at 110V nom.	Adjust generator voltage to 240V-260V. Adjust generator voltage to 120V-130V.
Input voltage low	Input voltage < 190V at 230V nom. Input voltage < 90V at 110V nom.	Unwind the power supply cable. Use power supply cable with the right diameter. Adjust Generator voltage.
Interturn shortc.	The current rises more than 15% during the welding. Shortcut of the fitting coil.	Welding is faulty!
Memory overflow	Report memory is full up.	Print reports or deactivate the memory control option.
No contact	No complete electrical contact with the fitting.	Check connection to the fitting.
	Fitting coil or welding cable is defect.	Use an other Fitting. Change welding cable.

Error	Cause	Reaction
Output volt. Error	The output voltage deviates from the rated voltage.	Check the generator. Revolutions fluctuate or power too weak.
Power failure	Last welding was interrupted by a break of the power supply.	Last welding is faulty! Prepare pipe again and use a new Fitting!
Resistor error	Fitting resistance is out of the valid working range.	Clean the contacts. Use an other fitting.
	Fitting resistance out of the valid range given by barcode.	Clean the contacts Use an other fitting.
Service	The recommended service interval of 12 months or 200 working hours is exceeded.	The device has to be checked by an authorized service point. The device is still usable, but the manufacturer does not accept any liability for the device until it is checked up.
System error	Danger! Selftest found an error in the system.	Disconnect power supply immediately. Do not connect the device to the power supply any more. Send it to the next service point.
Temp. Meas. Error	Temperature measurement is faulty.	Plug in the removable welding cable. Switch device off and on. Welding cable or sensor defect.
Temperature error	Surrounding temperature out of working range (-10-+50°C).	

9 Conformity Declaration

DE Konformitätserklärung des Herstellers
GB *Manufacturer's Conformity Declaration*
FR Certificat de conformité
IT *Dichiarazione di Confermità del Costruttore*
ES Declaracion de conformidad del fabricante
PT *CERTIFICADO DE CONFORMIDADE*



S c h w e i ß t e c h n o l o g i e G m b H

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DE erklärt, dass die Schweißmaschine
GB *declares that the welding machine*
FR déclarons que la machine électrosoudable
IT *dichiara che la saldatrice*
ES declara que la máquina de soldar
PT *declara que o equipamento*

Polymatic Plus (Top)	- 230V / 50Hz – 110V / 50Hz – 48V / 50 Hz 200Hz
Polymatic (Data)	- 230V / 50Hz – 110V / 50Hz – 48V / 50 Hz
Digimatic (Time / Data)	- 230V / 50Hz – 110V / 50Hz
Monomatic (light), Dualmatic	- 230V / 50Hz – 110V / 50Hz
Tiny M (Data), Polycode	- 230V / 50Hz – 110V / 50Hz
PolyControl (Plus / Top)	- 230V / 50Hz
Polyweld	- 230V / 50Hz – 48V / 50 Hz
Transformer Box (2600VA / 2800VA)	- 230V / 50Hz

DE gemäß den folgenden gesetzlichen Richtlinien, Vorschriften und Verordnungen hergestellt wurde:
GB *is made in compliance with the following directives, standards and legal regulations:*
FR est conforme aux normes, règles ou directives suivantes:
IT *è conforme alle disposizioni delle seguenti direttive, normative e prescrizioni che rispondono alle seguenti leggi:*
SP está conforme con lo dispuesto en la legislación vigente:
PT *foi fabricado e testado com o disposto nas seguintes regulamentações em vigor:*

73/23/EEC Low Voltage Directive
89/336/EEC Electro Magnetic Compatibility

EN 60335-1 / IEC 335-1
ISO 12176 (1-4); ISO/TR 13950; UNI 10566
DVS 2208

Alsfeld, 01.01.2007

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Managing Director: Dipl.-Ing. Bernd Merle
Legal Venue: Alsfeld
Pages: 1/1

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