



Technical Data Sheet

Tiny M(F)

Tiny Data M(F) USB

Tiny M(F) (Bluetooth)

Tiny Data M(F) USB (Bluetooth)

Electrofusion control unit
Electrofusion Control Unit with Bluetooth capability



Scope of application

The electrofusion control units of type Tiny M(F) (Bluetooth) and Tiny Data MF USB (Bluetooth) are solely meant for the welding of thermoplastic pipes (e.g. made of PE-HD, PE80, PE100 or PP) when used with electrofusion fittings that have an input voltage of less than 48 V. These devices are conforming to the standards DVS 2208-1 and ISO 12176-2, of which the applicable standards for the electrofusion fittings to be used are derived from.

Input of welding parameters

The electrofusion control units of type Tiny M(F) (Bluetooth) and Tiny Data M(F) USB (Bluetooth) provide the following means for entering the welding parameters:

Barcode (ISO TR 13950, Type 2/5i, 24-digits)



The barcode attached on most electro fusion fittings on the market contains all necessary data for processing them. After the read-in with the reading device (reading pen or scanner) the data is automatically transferred and processed by the electrofusion control unit. The barcodes mainly contain the following data: Manufacturer, type, diameter, fusion voltage, fusion time (with temperature correction, if applicable), resistance and resistance tolerance.

SmartFuse-System*



By reading out the reference resistor in one of the connector pins of the SmartFuse-fitting the control unit automatically determines the welding parameters for the fitting.

Manual input of the barcode digits.



If the barcode on the fitting or the barcode reading device is damaged or defective, it is possible to enter the barcode digits (if available) into the control unit manually.

Manual input of welding voltage and -time



If no barcode is available, it is possible to enter the fusion parameters provided by the fitting manufacturer (like voltage and time) manually.

***) Not all electrofusion control units have the SmartFuse-System. Please ask your dealer for further information. Electrofusion control units without the SmartFuse-System can be recognised by the two welding terminals partially covered by black pvc caps. Electrofusion control units with the system have one terminal covered by a red pvc cap and one terminal covered by a black one.**

Bluetooth functionality

The electrofusion control units of type Tiny M(F) (Bluetooth) and Tiny Data M(F) USB Bluetooth feature a built-in Bluetooth LE module. That makes it possible to control and record the welding procedure with the PFS app "ElectroFusion Studio". The app for smartphones and tablets is available for Android in the Google Play Store and for iOS in the Apple App Store. When using Bluetooth, the electrofusion control unit can only be used together with this app.



Attention!

To be able to use the app with the electrofusion control unit it is mandatory to have a registered account. Please ask your distributor.

Range of fitting dimensions

The range of fitting dimensions for which an electrofusion control unit can be used depends essentially on the power consumption of the used fittings. Since the power consumption of the fittings is different for different fitting manufacturers, it is not possible to provide a general rule which covers all the possible fitting dimensions. When in doubt, each fitting size has to be checked separately. For electrofusion control units of type Tiny M(F) (Bluetooth) and Tiny Data M(F) USB (Bluetooth), when all welding work is performed successively, such that the control unit has pauses in welding that correspond to the preparation time of the next fitting, the following rule applies:

Usage for dimensions **from 20 to 630 mm** without limitation.

When working with dimensions from 630 mm on, longer cool-down times must be provided for because otherwise the device might show the "Device too hot" error message. In this case, it is necessary to let the electrofusion control unit cool down before putting it to use again.

Before processing fittings in this dimension range, you have to check that the welding current demand of the fitting does not continuously exceed the output current of the device and that the maximum output current is not exceeded.

The above rule assumes an ambient temperature of 20 °C.

Scope of delivery

	Tiny M / Tiny M (Bluetooth)		Enclosed
	1 ×	Instruction manual	EN007
	1 ×	Adapter 4.0/4.7 mm (optional)	
	1 ×	Wooden box	1_2800_010/3

	Tiny MF / Tiny MF (Bluetooth)		Enclosed
	1 ×	Instruction manual	EN007
	1 ×	Adapter 4.0/4.7 mm (optional)	
	1 ×	Wooden box	1_2800_010/3

	Tiny Data M USB / Tiny Data M USB (Bluetooth)		Enclosed
	1 ×	Instruction manual	EN007
	1 ×	USB memory stick	5_5001_512
	1 ×	Adapter 4.0/4.7 mm (optional)	
	1 ×	Wooden box	1_2800_010/3

	Tiny Data M USB / Tiny Data M USB (Bluetooth)		Enclosed
	1 ×	Instruction manual	EN007
	1 ×	USB memory stick	5_5001_512
	1 ×	Adapter 4.0/4.7 mm (optional)	
	1 ×	Wooden box	1_2800_010/3

A Flightcase is available as an alternative to the wooden box.

Technical data

Tiny M (Bluetooth) / Tiny MF (Bluetooth)

Tiny Data M USB (Bluetooth) / Tiny Data MF USB (Bluetooth)

General				
Output voltage	[V]	8 to 48 AC		
Data recording		Yes		
Power (60 % ON time) according to ISO 12176-2		2600 W (72.5 A)		
Operating temperature range	[°C]	-10 to +50		
International protection		IP54		
Appliance class		1		
Conformity		CE		
ISO 12176-2 Class - classification Tiny M (Bluetooth) Tiny MF (Bluetooth)		P ₂ 3 U S ₁ V AK X		
ISO 12176-2 Class - classification Tiny Data M USB (Bluetooth) Tiny Data MF USB (Bluetooth)		P ₂ 3 U S ₁ V AK D X		
Input of welding parameters				
	Ye s	No	Opt.	
Barcode with reading pen ♣(optional with scanner)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SmartFuse Tiny M (Bluetooth)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SmartFuse Tiny MF (Bluetooth)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SmartFuse Tiny Data M USB (Bluetooth)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SmartFuse Tiny Data MF USB (Bluetooth)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Manual input of the barcode digits.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Manual input of welding parameters	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	U _{OUT} : 8 to 48 V t _{WELD} : 0 to 9999 s
Manual input of welding parameters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	U _{OUT} : 40 V (preset) t _{WELD} : 0 to 9999 s

Input/Mains		230 V devices	110 V devices
Nominal voltage (tolerance)	[V]	230 AC (190 to 300)	110 AC (90 to 150)
Nominal frequency (tolerance)	[Hz]	50/60 (40 to 70)	50/60 (40 to 70)
Power factor cos ρ		0.6 to 0.9 (phase-angle control)	0.6 to 0.9 (phase-angle control)
Nominal current	[A]	16	40
Power consumption	[VA]	3680	3680
Length of cord	[m]	4.5	On request
Plug type		Euro Schuko plug	On request
Output			
Output voltage	[V]	8 to 48 AC	
Output current (max.)		110	
Output current ($t \rightarrow \infty$)	[A]	30	
Output current (min.)	[A]	2	
Energy adjustment		Temperature compensation	
Welding cable length	[m]	4, other lengths on request	
Welding cable mounting		Fixed	
Welding terminals	[mm]	Optional 4.0, 4.7 or universal terminals for 4.0 und 4.7	
Monitoring functions			
Input		Voltage, current, frequency	
Output		Voltage, current, resistance, contact, short circuit	
Other		System, working temperature, service	
Error messages		Plain text, acoustic signal	
Casing/Display			
Material		Steel plate	
Display		4×20 characters, alphanumeric, background lighting	
Dimensions, weights and packaging			
Product dimensions L × W × H	[mm]	325 × 275 × 290	
Product weight (incl. welding cable)	[kg]	18.5*	
Product weight (excl. welding cable)	[kg]	16*	
Packaging dimensions L × W × H	[mm]	390 × 320 × 340	
Packaging material		Wood*	
Packaging type		Box*	
Packaging weight	[kg]	5.5	
Transport weight	[kg]	24	

The given technical information is valid for the standard setup of the electrofusion control unit. Depending on the ordered setup there may be variations.

Data recording Tiny M(F)

The electrofusion control units of type Tiny M and Tiny MF do not generate reports.

Data recording Tiny M(F) (Bluetooth)

When using the PFS app and the connection via Bluetooth, the electrofusion control units of type Tiny M(F) (Bluetooth) transfer reports to the connected smartphone or tablet. An internal memory is not available in the electrofusion control unit.

Data recording Tiny Data M(F) (Bluetooth)

The electrofusion control units of type Tiny Data M(F) USB (Bluetooth) provide data recording for approx. 1000 welding cycles and their barcode identifier conforming to ISO 12176-4 (traceability).

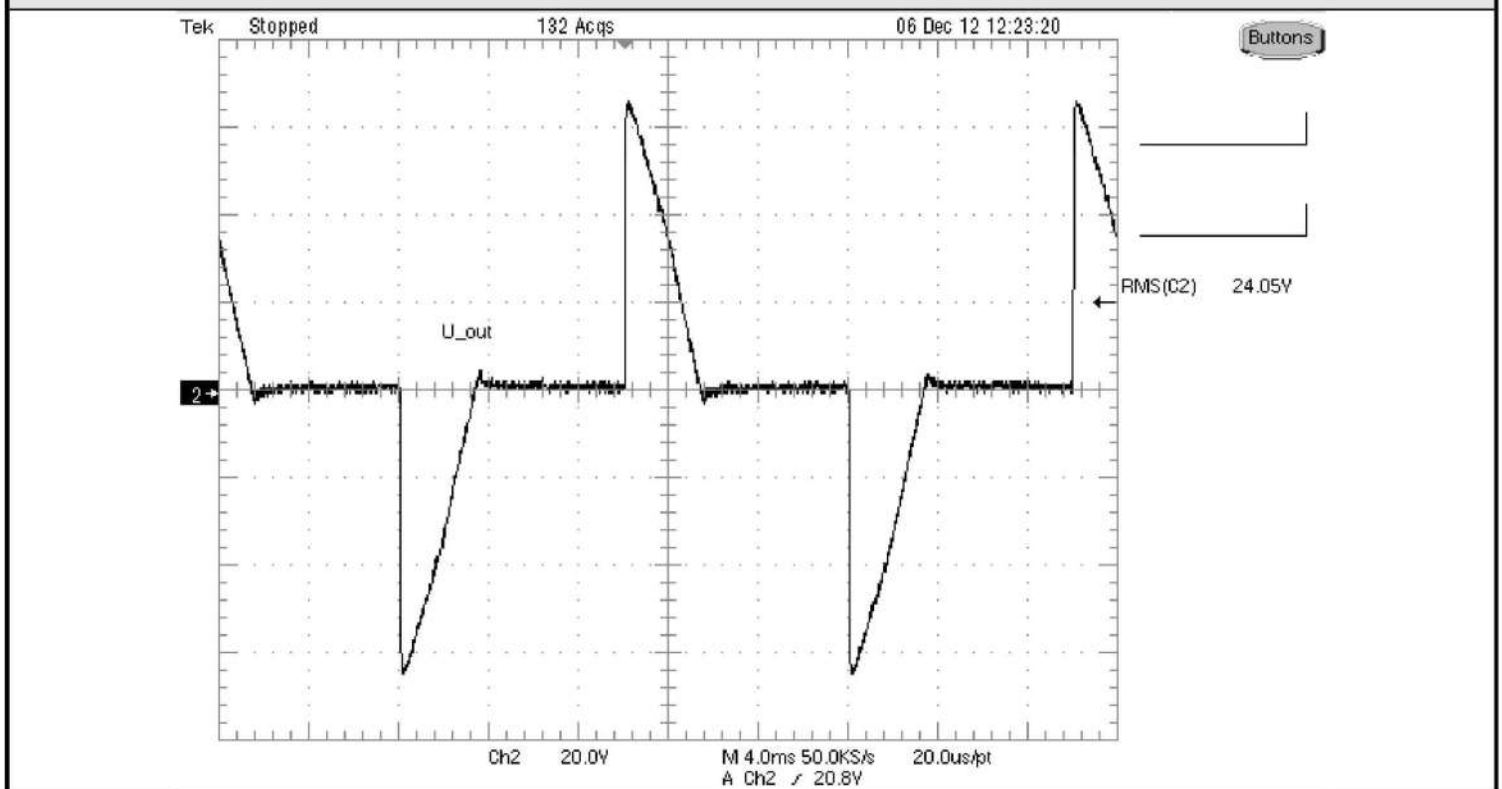
Tiny Data M USB (Bluetooth)		
Tiny Data MF USB (Bluetooth)		
Data recording		
Number of reports		Approx. 1000
Interface		USB (USB memory stick, USB printer)
Data format		PDF, CSV
Recorded data		
General data		Time, date, report number, ambient temperature, welder name, job number max. 40-digits (alphanumeric)
Fusion data		Voltage, current, energy, nominal and actual welding time, mode, resistance, error messages with 10 voltage and current values
Fitting data		Barcode Information (ISO/TR 13950), Type, Dimension, Manufacturer
Device data		Serial number, inventory number, date of last service, working hours, system configuration
Worker code		Barcode (PF or ISO 12176-3) for operator identification and access to manual input and system configuration
Traceability functions		
Job number		Max. 40 digits (alphanumeric), input by barcode or manual
Worker code		ISO 1276-3
Weather condition		DVS 2207 / 2208
Welding Barcode		ISO/TR 13950
Traceability barcode of fitting		ISO 12176-4
Traceability Barcode of 1st pipe		ISO 12176-4
Traceability Barcode of 2nd pipe -		ISO 12176-4
Traceability barcode of 3rd pipe / infotext		ISO 12176-4 / 40 digits (alphanumeric)

Additional functions		
Output options		Whole memory, selectable by job number
Job code input/selection		Barcode, manual, internal list of job numbers for selection
Input of position data / free text		40 characters, per joint

Technical file according to ISO 12176-2

Tiny M / Tiny M (Bluetooth) Tiny MF / Tiny MF (Bluetooth) Tiny Data M USB / Tiny Data M USB (Bluetooth) Tiny Data MF USB / Tiny Data MF USB (Bluetooth)		
Classification Tiny M / Tiny M (Bluetooth) / Tiny MF / Tiny MF (Bluetooth)		
Device type		Tiny M / Tiny M (Bluetooth) Tiny MF / Tiny MF (Bluetooth)
Classification		P ₂ 3 U S ₁ V AK X
Classification Tiny M / Tiny M (Bluetooth) / Tiny MF / Tiny MF (Bluetooth)		
Device type		Tiny Data M USB / Tiny Data M USB (Bluetooth) Tiny Data MF USB / Tiny Data MF USB (Bluetooth)
Classification		P ₂ 3 U S ₁ V AK D X

Simulation curved at 24 V output voltage



Duty cycle according to ISO 12176-2 at 30 %, 60 % and 100 %, Test time t = 60 minutes

Test time 60 min	Output power at $U_{OUT} = 36\text{ V}$	Output power at $U_{OUT} = 40\text{ V}$	Output current I_{OUT}
30 %	3500 W	3900 W	97.3 A
60 %	2600 W	2900 W	72.5 A
100 %	2100 W	2350 W	58.4 A

Additional Information

Soft Start	At least 3 seconds (ramp)
Ambient temperature compensation	According to ISO 13950
Fitting temperature compensation	No
Data recording Tiny M / Tiny MF Tiny M (Bluetooth) / Tiny MF (Bluetooth)	No
Data recording Tiny Data M / Tiny Data M USB (Bluetooth) Tiny Data MF / Tiny Data MF USB (Bluetooth)	Yes
Bluetooth module Tiny M / Tiny MF Tiny Data M USB / Tiny Data MF USB	No
Bluetooth module Tiny M (Bluetooth) Tiny MF (Bluetooth) Tiny Data M USB (Bluetooth) Tiny Data MF USB (Bluetooth)	Bluetooth LE

This machine is manufactured in Germany by



for

