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Technical Data Sheet

Polymatic Plus (USB)

Electrofusion control unit

Scope of application

The electrofusion control units of type **Polymatic Plus (USB)** 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 Polymatic Plus (USB) 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.

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 **Polymatic Plus (USB)**, 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

	Polymatic Plus (USB)		Enclosed
	1 ×	Instruction manual	EN019
	1 ×	USB memory stick 2 GB	5_5001_512
	1 ×	Accessory bag	1_2800_002
	1 ×	Transport box	1_2800_005

Technical data

Polymatic Plus (USB)				
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		P2 4 U S_1 V AK D X		
Input of welding parameters				
	Yes	**No**	**Opt.**	
Barcode with scanner	☒	☐	☐	
SmartFuse	☒	☐	☐	
Manual input of the barcode digits.	☒	☐	☐	
Manual input of welding parameters	☒	☐	☐	**U_{OUT}: 8 to 48 V** **t_{WELD}: 0 to 9999 s**
Manual input of welding parameters	☐	☒	☐	**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 → ∞)	**[A]**	40	
Output current (min.)	**[A]**	2	
Energy adjustment		Temperature compensation	
Welding cable length	**[m]**	5, other lengths on request	
Welding cable mounting		Fixed, optional detachable*	
Welding terminals	**[mm]**	4.0 (optional 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 with plastic casing	
Display		4 × 20 Characters (alphanum.), background lighting	
Dimensions, weights and packaging			
Product dimensions L × W × H	**[mm]**	450 × 325 × 380	
Product weight (incl. welding cable)	**[kg]**	18*	
Product weight (excl. welding cable)	**[kg]**	16*	
Packaging dimensions L × W × H	**[mm]**	470 × 440 × 380	
Packaging material		Plastic*	
Packaging type		Box*	
Packaging weight	**[kg]**	4	
Transport weight	**[kg]**	22	

***) 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

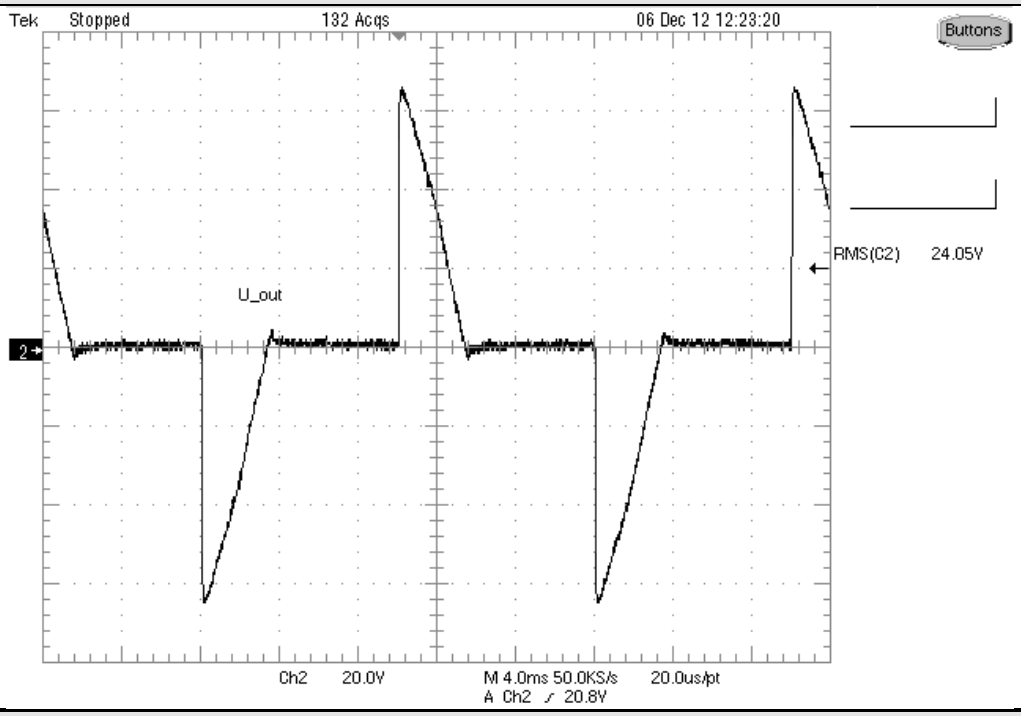
The electrofusion control unit **Polymatic Plus (USB)** provides data recording for approx. 1000 welding cycles and their barcode identifier conforming to ISO12176-4 (traceability).

Polymatic Plus (USB)		
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 (alphanumerical)
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		Job number max. 40 digits (alphanumerical), 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 (alphanumerical)
Additional functions		
Output options		Whole memory, selectable by job number
Job code input/selection		Barcode, manual, internal list of job numbers for selection

Technical file according to ISO 12176-2

Polymatic Plus (USB)		
Classification		
Device type		Polymatic Plus (USB)
Classification		P_2 4 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 V	Output power at U_{OUT} = 40 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	Yes