GOLDSCHMIDT
Smart Rail Solutions

SMARTWELD SPARK

ELECTRIC THERMIT® IGNITER

TRANSLATION OF THE ORIGINAL OPERATION MANUAL

Revision history

REVISION	DATE	COMMENTS, AFFECTED SECTIONS/CHAPTERS	EDITED BY
01	2019-04-18	Revision of the entire document	Quality Assurance
02	2022-02-02	Revision layout	Quality Assurance
03	2025-07-14	Revision of the content chap. 7.1, chap. 7.2	Quality Assurance
04	2026-12-01	Revision of the content chap. 1.3, chap. 2, chap. 6.1, chap. 6.2, chap. 6.3.1., chap. 6.4, chap. 6.5, chap. 8.1, chap. 8.3, chap. 9.1, chap. 9.2, chap. 9.4.2, chap. 10, chap. 12, chap. 13	Quality Assurance

ORIGINAL

EC Declaration of Conformity

according to the EMC Directive 2014/30/EU

Manufacturer:

ELEKTRO-THERMIT GMBH & CO. KG
Chemiestraße 24
06132 Halle (Saale)
Germany

hereby declares that the following product

Model:	Electric Thermit® igniter
Produkt name:	SMARTWELD SPARK
Serial number:	9929218617 - 9999999999
Year of manufacture:	from 01.08.2025

corresponds to all relevant provisions.

Applied harmonised standards
DIN EN 62135-1:2016 Safety requirements for design, manufacture, and installation
DIN EN 55011:2022 Industrial, scientific, and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
DIN EN 61000-4-2:2009 Testing and measurement techniques - Electrostatic discharge immunity test
DIN EN 61000-4-3:2021 Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
DIN EN 62471:2009 Photobiological safety of lamps and lamp systems

Mr. Ingolf Schöniger, Chemiestr. 24, 06132 Halle (Saale) is authorized to compile the technical documentation.

Halle (Saale), 09.07.2025

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1. General

1.1 General information on this instruction manual

The design and construction of the electric Thermit® igniter Smartweld Spark (hereinafter also referred to as “device”) and of all component parts are state of the art.

1.2 Using the instruction manual

The information in this instruction manual is binding. Prior to using the electric Thermit® igniter, every operator of the device must read and understand the complete instruction manual. Always obey the instructions, warnings and rules stated in this instruction manual.

1.3 Storing the instruction manual

The instruction manual must always be available to the operator.

Please scan the QR code on the device.

2. Signal words and symbols in the instruction manual

SYMBOL	MEANING
DANGER	DANGER refers to a hazard with a high degree of risk, which, if not avoided, will lead to death or severe injuries.
WARNING	WARNING refers to a hazard with a medium degree of risk, which, if not avoided, may lead to severe injuries.
CAUTION	CAUTION refers to a hazard with a low degree of risk, which, if not avoided, may lead to minor or moderate injuries.
NOTICE	Note, the non-observance of which may result in environmental or material damages.
	Attention risk of injury.

3. Liability

The operator is liable for any failure to comply with the instruction manual. The manufacturer is not liable for damages to the device or its accessory that occur as a result of misuse by the operator or failure to comply with the instruction manual.

Any conversions or changes to the device or the component parts without the manufacturer's prior approval are strictly forbidden and do not fall under the manufacturer's liability.

4. Copyright protection

This instruction manual is protected by the copyright of the Elektro-Thermit GmbH & Co. KG. This document may not, in whole or in parts, be copied or revealed to third parties, without prior consent, in writing, from Elektro-Thermit GmbH & Co. KG.

5. Defects liability

The statutory warranty period applies. You have the right to a defect-free replacement in the case of defects in the device or its accessories which were not caused by misuse or any use to the contrary of the device's intended purpose, but for which the manufacturer is clearly responsible. Wear and tear damages from normal use of the device are excluded from the warranty.

6. For your safety

This chapter includes all safety-relevant information.

NOTICE
Prior to using the device, thoroughly read and obey all safety rules.

6.1 Use according to the intended purpose

The electric Thermit® igniter Smartweld Spark is exclusively designed for the ignition of Thermit® portions of Elektro-Thermit GmbH & Co. KG. The device must only be used and operated according to this purpose.

Only the corresponding electrodes may be used for ignition. Any use of the device or its accessories not conforming to or exceeding the specified use is regarded as an infringement of the intended purpose.

6.2 Use to the contrary of the intended purpose

Any use other than that which is specified in chapter 6.1 "Use according to the intended purpose" is considered use to the contrary of the intended purpose.

Examples of use to the contrary of the intended purpose:

- Igniting other inflammable substances such as flammable gases, liquids or fuels.
- Igniting cutting torches or pre-heating torches to heat or cut rails.
- Using the device as a striking or recessing tool or as a substitute for other tools.
- Using batteries or the battery recharger in other devices (like cordless powered screwdrivers or drills).
- Using the battery recharger to charge batteries other than the ones supplied by the manufacturer.
- Using the battery recharger cable to carry the device or pull the plug from the electrical socket.
- Transporting and storing other objects, tools and materials in the transport case.
- Transporting and storing igniters in the transport case.
- Manually cooling the heated electrodes by dipping them in water, sand, soil, etc.

NOTICE
Elektro-Thermit GmbH & Co. KG is not responsible for personal or property damage caused by any use to the contrary of the intended purpose of the device or its component parts.

6.3 General hazard sources

6.3.1 Electrical components – battery recharger and batteries

The connecting plug (Euro connector CEE 7/16) of the battery recharger must be compatible with the electrical socket and the power supply grid. The connector is designed exclusively for use in Europe (except for GB, IRL, CY, MT) and must not be tampered with in any way. Please use the power cable that is commonly used in the application country.

DANGER

1. The ingress of water into the battery recharger while connected to the power supply can cause serious personal injury through electric shock. This may result in ventricular fibrillation, cardiac arrest or respiratory paralysis leading to death. Therefore protect the device, the batteries and the battery recharger from rain and humidity! Only recharge the batteries in a safe place.
2. Broken cables or exposed wires of the battery recharger can cause serious personal injury through electric shock. This may result in ventricular fibrillation, cardiac arrest or respiratory paralysis leading to death. Protect the battery recharger cable from moving components of the device, tools and sharp edges!
3. The batteries may catch fire, explode and cause chemical burns if not handled appropriately. The batteries must never be bypassed, pierced, thrown into fire, crushed, dipped in water, forcibly discharged or exposed to temperatures higher than 45 °C.

6.3.2 Device

The device produces an electric voltage pulse to ignite the Thermit® portion. This pulse lies in a voltage range lower than 60 V. Nevertheless, misuse can cause electrical shock.

WARNING

The on-switch is used to de-energize the complete assembly. The switch has a maximum load current of 12 A and must be ensured that it is only actuated in a no-load state (without gate trigger current). See Figure 2: Device configuration, pt. (5) On-switch.

6.3.3 Fire prevention

Obey all workplace fire regulations.

6.4 Qualification of personnel

Working with the electric Thermit® igniter Smartweld Spark may only be carried out by personnel who have been trained in an initial training with the following main emphasises:

- functional description of the Smartweld Spark,
- explanation of the individual components,
- explanation of the hazard sources,
- use of the Smartweld Spark,
- recognition of functional errors and malfunctions,
- correct cleaning of the Smartweld Spark.

6.5 Using the personal protective equipment

The electric Thermit® igniter Smartweld Spark initiates the chemical reaction of the Thermit® portion.

If the operator has added no further provisions, the protective equipment listed in the following table is mandatory when working with the Smartweld Spark.

SYMBOL	PROTECTIVE EQUIPMENT	WORK
	Protective work clothing (protective wear for welders in accordance with EN 470-1, if necessary hi-vis warning clothing in accordance with EN 471)	Transport, operation, maintenance, cleaning/care
	Protective work shoes (S3 safety shoes in accordance with EN ISO 20345 ankle-height shoes)	Transport, operation, maintenance
	Protective goggles (normal and protective level 6 for welding work)	Operation (welding)
	Protective gloves (severe mechanical hazards in accordance with EN 388 (4101), if necessary protective gloves against thermal risks in accordance with EN 407)	Transport, operation, maintenance, cleaning/care

7. Technical Data

7.1 Device

CATEGORY	DATA
Dimensions with rechargeable battery	340 x 220 x 75 mm
Weight with rechargeable battery	ca. 1,700 g
Ignition voltage	59.5 V
Ignition potential	30 s
Ignition delay	1 s
Ignition time	5 s
Max. operating temperature	45 °C
Type of protection	IP 44

7.2 Batteries

CATEGORY	DATA
Type	Lithium-ion-battery
Nominal voltage	18.0 V
Nominal capacity	3.0 Ah
Charging time (90 % full)	approx. 85 min
Chemical system	Lithium-NMC/graphite
Voltage range	21 V, max. 21.25 V
Weight	630 g
Charge temperature	+5 °C to +45 °C
Storage temperature	-20 °C to +45 °C
Storage humidity	0 % to max. 80 %

7.3 Battery recharger

CATEGORY	DATA
Power supply voltage	90 - 240 V
Power frequency	50 - 60 Hz
Rated power	58 W

7.4 Operating conditions

To correctly operate the electric Thermit® igniter Smartweld Spark, the following conditions must be met:

- Ambient temperature not lower than -20 °C and not higher than 60 °C.
- Always store the device and its accessories in a dry place.

8. Components and function

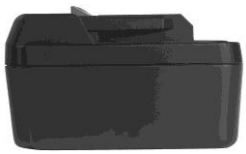
8.1 Scope of delivery

Check if the delivery is complete and in correct condition.

Prior to their delivery, the components were subject to thorough functional and quality tests. In case of claims, contact the manufacturer.

Device (Smartweld Spark)

Wear pad cover



Battery

Battery recharger

Electrode guide

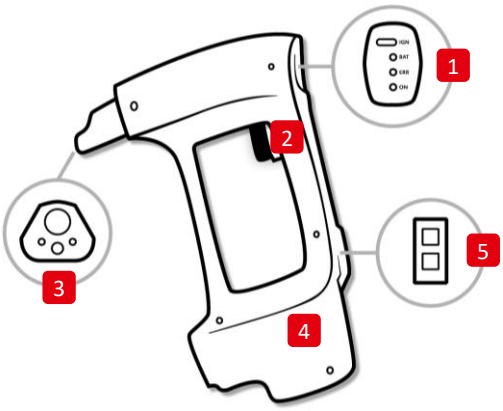
Transport case for device and accessory

Electrodes (10 pieces/pack)

Figure 1: Scope of delivery

8.2 Configuration of the device

The electric Thermit® igniter Smartweld Spark (see Figure 2) has a shock-resistant enclosure comprised of glass fibre-reinforced polyamide. The pistol-shaped device allows for one-hand operation. The ignition of the Thermit® portion occurs in a crucible.



(1) Display (see Figure 6)

(2) Start button (see Figure 4)

(3) Plug and LED lighting (see Figure 5**Fehler! Verweisquelle konnte nicht gefunden werden.**)

(4) Enclosure

(5) Display with LIGHT button and ON switch (see Figure 3)

Figure 2: Device configuration

8.3 Displays and controls

The device includes the following controls:

CONTROL ELEMENT	FIGURE	FUNCTION	OPERATION
LIGHT button	 *Figure 3*	Start and stop the LED lighting (to illuminate the working area)	Push the button once to start the LED lighting at the front of the device if it was off or stop the LED lighting if it was on. Also operates when the device itself is off.
ON switch		Start and stop the device	Push the button once to start the device if it was off or stop the device if it was on.
Start button	 *Figure 4*	Start the ignition	Push the button once to start the process. If you push it again within 30 seconds, the process is cancelled.
Electrode guide and LED lighting	 *Figure 5*	Connects the electrode guide to the device; Lighting	Electrode guide changeable

Display on the back of the device:

PILOT LAMP	FIGURE	MEANING
IGN-LED	 *Figure 6*	Flashes when the ignition voltage is available. Glows constantly when the Thermit® portion is ignited.
BAT-LED		Indicates the battery charge condition. Comes on green, yellow, violet or red according to the charge condition of the battery. green: ready for another ignition yellow: ready for another ignition, charge batteries violet: ready for ignition, backfire possible, charge batteries red: ignition not possible, charge batteries
ERR-LED		Comes on red if an error occurred in the device or if the overheat control was activated. (see chapter 10 “Malfunctions”).
ON-LED		Comes on green when the device is switched on.

8.4 Acoustic signal at ignition

An acoustic signal (105 dB) sounds as soon as the Thermit® portion in the crucible is ignited. The acoustic signal tells the operator to remove the device from the crucible and get to a safe distance as fast as possible (away from the crucible).

NOTICE
The acoustic signal indicates that the Thermit® portion has definitely ignited even if a reaction isn’t immediately apparent!

9. Use

9.1 Checking the device before the use

Prior to putting the device into service, check if the transport case contains all components included in the scope of delivery.

Then check the device for external damage. Pay particular attention to the plug connection for the extension adapter. Make sure that the device and the component parts are in their correct working conditions. If not, do not use them.

NOTICE

If you discover damage to the buttons, switches, pilot lamps, or other important components, do not use the device. Immediately contact the manufacturer. Never attempt to repair the device yourself.

9.2 Correctly charging the batteries

Make sure that the batteries are fully charged prior to the initial use. The battery recharger has a display showing the charge condition of the inserted battery (see Figure 7).

NOTICE

Overheating or damage to the battery: The left display of the battery recharger (Figure 7) indicates if the battery is overheated or damaged. If the display comes on red, immediately disconnect the recharger from the power grid to avoid any further damage. Do not use a defective battery. Dispose of the battery according to all applicable rules and regulations (see chapter 12 “Disposal and recycling”).

Figure 7: Display of the battery recharger

NOTICE

Make sure that the battery is only charged as long as necessary. This prevents damage and reduction to the charge capacity.

9.3 Preparing the device for use

To use the device for igniting a weld portion in a crucible, the electrodes must be inserted into the electrode guide at the front until they snap into place and are held firmly. The well charged battery is latched onto the device.

NOTICE

The charge condition of the battery shows on the display (under BAT LED) after the device is switched on (see related table in chapter 8.3 “Displays and controls”).

9.4 Operating the device

WARNING

1. Bursts of flame pose a serious burn hazard! Serious burns may occur to the skin, hair, and eyes. To start the ignition, insert the electrodes 40 mm deep into the Thermit® portion. After ignition, immediately retreat to the required safe distance.
2. The reaction of the Thermit® portion poses a serious burn hazard! Serious burns may occur to the skin, hair, and eyes. When the acoustic signal sounds, immediately remove the device from the crucible and move back at least six meters from the crucible.

CAUTION

Hot electrodes pose a serious burn hazard! Burns may occur to your own skin and the skin of others. Do not touch the electrodes until they have cooled down. Always handle the device carefully. The tips of the electrodes may still glow after igniting the Thermit® portion.

Once the device is correctly prepared (see chapter 9.3 “Preparing the device for use”), you may proceed with the operation.

9.4.1 Starting the device

To start the device, push the ON switch. The device goes into standby and the ON LED on the display comes on green.

9.4.2 Igniting the Thermit® portion in the crucible

1. Single-use crucible: Insert electrodes 40 mm deep into the welding portion through the opening in the lid of the single-use crucible.
   Long-life crucible: Remove the cap from the long-life crucible and hold it in your hand and insert the electrodes 40 mm into the welding portion.
2. Push the start button.

The IGN LED flashes. The ignition voltage is now available and the device is ready for ignition for a period of 30 seconds. Once the device correctly makes contact with the Thermit® portion, an ignition is released after one second ignition delay.

NOTICE

Lightly stirring the igniter will increase the likelihood of ignition.

If no ignition takes place after pushing the Start button (within 30 seconds e.g. due to improper contact with the Thermit® portion), the process is automatically cancelled.

The welding portion is ignited when the device gives an acoustic signal and the IGN LED glows constantly. The operator has two seconds to close the long-life crucible with the cover and remove the device from the crucible and retreat to the safe distance.

WARNING

The reaction of the Thermit® portion poses a serious burn hazard!

CAUTION

Hot electrodes pose a burn hazard!

3. After ignition, remove Smartweld Spark from the crucible and quickly create a safety distance. Long-life crucibles: close immediately with the cap.

WARNING

Bursts of flame pose a serious burn hazard!

4. Withdraw the electrodes and correctly dispose of them.

NOTICE

Dispose of the electrodes together with any welding waste.

9.4.3 Preparing a new ignition

After the ignition of a Thermit® portion is completed, the electrodes can be replaced while the device is still on. Make sure that the used electrodes have completely cooled down to reduce the danger of burns. Use protective gloves. Withdraw the used electrodes from the electrode guide. Insert new electrodes.

NOTICE

You can ignite a new Thermit® portion after approx. 30 seconds (refer to chapter 9.4.2 "Igniting the Thermit® portion in the crucible").

9.4.4 Stopping the device

To stop the device, push the ON switch. The ON LED goes off.

9.5 After use/storage

After use, clean the device of dust and dirt, then put all components into the transport case.

HINWEIS

For long-term storage of the device make sure that the storage location is dry (humidity not higher than 80 %) and adequately ventilated. Storage temperatures must be between -20 °C and +45 °C. Recharge batteries after long storage.

10. Malfunctions

The ERR LED goes on if an error occurs in the device or if the overheat control is activated.

Troubleshooting if the overheat control activated:

1. Wait until the device has cooled down. This may take several minutes.
2. Then push the start button. If the ERR LED goes off after pushing the start button, continue using the device.
3. If not, let it continue to cool down for a few minutes, then push the start button again.

Troubleshooting in case of a device error:

If the ERR LED stays on even after allowing to cool multiple times, an error occurred in the device. Do not try to correct the error yourself. Contact the manufacturer instead (see publisher).

11. Servicing and maintenance

Prior to using the device do a visual check for possible damages.

Only Elektro-Thermit GmbH & Co. KG or service centres authorized by Elektro-Thermit GmbH & Co. KG may perform any necessary maintenance or repairs to the device and its accessories. Performing maintenance or repairs yourself is prohibited.

12. Disposal and recycling

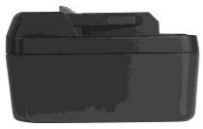
These general rules apply: All waste originating from welding work must be removed from the track area and disposed of.

The table below lists the single components and the related waste management possibility.

COMPONENTS	**WASTE MANAGEMENT**
Electrodes	Dispose of the electrodes together with any welding waste.
Batteries	Batteries contain dangerous chemicals. They must be disposed of as hazardous waste. Batteries may only be disposed of via an approved collection system. Contact the local refuse management office for the most appropriate collection centre. **NOTICE** Never dispose of a battery with residual waste!
Device and battery recharger	The device and the battery recharger must be disposed of as electrical waste. Contact the local refuse management office for the most appropriate collection/ recycling centre.
Travel case, electrode guide, wear pad cover	Dispose of as residual waste.

13. Order list for consumables/wearing parts

You can reorder consumables and wearing parts for the electric Thermit® igniter Smartweld Spark through Elektro-Thermit GmbH & Co. KG. When contacting the manufacturer, please indicate the correct product number (see below).

COMPONENT	FIGURE	PRODUCT NUMBER
Waer pad cover		256701
Battery		258467
Battery recharger		256703
Electrode guide		256702
Electrodes		256838