Instruction Manual

Ex-MP4

List of Contents

1. Applications

Portable non-contact pyrometers are robust, easy to operate devices, which are specially designed for maintenance purposes. They are suitable for the indication of temperatures either mechanical moving or electric under the strain of stationary parts, without production flows being impeded, the installation being switched off or the parts having to be removed. They also help with the supervision of production processes, with the temperatures being measured during production. In doing so, quality problems can be identified and recognised earlier.

2. Working Method

All objects with a temperature above absolute zero radiate infrared energy, which extends in every direction with the speed of light. If an infrared pyrometer is trained on an object the lens gathers the energy and focuses on the infrared sensor.

The sensor reacts through the distribution of a voltage signal, whose absorbed energy is exactly proportional. The microprocessor controlled electronics of the equipment then determine and indicate the momentary temperature (in regard to a wider parameter).

Objects with radiant or polished surfaces radiate not only energy but also reflect a proportion of radiation from their surrounding area. 1, as an emission level indication factor between 0,1 and 1,0 supports this factual calculation, so that only the true radiated energy and not the reflected energy is brought in for the calculation of the object being measured. For the majority of all uses an emission level of 0.95 is used for calculation purposes. For the equipment Ex-MP4, the level is set at 0.95 and cannot be altered.

3. Operation in Hazardous Areas

The non-contact temperature-measuring device Ex-MP4 is suitable for measuring temperatures in potentially explosive areas. Inside the hazardous area the use is only permitted when used with the specified accompanying leather case. The battery must only be changed outside of the hazardous areas. Only 9V Block alkaline batteries type IEC 6LR61 are permitted to be used whose manufacturers and types are listed in the technical data. The use of any other type of battery is strictly forbidden in that it will invalidate the Ex-data certification.

4. Safety Advice

The following operating instructions contain information and precautionary advice which for the described conditions, must be taken into consideration to guarantee safe operation.
In case of doubt (due to translation and/or printing errors) reference should be made to the original German instruction manual.

5. Faults and Damage

If there is any reason to suspect that the safety of the equipment has been affected then it must be immediately withdrawn from use and precautionary measures taken in order to prevent any further use of the equipment in the hazardous area until such time that all necessary checks and repairs have been carried out.

The safety and integrity of the equipment could be compromised by, for example:

- External damage to the housing
- Incorrect storage of equipment
- Equipment has suffered damage whilst in transit
- Internal damage to the device is visible
- Exposure to excessive loads
- Correct certification is illegible
- Functioning errors occur
- The permitted limitations are exceeded
- Functioning errors or obvious measurement inaccuracies occur which prevent further measurement by the equipment

6. Safety regulations

In order to exclude false operation of the unit, its use assumes that the user is aware of and complies with the usual safety regulations.

The following safety regulations must be complied with:
- the unit must not be opened within the explosion endangered area.
- the batteries may only be changed outside the explosion endangered area.
- only type approved batteries may be used.
- The equipment may only be used in the Ex-hazardous area providing it is fitted in the specified accompanying holster.

Please note the special conditions for measuring from distance into a Zone 0 area.

The measuring of temperatures within a Zone 0 area using the Ex-MP4 is only permitted under the following conditions:

1. The Ex-MP4 unit must not be allowed into the Zone 0 area.

2. It is imperative to ensure that the equipment is unable to enter the Zone 0 area inadvertently or otherwise.

   That a safety strap on the equipment is secured either onto the belt of the user or onto a belt hanger to ensure a safe operation.

   That the length of the strap is such that the Ex-MP4 is restricted from being within 50cm of the border of the Zone 0 area.

7. Safety instructions

- Caution! Laser Radiation!
- Do not stare into beam!
- Danger of eye damage!

8. Ex-Data

Certificate of conformity: TÜV 00 ATEX 1580 X
Certification: II 2 G EEx ia IIC T4

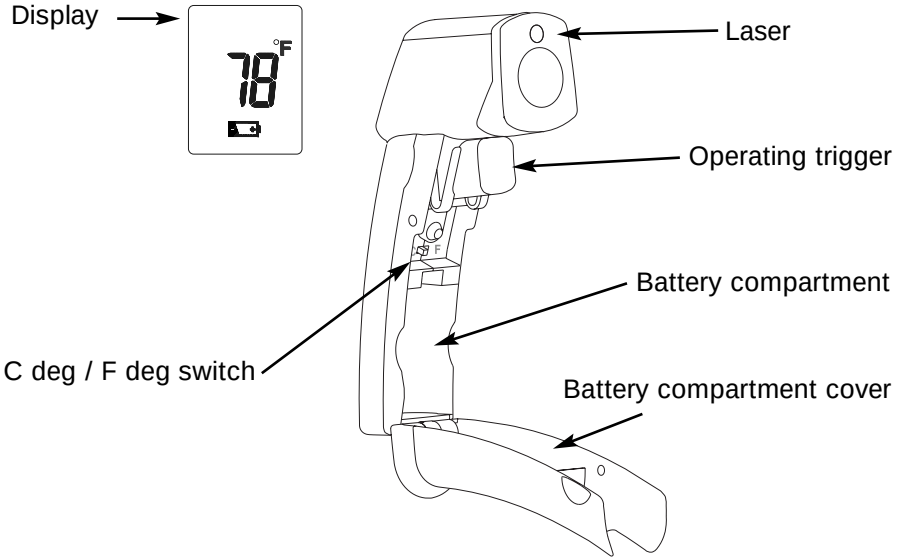
9. Technical Data

Temperature range:	-18 deg centigrade to +260 deg centigrade (0 – 500 degrees Fahrenheit)
Emissivity:	0.95 - preset
Target sighting:	Laser (class 2)
CE number:	CE 0102
Accuracy: (at 23°C)	-18°C ... -1°C : ±3°C 0°C ... 99°C : ±2°C 100°C ... 260°C : ±2% of reading
Repeatability:	± 2% of reading or ± 2 deg C (± 3 deg F)
Spectral response:	7 to 18 microns
Response time:	500 mSec
Ambient operating range:	0 deg C to +50 deg C (32 deg F to 120 deg F)
Relative humidity:	95% r.H. non-condensing at up to 30 deg C (86 deg F).
Storage temperature range:	-20 deg C to + 65 deg C (-4 deg F to 150 deg F)
IP protection level:	IP 50
Power supply:	9V alkaline batteries type IEC 6LR61

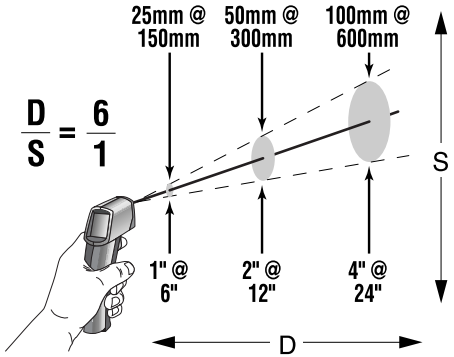
Type (6LR61):	Supplier:
Alkaline No. 4822	Varta
Alkaline Universal No. 4022	Varta
Alkaline Electric Power No. 8022	Varta
Alkaline	Duracell
Alkaline Ultra	Duracell
Professional Alkaline Battery Procell	Duracell
Alkaline Power Line Industrial Battery	Panasonic
Alkaline Energizer	Eveready
Alkaline	Daimon

Dimensions:
152 x 101 x 38 mm
Weight: ~ 200 g

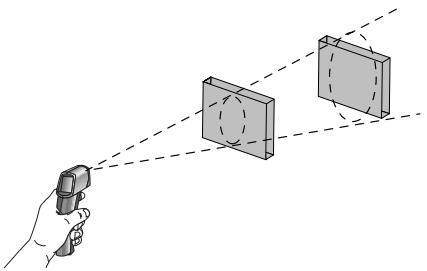
10. Overall View Of Construction



11. Field Of Sight



Distance sensor – object [mm]



Ensure that the specific area or object to be measured is larger than the laser spot size of the device. The smaller the object the closer the equipment must be. For optimum measuring accuracy the area/object should be at least twice that of the spot size.

12. Operation of the Laser Vision

The laser vision is an essential part of the Ex-MP4.
Please read through the following section carefully.

Warning!!

Do not look directly at the laser beam
Danger of eye damage
Operate the equipment carefully
Do not aim at other people

The laser vision provides an exact aim and is helpful for the sighting of small or distant objects. It does not indicate the size of the spot. This is dependent on range and reference to the optical diagram should be made. The device is equipped with a robust solid state laser, which is housed inside the equipment.

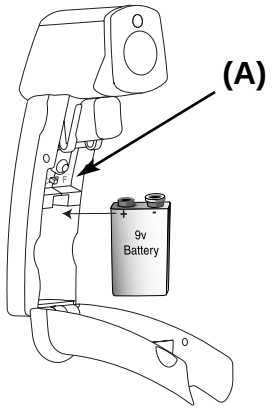
Laser - Technical Data

Class:	II
Power:	< 1mW
Wavelength:	630-670nm

13. Battery Change

When the battery needs changing and while there is still a usable charge the battery condition indicator symbol appears on the display. If this occurs the battery should be changed in order to ensure a safe and optimum operation. The exchange of this maintenance element may only be carried out outside of the hazardous area. Take care and ensure that when changing the battery, that only those in the listed operating instructions are used.
The use of any other type of battery is strictly forbidden in that it will invalidate the Ex-data certification.
In order to open the battery compartment first remove the leather case. After exchanging the battery refit the leather case in order to use the equipment in the hazardous area.

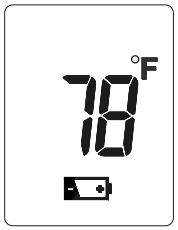
14. Operation of the Equipment



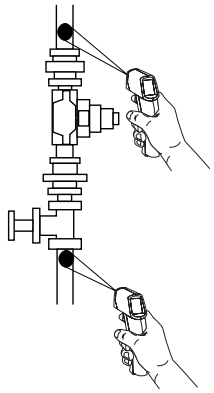
C deg / F deg Change-over

In order to switch between centigrade and fahrenheit, the battery compartment has to be opened – having first taken off the leather case. It is then possible to select the temperature indicator required by sliding Switch **A** from either degree C or degree F.

After selecting the temperature indicator required the leather case must again be fitted before operation of the equipment in the hazardous area.



The LCD indicator shows the temperature in degrees C or degrees F. After release of the trigger the temperature measurement is displayed for a further 7 seconds and at the same time the word "Hold" is displayed. The battery condition indicator symbol shows the state of the battery.



Operation of the Device

For a temperature reading, the equipment is pointed towards an object and the trigger is pressed. Consider the distance in relation to the spot size at this point (optical diagram) as well as taking the field of sight into consideration. With increased distance from the object, increase the surface of the measured area of equipment.

15. Emission Level

The majority of most organic materials, as well as polished and oxidised surfaces, possess an emission level of 0.95. For this reason the emission level of the Ex-MP4 is adjusted to 0.95 and cannot be altered.
The regulation of the temperatures of shiny or highly polished metallic surfaces produces inexact measurements. To compensate, the measuring object can be covered with adhesive tape or painted with a matt black colour. Wait until the adhesive tape is the same temperature as the material. Then determine the temperature of the adhesive tape (appropriate material) or of the painted surface.

16. Cleaning and maintenance

The unit should only be cleaned with a moist cloth or sponge. Detergents or abrasive materials should not be used.

We recommend that the function and sensitivity of unit be checked every two years by the manufacturer.

17. Fault finding

Code	Problem	Action
- - - (on indicator)	Target temp above or under range	Select target within the units specification
Battery symbol appears	Battery low	Replace battery
No indicator	Discharged battery	Replace battery
Laser does not function	Low or discharged battery	Replace battery

18. Repairs

Should repairs be necessary, then the conditions of ELEX V. must be complied with. We recommend that repairs be carried out in the manufacturer's factory as it is necessary for the unit to be checked for technical safety reasons.

19. Guarantee and liability

For this product, the *ecom instruments GmbH* guarantees the function and workmanship of the equipment under normal operating and maintenance conditions for a period of two years commencing from the date of delivery .

This guarantee does not apply to products which are improperly used, modified, neglected, damaged in accidents or exposed to abnormal operating conditions or improper handling.

Claims under the guarantee can be made by returning the defective equipment to the factory. We reserve the right to repair, renew the settings or exchange the device.

The above-mentioned guarantee conditions are the sole and only right of the purchaser to compensation, are exclusively valid and replace all other contract or legal warranty obligations. The *ecom instruments GmbH* accepts no responsibility for special, direct, indirect, accompanying or consequential damage as well as losses including the loss of data which may arise through the use or acquisition of the equipment. *ecom instruments GmbH* will not be responsible for any special or consequential damage which may occur independent of whether it was caused by violation of the warranty obligation, lawful or unlawful action, action in good faith or any other action.

If in certain countries, the limitation of a legal guarantee as well as the exclusion or limitation of accompanying or consequential damage is not permissible, it may be that the above-mentioned limitations and exclusions are not valid for every purchaser. Should such clauses of these guarantee terms be declared to be void or not realisable by a competent court, the effectiveness or enforceability of any one of the other conditions of these guarantee terms will be unaffected by the court decision.

Translation

(1) **EC TYPE-EXAMINATION CERTIFICATE**

(2) Equipment or Protective System intended for use in potentially explosive atmospheres **- Directive 94/9/EC**

(3) EC-Type Examination Certificate Number

TÜV 00 ATEX 1580 X

(4) Equipment or Protective System: Explosion-proof temperature measuring device type Ex-MP4

(5) Manufacturer: ECOM Rolf Nied GmbH

(6) Address: Industriestraße 2
D-97959 Assamstadt

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Certification Body, notified body number 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Basic Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report N° 00 PX 11700.

(9) Compliance with the Basic Health and Safety Requirements has been assured by compliance with:

EN 50 014:1997 **EN 50 020:1994**

(10) If the sign "X" is placed after the certification number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design and construction of the specified equipment or protective system according to Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and placing on the market of this equipment or protective system.

(12) The marking of the equipment or protective system must include the following:

II 2 G EEx ia IIC T4

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Head of the Certification Body

Hanover, 2000-07-06

(13) **SCHEDULE**

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 00 ATEX 1580 X**

(15) Description of equipment or protective system

The explosion-proof temperature measuring device type Ex-MP4 is allowed to be used within the explosion-hazardous area of the Categories 2 and 3 (Zone 1 and Zone 2).

The highest permissible ambient temperature is 50°C.

Electrical data

Supply (internal battery)	1 pc. block battery according to IEC 6LR61 U = 9 V

Only batteries successfully type-examined according to section 10.9 of the EN 50020:1994 are permissible. The manufacturers and the types have to be indicated in the operating instructions.

(16) Test documents are listed in the test report No. 00 PX 11700.

(17) Special condition for safe use

It is only allowed to replace the battery outside of the hazardous area.

In the hazardous explosive area the temperature measuring device must only be used with the associated leather bag.

(18) Basic Health and Safety Requirements

no additional ones

Translation

1. SUPPLEMENT to

EC TYPE-EXAMINATION CERTIFICATE No. TÜV 00 ATEX 1580 X

of the company: ECOM Rolf Nied GmbH
Industriestraße 2
D-97959 Assamstadt

In the future, the explosion-proof temperature measuring device type Ex-MP4 may also be manufactured according to the test documents listed in the test report.

The electrical data, the special conditions for safe use and all other data apply unchanged for this supplement.

(16) Test documents are listed in the test report N° 01 YEX 126560.

(17) Special condition for safe use

For the measuring of temperatures in areas that requires category 1 equipment (zone 0) applies the following:

The temperature measuring device type Ex-MP4 must not be introduced into areas that require apparatus of category 0 (zone 0) itself.

The strap of the device with leather bag has to fixed at the belt or at a belt buckle of the operator in such a way that in the case of free hanging of the device at the strap there is a safety distance greater than 50 cm to the border area of the category 1 (zone 0) observed. It is only allowed to use the strap of the manufacturer.

(18) Essential Health and Safety Requirements

no additional ones

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 2001-07-25

Head of the
Certification Body

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22. Declaration of EC-Conformity

We ***ecom instruments GmbH· Industriestraße 2***
D-97959 Assamstadt
hereby declare in sole responsibility, that our porduct

Ex-MP4

which is the subject of this declaration, complies with the conditions of the followong EG guidelines (including all relevant changes):

94/9/EG	Equipment and protective systems in explosionendangered areas
89/336/EWG	Electromagnetic compatibility

and with the following standards:

EN 50081-1:1993	Electromagnetig compatibility (EMC) Generic emission standard
EN 50082-1:1997	Electromagnetic compatibility (EMC) Generic immunity standard
EN 50014:1997	Electrical apparatus for potentially explosive atmospheres General requirements
EN 50020:1994	Electrical apparatus for potentially explosive atmospheres Intrinsic safety „i“

ecom instruments GmbH

Assamstadt, 17.01.02

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440B0101 03/02 Änderungen vorbehalten