

Digital MAURER Pyrometer

## KTRD 4485-HS

measuring range 600-1600°C

**HIGHSPEED** COMPACT DEVICE

with Fiber Optic Cable

**Laser application**



Performance, precision and reliability - you can count on MAURER pyrometers. The compact and easy to use design, as well as a large selection of matching accessories, enables you to quickly integrate the pyrometer into your surroundings. For tight spaces, this pyrometer is equipped with a fiber optic cable and an attached optic system.

The most important **features** and **characteristics** at a glance:

- Spectral range: 0,85 – 1,1  $\mu\text{m}$
- **Ultra-short responsetime of 100  $\mu\text{s}$**
- **Emissivity from 100 – 10 %**, adjustable directly at the pyrometer or via interface
- **Green target light (LED)** that is exactly identical to the actual measuring spot in position and size
- With **fiber optic cable and optic system** for exact focusing even in narrow spaces
- Use with **digital and analogue output**
- **1 limit output** (open collector)
- Operating voltage **24 V DC**
- **Free software** (IR-LOG) for parameter setting, data recording and storage



### Measuring Ranges

#### Short measuring ranges

1. 600 – 1200 °C
2. 650 – 1300 °C
3. 700 – 1400 °C
4. 750 – 1500 °C

#### Long measuring ranges

5. 600 – 1600 °C

Special measuring ranges upon request

### Scope of Applications

Processing of steel, iron, non-ferrous metal, wires and ceramics; rolling, soldering, welding, transforming, induction heating; vacuum furnace etc.

## Technical Data

|                                 |                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spectral range                  | 0,85 – 1,1 µm                                                                                                                                                  |
| Target marking                  | Green target light (LED)                                                                                                                                       |
| Response time                   | 100 µs                                                                                                                                                         |
| Measurement uncertainty         | 0,5 % ± 1 °C (ε = 1, Tu = 23 °C, T 95 = 1 s)                                                                                                                   |
| Temperature dependence          | 0,01 % / °C                                                                                                                                                    |
| Reproducibility                 | 0,1 %                                                                                                                                                          |
| Emissivity                      | 100 – 10 %, adjustable directly at the pyrometer or via interface                                                                                              |
| Resolution                      | < 0,1 % at the analogue output      < 0,1 °C at the interface                                                                                                  |
| Operating / Storage temperature | 0 – 60 °C, fiber optic cable and optics 150°C / -10 °C – 70 °C<br>32 – 140 °F, fiber optic cable and optics 302 °F / 14 – 158 °F                               |
| Permissible humidity            | 35 – 85 % RH (non-condensing)                                                                                                                                  |
| Analogue output                 | 0 – 20 mA / 4 – 20 mA (Load max. 500 Ω)                                                                                                                        |
| 1 limit output (open coll.)     | 24 V 100 mA                                                                                                                                                    |
| interface                       | RS 232 ± 50 V isolated <u>or</u> RS 485 ± 70 V isolated                                                                                                        |
| Maximum value memory            | Maximum memory, peak value memory double, adjustable time and threshold value, erasing after time, external contact, by software, after every measuring object |
| Supply voltage                  | 24 V DC ± 10 %                                                                                                                                                 |
| Power consumption               | < 100 mA                                                                                                                                                       |
| Device connection               | 8-pol. plug connector if RS232, 7-pol. plug connector if RS485                                                                                                 |
| Dimensions (LxHxW) / Weight     | 30 x 65 x 80 mm / 0,15 kg without fiber optic cable                                                                                                            |
| IP Code                         | IP65                                                                                                                                                           |

## Fiber optic cables

Quartz fiber optic cable in metal hose, ambient temperature max. 150 °C, minimum bending radius = 200 x fiber thickness. Both sides with FSMA-plug for connecting the pyrometer and the optic system. Custom-tailored lengths and other fibers available upon request

| Fiber thickness | For measuring range No. |
|-----------------|-------------------------|
| Ø 0,2 mm fiber  | 1-5                     |

## Configurations

- Version with fiber optic cable: KTRD 4485
- Special objective and measuring ranges upon request

## Main Equipment

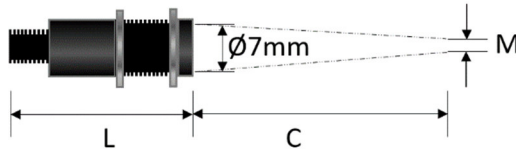
| Electronic Equipment     |                                   | Mechanical Equipment |                                |
|--------------------------|-----------------------------------|----------------------|--------------------------------|
| Connection cables        | Power Supply 100-270 VAC – 24 VDC | Objectives           | Mirror 90° for beam deflection |
| Electronic process units | Interface converter (to USB)      | Mounting parts       | Blowing devices                |
|                          |                                   | Cooling plate        |                                |

Optics for MAURER pyrometers with fiber optic cable

## Optic systems

### OVERVIEW

Fix-Focus  
M12x1

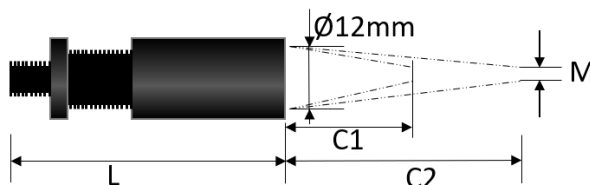


#### Legende

- L Length of optic
- C Measuring distance from optic front edge
- M Measuring spot size

| Optics      | C<br>[mm] | L<br>[mm] | Fiber Ø<br>[µm] | M<br>[mm] |
|-------------|-----------|-----------|-----------------|-----------|
| VL 50-M 12  | 50        | 38        | 200             | 0,7       |
|             |           |           | 400             | 1,4       |
|             |           |           | 600             | 2,0       |
| VL 100-M 12 | 100       | 40        | 200             | 1,0       |
|             |           |           | 400             | 2,0       |
|             |           |           | 600             | 3,0       |
| VL 150-M 12 | 150       | 38        | 200             | 1,4       |
|             |           |           | 400             | 2,7       |
|             |           |           | 600             | 4,0       |
| VL 200-M 12 | 200       | 38        | 200             | 2,0       |
|             |           |           | 400             | 4,0       |
|             |           |           | 600             | 6,0       |

Vario-Focus  
Ø 18 mm

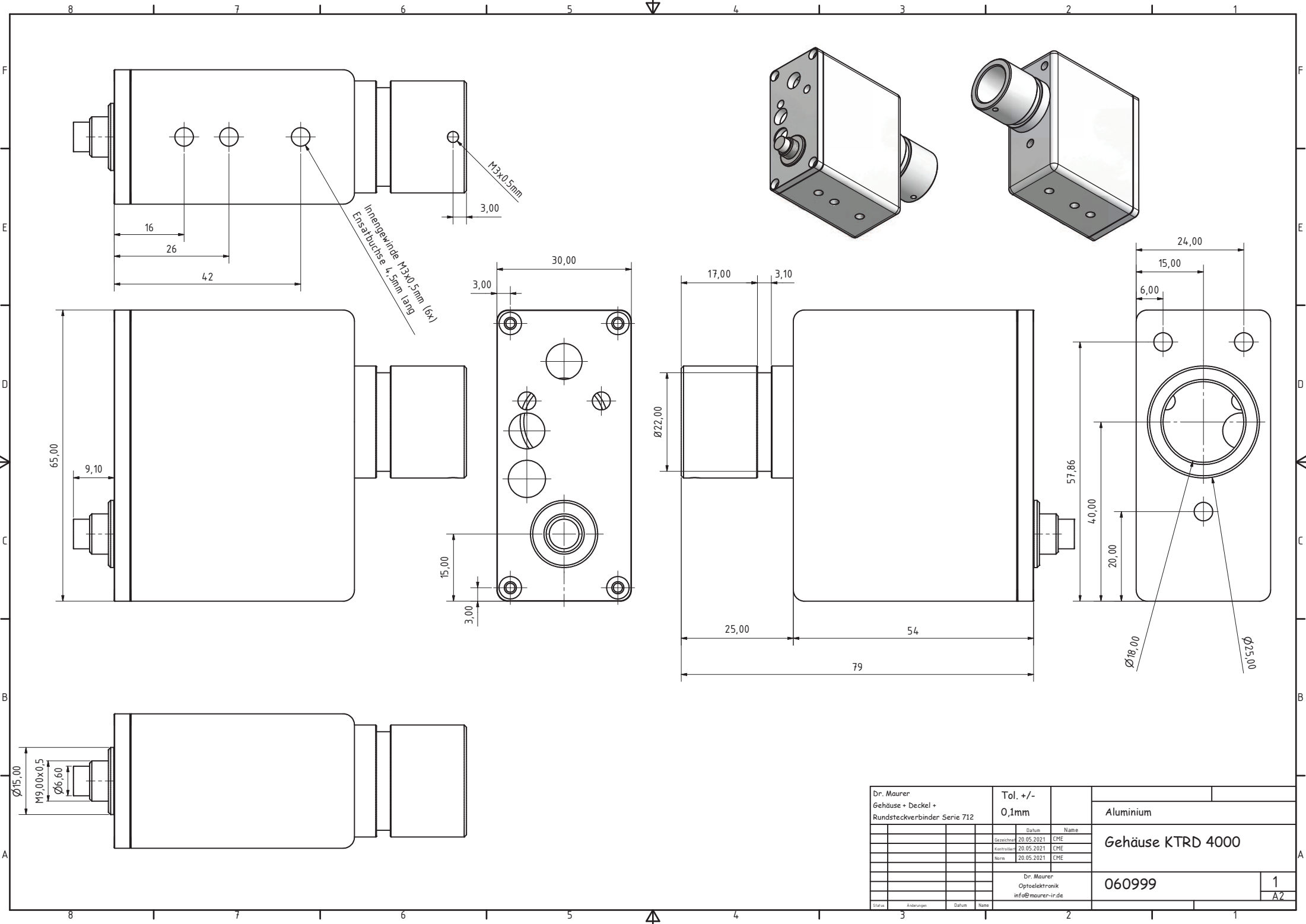


#### Legende

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Measuring spot size M (mm) =  $\frac{\text{Measuring distance (mm)}}{\text{distance ratio}}$  z.B.  $\frac{C=150 \text{ mm}}{D=75} = \text{Ø } 2,00 \text{ mm}$

| Optics  | C1<br>[mm] | C2<br>[mm] | L<br>[mm] | Fiber Ø<br>[µm] | D<br>Distance ratio |
|---------|------------|------------|-----------|-----------------|---------------------|
| VL-VA N | 65         | 160        | 46 – 56   | 200             | 138                 |
|         |            |            |           | 400             | 69                  |
|         |            |            |           | 600             | 46                  |
| VL-VA T | 100        | 5000       | 46 – 56   | 200             | 150                 |
|         |            |            |           | 400             | 75                  |
|         |            |            |           | 600             | 50                  |



|                              |            |       |      |                   |            |           |                   |  |  |  |
|------------------------------|------------|-------|------|-------------------|------------|-----------|-------------------|--|--|--|
| Dr. Maurer                   |            |       |      | Tol. +/-          |            |           |                   |  |  |  |
| Gehäuse + Deckel +           |            |       |      | 0,1mm             |            | Aluminium |                   |  |  |  |
| Rundsteckverbinder Serie 712 |            |       |      |                   |            |           |                   |  |  |  |
|                              |            |       |      | Datum             | Name       |           |                   |  |  |  |
|                              |            |       |      | Gezeichnet        | 20.05.2021 | CME       |                   |  |  |  |
|                              |            |       |      | Kontrolliert      | 20.05.2021 | CME       |                   |  |  |  |
|                              |            |       |      | Norm              | 20.05.2021 | CME       |                   |  |  |  |
|                              |            |       |      | Dr. Maurer        |            |           | Gehäuse KTRD 4000 |  |  |  |
|                              |            |       |      | Optoelektronik    |            |           |                   |  |  |  |
|                              |            |       |      | info@maurer-ir.de |            |           |                   |  |  |  |
|                              |            |       |      |                   |            |           |                   |  |  |  |
|                              |            |       |      | 060999            |            |           | 1                 |  |  |  |
|                              |            |       |      |                   |            |           | A2                |  |  |  |
| Status                       | Änderungen | Datum | Name |                   |            |           |                   |  |  |  |