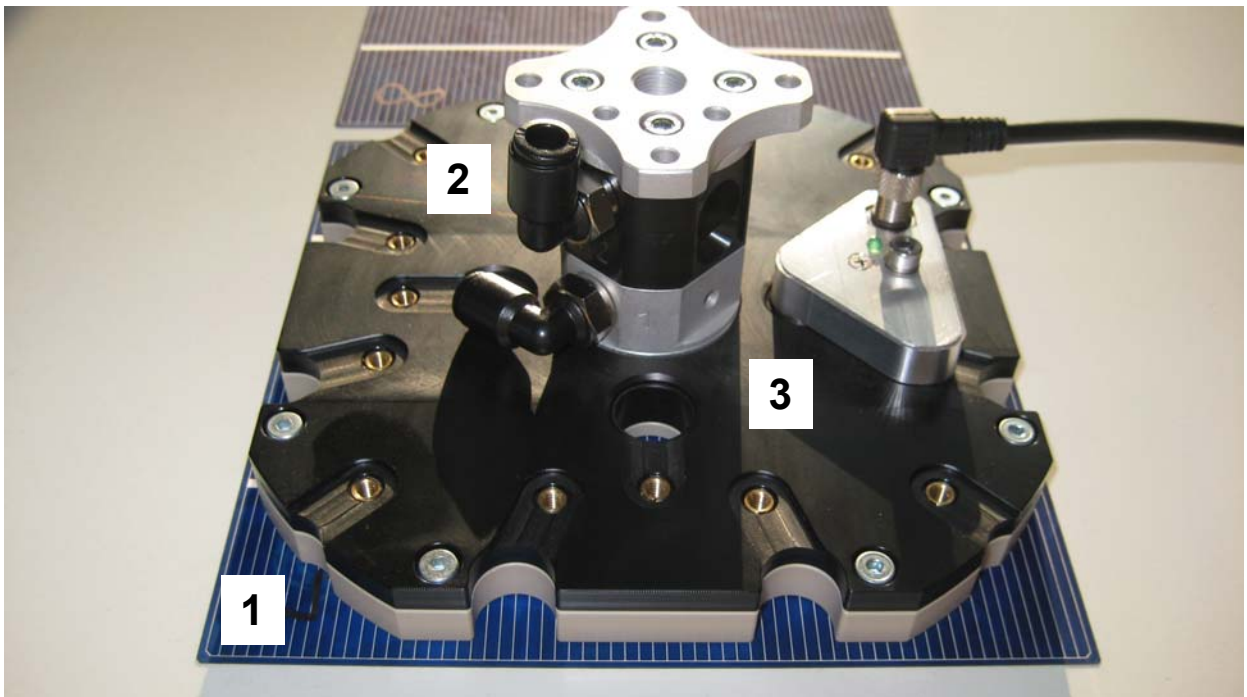
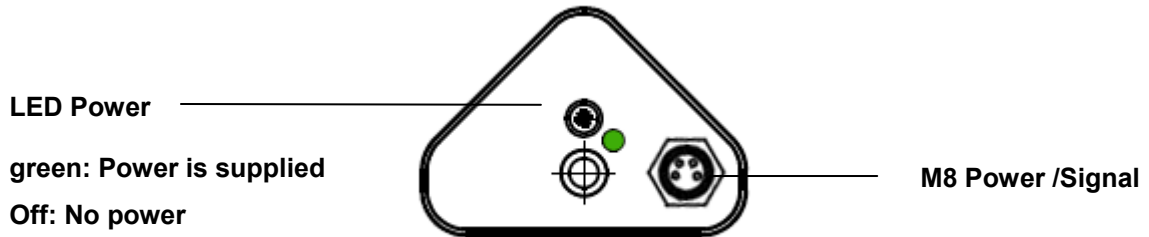


- **Double cell detection of crystalline solar cells**
- **Eddy current measurement principle**
- **For mounting in „Schmalz Wafer Gripper SWG“**
- **Very fast reaction time – less than 20 ms**
- **Analogue output signal for connection to PLC**



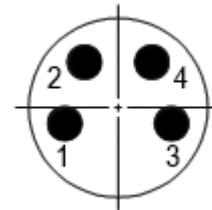
1 – Crystalline Solar cell
2 – Schmalz Wafer Gripper SWG
3 – Roland Sensor WF14x15AQ453S

For double layer detection of other thin metal layers please contact Roland Electronic GmbH in Keltern / Germany.



Connector M8 Power / Signal

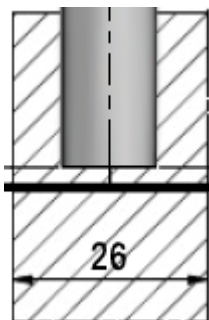
- Pin 1 → +24VDC supply voltage → brown
- Pin 2 → Current output (4 - 20mA) → white
- Pin 3 → GND → blue
- Pin 4 → Voltage output (2 – 10V) → black



Important notes:

Sensor WF14x15AQ453S is especially designed for the Schmalz Wafer Gripper SWG. This type of Gripper is ideal for the task of double cell detection. The following requirements are fulfilled:

1. No conductive material in the surrounding area of the sensors tube with a diameter of 26mm

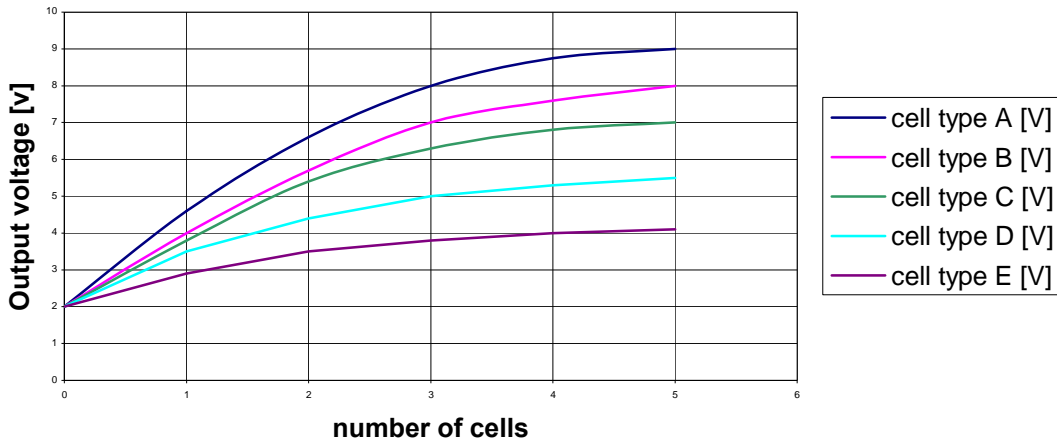


2. The air gap between sensors front and surface of solar cell has to be held constant during the measurement. Ideal is 0.5mm +/- 0.2mm, other air gaps according specification data



Typical ratings at 25°C

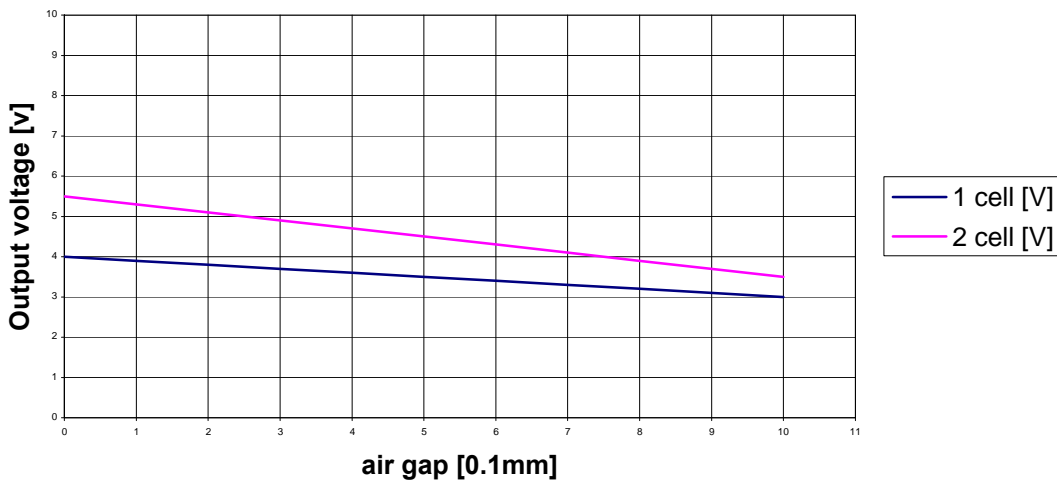
**Voltage output vs number of cells
(air gap 0.5mm)**



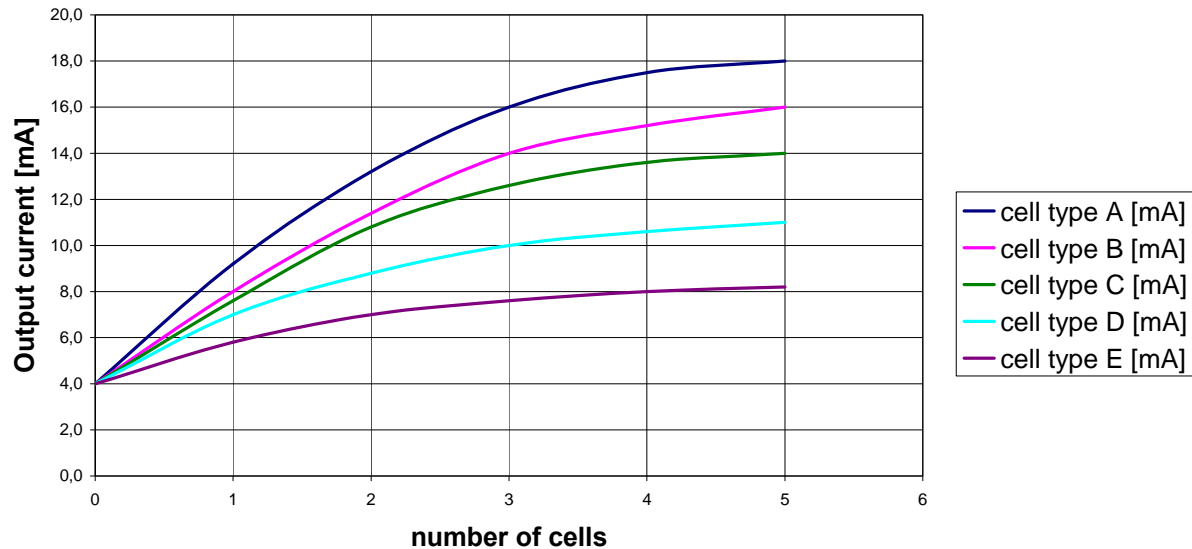
Note: cell type doesn't mean a standardized classification. Cell type classifies the influence of thickness of silicon, back-surface field and busbars. This influence will cause different levels of output voltage.

Important: Considering that the sensor output voltage depends on cell type a Teach-In Procedure for reliable measuring is essential.

**Voltage output vs air gap
(Cell type B)**



Current output vs number of cells (air gap 0.5mm)



Typical Specification

Air gap range without limitations
Absolute air gap maximum¹

0 ... 1.0 mm
1.5 mm

Air gap variation during measurement for
 ...Air gap 0.0 mm
 ...Air gap up to 1.0 mm
 ...Air gap up to 1.4 mm

less than -0.0 / +0.2mm
less than +/- 0.2mm
less than +/- 0.1mm

Analogous signal latency
Full scale

less than 20ms

Supply voltage:
Supply current:

20 ... 28V DC
less than 50mA

Voltage output:
Voltage output resistance:
Current output:
Current output resistance

0/2 ... 10V
100KΩ (min. 20KΩ)
0/4 ... 20mA
50Ω (min. 0Ω / max. 300Ω)

Temperature range:

+15 ... +45°C (Operation)
-20 ... +70°C (Storage)

Weight of sensor

40 g

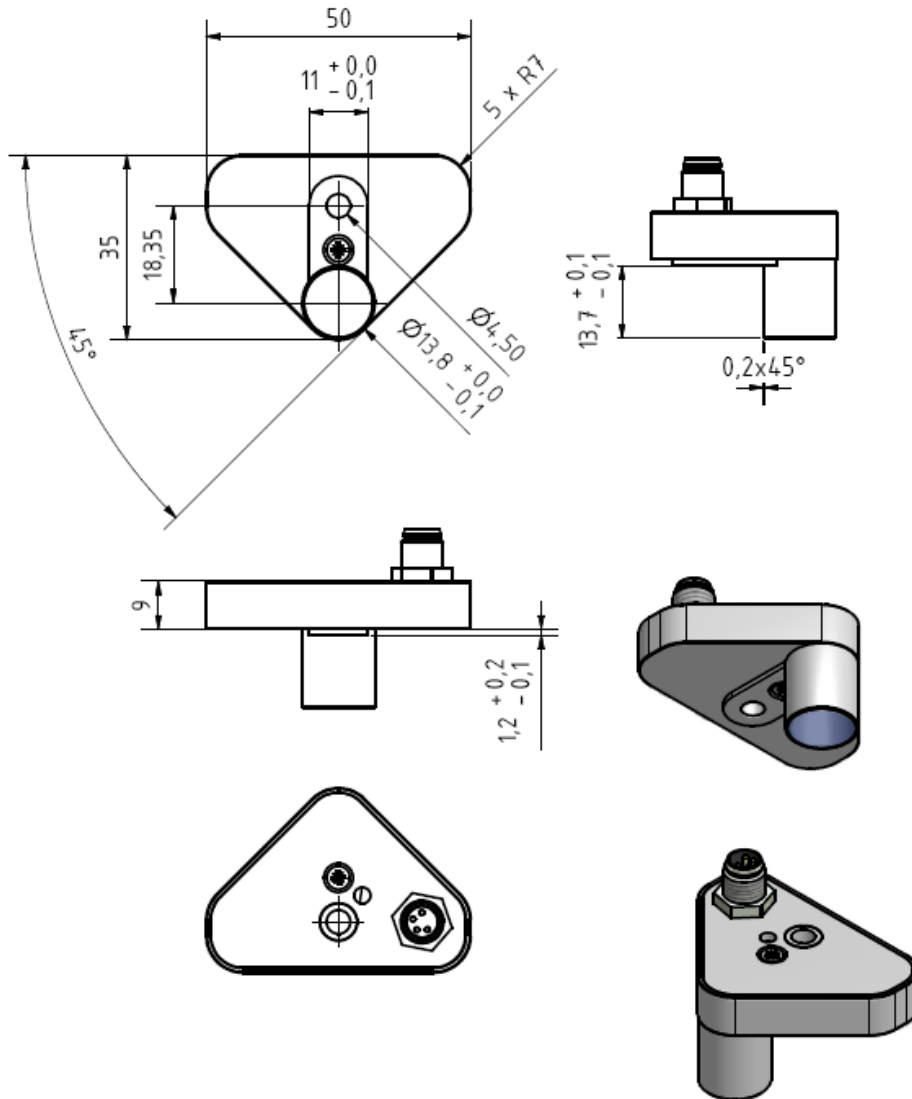
Conformity standards

CE

¹ Air gaps with higher values can reduce the capability to recognize the second cell / layer

Dimensions

see drawing



Ordering information

Sensor with M8 connector
(including screw M4x 16)

WF14x15AQ453S

cable 5m, straight plug M8- 4pin
cable 5m, right angle plug M8- 4pin

CWFM8S-G
CWFM8S-W