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C A L I B R A T I O N C E R T I F I C A T E

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CALIBRATION DATE : 07 sep 1999

CALIBRATED BY : F.de Wit

PYRANOMETER TYPE : CM11

SERIAL NUMBER : 996985

SENSITIVITY (+/- 0.5%) 4.90 x 10⁻⁶ V per W/m² (with no load)
at 20°C and 500 W/m²

RADIATION SCALE World Radiometric Reference (WRR)

CALIBRATION PROCEDURE : By comparison with an outdoors
calibrated reference pyranometer :
CM11 913550
Pyranometers were mounted horizontally,
side by side.
Source : 1000 W tungsten-halogen lamp
Color temperature : 3300° K
Angle of incidence : normal incidence

KIPP & ZONEN DELFT B.V.
DELFT/HOLLAND

Radiometer type : **CM 11**
 name : **ISO 9060 secondary standard pyranometer**
 serial no. : 996905

	<i>description</i>	<input type="checkbox"/>	<i>remarks</i>
Specials :	temperature sensor	<input type="checkbox"/>	type pt100 / YSI 44031
	extended cable	<input type="checkbox"/>	_____ mtr.
	connector	<input type="checkbox"/>	type _____ _____
	outer dome	<input type="checkbox"/>	type _____
	inner dome	<input type="checkbox"/>	type _____
	extended temperature range (specify range, and thermistors)	<input type="checkbox"/>	_____ _____
	other	<input type="checkbox"/>	_____ _____

resistance of elements (in serie) :	RE	<u>1004</u>	Ω
mounted resistors	RV	<u>3k3</u>	Ω
occasionally	RS	_____	Ω
occasionally	RP	_____	Ω
occasionally	R2	_____	Ω

special measurements :

cosine error for eight
azimuth directions
temperature dependence
of sensitivity special angles?: _____ range _____ °C to _____ °Cazimuth error at 70° zenithangle _____ 1,4 % (peak - peak)
(if pyranometer is levelled with spirit level)

mean cosine error at zenithangle 40° _____ -0,2 %

mean cosine error at zenithangle 60° _____ -0,3 %

mean cosine error at zenithangle 70° _____ -0,2 %

mean cosine error at zenithangle 80° _____ 2 %
(if pyranometer is radiometrically levelled, expressed as percentage deviation from the
ideal proportionality to the cosine).

Impedance of CM11 : _____ 1406 Ω

IN-PROCESS INSPECTION

approved by:

of serial no. : _____ 996985

date : _____ 7-9-99

F. de W. A.



checked :

DATUM 24-06-'99

file name : cm11keur.rap

rev.Nr.3