



EN: This Datasheet is presented by the manufacturer.

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SMA IR CAM

instruction manual
eredeti használati utasítás
návod na použitie
manual de utilizare
uputstvo za upotrebu
uputa za uporabu



2D4-1

	EN	H	SK	RO	SRB-MNE	HR-BIH
	Presence of dangerous voltage	Veszélyes feszültség jelenléte	Pritomnost nebezpečného napätia	Prezență unei tensiuni periculoase	Prisustvo visokog napona	Prisutnost opasnog napona
	Alternating voltage / current	Váltakozó feszültség / áram	Striedavé napätie / prúd	Tensiune / curent alternativ	Naizmenični napon/struja	Izmjenični napon / struja
	DC voltage / current	Egyenfeszültség / áram	Jednosmerné napätie / prúd	Tensiune / curent continuu	Jednosmerni napon/struja	Istosmjerni napon / struja
	Direct or alternating	Egyen vagy váltakozó	Jednosmerné alebo striedavé	Direct sau alternativ	Jednosmerno ili naizmenično	Istosmjerni ili izmjenični
	Caution! Safety requirement.	Figyelem! Biztonsági előírás!	Pozor! Bezpečnostný predpis!	Atenție! Prevederi de siguranță!	Pažnja! Bezbednosni propis!	Pažnja! Sigurnosni propis!
	Earthing / testing	Földelés / testelés	Uzemnenie / telo	Punere la pământ / testare	Uzemljenje / masa	Uzemljenje / uzemljenje
	Fuse	Biztosíték	Poistka	Siguranță	Osigurač	Osigurač
	Double / reinforced insulation	Kettős / megerősített szigetelés	Dvojitá / posilnená izolácia	Izolație dublă / armată	Dvostruka izolacija	Dvostruka / pojačana izolacija
	Depleted batteries	Kimerült elemek	Vybitá batéria	Baterii descărcate	Prazna baterija	Prazne baterije

Producer / gyártó / výrobca / producător / Hersteller / proizvođač / výrobce / proizvođač:
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Zemlja uvoza: Mađarska • Zemlja porekla: Kina • Proizvođač: Somogyi Elektronik Kft.

Uvoznik za HR: **ZED d.o.o.**
Industrijska c. 5, 10360 Sesvete, Hrvatska • Tel: +385 1 2006 148 • www.zed.hr
Uvoznik za BiH: **DIGITALIS d.o.o.**
M. Spahe 2A/30, 72290 Novi Travnik, BiH • Tel: +387 61 095 095 • www.digitalis.ba
Proizvođač: Somogyi Elektronik Kft, Gesztenyefa ut 3, 9027 Győr, Mađarska

TECHNICAL SPECIFICATION	
THERMAL IMAGING UNIT	
Higher sensitivity and pixel density sensor	UFPA (uncooled focal plane arrays)
Image capture frequency	16 Hz
Therma imaging pixels	(768) 24 x 32
Display image resolution	187 x 251
Field of view	35° (V) x 55° (H)
Emissivity, adjustable	0.1 – 0.99 (default 0.95)
Temperature range	-40 °C – 300 °C
Resolution	0.1 °C / 0.1 °F
Accuracy	>0 °C ±2 °C or ±2% / ≤0 °C ±5 °C or ±5%
Image storage format	.BMP (240x320p / 96dpi)
Gain mode	Auto Gain
Color palette	Iron red / Rainbow
Measurement distance	max. ~ 5-7 m
MULTIMETER UNIT	
DC Voltage max.	1000 V
AC Voltage max.	750 V
Resistance max.	40 MΩ
Capacitance max.	100 μF
Frequency range	40 – 500 Hz
Duty cycle range	0.1 – 99.9 %
Diode test range	0 -1.5 V
Continuity test	≤30 Ω
Sampling frequency	3x / sec.
GENERAL	
Display	2.8" TFT LCD, 240x320p
Touch screen method	resistive, push on
Counts	max.4000
Over-range indicator	display „OL”
Battery low Voltage	display battery symbol
Input polarity indication	display „-” automatically
Storage capacity	3.5MB
Data transmission	Type-C interface
Accuracy index	23 ± 5 °C (≤80% RH) / 1 year
Working temp/humidity	0...40 °C (≤80% RH)
Storage temp/humidity	-10...50 °C (≤70% RH)
Temperature coefficient	0,1/°C (<18 °C, >28 °C)
Auto power off function	variable (display and unit)
Environmental conditions:	CATII, 600V
Batteries	3xAAA alkali (1.5 V)
Dimensions	69 x 134 x 25 mm
Weight	~130 g

EN THERMAL CAMERA MULTIMETER

IMPORTANT SAFETY INSTRUCTIONS
READ THE INSTRUCTION MANUAL CAREFULLY BEFORE USE AND RETAIN IT FOR LATER REFERENCE!



WARNINGS

• Please read and keep the following instructions before using the product. The original instructions are in Hungarian. This device should only be used by persons with reduced physical, sensory or mental capabilities, or lacking experience and knowledge, and children aged 8 years and over, if they are supervised or instructed in the use of the device and understand the hazards involved in its safe use. Children should not play with the device. Children should not be allowed to clean or perform user maintenance on the appliance without supervision. After unpacking, make sure that the appliance has not been damaged in transit. Keep children away from the packaging if it contains bags or other dangerous components. • Never use a damaged measuring lead or an instrument with a damaged casing! If the cable is damaged, it must be replaced by the original type only! Always keep your fingers behind the finger guard ring of the measuring tip! • When measuring, first connect the black wire ("Test, Earth") to the circuit to be measured, then the red wire (under voltage or phase). When completing the measurement, first remove the red wire from the circuit. • Depending on the measurement, a few seconds may be needed for a stable reading. • Due to the high sensitivity of the instrument, it is possible that the display may already show data while the measuring leads are free. This is not an error, the actual value is displayed after the connection to the circuit. • Working with live circuits requires increased caution! • Risk of electric shock and fire if used incorrectly! The measuring instrument may malfunction and damage the connected device! • The connections must be stable and free of locks! • Make sure that no foreign objects enter through the openings! • Switch off and disconnect from the circuit when not in use! • Make sure that the insulation of the connection cables is not damaged when you run them. • In case of any abnormality, switch off the power immediately and contact a professional! • Do not use in humid, damp or explosive atmospheres, in the presence of flammable gases or similar substances! • Protect from dust, moisture, liquid, heat, humidity, frost and impact, as well as direct exposure to heat or sunlight. • Do not dismantle or modify the appliance as this may cause fire, accident or electric shock! • Because of the presence of mains voltage, observe the usual life safety rules! • Do not touch the device or the connection cable with wet hands! • Improper use of connecting cables may cause electric shock, fire or accidents! • If the connection cable is damaged, switch off the power immediately! • The device should only be used in dry conditions! • This product is for residential use, not industrial-commercial use. • Remove the protective film if the front panel has been provided with one. • If the product has reached the end of its useful life, it is considered hazardous waste. It must be disposed of in accordance with local regulations. • Improper installation or improper handling will void the warranty. • Due to continuous improvements, technical specifications and design are subject to change without notice. The current instructions for use can be downloaded from www.somogyi.hu.

WARNING!

• NEVER CONNECT THE INSTRUMENT TO MORE THAN 1000V DC OR 750V AC_{max} SUPPLY! • WARNING! RISK OF ELECTRIC SHOCK! THE MEASURING INSTRUMENT MAY FAIL! • DO NOT TOUCH THE TACTILE TIP! DO NOT PLACE YOUR FINGERS NEAR IT! • NEVER CONNECT A VOLTAGE SOURCE TO THE DEVICE IN THE RESISTANCE, DIODE, BREAKDOWN TEST FUNCTION! • FIRST CONNECT THE EARTH (BODY) WIRE TO THE CIRCUIT, THEN THE ACTIVE (RED) WIRE. WHEN COMPLETING THE MEASUREMENT, REMOVE THE ACTIVE WIRE FIRST! • DURING MEASUREMENT, ONLY CHANGE THE FUNCTION AFTER THE TEST LEADS HAVE BEEN REMOVED FROM THE CIRCUIT UNDER TEST! • BE CAREFUL IF YOU ARE WORKING WITH AT LEAST 60 V DC OR 30 V AC TRUE RMS (42V AC PEAK)! THIS LEVEL CAN CAUSE ELECTRIC SHOCK! • KEEP IN MIND THAT SOME EQUIPMENT OR COMPONENTS MAY CAUSE DAMAGING VOLTAGE SURGES TO THE INSTRUMENT! FOR EXAMPLE: TV, SWITCHING POWER SUPPLY, CAPACITOR... • THIS PRODUCT IS FOR PROFESSIONALS! SAFE USE REQUIRES KNOWLEDGE THAT IS NOT COVERED IN THIS MANUAL. • ONLY THE ORIGINAL MEASURING CORDS MAY BE USED WITH THE INSTRUMENT!

CAT II 600V

CAT IV: measurements for low voltage power supplies E.g.: power meters, switchgear cabinets, primary surge protection devices
CAT III: measurements in buildings, premises E.g.: fixed equipment, distribution board, cabling, busbar, switches, overcurrent protecting box, etc.
CAT II: measurements in circuits that are directly connected to low-voltage circuits. E.g.: household articles, portable devices and similar equipment
CAT I: measurements in circuits that are directly not connect electric network



Caution: Risk of electric shock! Do not attempt to disassemble or modify the unit or its accessories. In case any part is damaged, immediately power off the unit and seek the assistance of a specialist.



The product is not a toy. Keep out of reach of children.



DISPOSAL

Waste equipment must be collected and disposed separately from household waste because it may contain components hazardous to the environment or health. Used or waste equipment may be dropped off free of charge at the point of sale, or at any distributor which sells equipment of identical nature and function. Dispose of product at a facility specializing in the collection of electronic waste. By doing so, you will protect the environment as well as the health of others and yourself. If you have any questions, contact the local waste management organization. We shall undertake the tasks imposed upon the manufacturer pursuant to the relevant regulations and shall bear all associated costs arising from such.

CHARACTERISTICS

• large touchscreen • thermal imaging • measuring the temperature of objects without touching • building thermal bridges, finding mould-prone areas • door, window, building insulation testing • radiators, checking radiators, radiators venting • checking conventional and electric underfloor heating • checking infrared heating panel and solar panel heating • checking heating components of vehicles and electrical equipment • identifying failed electronic components • finding blockages in piping • looking for small living things • AC-DC Volt / frequency / capacitance / resistance / diode / break • automatic or manual switching of measurement limits • recording of measured value, graphical display • thermal images and measurements can be copied to a computer • automatic power off can be set • power supply: 3xAAA (1.5V) batteries, not included • accessories: measuring leads, USB-C connection cable

BATTERY REPLACEMENT

BEFORE STARTING THE OPERATION, SWITCH OFF THE INSTRUMENT AND DISCONNECT THE MEASURING CORDS TO AVOID POSSIBLE ELECTRIC SHOCKS! DO NOT USE THE INSTRUMENT IF THE BACK PLATE IS NOT FIXED IN PLACE!

The battery symbol on the display indicates that the battery needs to be changed. The accuracy of a measurement taken despite the warning signal can no longer be guaranteed and may therefore be dangerous. Replace submerged batteries immediately! Remove the cover to replace the 3xAAA (1.5V) battery. The centre of the back cover can be lifted out when the slit in the fixing screw is horizontal and the open padlock is visible underneath. Make sure to insert the alkaline batteries with the correct polarity! Then turn the screw 180 degrees. The screw cannot be tightened in the conventional way, so always check the position of the screw head and the closed position of the cover before use. Remove the batteries if you are not going to use it for a longer period of time!
• **WARNING! RISK OF EXPLOSION IF BATTERIES ARE INCORRECTLY REPLACED! REPLACE ONLY WITH THE SAME OR A SUBSTITUTE TYPE! DO NOT EXPOSE THE BATTERY TO DIRECT HEAT OR SUNLIGHT AND DO NOT THROW IT INTO A FIRE! IF THE BATTERY SHOULD LEAK, WEAR PROTECTIVE GLOVES AND CLEAN THE BATTERY COMPARTMENT WITH A DRY CLOTH!**
• **THE BATTERY MUST NOT FALL INTO THE HANDS OF A CHILD! DO NOT OPEN, THROW INTO FIRE, SHORT-CIRCUIT OR CHARGE THE BATTERY! RISK OF EXPLOSION!**
• Remove exhausted batteries immediately! • Do not use batteries of different makes or in different condition!

POWER ON, COMMISSIONING

Press and hold the **ON/OFF** button to switch on. In the menu you can choose to start the device with thermal camera or multimeter function. You can switch between the two main modes at any time by pressing this button: **IR/DMM**. If the screen goes dark after a while, touch the screen or press the **ON/OFF** button briefly. In the menu, you can also set the screen switch-off delay and the instrument switch-off delay.
• The touch screen is a resistive type, you have to press firmly to operate it. It is recommended to handle it with a fingernail or a blunt plastic object. For example, a touch tip with a protective cap.
• Before measuring, remove the insulating cap from both ends of the measuring lead, if fitted.
• Remove the protective film from the screen, if it has been provided with one!

	to switch on and off, press and hold
IR / DMM	thermal imaging camera / digital multimeter switch
Hz / %	frequency / fill factor when measuring sine wave AC Volt
HOLD / RANGE	keep measured data on display / change measurement limit (depending on menu setting)

USING THE INFRARED THERMAL IMAGING CAMERA

In the menu, you can set the multimeter or thermal imaging camera to start when you switch on. You can switch between the two later using the **IR/DMM** button. Using a thermal imaging camera opens up new horizons for professionals and enthusiasts alike. It offers a wide range of new measurement and inspection possibilities, providing instant results when inspecting objects. Thermal images can be stored in the internal memory. Some examples of applications are: measuring the temperature of objects without touching them - identifying building thermal bridges and mould-prone areas - checking door, window and building insulation - checking radiators and radiator ventilation - checking conventional and electric underfloor heating - checking infra-heating panel and solar panel heating - checking heating components in vehicles and electrical equipment - checking faulty electronic components - finding blockages in pipes - looking for small living organisms...
To always get the easiest to analyse thermal image, you need to make several settings in the menu. The ideal setting may vary depending on different environmental conditions and materials. Experiment with the settings and always update them before measurement (**SETTINGS / IR CAMERA**: colour palette, emission factor).
The instrument rescales itself before each image adjustment or measurement. Depending on the changing content of the image, surfaces with the same temperature may appear in different colours in successive different images. Depending on how the environment under test changes. The thermal images show the approximate minimum and maximum temperatures.

To take and store a thermal photo, press the button at the bottom right of the screen. Wait until the screenshot is saved. You can find this screenshot later in the **STORAGE** section of the **SETTINGS** (gear icon) menu. Approximately 20-22 images can be stored - this also depends on the content of the images. If the memory is full, delete or copy the pictures to a computer before taking new pictures!
• Keep in mind the emission data for actual temperatures. Reflective objects may show lower temperatures than the real ones. This may increase the risk of injury and burns.
• The accuracy of the measurement depends on the emission factor. This shows how much light a material emits compared to an absolute black body.
• For example, on a hand wearing a ring, the metal ring is perceived as colder, even though it is at a similar temperature to the hand. So even though the two objects are the same temperature, they emit different amounts of infrared energy. The emissivity is the ratio of how much infrared radiation a material can emit compared to a perfect emitter. Its value is between 0.0 and 1.0. An object with an emission factor of 1.0 is considered a perfect emitter and is called a "black body". In reality, there are no perfect emitters, which makes infrared measurements difficult. This thermal camera allows the emissivity to be adjusted within a wide range. It has to be adjusted according to the material of the measured object. This operation is necessary to obtain a more accurate measurement result.
• In thermal camera mode, do not connect a measuring lead to the instrument!
• Protect the rear camera lens from dirt and scratches! Keep it in a safe and protected place when not in use!

TRANSFER THERMAL IMAGES TO A COMPUTER

You can connect the **USB-C** connector on the side of the meter to a computer using the supplied cable. Press the **USB MOD** button in the **SETTINGS** (gear) menu. A folder called **THERMAL** will then appear on the computer. The multimeter is displayed as an external drive on the computer and must be handled accordingly. You can copy files from the instrument's internal storage for further processing. These are thermal camera images (.BMP).
• If you see files created other than thermal images (e.g. VOM), they have no actual data content. They cannot be viewed or opened. This type of meter does not provide this service. Delete these files.
• Remove the measuring leads before connecting the USB cable!
• Remove the USB cable after copying the files!
• On your computer, you should use the "safely remove external drive" method, as if you were just removing a thumb drive device. Otherwise, files and the instrument may be damaged.

DIGITAL MULTIMETER

Plug the black (**COM**) and red (**VΩ**) leads in correctly when the instrument is switched off. If the thermal camera mode is activated when the instrument is switched on, toggle it with the **IR/DMM** button. Use the icons on the bottom row of the screen to select the mode. The first button displays the functions that can be measured by the multimeter on the screen. Press the function you want to use: DC voltage (**VDC**), AC voltage (**VIAC**), resistance measurement, break test with audible alarm, diode test, capacitance measurement. The automatic change of the measurement limit (**AUTO**) can be changed manually with the **HOLD/ RANGE** button - if enabled in the menu.
The middle icon in the bottom row switches to graphical display. It is possible to store and copy data to a computer, see above. The tool icon changes the frequency of the measurements (0.5/1/2s) and switches on continuous measurement.
The gear icon on the bottom row opens the **SETTINGS** menu. Once you have made the desired changes, you must exit by pressing the **BACK** button, this will ensure that the new settings are saved.

