

InfraRed Thermal Imaging Systems

IRTIS-2000M COMPUTER THERMOVISION CAMERA-THERMOGRAPH



COMPUTER THERMOGRAPHY

Thermography - a method of visualization and registration of its own infrared radiation surface of the body, which allows detection of pathology, based on deviations of the temperature distribution over the surface of the body.

Any body whose temperature is above absolute zero (-273 degrees C) is a source of heat radiation - electromagnetic waves emitted infrared waves contain information about members of the body structures (materials) with different temperatures and their location.

IR-camera of IRTIS-2000ME - is a precision opticalmechanical scanner with a highly sensitive IR receiver. A number of know-how used in the device allow to achieve high repeatability of measurements from frame to frame with uniform sensitivity across the frame and a high visualization of the object to be very close to reality.

This allows of dynamic infrared shooting the same area of the patient periodically, and then run over the thermograms obtained in the form of thermal footage.

The configuration of the device is optimized for maximum achievement of high technical parameters, and the combination with the latest computer technology ensures high efficiency of the device for a wide range of tasks

MAXIMUM SIZE OF THE OBJECT DEPENDING ON THE DISTANCE



TECHNICAL SPECIFICATIONS

IR-SENSOR InSb, HgCdTe COOLING Liquid nitrogen SPECTRAL RANGE 3-5 µk

Thermal sensitivity at 30 °C 0,02 °C Field of view 25x20° Spatial resolution 1.5 mrad Storage temperature -20 to +100 °C Operating temperature -20 to +50 °C Accuracy (% of reading) +-1 °C or +-1 % Thermal resolution/Pixels number 320(640)x240 Image update time 1.5 sec (0.6 sec) Autonomous operation/Battery life 6 hours **Power 6 V battery** Power consumption 1,2 W Weight 1,4 kg Size 92x125x200 mm

MAIN ADVANTAGES OF THE COMPUTER THERMOGRAPHY



- ☑ Physiological imaging
- Risk-free, absolutely safe for the patient
- ☑ Non invasive
- ☑ Contactless, painless
- ☑ No contraindications
- ☑ Diagnostics of:
 - Different pathological states
 - Different age groups
- Possibility of multiple studies

THE USE OF COMPUTER TOMOGRAPHY IN MEDICINE

- **Traumatology-Orthopedics**
- Reumatology
- **Otorhinolaryngology**
- Dentistry
- **Ophthalmology**
- Oncology
- Endocrynology
- **Dermatology**
- **Obstetrics and gynecology**
- Urology

- Neurology
- Surgery
- **Aesthetic surgery**
- **Paediatrics**
- **Aesthetic medicine**
- **Follow-up therapy**
- **Scientific researches**
- **Prophylactics**
- **After-care medicine**
- **Spa-resort treatment**

Pathologies diagnosed by computer thermography

Cardio-vascular diseases	Organic peripheral vascular diseases, arteriosclerosis obliterans, endarteritis of the limb vessels, thrombophlebitis, varicose veins, diabetic angiopathy, ischemic heart disease, etc.
Traumatology- orthopaedics	Scoliosis, scapulohumeral periarthrosis, inflammatory diseases of the large joints of various etiologies, Sudek's disease, osteomyelitis, meniscus injury, acute synovitis, etc.
Neurology	Radicular syndrome, osteochondrosis, peripheral neuropathy, Raynaud's syndrome, polymyositis, neurovegetative regulation disorders, ishemic attacks, facial nerve paralysis and paresis, etc.
Endocrynology	Hypothyroidism, thyrotoxic goiter, etc.
Dentistry	Stomatitis, gingivitis, periostitis, etc.

Ear, Nose, and Throat dysfunction

Ophthalmology

Oncology

Mammalogy

Obstetrics and Gynecology

Urology

Dermatology

Sinusitis, otitis, vasomotor rhinitis, sinus cysts, etc.

Conjunctivitis, glaucoma, myopia, orbital pseudotumor, etc.

Benign and malignant tumors of various origins

Benign and malignant tumors, cysts, breast cancer, mastitis, etc.

Early diagnosis and complications of pregnancy, etc.

Kidney inflammation, inflamed bladder, inflammation of the testicles, varicocele, etc.

Collagenosis, dermatitis, acne, allergy, etc.

APPLICATIONS OF COMPUTER THERMOGRAPHY IN PRACTICAL MEDICINE

Plastic surgery	Assessment of the viability and healing of skin graft re- implant limbs, etc.
The control treatment	to obtain objective data on the effects of anti- inflammatory and vasodilators, the efficacy and correlation of therapies, etc.
Mammography rehabilitation	Control of scarring (postoperative), selection of exo prosthesis.
Recovery medicine	Control during rehabilitation after thermal lesions, injuries, surgery, dynamic control over the physiotherapy procedures.
Preventive medicine	Employee physical exams, identification of early stages of disease

CHOICE OF SPECTRAL RANGE





8-14 μκ

PATHOLOGY OF RESPIRATORY ORGANS



Inflammation of maxillary sinuses Inflammation of the ethmoid sinuses.

OPHTHALMIC PATHOLOGY



Glaucoma

Orbital pseudotumor

ENDOCRYNE DISORDERS



Hypothyroid

Thyrotoxic goiter

VIOLATION OF CIRCULATION



Post-insult state

Thermal amputation of the hands with neurocirculatory dystonia

CARDIO-VASCULAR DISEASES



Coronary artery disease

Angina pectoris

NEUROLOGY DISEASES



Radicular syndrome

Spinal osteochondrosis

LOCOMOTORS DISORDERS



Scoliosis

Post-traumatic gonarthrosis of the left knee

LOWER EXTREMITY VASCULAR DISEASES



Varicose veins

Thrombophlebitis



DIABETIC ANGIOPATHY

UPPER EXTREMITY NERVE INJURY





Post-traumatic ulnar nerve neuropathy Post-traumatic neuropathy of the median and radial nerve

DIAGNOSTICS OF UROGENITAL DISEASES



Varicocele

Norm

THERMOGRAPHY SCREENING



Anatomical/congenital defect (absence of right kidney) Osteochondrosis

THERMOGRAPHY DIAGNOSIS CANCER DETECTION BY GLUCOSE TEST



Melanoma

Third stage of breast cancer

THERMOGRAHY DIAGNOSTICS CANCER DETECTION BY GLUCOSE TEST IN DYNAMICS





AFTER 20 MINUTES



AFTER 30 MINUTES

AFTER 40 MINUTES

33.9

33.7

33.5

33.3

33.0

32.8

32.6

32.3

32.1

31.9

-31 . 4

DYNAMIC GLUCOSE TEST IN DETECTION OF MALIGNANT ORBITAL TUMOR



Malignant orbital tumor





Orbital pseudotumor

THERMOGRAPHY IN POST-OPERATIVE MONITORING



Control after mastectomy

Recovery of blood flow after replantation of hand

DYNAMIC THERMOGRAPHY CONTROL IN ONGOING TREATMENT



Improvement of blood flow in Raynaud's phenomenon

DYNAMIC THERMOGRAPHY CONTROL IN ONGOING TREATMENT

ACUTE PYELONEPHRITIS



Before treatment

After 14 days

THERMOGRAPHY CONTROL IN ONGOING THERAPY

TREATMENT OF KELOIDS



Before treatment

After 13 days

THERMOGRAPHY CONTROL IN ONGOING THERAPY

TREATMENT OF KELOIDS



THERMOGRAPHY CONTROL OF TREATMENT

TRANSPLANTATION OF THORACODORSAL FLAPS



7 days after surgery (arterial thrombosis)

THERMOGRAPHY CONTROL OF THE TREATMENT

Sclerotherapy of varicose veins

Before treatment

5 days after surgery

Thermograms of the left inner shin before and after endovasal laser photocoagulation

"3-D thermal images/thermograms" of the left inner shin before and after endovasal laser photocoagulation.

ANTENATAL CARE

34 WEEKS

THERMOGRAPHY EXAMINATION

PHYSICAL NORM

THERMOGRAPHY EXAMINATION

Fibrocystic breast disease

Cystic mastitis

THERMOGRAPHY EXAMINATION

THERMOGRAPHIC CONTROL OVER REHABILITATION

POST-MASTECTOMY PAIN SYNDROME (Female, 35 years)

5 months after the surgery, non-contact silicone exo prosthesis without thermal regulation 8 months after surgery, adhesive breast prosthesis with active temperature regulators of AMOENA company

THERMOGRAPHIC CONTROL OVER REHABILITATION

POST-MASTECTOMY PAIN SYNDROME (Female, 35 years)

AMOENA adhesive breast prosthesis with active temperature regulators

12 months after surgery

THERMOGRAPHIC CONTROL OVER REHABILITATION

POST-MASTECTOMY PAIN SYNDROME (Female, 58 years)

silicone non-contact exo prosthesis without thermal regulation

4 months after surgery

THERMOGRAPHY CONTROL OVER REHABILITATION POST-MASTECTOMY PAIN SYNDROME (Female, 63 years)

Disturbance of peripheral blood circulation related to keloid cicatrix in the armpit area, 20 years after surgery

POST-MASTECTOMY PAIN SYNDROME (Female, 36-year-old, 4.5 years after surgery)

AMOENA adhesive breast prosthesis with thermal regulation (after removal of the prosthesis)

POST-MASTECTOMY PAIN SYNDROME (Female, 61 years, 2 years after surgery)

After radiation therapy

After 20 minutes

THERMAL PANORAMA'S

LIST of medical facilities using IRTIS-2000M in 2008-2009.

Moscow Rehabilitation Center for sick and disabled people with locomotor and nervous system dysfunction (Hospital Nº 10)

Moscow Regional Scientific Research Clinical Institute

State Russian Cancer Research Center named after N.N.Blohin, RAMS

Russian Scientific Center of radiology, Federal Agency of High-Tech Medical Technology

The Helmholtz Moscow Research Institute of Eye diseases

S.Fedorov Intersectoral Scientific-Research Center "Microsurgery of Eye"

N.Priorov Central Scientific-Research Institute of traumatology and orthopedics

Surgery Institute of High Technology

Institute of Biomedical problems, RAS

N.Filatov Moscow City Pediatric Clinical Hospital Nº13

Moscow Eye Clinical Hospital Nº1

Moscow City Clinical Hospital Nº13

GazProm Clinic

RF Ministry of Defence Headquarters of Internal Affairs Clinic

Russian Ministry of Defence Scientific Institute of military medicine

Russian Ministry of Health, Mammalogy center

Burnazian Federal Medical Biophysical Center, Federal Medical-Biological Agency

Moscow Institute of Cybernetic medicine

People's Friendship University of Russia

Medical Homeopathic Center "FELIX"

Public establishment of Healthcare, Perm City clinical hospital Nº2

Samara Diagnostic Center

G.Nevelsky Maritime State University, Diagnostic-therapy center "SINEGRIA", Vladivostok city

Kinesiotherapy clinic, Volgograd city

Correctional and Health care Center, Nizhny Novgorod city

CERTIFICATES

ГОСУДАРСТВЕННЫЙ КОМИТЕТ ПО СТАНДАРТИЗАЦИИ РЕСПУБЛИКИ БЕЛАРУСЬ

STATE COMMITTEE FOR STANDARDIZATION OF THE REPUBLIC OF BELARUS

СЕРТИФИКАТ

ОБ УТВЕРЖДЕНИИ ТИПА СРЕДСТВА ИЗМЕРЕНИЙ

PATTERN APPROVAL CERTIFICATE OF MEASURING INSTRUMENT

номер сертификата: 5418

1 ноября 2012 г.

Настоящий сертификат удостоверяет, что на основании решения Научно-технической комиссии по метрологии (№ 07-08 от 29.07.2008 г.) утвержден тип

Термографы компьютерные портативные ИРТИС-200М, ИРТИС-2000,

ООО "ИРТИС", г. Москва, Российская Федерация (RU),

который зарегистрирован в Государственном реестре средств измерений под номером **РБ 03 10 2082 08** и допушен к применению в Республике Беларусь с 2 декабря 2003 г.

Описание типа средства измерений приведено в приложении и является неотъемлемой частью настоящего сертификата.

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