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**WEATHER
INSTRUMENTS
AND SYSTEMS**

2024





”PELENG” COMPANY

JSC “Peleng” is a leading design enterprise in optoelectronic industry of the Republic of Belarus. More than 45 years we are focus on design and manufacturing optoelectronic systems for different use.

The company was established in the year 1974 by reorganization of the designing section of the Vavilov Minsk Mechanical Plant (BelOMO) into the Central Designing Bureau “Peleng”. In 1994 the Designing Bureau was transformed into the Joint-Stock Company “Peleng”. In 2003 the company was included in the Register of high-tech industries and enterprises of the Republic of Belarus.

Main competence of the company is research and development, that include complete manufacturing cycle of science-based optoelectronic products for wide use.

Over 3,300 employees work in the company and more than half of them are highly qualified engineering and technical personnel.

The company has a long-term leader's reputation and proven experience of participation in such large-scale projects as creation of special-purpose equipment for space crafts and satellites, modernization of meteorological services, implementation of large foreign orders, including space instrumentation area. The main volume of company's products is exported, and besides Russia and the CIS countries, the buyers of JSC “Peleng” are the United Arab Emirates, India, China and other countries.

Our mission:

**TO PRODUCE THE BEST OPTOELECTRONIC SYSTEMS,
ANTICIPATING THE CUSTOMER'S DESIRES**

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AVIATION METEOROLOGICAL SYSTEMS

AMIS-PELENG SF-09 · AUTOMATED
WEATHER OBSERVING SYSTEM FOR AIRFIELDS

AMIS-PELENG SF-09 · AUTOMATED
WEATHER OBSERVING SYSTEM FOR HELIPADS

AMIS-PELENG SF-09 · AUTOMATED
WEATHER OBSERVING SYSTEM FOR AIRFIELDS
AND HELIPADS (MARINE VERSION)

AMIS-PELENG SF-09 · AUTOMATED WEATHER
OBSERVING SYSTEM FOR AIRFIELDS AND
HELIPADS (PORTABLE VERSION)

AMIS-PELENG SF-09 · MOBILE AUTOMATED
WEATHER OBSERVING SYSTEM FOR AIRFIELDS
AND HELIPADS



AMIS-PELENG SF-09

AUTOMATED WEATHER OBSERVING SYSTEM FOR AIRFIELDS

AMIS-PELENG SF-09 is a flexible scalable solution for meteorological support of aircrafts takeoffs and landings, suitable for any type of airport in any corner of the world.

Operating costs are reduced, the reliability of the system increases, and the customer receives accurate meteorological data at the right time due to the use of the instruments and sensors of our own production in the system.

PURPOSE

- Automatic measurement of the main meteorological values required to ensure takeoffs and landings of aircraft.
- Calculation of runway visual range (RVR), perpendicular wind speed to the runway, dew point, runway threshold pressure (QFE), sea level pressure (QNH).
- Determination of cloud coverage distance and current weather phenomenon.
- Automatic generation of weather reports in METAR (SPECI), ATIS, KN-01 codes, transmission of reports in communication lines and to the display devices.
- Status indication of all measuring transducers (sensors) of meteorological values.
- Manual entry of meteorological values that are not measured or not determined automatically.
- Keeping the AV-6 weather log.
- Keeping the system operation events log.
- Registration and archiving of measured, manually entered, calculated, and transmitted meteorological information.

INTERFACING WITH INFORMATION DATA TRANSMISSION SYSTEMS *

- Alpha ATC System (NITA, LLC)
- AMetISt ATIS/VOLMET Complex (NITA, LLC)
- UniMAS Software and Hardware Complex (Aviamettelecom)
- MITRA Software and Hardware Complex (RMC TRUST, LLC)
- Topaz ATM Automated System (NPO Almaz, PJSC)
- Popugai 2 AVCG (NPO Almaz, PJSC)
- ATIS Eleron (CSTR Eleron)
- MSC MeteoTelex (IRAM, LLC)
- AIS MeteoServer (IRAM, LLC)

* AMIS-PELENG SF-09 may be tailored for use with any other systems.

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Cloud-base height
- Background luminance
- Precipitation amount

EQUIPMENT CONFIGURATION *

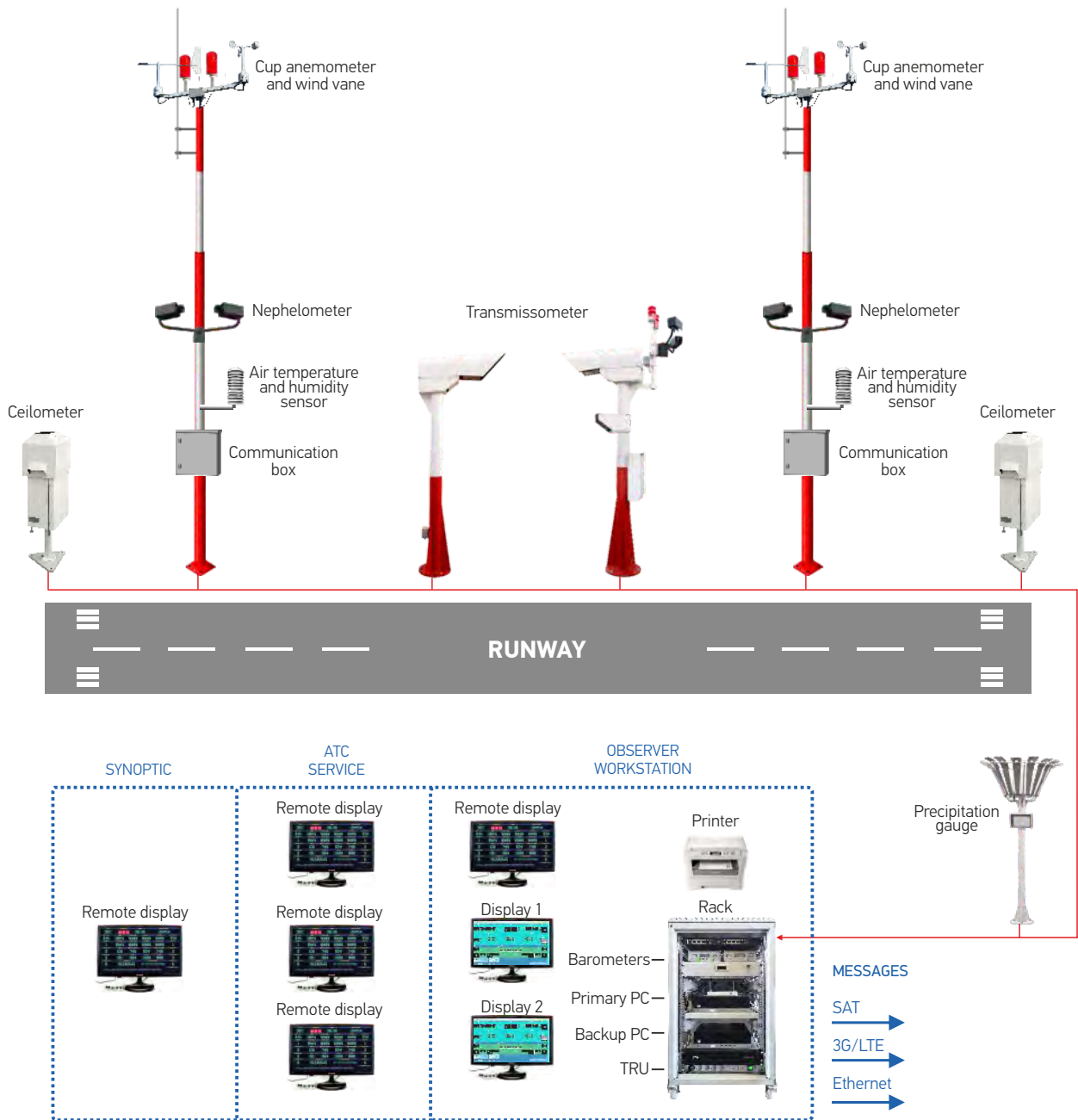
Meteorological sensors:

- AT-21 transmissometer
- PELENG SF-03 cup anemometer and wind vane
- PELENG SL-03 nephelometer
- SD-02 2006 ceilometer
- Air temperature and relative humidity sensor
- PELENG SF-11 precipitation gauge
- BRS-1M/BA-1 barometer

Equipment and sets:

- Rack
- Remote display
- Modem protection module
- MM-1 Meteorological tower with the lightning rod and winch
- Obstruction light
- Accessory kit
- Installation kit
- Cable set
- Set of spare parts
- Shipping cases
- Software

* Each station is constructed according to the modular concept and can be individually configured based on the Customer's requirements



SPECIFICATIONS

- Power supply voltage : 230 ± 23 V (50Hz)
- Power consumption : ≤ 2.5 kW
- Data transmission interface : RS-485/V.23
Ethernet
LTE/SAT
- Protection : IP 66
- Average lifetime : 10 years

- Outdoor device's operating conditions:
 - air temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
 - wind speed : ≤ 55 m/s
- Indoor device's operating conditions:
 - air temperature : +5°C to +40°C
 - relative air humidity : ≤ 80%

AMIS-PELENG SF-09

AUTOMATED WEATHER OBSERVING SYSTEM FOR HELIPADS

AMIS-PELENG SF-09 is a flexible scalable solution for meteorological support of aircrafts takeoffs and landings, suitable for any type of airport in any corner of the world.

Operating costs are reduced, the reliability of the system increases, and the customer receives accurate meteorological data at the right time due to the use of the instruments and sensors of our own production in the system.

PURPOSE

- Automatic measurement of the main meteorological values required to ensure takeoffs and landings of aircraft.
- Calculation of runway visual range (RVR), perpendicular wind speed to the runway, dew point, runway threshold pressure (QFE), sea level pressure (QNH).
- Determination of cloud coverage distance and current weather phenomenon.
- Automatic generation of weather reports in METAR (SPECI), ATIS, KN-01 codes, transmission of reports in communication lines and to the display devices.
- Status indication of all measuring transducers (sensors) of meteorological values.
- Manual entry of meteorological values that are not measured or not determined automatically.
- Keeping the AV-6 weather log.
- Keeping the system operation events log.
- Registration and archiving of measured, manually entered, calculated, and transmitted meteorological information.

INTERFACING WITH INFORMATION DATA TRANSMISSION SYSTEMS *

- Alpha ATC System (NITA, LLC)
- AMetISt ATIS/VOLMET Complex (NITA, LLC)
- UniMAS Software and Hardware Complex (Aviamettelecom)
- MITRA Software and Hardware Complex (RMC TRUST, LLC)
- Topaz ATM Automated System (NPO Almaz, PJSC)
- Popugai 2 AVCG (NPO Almaz, PJSC)
- ATIS Eleron (CSTR Eleron)
- MSC MeteoTelex (IRAM, LLC)
- AIS MeteoServer (IRAM, LLC)

* AMIS-PELENG SF-09 may be tailored for use with any other systems.

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature and relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Cloud-base height

EQUIPMENT CONFIGURATION *

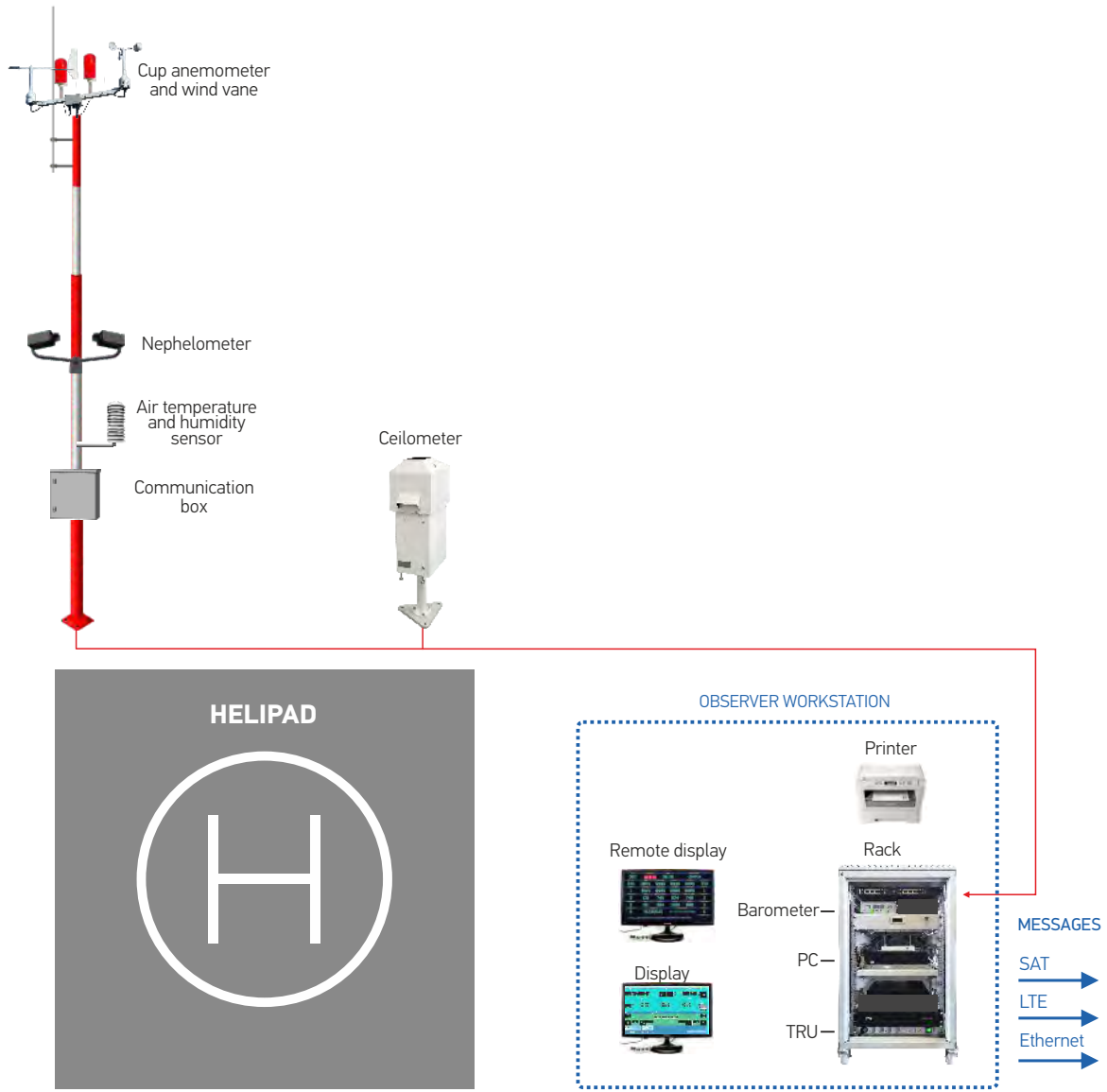
Meteorological sensors:

- PELENG SF-03 cup anemometer and wind vane
- PELENG SL-03 nephelometer
- SD-02 2006 ceilometer
- Air temperature and relative humidity sensor
- BRS-1M barometer

Equipment and sets:

- Communication box
- Reck
- Remote display
- Modem protection module
- MM-1 Meteorological tower with the lightning rod and winch
- Obstruction light
- Operator kit
- Accessory kit
- Installation kit
- Cable set
- Set of spare parts
- Shipping cases
- Software

* Each station is constructed according to the modular concept and can be individually configured based on the Customer's requirements.



SPECIFICATIONS

- Power supply voltage : 230 ± 23 V (50Hz)
- Power consumption : ≤ 2.5 kW
- Data transmission interface : RS-485/V.23
Ethernet
LTE/SAT
- Protection : IP 66
- Average lifetime : 10 years

- Outdoor device's operating conditions:
 - air temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
 - wind speed : ≤ 55 m/s
- Indoor device's operating conditions:
 - air temperature : +5°C to +40°C
 - relative air humidity : ≤ 80%

AMIS-PELENG SF-09

AUTOMATED WEATHER OBSERVING SYSTEM FOR AIRFIELDS AND HELIPADS (MARINE VERSION)

AMIS-PELENG SF-09 is a flexible scalable solution for meteorological support of aircrafts takeoffs and landings, suitable for any type of airport in any corner of the world.

Operating costs are reduced, the reliability of the system increases, and the customer receives accurate meteorological data at the right time due to the use of the instruments and sensors of our own production in the system.

PURPOSE

- Continuous collection, processing, storage and display of meteorological information about the main atmospheric parameters to support aircraft takeoffs and landings on marine stationary platforms, floating drilling rigs or marine vessels.
- Generation of meteorological reports for transmission onboard a helicopter, to a coastal center or a radio meteorological center.

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature
- Relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Cloud-base height

INTERFACING WITH INFORMATION DATA TRANSMISSION SYSTEMS

- Interfacing with vessel information data transmission systems via NMEA 0183 protocol.

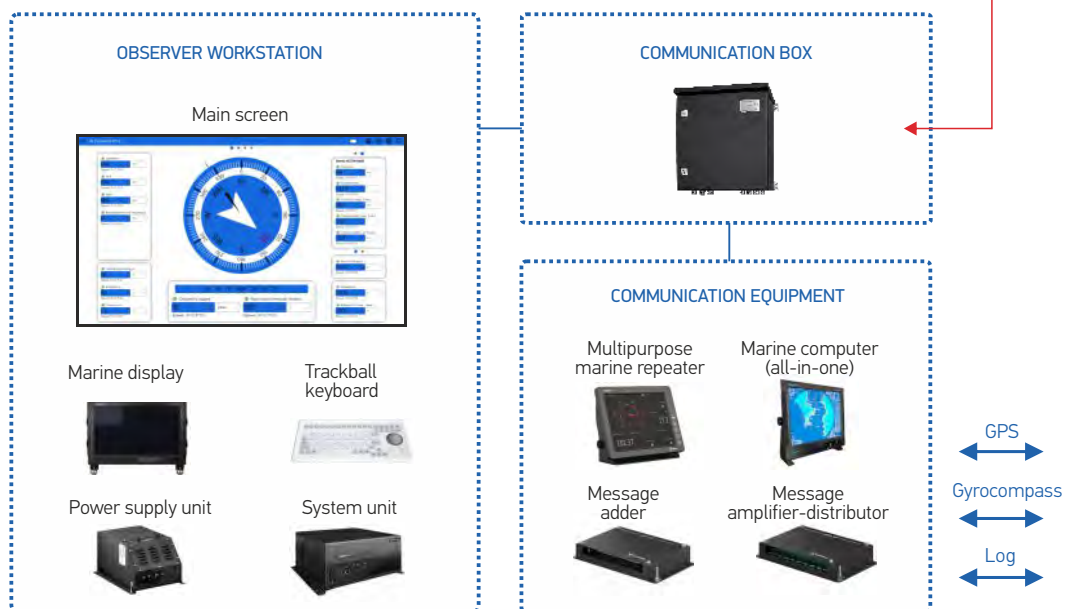
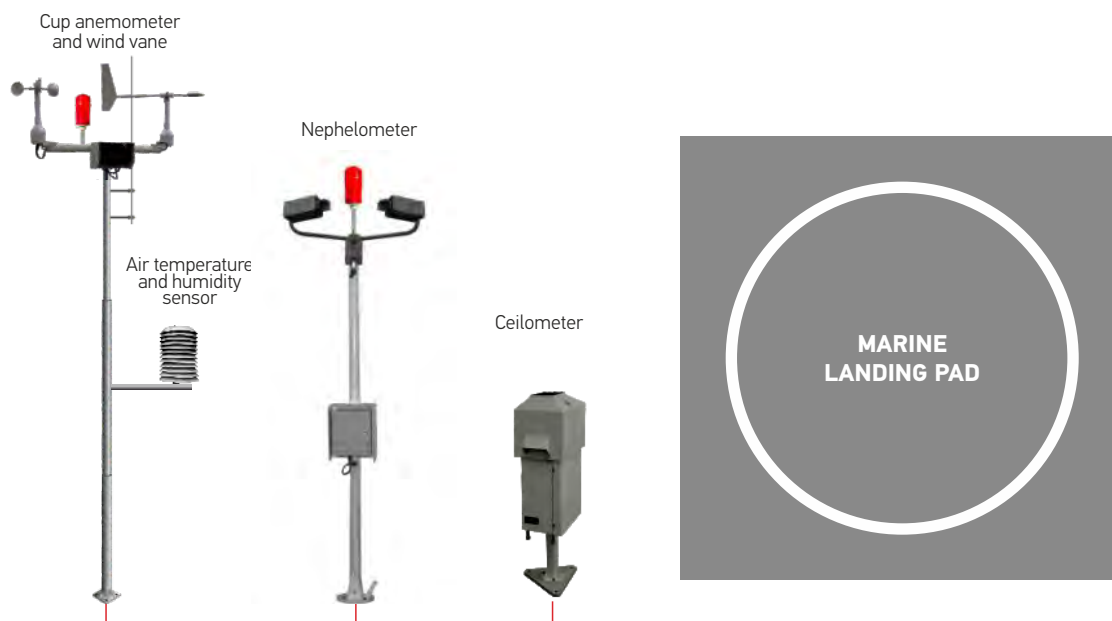
EQUIPMENT CONFIGURATION

Meteorological sensors:

- PELENG SF-03 cup anemometer and wind vane
- PELENG SL-03 nephelometer
- SD-02 2006 ceilometer
- Air temperature and relative humidity sensor
- DADS-1 atmospheric pressure sensor

Equipment and sets:

- Communication box
- Power supply unit
- System unit
- Trackball keyboard
- Main screen
- Marine display
- Marine computer (all-in-one)
- Multipurpose marine repeater
- Message adder
- Message amplifier-distributor
- Obstruction light
- Installation kit
- Cable set
- Set of spare parts
- Shipping cases
- Software



SPECIFICATIONS

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Power supply voltage : 230 ± 23 V (50Hz) • Power consumption : ≤ 2.5 kW • Data transmission interface : RS-485/V.23 Ethernet LTE/SAT • Protection : IP 66 • Average lifetime : 10 years | <ul style="list-style-type: none"> • Outdoor device's operating conditions: <ul style="list-style-type: none"> - air temperature : -60°C to +65°C - relative air humidity : 0 - 100% - atmospheric pressure : 600 - 1100 gPa - wind speed : ≤ 55 m/s • Indoor device's operating conditions: <ul style="list-style-type: none"> - air temperature : +5°C to +40°C - relative air humidity : ≤ 80% |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





AMIS-PELENG SF-09

AUTOMATED WEATHER OBSERVING SYSTEM FOR AIRFIELDS AND HELIPADS (PORTABLE VERSION)

PURPOSE

- Support of aircraft takeoffs and landings from unequipped sites or temporary aerodromes.
- Continuous collection and processing of meteorological information coming from sensors at the location of deployment of the mobile system.
- Formation of regular and "storm" telegrams.
- Sending telegrams to meteorological information collection centers via dedicated communication channels.
- Maintaining an archive of meteorological information.

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature and relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Cloud-base height

EQUIPMENT CONFIGURATION *

Meteorological sensors:

- Ultrasonic anemometer
- PELENG SL-03 Nephelometer
- SD-02 2006 Ceilometer
- Air temperature and relative humidity sensor
- Barometer

Equipment and sets:

- Receiving & transmitting unit
- Battery unit
- MM-1 Meteorological tower with the lightning rod and winch
- Obstruction light
- Operator kit (PC)
- Software
- Accessory kit
- Installation kit
- Cable set
- Set of spare parts
- Shipping cases
- Solar battery set (optional)
- Communication terminal 3G/LTE/SAT (optional)
- Lightning rod (optional)

* Each station is constructed according to the modular concept and can be individually configured based on the Customer's requirements.

ADVANTAGES

MOBILITY

The system is delivered to the place required by the customer using light freight vehicles (LCV) due to its shipment in the shipping cases.

DEPLOYMENT SPEED IS 30 MINUTES

STATION CONSTRUCTION IS FLEXIBLE

The customer can choose the scope of delivery, types of equipment and options.

RESOURCE OPTIMIZATION

The station staff is 2 persons.

HIGH AUTONOMY

The power supply can be performed through from the vehicle mains and from storage batteries, a diesel generator or solar batteries.

LIGHTNESS AND CORROSION RESISTANCE

Main structural components of the telescopic mast are made of composite materials and aluminum.

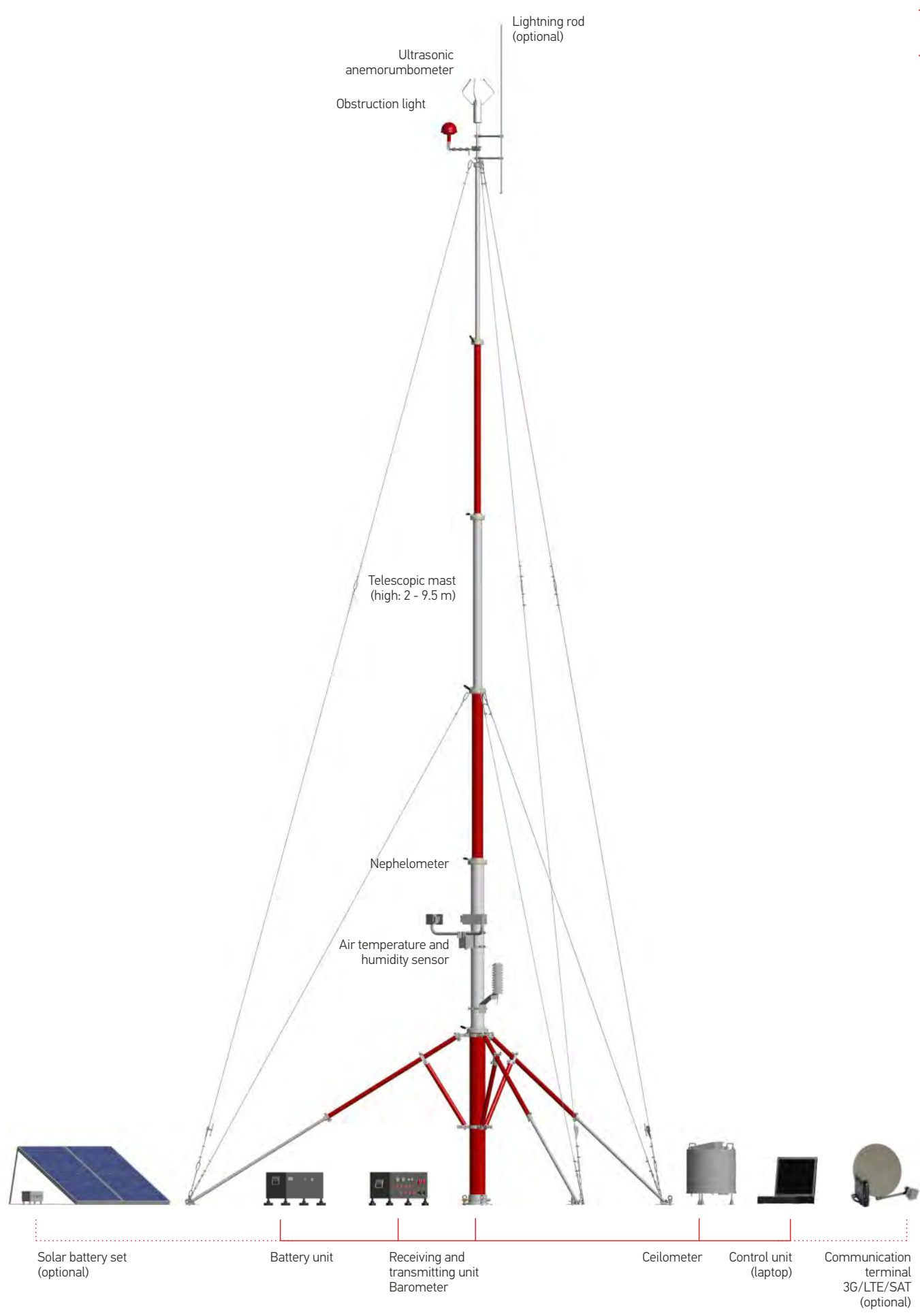
COMPREHENSIVE SOLUTION

From initial consultation and development to the delivery, mounting, personal training and maintenance.

SPECIFICATIONS

- System power supply:
 - by DC mains of the vehicle : 9 - 36 V
 - by AC mains : 230 ± 23 V (50Hz)
- Off-line operation time ** : not less 8 hours
- Data transmission interface : RS-485/Ethernet, 3G/LTE, SAT (optional)
- Protection : IP 66
- Operating temperature:
 - operating from batteries : -25°C to +50°C
 - operating from mains sources : -55°C to +60°C
- Telescopic mast height : 2 - 9.5 m
- Telescopic mast weight : 50 kg
- Battery unit weight : 30 kg
- Receiving & transmitting unit weight : 15 kg
- Ceilometer weight : 26 kg
- System overall mass (gross/net) : 237 / 176 kg
- System overall dimensions in shipping cases (8 units***) : 1.95 m³

** When using a solar battery, the battery unit will be continuously recharged throughout the day.



AMIS-PELENG SF-09

MOBILE AUTOMATED WEATHER OBSERVING SYSTEM FOR AIRFIELDS AND HELIPADS

APPLICATION

- Temporary aerodromes
- Helipads
- Unequipped landing pads

PURPOSE

- Meteorological information support for mobile control points and aviation flight situation response centers.

TASKS

- Measurement of meteorological parameters at the deployment location.
- Calculation of estimated values of meteorological parameters.
- Reception via dedicated communication channels and analysis of weather maps, data from weather radars, ground-based hydrometeorological observation networks and upper air radiosonde observation stations.
- Generation, transmission of current weather information for the specific territory via dedicated communication channels and its output to connected technical visualization tools (up to 10 tools).
- Reception of hydrometeorological information via dedicated communication channels, including satellite communication channels (optional).

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature
- Relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Cloud-base height

ADVANTAGES

MOBILITY

The equipment, including sensors, technical means of communication, personnel workplaces, electrical power supply and utility systems, is located in a single module mounted on a mobile chassis.

CROSS-COUNTRY CAPABILITY

FAST DEPLOYMENT IN THE FIELD

The time of deployment of the system's measurement module is max 45 min (for two persons).

HIGH AUTONOMY

An autonomous uninterruptible electrical power supply system ensures continuous operation of equipment, lighting and main utility systems.

CAMOUFLAGE:

- special coating
- camouflage net

COMFORTABLE SPACE FOR WORK AND LEISURE:

autonomous heating, ventilation, air conditioning and purification systems; two beds; a refrigerator; a microwave; a sink with heated water supply; storage spaces for personal items.

CHASSIS

- KAMAZ-43118
- URAL 4320-4971-82
- MAZ-631708
- MZKT-62273

SYSTEM MODULE CONFIGURATIONS

- Box body 1
- Box body 2
- Container body

Service module

length : 1 400 mm
width : 2 450 mm
высота : 1 520 - 2 150 mm

Living area

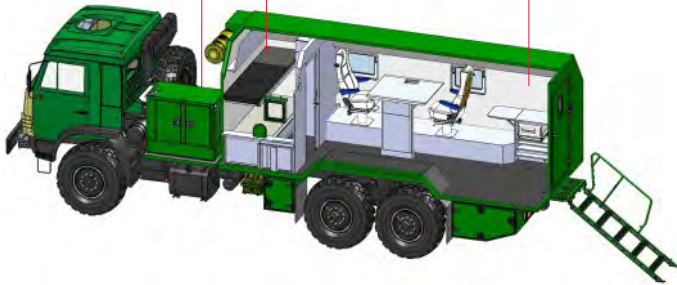
length : 1 330 mm
width : 2 350 mm
height : 1 420 - 2 050 mm

Working area

length : 4 500 mm
width : 2 350 mm
height : 1 420 - 2 050 mm

Box body 1

length (excluding the service module)	6 000 mm
length (including the service module)	7 400 mm
width	2 450 mm
height	2 150 mm

**Service module**

length : 900 mm
width : 2 540 mm
height : 1 540 - 1 960 mm

Working area

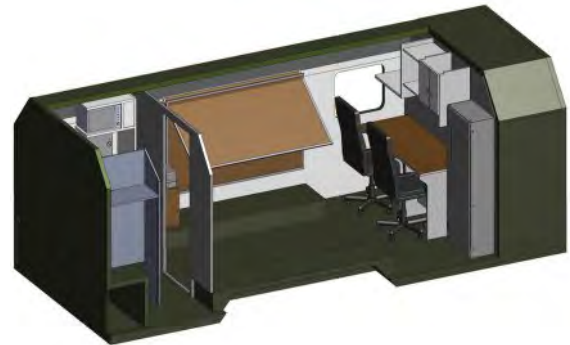
length : 3 740 mm
width : 2 420 mm
height : 1 430 - 1 800 mm

Living area

length : 1 310 mm
width : 2 420 mm
height : 1 430 - 1 800 mm

Box body 2

length	6 050 mm
width	2 540 mm
height	1 960 mm

**Service module**

length : 960 mm
width : 2 440 mm
height : 2 490 mm

Working area

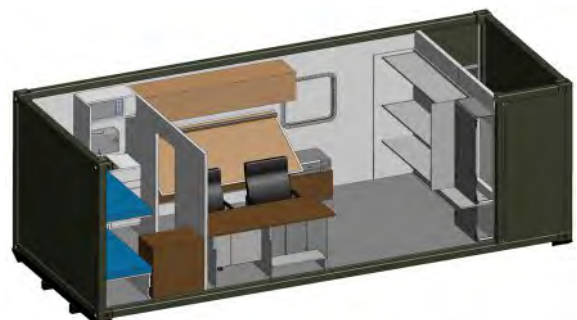
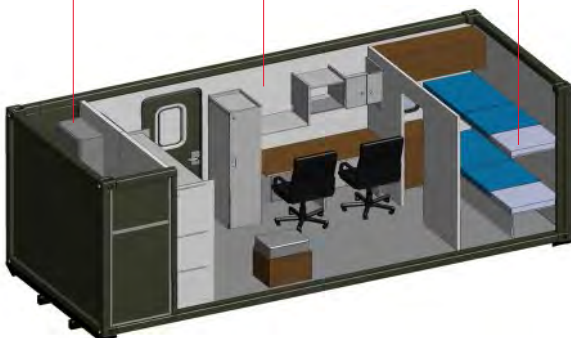
length : 3 660 mm
width : 2 240 mm
height : 2 040 mm

Living area

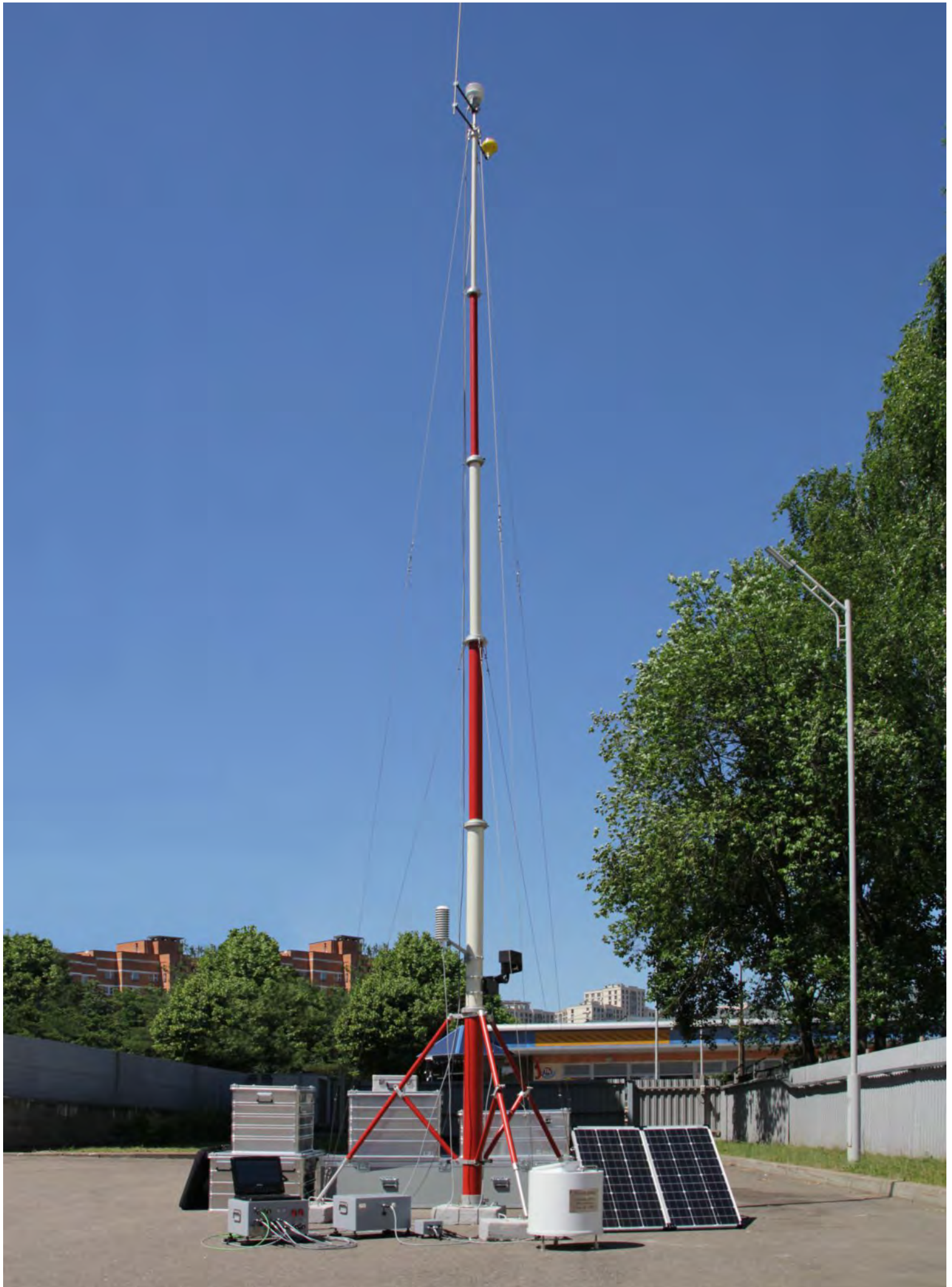
length : 1 310 mm
width : 2 240 mm
height : 2 040 mm

Container body

length	6 070 mm
width	2 440 mm
height	2 490 mm







MEASUREMENT RANGE AND ACCURACY *

	AMIS-PELENG SF-09 meteorological system for airfields	AMIS-PELENG SF-09 meteorological system for helipads	AMIS-PELENG SF-09 meteorological system for helipads (marine version)	AMIS-PELENG SF-09 meteorological system for airfields and helipads (portable version)	AMIS-PELENG SF-09 mobile meteorological system for airfields and helipads
Wind speed: - measurement range - measurement accuracy	0.4 ÷ 75 m/s ± 0.3 m/s (0.4 ÷ 10 m/s) ± 3% (10 ÷ 75 m/s)	0.4 ÷ 75 m/s ± 0.3 m/s (0.4 ÷ 10 m/s) ± 3% (10 ÷ 75 m/s)	0.4 ÷ 75 m/s ± 0.3 m/s (0.4 ÷ 10 m/s) ± 3% (10 ÷ 75 m/s)	0.3 ÷ 55 m/s ± 0.3 m/c (0.3 ÷ 10 m/s) ± 3% (10 ÷ 55 m/s)	0.3 ÷ 55 m/s ± 0.3 m/c (0.3 ÷ 10 m/s) ± 3% (10 ÷ 55 m/s)
Wind direction: - measurement range - measurement accuracy - response time	0 ÷ 360° ± 3° 3 s	0 ÷ 360° ± 3° 3 s	0 ÷ 360° ± 3° 3 s	0 ÷ 360° ± 3° < 1 s	0 ÷ 360° ± 3° < 1 s
Air temperature: - measurement range - measurement accuracy	-60°C ÷ +60°C ± 0.6°C (-60°C ÷ -50°C) ± 0.4°C (-50°C ÷ +60°C)	-60°C ÷ +60°C ± 0.6°C (-60°C ÷ -50°C) ± 0.4°C (-50°C ÷ +60°C)	-60°C ÷ +60°C ± 0.6°C (-60°C ÷ -50°C) ± 0.4°C (-50°C ÷ +60°C)	-60°C ÷ +60°C ± 0.6°C (-60°C ÷ -50°C) ± 0.4°C (-50°C ÷ +60°C)	-60°C ÷ +60°C ± 0.6°C (-60°C ÷ -50°C) ± 0.4°C (-50°C ÷ +60°C)
Air pressure: - measurement range - measurement accuracy	600 ÷ 1100 gPa ± 0.3 gPa	600 ÷ 1100 gPa ± 0.3 gPa	600 ÷ 1100 gPa ± 0.3 gPa	300 ÷ 1100 gPa ± 0.5 gPa	300 ÷ 1100 gPa ± 0.5 gPa
Relative humidity: - measurement range - measurement accuracy	2 ÷ 99% ± 4% (2 ÷ 90%) ± 5% (90 ÷ 99%)	2 ÷ 99% ± 4% (2 ÷ 90%) ± 5% (90 ÷ 99%)	2 ÷ 99% ± 4% (2 ÷ 90%) ± 5% (90 ÷ 99%)	2 ÷ 99% ± 4% (2 ÷ 90%) ± 5% (90 ÷ 99%)	2 ÷ 99% ± 4% (2 ÷ 90%) ± 5% (90 ÷ 99%)
Meteorological optical range (MOR): - measurement range - measurement accuracy	5 ÷ 50 000 m ± 10% (10 ÷ 10 000 m) ± 20 % (10 000 ÷ 50 000 m)	5 ÷ 50 000 m ± 10% (10 ÷ 10 000 m) ± 20 % (10 000 ÷ 50 000 m)	5 ÷ 50 000 m ± 10% (10 ÷ 10 000 m) ± 20 % (10 000 ÷ 50 000 m)	5 ÷ 50 000 m ± 10% (10 ÷ 10 000 m) ± 20 % (10 000 ÷ 50 000 m)	5 ÷ 50 000 m ± 10% (10 ÷ 10 000 m) ± 20 % (10 000 ÷ 50 000 m)
Cloud-base height: - measurement range - measurement accuracy	5 - 8 000 m (up to three layers) ± 5 m (5 ÷ 100 m) ± 10% (100 ÷ 2 000 m) ± 5% (2 000 ÷ 8 000 m)	5 - 8 000 m (up to three layers) ± 5 m (5 ÷ 100 m) ± 10% (100 ÷ 2 000 m) ± 5% (2 000 ÷ 8 000 m)	5 - 8 000 m (up to three layers) ± 5 m (5 ÷ 100 m) ± 10% (100 ÷ 2 000 m) ± 5% (2 000 ÷ 8 000 m)	5 - 8 000 m (up to three layers) ± 5 m (5 ÷ 100 m) ± 10% (100 ÷ 2 000 m) ± 5% (2 000 ÷ 8 000 m)	5 - 8 000 m (up to three layers) ± 5 m (5 ÷ 100 m) ± 10% (100 ÷ 2 000 m) ± 5% (2 000 ÷ 8 000 m)
Background luminance: - measurement range - measurement accuracy	10 ÷ 50 000 cd/m ² ±15%	-	-	-	-
Precipitation: - measurement range - measurement accuracy	0.1 ÷ 250 mm ±(0.10+0.05K) mm (K - measured precipitation)	-	-	-	-

* - System specifications, including sensors, comply with IAC and ICAO requirements.

METEOROLOGICAL INFORMATION DISPLAY MEANS

Central Unit Display (PC)



Remote Display



METEOROLOGICAL MEASURING AND INFORMATION SYSTEMS

S-01 · METEOROLOGICAL MEASURING AND
INFORMATION SYSTEMS

S-01 · METEOROLOGICAL MEASURING AND
INFORMATION SYSTEM
(HYDROMETEOROLOGICAL VERSION)

S-01 · METEOROLOGICAL MEASURING AND
INFORMATION SYSTEM
(AGROMETEOROLOGICAL VERSION)

S-01 · METEOROLOGICAL MEASURING AND
INFORMATION SYSTEM
(PORTABLE VERSION)

S-01 · METEOROLOGICAL MEASURING AND
INFORMATION SYSTEM
(SMALL SIZE PORTABLE VERSION)



S-01

METEOROLOGICAL MEASURING AND INFORMATION SYSTEM

PURPOSE

- Continuous measurement of meteorological parameters
- Continuous collection and processing of data from weather sensors
- Issue of regime summaries
- Issue of routine and “warning” reports
- Sending reports to meteorological information centers
- Weather information archive management
- Operation in automated or automatic modes

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature and relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Cloud-base height
- Background luminance
- Precipitation amount
- Snow cover height
- Soil temperature at various depths
- Solar radiation
- Irradiance of radiation influence
- Duration of sunshine
- Dose equivalent of X-ray and gamma radiation
- Determination of weather phenomena

ADVANTAGES

WIDE RANGE OF APPLICATIONS:

- urban meteorology
- roads and railways
- forestry
- synoptic meteorology

FLEXIBILITY OF SYSTEM BUILDING

The customer can choose the completeness of the delivery, types of equipment and options

POSSIBILITY OF BUILDING AN AUTONOMOUS SYSTEM

The use of autonomous power sources and the ability to work in automatic mode allows the station to be operated in hard-to-reach places and without operator participation

COMPLETE SOLUTION

From initial consultation and development to delivery, installation, staff training and technical support

EQUIPMENT CONFIGURATION

Meteorological sensors:

- Cup anemometer and wind vane
- Nephelometer
- Ceilometer
- Air temperature and relative humidity sensor
- Precipitation gauge
- Net radiometer
- Actinometer
- Pyranometer
- Sunshine duration sensor
- Gamma radiation detection unit
- Barometer
- Snow depth sensor
- Soil temperature sensors

Equipment and sets:

- Meteorological tower
- Racks and lifting beams for equipment installation
- LED lamp
- Lightning rod
- Video camera
- Motion sensors
- Electronic / communication units box:
- Electronic unit
- Cable set
- Installation kit
- Set of spare parts

1 AUTOMATED VERSION

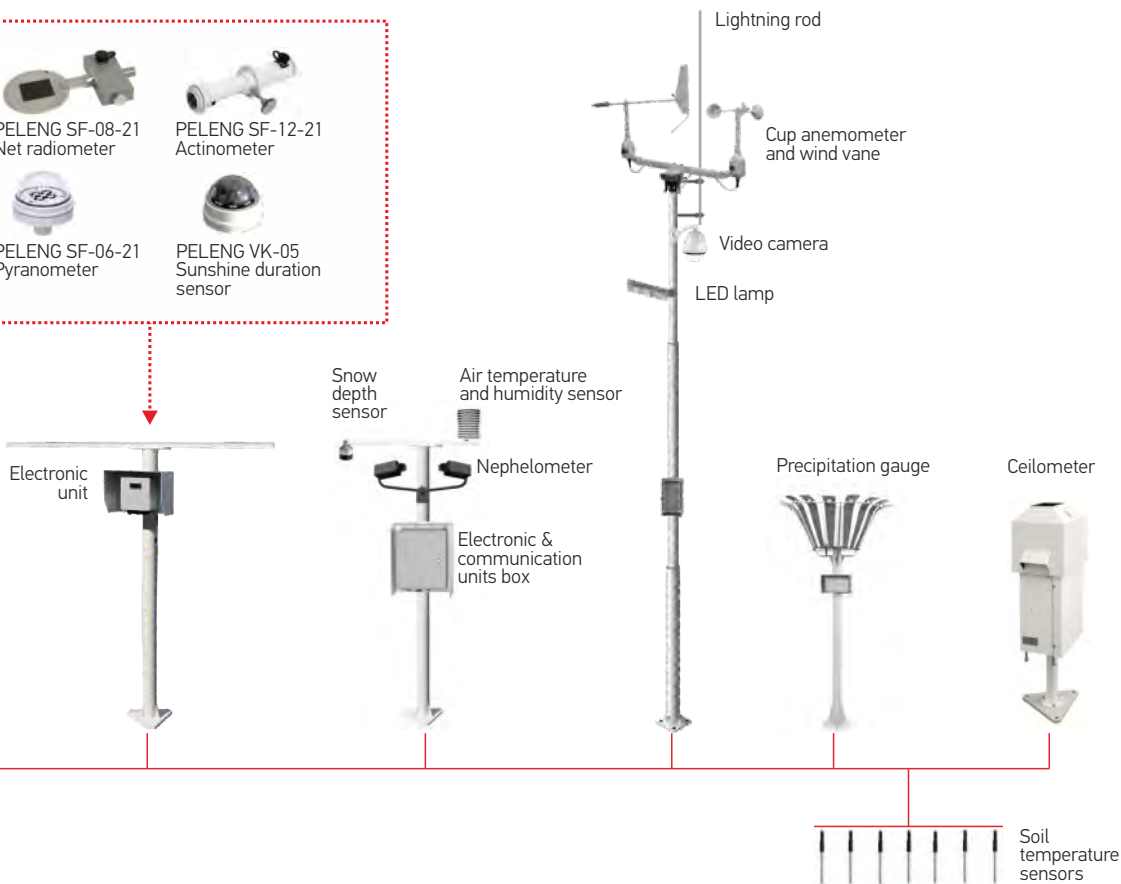
- Operator automated workplace:
 - control rack
 - primary and backup PC
 - UPS
 - modem
 - monitors
 - printer

2 AUTOMATIC VERSION

- Communication box:
 - PC
 - UPS
 - communication terminal 3G/LTE/Ethernet

3 AUTONOMOUS VERSION

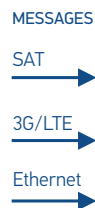
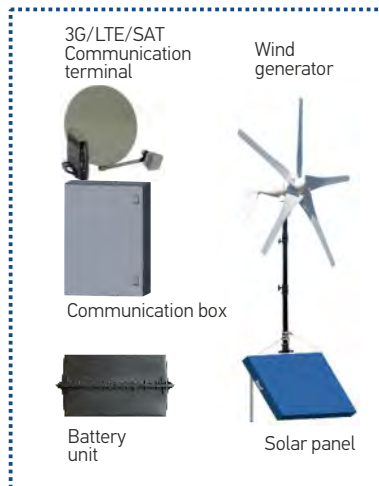
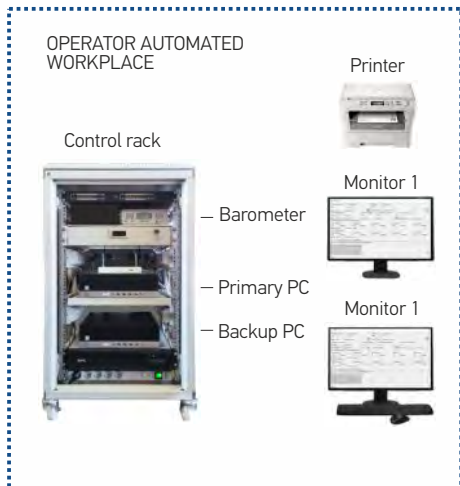
- Communication box
- Communication terminal 3G/LTE/SAT
- Self-contained power supply:
 - solar panel
 - wind generator
 - battery unit



1 AUTOMATED VERSION

2 AUTOMATIC VERSION

3 AUTONOMOUS VERSION







S-01

METEOROLOGICAL MEASURING AND INFORMATION SYSTEM (HYDROMETEOROLOGICAL VERSION)

PURPOSE

- Continuous measurement of hydrological and meteorological parameters
- Surveillance over a water body state
- Issue of regime summaries
- Sending reports to information centers
- Hydrological and meteorological information archive management

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature and relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Precipitation amount
- Water temperature
- Water level
- Water flow rate
- Water muddiness

ADVANTAGES

WIDE RANGE OF APPLICATIONS

- hydrology
- water transport
- power engineering

FLEXIBILITY OF SYSTEM BUILDING

The customer can choose the completeness of the delivery, types of equipment and options

POSSIBILITY OF BUILDING AN AUTONOMOUS SYSTEM

The use of autonomous power sources and the ability to work in automatic mode allows the station to be operated in hard-to-reach places and without operator participation

COMPLETE SOLUTION

From initial consultation and development to delivery, installation, staff training and technical support

EQUIPMENT CONFIGURATION

Meteorological sensors:

- Cup anemometer and wind vane
- Air temperature and relative humidity sensor
- Precipitation gauge
- Barometer

Hydrological sensors:

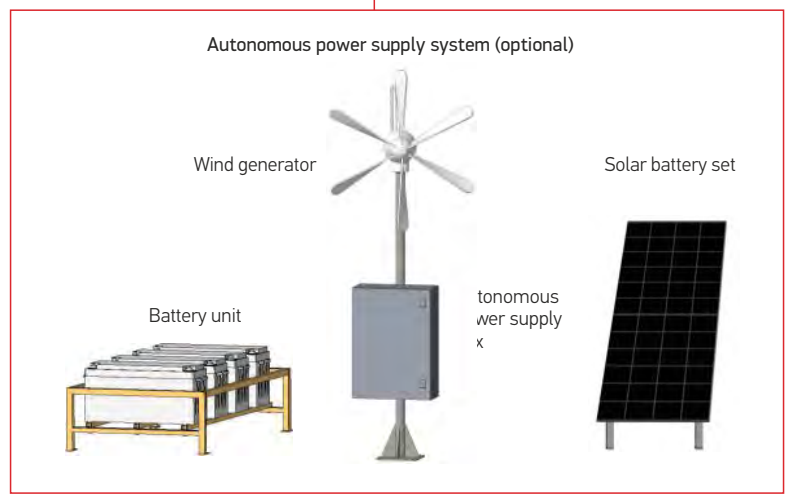
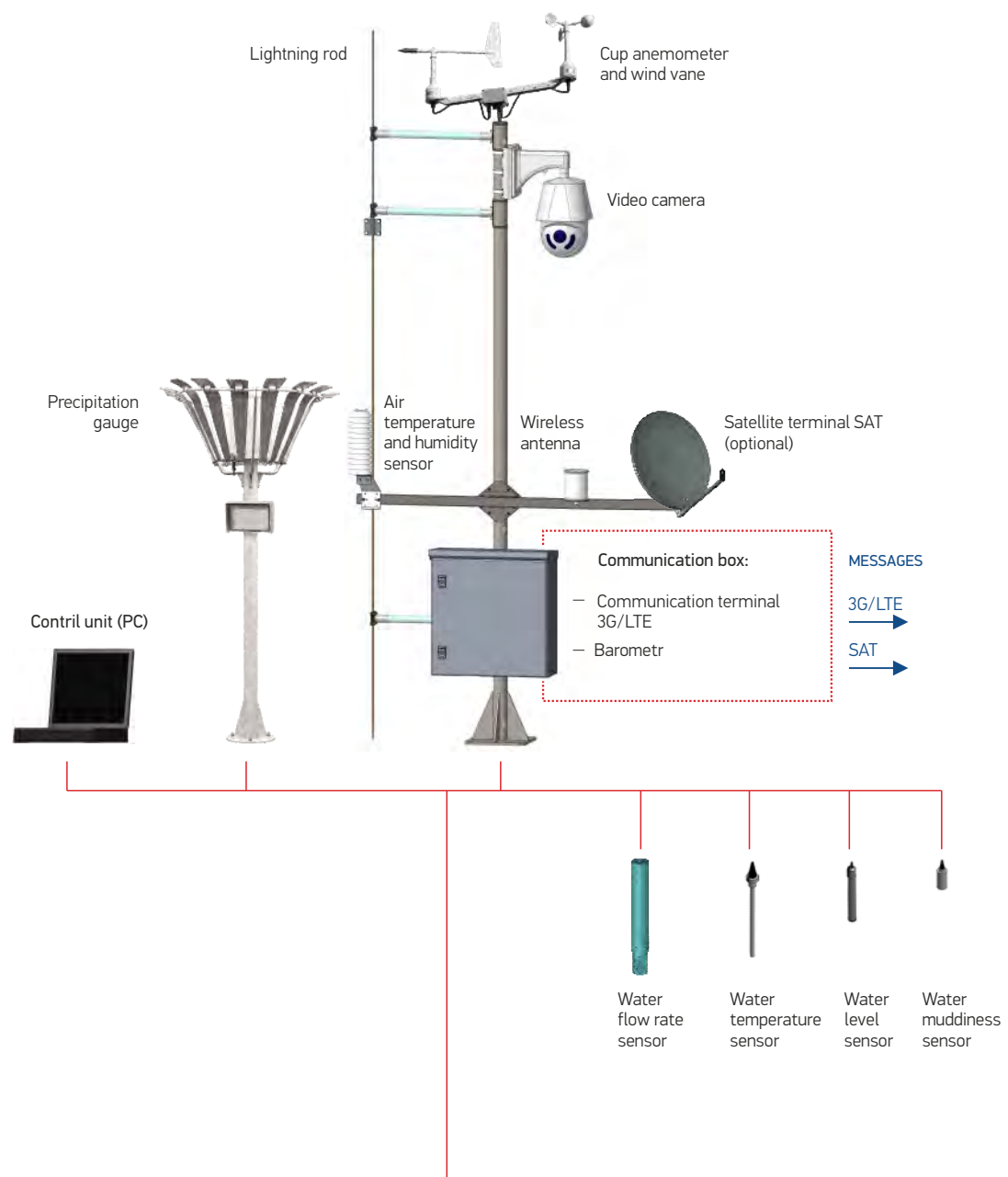
- Water temperature sensor
- Water level sensor
- Water flow rate sensor
- Water muddiness sensor

Equipment and sets:

- Control unit (PC)
- Meteorological tower with lightning rod
- Racks and lifting beams for equipment installation
- Video camera
- Communication box
- 3G/LTE communication terminal
- Satellite terminal SAT (optional)
- Battery unit
- Solar battery set (optional)
- Wind generator (optional)
- Autonomous power supply box (optional)
- Cable set
- Installation kit
- Set of spare parts
- Diagnostic kit

SPECIFICATIONS

- System power supply : 230 ± 23 V (50Hz)
- Data transmission interface : RS-485/Ethernet, 3G/LTE/SAT
- Protection : IP 65
- Average lifetime : 10 years
- Operation environment:
 - ambient temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
 - wind speed : ≤ 55 m/s



S-01

METEOROLOGICAL MEASURING AND INFORMATION SYSTEM (AGROMETEOROLOGICAL VERSION)

PURPOSE

- Continuous measurement of meteorological parameters and crop state observation
- Transfer of measured and analytical information to a remote server via mobile communication
- Meteoroinformation filing, compilation of «Cropping history»

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature and relative humidity
- Atmospheric pressure
- Type and amount of precipitation
- Total solar radiation
- Photosynthetic active radiation (PAR)
- Soil temperature and moisture
- Soil acidity
- Leaf moisture

MAIN DESIGN FEATURES

- The traverse form and special adapters for sensors allow install on it a large number of equipment
- Concealed cable route is provided
- Mast consists from two sections that allow fast and easy system installation

EQUIPMENT CONFIGURATION

Meteorological sensors:

- Ultrasonic anemorumbometer
- Air temperature, relative humidity and atmospheric pressure sensor
- Photosynthetic active radiation (PAR)
- Precipitation gauge
- Soil temperature and moisture sensor
- Soil acidity sensor
- Leaf moisture sensor

Equipment and sets:

- Electronic unit
- External battery in sealed box
- Solar panel
- Communication terminal 3G/LTE/SAT
- Demountable mast with traverse
- Cable set
- Installation kit
- Set of spare parts

ADVANTAGES

COST REDUCTION

Due to up-to-date meteorological information the optimum quantity of fertilizers is applied just in time

YIELD ENHANCEMENT

Continuous control of the plants' state prevents their blight and increases the quality of the yield

FLEXIBILITY OF SYSTEM BUILDING

The customer can choose the completeness of the delivery, types of equipment and options

POSSIBILITY OF BUILDING AN AUTONOMOUS SYSTEM

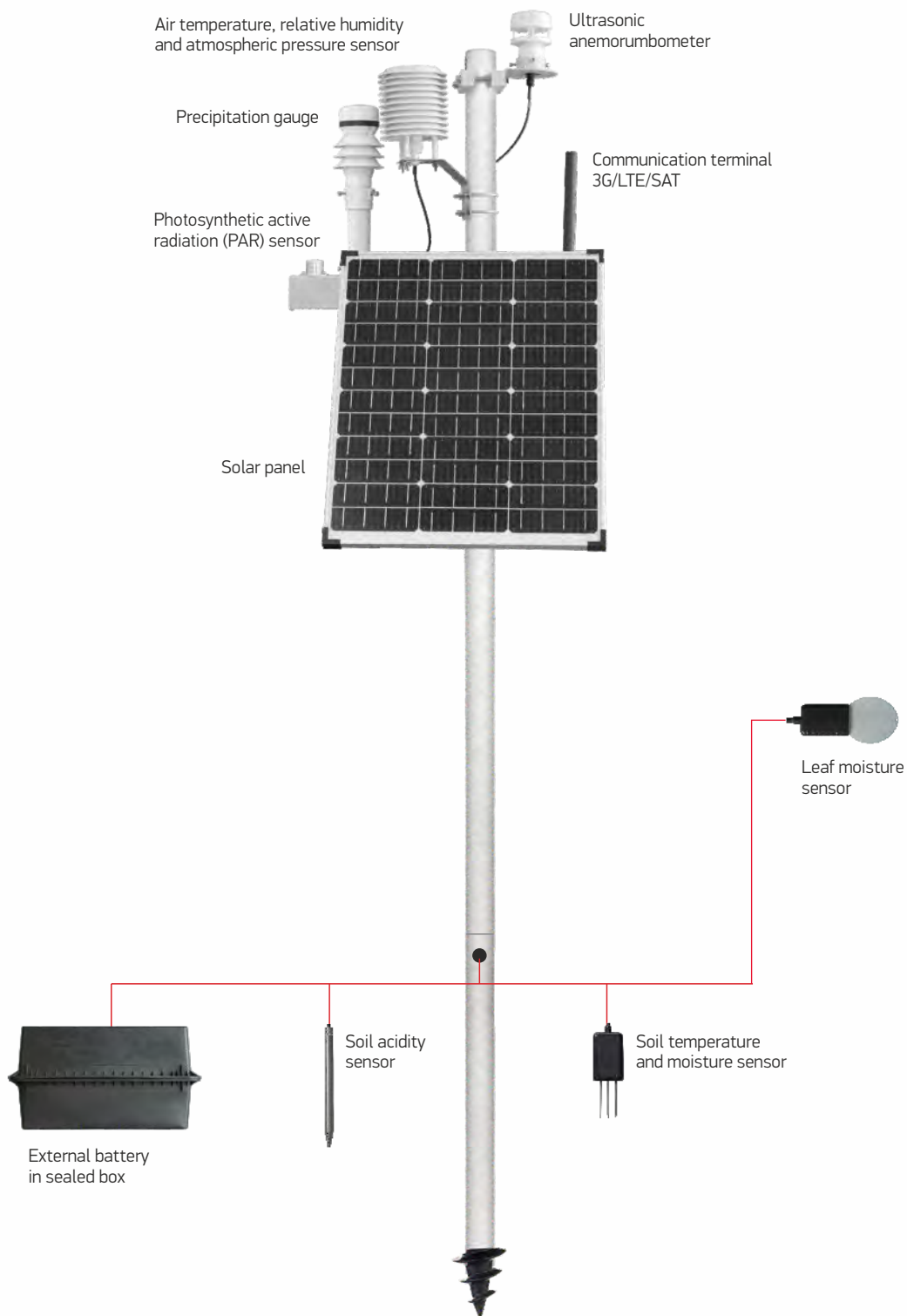
The use of autonomous power sources and the ability to work in automatic mode allows the station without operator participation

COMPLETE SOLUTION

From initial consultation and development to delivery, installation, staff training and technical support

SPECIFICATIONS

- Mast height:
 - overall height : 2.2 m
 - high of section screwed into the ground : 0.8 m
- System power supply : 12 V
- Data transmission interface : RS-485/Ethernet, 3G/LTE/SAT
- Protection : IP 65
- Average lifetime : 10 years
- Operation environment:
 - ambient temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
 - wind speed : ≤ 55 m/s



S-01

PORTABLE METEOROLOGICAL STATION

PURPOSE

- Continuous collection and processing of meteorological information coming from sensors at the location of deployment of the mobile system
- Formation of regime summaries
- Formation of regular and "storm" telegrams
- Sending telegrams to meteorological information collection centers
- Maintaining an archive of meteorological information

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature and relative humidity
- Atmospheric pressure
- Meteorological optical range (MOR)
- Cloud-base height
- Precipitation amount
- Soil temperature
- Determination of weather phenomena

EQUIPMENT CONFIGURATION

Meteorological sensors:

- Ultrasonic anemometer
- Nephelometer with weather sensor
- Ceilometer
- Air temperature and humidity sensor
- Precipitation gauge
- Soil temperature sensor
- Barometer

Equipment and sets:

- Receiving and transmitting unit
- Control unit (PC)
- Communication terminal 3G/LTE/SAT (optional)
- Battery unit
- Solar battery set (optional)
- Telescopic mast with pneumatic drive
- Lightning rod (optional)
- Compass
- Shipping cases
- Cables set
- Installation kit
- Set of spare parts

ADVANTAGES

MOBILITY

The system is delivered to the place required by the customer using light freight vehicles (LCV) due to its shipment in the shipping cases

DEPLOYMENT SPEED IS 30 MINUTES

STATION CONSTRUCTION IS FLEXIBLE

The customer can choose the scope of delivery, types of equipment and options

RESOURCE OPTIMIZATION

The station staff is 2 persons

HIGH AUTONOMY

The power supply can be performed through from the vehicle mains and from storage batteries, a diesel generator or solar batteries

LIGHTNESS AND CORROSION RESISTANCE

Main structural components of the telescopic mast are made of composite materials and aluminum

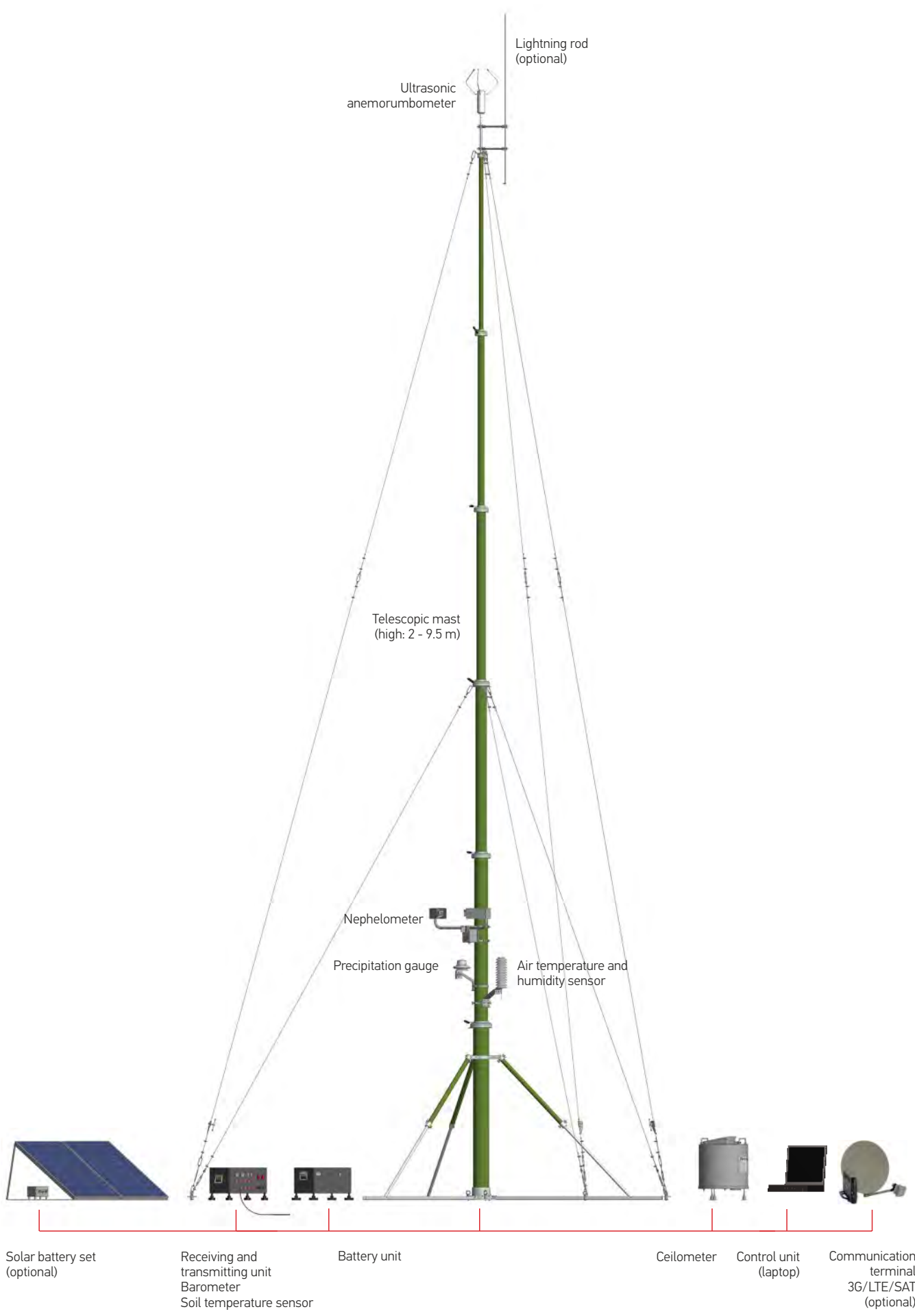
COMPREHENSIVE SOLUTION

From initial consultation and development to the delivery, mounting, personal training and maintenance

SPECIFICATIONS

- System power supply:
 - by DC mains of the vehicle : 9 - 36 V
 - by AC mains : 230 ± 23 B (50Hz)
- Off-line operation time ⁽¹⁾ : not less 8 hours
- Data transmission interface : RS-485/Ethernet, 3G/LTE, SAT (option)
- Protection : IP 65
- Operating temperature:
 - operating from batteries : -25°C to +50°C
 - operating from mains sources : -55°C to +60°C
- Telescopic mast height : 2 - 9,5 m
- Telescopic mast weight : 45 kg
- Battery unit weight : 30 kg
- Receiving and transmitting unit weight : 15 kg
- Ceilometer weight : 26 kg
- System overall mass (gross / net) : 232 / 171 kg
- System overall dimensions in shipping cases (8 units) : 1,95 m³

⁽¹⁾ When using a solar battery, the battery unit will be continuously recharged throughout the day



S-01

SMALL SIZE MOBILE METEOROLOGICAL SYSTEM

PURPOSE

- Continuous collection and processing of meteorological information coming from sensors at the location of deployment of the mobile system
- Formation of regime summaries
- Formation of regular and "storm" telegrams
- Sending telegrams to meteorological information collection centers
- Maintaining an archive of meteorological information

MEASURED PARAMETERS

- Wind speed and direction
- Air temperature and relative humidity
- Atmospheric pressure
- Precipitation amount
- Soil temperature
- Determination of weather phenomena

EQUIPMENT CONFIGURATION

Meteorological sensors:

- Multifunctional weather sensor
- Soil temperature sensor

Equipment and sets:

- Controller
- Control unit (PC)
- Communication terminal 3G/LTE/SAT (optional)
- Battery unit
- Solar battery set (optional)
- Dismountable mast
- Compass
- Shipping cases
- Cables set
- Installation kit
- Set of spare parts

ADVANTAGES

MOBILITY

The system is delivered to the place required by the customer using light freight vehicles (LCV) due to its shipment in the shipping cases

DEPLOYMENT SPEED IS 15 MINUTES

RESOURCE OPTIMIZATION

The station staff is 1 person

HIGH AUTONOMY

The power supply can be performed through from the vehicle mains and from storage batteries, a diesel generator or solar batteries

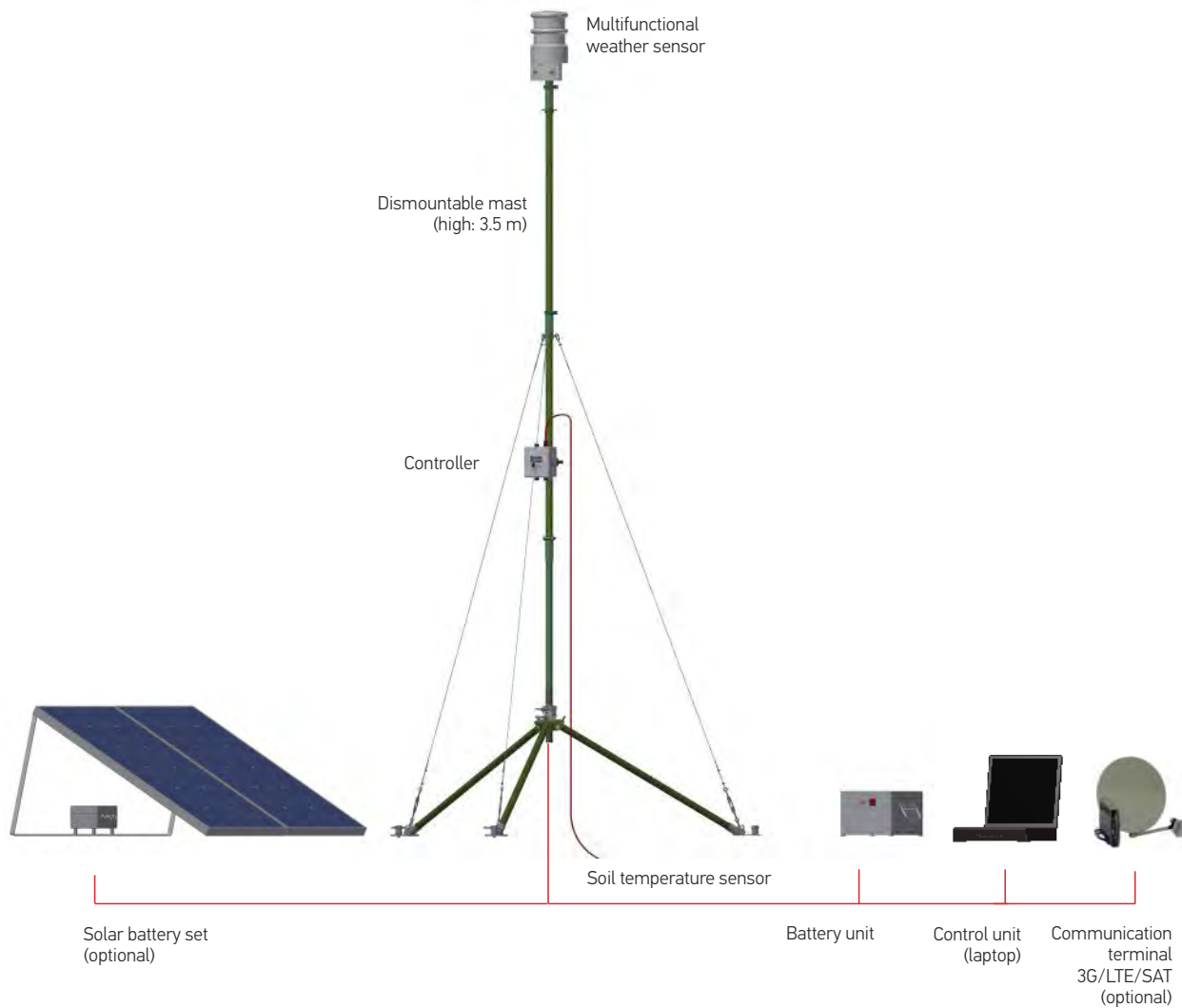
COMPREHENSIVE SOLUTION

From initial consultation and development to the delivery, mounting, personal training and maintenance

SPECIFICATIONS

- System power supply:
 - by DC mains of the vehicle : 9 - 36 V
 - by AC mains : 230 ± 23 B (50Hz)
- Off-line operation time ⁽¹⁾ : not less 8 hours
- Data transmission interface : RS-485/Ethernet, 3G/LTE, SAT
- Protection : IP 65
- Operating temperature:
 - operating from batteries : -25°C to +50°C
 - operating from mains sources : -55°C to +60°C
- Mast height : 3.33 m
- Mast overall weight : 7.3 kg
- Battery unit weight : 5.2 kg
- System overall mass (gross / net) : 58 / 38 kg
- System overall dimensions in shipping cases (3 units) : 0.58 m³

⁽¹⁾ When using a solar battery, the battery unit will be continuously recharged throughout the day



Small size mobile meteorological system S-01 in a shipping package



MEASUREMENT RANGE AND ACCURACY

	S-01 METEOROLOGICAL MEASURING AND INFORMATION SYSTEM	S-01 Hydrometeorological Version	S-01 Agrometeorological Version	S-01 Portable Version	S-01 Small Size Portable Version
Wind speed: - measurement range - measurement accuracy	0.4 - 75 m/s ± 0.3 m/s (0.4 - 10 m/s) ± 3% (10 - 75 m/s)	0.4 - 75 m/s ± 0.3 m/s (0.4 - 10 m/s) ± 3% (10 - 75 m/s)	0 - 40 m/s ± 0.3%	0.3 - 55 m/s ± 0.3 m/s (0.3 - 10 m/s) ± 3% (10 - 55 m/s)	0.2 - 60 m/s ± 0.5 m/s (0.2 - 10 m/s) ± 5% (10 - 60 m/s)
Wind direction: - measurement range - measurement accuracy	0 - 360° ± 3°	0 - 360° ± 3°	0 - 360° ± 3°	0 - 360° ± 3°	0 - 360° ± 3°
Air temperature: - measurement range - measurement accuracy	-60°C to +60°C ± 0.6°C (-60°C to -50°C) ± 0.4°C (-50°C to +60°C)	-60°C to +60°C ± 0.6°C (-60°C to -50°C) ± 0.4°C (-50°C to +60°C)	-40°C to +60°C ± 0.5°C	-60°C to +60°C ± 0.6°C (-60°C to -50°C) ± 0.4°C (-50°C to +60°C)	-50°C to +60°C ± 0.5°C (-60°C to -50°C) ± 0.3°C (-50°C to +60°C) ± 0.4°C (-50°C to +60°C)
Air pressure: - measurement range - measurement accuracy	600 - 1 100 gPa ± 0.3 gPa	600 - 1 100 gPa ± 0.3 gPa	100 - 1 100 gPa ± 1 gPa	300 - 1 100 gPa ± 0.5 gPa	600 - 1 100 gPa ± 0.5 gPa
Relative humidity: - measurement range - measurement accuracy	2 - 99% ± 4% (2 - 90%) ± 5% (90 - 99%)	2 - 99% ± 4% (2 - 90%) ± 5% (90 - 99%)	0 - 100% ± 3%	2 - 99% ± 4% (2 - 90%) ± 5% (90 - 99%)	0 - 100% ± 3% (10% - 90%) ± 5% (90% - 100%)
Meteorological optical range (MOR): - measurement range - measurement accuracy	0 - 30 000 m ± 10% (0 - 10 000 m) ± 20% (10 000 - 30 000 m)	-	-	0 - 30 000 m ± 10% (10 - 10 000 m) ± 20% (10 000 - 30 000 m)	-
Cloud-base height: - measurement range - measurement accuracy	5 - 8 000 m (up to three layers) ± 5 m (5-100 m) ± 10% (100 - 2 000 m) ± 5% (2 000 - 8 000 m)	-	-	5 - 8 000 m (up to three layers) ± 5 m (5-100 m) ± 10% (100 - 2 000 m) ± 5% (2 000 - 8 000 m)	-
Precipitation: - measurement range - measurement accuracy	0.1 - 1 500 mm ± 10% (0.1 - 0.2 mm) ± 5% (0.2 - 1 500 mm)	0.1 - 1 500 mm ± 10% (0.1 - 0.2 mm) ± 5% (0.2 - 1 500 mm)	0 - 200 mm/h (intensity) (defines 3 types of precipitation: rain, snow, hail)	0 - 200 mm/h (intensity) (defines 3 types of precipitation: rain, snow, hail)	-
Snow cover height: - measurement range	0 cm-9.5 m	-	-	-	-
Soil temperature - measurement range - measurement accuracy	-55°C to +65°C ± (0.2+0.002· t)	-	-30°C to +70°C	-55°C to +65°C ± (0.2+0.002· t)	-55°C to +65°C ± (0.2+0.002· t)
Soil moisture: - measurement range	-	-	0-100%	-	-
Soil acidity: - measurement range	-	-	0-14 pH	-	-
Leaf moisture - measurement range - measurement accuracy	-	-	0-100% ± 3% (0 - 50%) ± 5% (50 - 100%)	-	-
Direct solar radiation: - measurement range	0 - 2 kW/m ²	-	-	-	-
Total solar radiation: - measurement range	0 - 2 kW/m ²	-	0 - 1.4 kW/m ²	-	-
Reflected solar radiation: - measurement range	0 - 2 kW/m ²	-	-	-	-
Radiation balance: - measurement range	0,01 - 2 kW/m ²	-	-	-	-
Sunshine duration: - measurement range	0 - 24 hours	-	-	-	-
Photosynthetic active radiation (PAR) - measurement range	-	-	0 - 2 500 μMol/m ² ·s	-	-
Power of ambient dose equivalent of X-ray and gamma radiation - measurement range	4×10 ⁻⁸ - 3 Sv/h	-	-	-	-
Water temperature: - measurement range	-	-80°C to +80°C	-	-	-
Water level: - measurement range	-	0 - 40 m	-	-	-
Water flow rate: - measurement range	-	-10 to +10 m/s	-	-	-
Water muddiness: - measurement range	-	0.01 - 4 000 NTU	-	-	-

CAPABILITIES

- Automatic generation in international meteorological code FM-12 SYNOP, KH-19, KH-21, KH-24, WAREP, in xml-file format (with a resolution of 10 min.)
- It is possible to manually enter the values of meteorological elements that are not measured automatically, as well as to manually enter the values of meteorological elements in case of failure of the weather station sensors
- Technical and primary critical control of the received data
- Missing observation data filling
- Preparation of operational messages
- Defines a set of procedures and rules for reparation of meteorological information of an existing standard for transfer to the consumer or to permanent storage funds for further use
- Maintaining the meteorological information archive and the events log of the station operation for a period of at least 30 days
- Statistical and other calculations:
 - average indicators for the specified periods
 - max/min values for the specified periods

TESTS

- For resistance to radio-frequency electromagnetic field according to STB EN 55022-2012, STB IEC 61000-4-6-2011, STB IEC 61000-4-3-2016
- For resistance to radio interference according to STB IEC 61000-4-2-2011, STB IEC 61000-4-4-2016, GOST IEC 61000-4-5-2017, STB IEC 61000-4-11-2006
- For heat resistance, protection against electrical current damages, from mechanical hazards, from mechanical shock and shaking, protection against radiation (including laser emission sources), marking to GOST IEC 61010-1-2014

CERTIFICATES

- Pattern Approval Certificate of Measuring Instruments No. 16226 dated 31.03.2023 issued by the State Committee for Standardization of the Republic of Belarus
- Certificate of ME Type Approval № 80612-20 dated 18.03.2021 issued by Federal Agency on Technical Regulation and Metrology (Russian Federation)



INSTRUMENTS AND SYSTEMS FOR ACTINOMETRIC MEASUREMENTS

SF-14-21 · ACTINOMETRIC STATION

PELENG SF-06-21 · PYRANOMETER

PELENG SF-12-21 · ACTINOMETER

PELENG SF-08-21 · NET RADIOMETER

PELENG VK-05 · SUNSHINE DURATION DEVICE

PSS-1 · SUN TRACKER



SF-14-21

ACTINOMETRIC STATION

PURPOSE

- Measurement of radiation parameters of the earth's surface, collection and processing of the information received
- Actinometric stations are installed on the meteorological site and they are operated in continuous or periodic measurement modes
- The operation principle of the station is based on transfer of the received signals from sensors (primary transducers of environmental characteristics installed in the open air) to measuring devices located in an eight-channel electronic unit, where they are converted and transferred to the PC via RS-485 interface. Further, the information is processed, additional parameters are calculated and displayed on the PC monitor using the software for SF-14-21 actinometric station

MEASURED PARAMETERS

- Direct solar radiation
- Total solar radiation (calculated)
- Radiation balance (total)
- Long-wave radiation balance
- Ground (underlying surface) albedo

EQUIPMENT CONFIGURATION

- PELENG SF-12-21 actinometer
- PELENG SF-06-21 pyranometer (3 units)
- PELENG SF-08-21 net radiometer
- PELENG VK-05 sunshine duration sensor
- PSS-1 sun tracker
- Pole
- Electronic unit
- Connecting box
- Power supply unit
- Software
- Installation kit

OPTIONAL EQUIPMENT

- PC-workstation
- Power supply (AC 220V 50Hz)

CERTIFICATES

- № 9206 State Committee for Standardization of the Republic of Belarus
- №83298-21 Federal Agency on Technical Regulation and Metrology (Russian Federation)

MEASUREMENT RANGE AND ACCURACY

- **Direct solar radiation:**
 - measurement range : 0 - 2 kW/m²
 - measurement accuracy : ± 3%
- **Total solar radiation :**
 - measurement range : 0 - 2 kW/m²
 - measurement accuracy : ± 10%
- **Reflected solar radiation:**
 - measurement range : 0 - 2 kW/m²
 - measurement accuracy : ± 10%
- **Diffuse solar radiation:**
 - measurement range : 0 - 2 kW/m²
 - measurement accuracy : ± 10%
- **Long-wave radiation balance:**
 - measurement range : 0.01 - 2 kW/m²
 - measurement accuracy : ± 10%

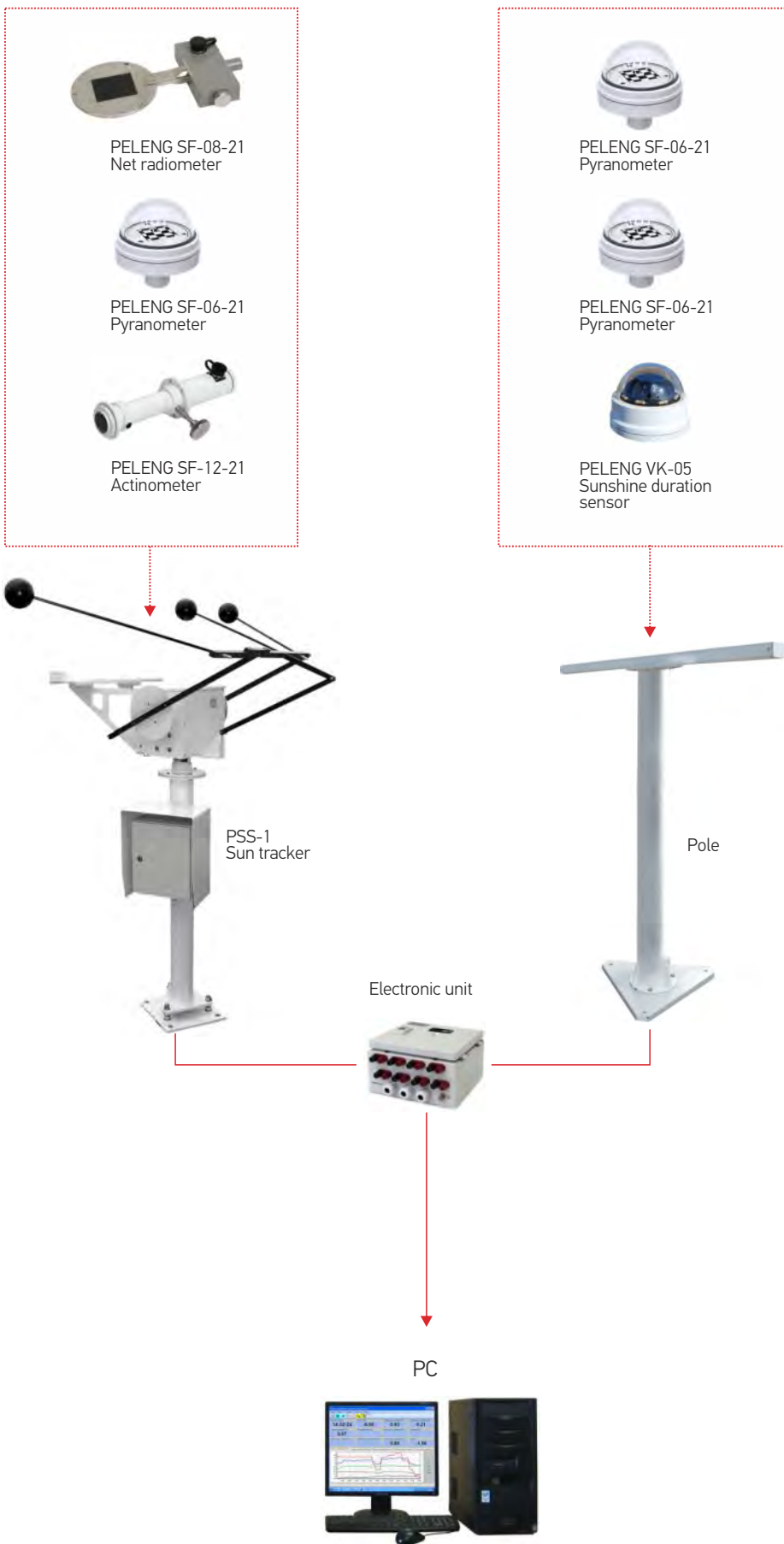
SPECIFICATIONS

- Operation environment:
 - ambient temperature : -50°C to +50°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- Power supply voltage : 24 ± 2.4V / 220 ± 23 V⁽¹⁾
- Interface : RS-485
- Protection : IP 53
- Life time : 6 years

⁽¹⁾ when using the power supply AC 220BV50Hz

SOFTWARE INTERFACE FOR SF-14 ACTINOMETRIC STATION







PELENG SF-06-21

PYRANOMETER



PURPOSE

- Total solar irradiance measurement in 0.28 μm to 4 μm range
- Operating principle of the device is based on the temperature variation determination of manganin-constantan elements of thermobattery, proportional irradiance generated by solar irradiation. Temperature variation transforms into electric signal in analog form. Digital signal in ASCII codes is used via the RS-485 interface according to the corresponding protocols. When working with a computer, the value of the irradiance is displayed in the software window "Peleng Meteo Actinometry"
- Two device versions are available:
 - pyranometer with analog output signal
 - electronic pyranometer with digital and analog signals

CERTIFICATES

- №11217 State Committee for Standardization of the Republic of Belarus
- №82816-21 Federal Agency on Technical Regulation and Metrology (Russian Federation)
- Conforms to ISO 9060

SPECIFICATIONS

- Spectral range:
 - version with glass protector cap : 0.3 - 2.8 μm
 - version with quartz protection cap : 0.28 - 4 μm
- Irradiance range : 0 - 2 kW/m^2
- Permissible main relative measurement error : $\pm 10\%$
- Ambient temperature induced permissible additional measurement error, per 10°C temperature change : $\pm 1.5\%$
- Conversion factor for normal irradiance : $\geq 8 \text{ mV m}^2 / \text{kW}$
- Response time : 20 s
- Operation environment:
 - ambient temperature : -60°C to +80°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- Electronic pyranometer interface : RS-485
- DC supply voltage range electronic pyranometer : 6 - 24 V
- Protection : IP 65
- Life time : 10 years
- Time between verifications : 2 years
- Overall dimensions (L × W × H):
 - pyranometer : 105×105×95 mm
 - electronic pyranometer : 105×105×105 mm
- Weight:
 - pyranometer head : 1 kg
 - electronic pyranometer : 1.1 kg

PELENG SF-12-21

ACTINOMETER



PURPOSE

- Direct solar irradiance measurement in 0.3 μm to 10 μm range
- Operating principle of the device is based on the conversion of manganin- constantan thermoelements of irradiance generated by solar irradiation in electric signal in analog form. Further, the signal enters on the input of the electronic unit, is converted into digital form, processed by the built-in microcontroller and displayed on the led indicator of the electronic unit. Actinometers consist of converter and electronic unit. Electronic unit can be connected to PC via interface RS-485. During operation, the values of direct solar radiation irradiance are displayed in the "Peleng Meteo Actinometry" software in the display window of the sensor operation, or can be calculated from instantaneous values, taking into account the conversion factor.
- Two device versions are available:
 - actinometer with analog output signal
 - electronic actinometer with digital and analog signals

CERTIFICATES

- №11059 State Committee for Standardization of the Republic of Belarus
- №82669-21 Federal Agency on Technical Regulation and Metrology (Russian Federation)

SPECIFICATIONS

- Spectral range : 0.3 - 10 μm
- Irradiance range : 0 - 2 kW/m^2
- Permissible nonlinearity : $\pm 1\%$
- Permissible main relative measurement error : $\pm 3\%$
- Ambient temperature induced permissible additional measurement error, per 10°C temperature change : $\pm 1\%$
- Conversion factor for normal irradiance : $\geq 6 \text{ mV m}^2 / \text{kW}$
- Response time : $\leq 20 \text{ s}$
- Operation environment:
 - ambient temperature : -60°C to $+80^\circ\text{C}$
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- Electronic actinometer interface : RS-485
- DC supply voltage range
 - electronic actinometer : 6 - 24 V
- Protection : IP 65
- Life time : 10 years
- Time between verifications : 2 years
- Overall dimensions (L x W x H):
 - actinometer : 180x90x70 mm
 - electronic actinometer : 222x90x54 mm
- Weight:
 - actinometer : 1 kg
 - electronic actinometer : 1 kg

PELENG SF-08-21

NET RADIOMETER



PURPOSE

- Measurement of the radiation balance of the surface under study in natural conditions, that is, the difference in the values of irradiance (radiation) created by the fluxes of solar and thermal radiation entering on its receiving surfaces.
Operating principle of Net Radiometer is based on thermal-to-electrical energy conversion. Under the influence of solar and thermal radiation entering on the blackened receiving surfaces of the sensitive element, an electromotive force (hereinafter referred to as EMF) of direct current is generated in the thermobattery, which is proportional to the difference in the values of the irradiance of the receiving surfaces (i.e., the radiation balance). The analog signal from the radiation balance converter enters onto the input of the analog-to-digital converter of the electronic unit, is converted into digital form and then enters to the RS-485 interface converter connected to the PC. The information on PC is displayed by means of «Peleng Meteo» software. When using the electronic radiation balance converter the digital signal via the RS-485 interface enters directly to the PC through the interface converter. The information on the PC is displayed by the "Peleng Meteo Actinometry" software.
- Two device versions are available:
 - net radiometer with analog output signal
 - electronic net radiometer with digital and analog signals

CERTIFICATES

- №10826 State Committee for Standardization of the Republic of Belarus
- №82652-21 Federal Agency on Technical Regulation and Metrology (Russian Federation)

SPECIFICATIONS

- Spectral range : 0.28 - 40 μm
- Irradiance range : 0.01 - 2 kW/m^2
- Permissible main relative measurement error : $\pm 10\%$
- Wind correction factor for each 1 m/s of wind speed change (wind speed range 0 to 15 m/s) : < 0.04
- Difference of conversion factor between upper and lower sensor (sensor asymmetry) : $\pm 5\%$
- Conversion factor for normal irradiance : $\geq 8 \text{ mV m}^2 / \text{kW}$
- Response time : $\leq 20 \text{ s}$
- Operation environment:
 - ambient temperature : -60°C to $+80^\circ\text{C}$
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- Electronic net radiometer interface : RS-485
- DC supply voltage range electronic net radiometer : 6 - 24 V
- Protection : IP 65
- Life time : 10 years
- Time between verifications : 2 years
- Overall dimensions (L x W x H):
 - net radiometer : 210x110x40 mm
 - electronic net radiometer : 210x115x25 mm
- Weight:
 - net radiometer : 1.05 kg
 - electronic net radiometer : 1.2 kg

PELENG VK-05

SUNSHINE DURATION DEVICE



PURPOSE

- Sunshine duration measurement with 120 W/m² threshold level for direct solar radiation

MAIN FEATURES

- The device is a specially designed receiver with a set of sensors (silicon photodiodes) connected to an electronic detector. The output signal of the device goes to the PC via RS-485 interface. The information is displayed on the PC using the "Peleng Meteo Actinometry" software

CERTIFICATES

- № 11841 State Committee for Standardization of the Republic of Belarus
- № 37018-08 Federal Agency on Technical Regulation and Metrology (Russian Federation)

SPECIFICATIONS

- Irradiance threshold level : 120 W/m²
- Permissible main relative measurement error : ±10%
- Ambient temperature induced permissible additional measurement error, per 10°C temperature change : ±10%
- Sunshine duration measurement intervals : 1 s; 3 s; at the operator's request

Operation environment:

- ambient temperature : -50°C to +50°C
- relative air humidity : 0 - 100%
- atmospheric pressure : 600 - 1100 gPa
- Interface : RS-485
- Protection : IP 57
- Life time : 8 years
- Time between verifications : 1 year
- Overall dimensions (L × W × H) : 100×100×107 mm
- Weight : 1.05 kg

PSS-1

SUN TRACKER



PURPOSE

- Sun tracking for actinometric devices pointing
- Primary use - for actinometric stations

EQUIPMENT CONFIGURATION

- Attitude control unit
- Base
- Shading ball assembly
- Software
- Installation kit

OPTIONAL EQUIPMENT

- PC
- Power supply (AC 220V 50Hz)

SPECIFICATIONS

- Rotation:
 - in azimuth : 345°
 - in zenith : 90°
- Pointing error:
 - in azimuth : ± 0.5°
 - in zenith : ± 0.5°
- Reproducibility of pointing:
 - in azimuth : ± 0.05°
 - in zenith : ± 0.05°
- Resolution : 2'
- Daily time error : ± 2 s
- Interface : V.23, RS-485
- Protection : IP 53
- Life time : 6 years
- Power supply voltage : 24 ±2.4 V / 220 ±23 V⁽¹⁾
- Power consumption : ≤ 150 W
- Operation environment:
 - ambient temperature : -50°C to +50°C
 - relative air humidity : 0 - 98%
 - atmospheric pressure : 600 - 1100 gPa
- Overall dimensions (L × W × H) : 1250×1400×2100 mm
- Weight : 80 kg

⁽¹⁾ when using the power supply AC 220V 50Hz

INSTRUMENTS FOR MEASURING MAIN METEOROLOGICAL VALUES

PELENG SF-01 · TRANSMISSOMETER

AT-21 · TRANSMISSOMETER

PELENG SL-03 · NEPHELOMETER

PELENG SL-02 · BACKGROUND LUMINANCE SENSOR

SD-02-2006 · CEILOMETER

SD-02-2006M · PORTABLE CEILOMETER

PELENG SF-03 · CUP ANEMOMETER AND WIND VANE

PELENG SF-17 · ULTRASONIC CUP ANEMOMETER AND
WIND VANE

PELENG SF-11 · PRECIPITATION GAUGE

DO-22 · PRECIPITATION GAUGE

AIR TEMPERATURE AND HUMIDITY SENSOR

PTV · AIR TEMPERATURE AND RELATIVE HUMIDITY
MEASUREMENT DEVICE

SF-15 · SOIL THERMOMETER

SF-19 · WATER THERMOMETER



PELENG SL-01

TRANSMISSOMETER



PURPOSE

- Continuous measurement of extinction coefficient in horizontal layer of atmosphere, automatic calculation of MOR, data storage and display
- The measurements are performed during daytime and at night. The transmissometer can operate independently and as a part of weather station, including automatic airport weather stations

COMPLETE SET

- Emitter
- Receiver
- Pole (2 units)
- Electronic unit
- Distribution box
- Installation kit
- Spare parts and instruments set
- Software

OPTIONAL EQUIPMENT

- Obstruction lights
- PC
- Interface unit (v.23-RS232)

CERTIFICATES

- № 16386 issued by the State Committee for Standardization of the Republic of Belarus
- № 25194-20 issued by Federal Agency on Technical Regulation and Metrology (Russian Federation)
- № 209 issued by Interstate Aviation Committee (IAC). Airport and Equipment Certification Committee

SPECIFICATIONS

- Baseline distances : 30 / 50 / 75 / 100 m
- Range of atmospheric transmission factor measurement with 0.001 resolution : 0 - 1
- Limits of permissible absolute error of luminous flux transmittance coefficient in the atmospheric layer : $\pm 0.003\%$
- MOR range : 15 - 10 000 m
- MOR accuracy:
 - 15 to 600 m : ± 20 m
 - 600 to 1 500 m : $\pm 5\%$
 - 1 500 to 10 000 m : $\pm 15\%$
- Sampling period : 5 s
- Interface : V.23, RS485
- Power supply voltage : 230 ± 23 V (50Hz)
- Power consumption : ≤ 75 W
- Protection : IP 66
- Life time : 10 years
- Operation environment:
 - ambient temperature : -60°C to $+65^{\circ}\text{C}$
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- Overall dimensions (L x W x H):
 - emitter mounted on pole with cover : 1 020x420x2 640 mm
 - receiver mounted on pole with cover : 1 020x420x2 640 mm
- Weight:
 - emitter mounted on pole with cover : 131 kg
 - receiver mounted on pole with cover : 131 kg
 - electronic unit : 15 kg

AT-21

TRANSMISSOMETER



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PURPOSE

- Continuous measurement of extinction coefficient in horizontal layer of atmosphere, automatic calculation of MOR, data storage and display. The measurements are performed during daytime and at night. The transmissometer can operate independently and as a part of weather station, including automatic airport weather stations

MAIN FEATURES

- Joint operation of MOD meters
- Automatic adjustment of luminous flux
- Automatic calibration and alignment
- On-site self-test

COMPLETE SET

- PELENG SF-01 transmissometer
- PELENG SL-03 nephelometer
- Electronic unit
- Installation kit
- Spare parts and instruments set
- Software

OPTIONAL EQUIPMENT

- Background luminance sensor
- Obstruction light
- PC
- Interface unit (v.23-RS232)

SPECIFICATIONS

- Baseline distances : 30 / 50 / 75 / 100 m
- Range of atmospheric transmission factor measurement with 0.1% resolution : 0 - 100%
- Accuracy of atmospheric transmission factor measurement : $\pm 0.3\%$
- MOR range : 15 - 30 000 m
- MOR accuracy:
 - 15 to 600 m : ± 20 m
 - 600 to 1 500 m : $\pm 5\%$
 - 1 500 to 10 000 m : $\pm 15\%$
 - 10 000 to 30 000 m : $\pm 20\%$
- Sampling period : 5 s
- Background luminance measurement range : 10 - 20 000 cd/m²
- Background luminance measurement accuracy : $\pm 15\%$
- Determination of weather phenomena : 9 types
- Interface : V.23, RS485
- Power supply voltage : 230 \pm 23 V (50Hz)
- Power consumption : ≤ 200 W
- Protection : IP 66
- Life time : 10 years
- Operation environment:
 - ambient temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1 100 gPa
- Overall dimensions (L x W x H):
 - emitter mounted on pole with cover : 1 020x420x2 640 mm
 - receiver mounted on pole with cover : 1 020x420x2 640 mm
 - nephelometer : 770x455x620 mm
- Weight:
 - emitter mounted on pole with cover : 131 kg
 - receiver mounted on pole with cover : 131 kg
 - nephelometer : 5 kg
 - electronic unit : 15 kg

PELENG SL-03

NEPHELOMETER



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PURPOSE

- Meteorological optical range (MOR) measurement
- Determination of the current weather phenomenon (optional):
 - rain
 - drizzle
 - rain with snow
 - snow
 - hail
 - fog
 - haze
 - fair
 - precipitation of an indeterminate type

MAIN FEATURES

- Heated protective glasses and housings
- Compensation of protective glasses' contamination

COMPLETE SET

- Bridge assembly:
 - emitter
 - receiver
 - bridge
 - control unit
- Software

OPTIONAL EQUIPMENT

- Pole (h=2.5 m)
- Intermediate pole (h = 0.5 m; 1 m; 2 m)
- Installation kit
- Weather phenomenon sensor
- Obstruction light
- PC
- Power supply (AC 220V 50Hz-DC 24V)

CERTIFICATES

- № 16385 issued by the State Committee for Standardization of the Republic of Belarus
- № 48786-19 issued by Federal Agency on Technical Regulation and Metrology (Russian Federation)
- № 601 Issued by interstate aviation committee (IAC). Airport and Equipment Certification Committee

SPECIFICATIONS

- Displayed MOR range : 0 - 75 000 m
- Measured MOR range : 5 - 50 000 m
- MOR accuracy:
 - 5 to 10 000 m : ±10%
 - 10 000 to 50 000 m : ±20%
- Measurement resolution : 1 m
- Measurement cycle duration : 15 s
- Current weather phenomenon determination : 9 types
- Protection : IP 66
- Life time : 10 years
- Interface : V.23, RS485
- Power supply voltage : 24 ±2.4 V / 230 ±23 V⁽¹⁾
- Power consumption : ≤ 50 W
- Operation environment:
 - ambient temperature : -60°C to +65°C
 - relative air humidity : 0 - 98%
 - atmospheric pressure : 600 - 1100 gPa
- Overall dimensions (L × W × H) : 770×450×4 840 mm
- Weight:
 - bridge assembly : 5 kg
 - pole with mounting plate : 30 kg
 - intermediate pole : 10 kg
 - obstruction light : 5 kg

⁽¹⁾ when using the power supply AC 220V 50Hz-DC 24V



PELENG SL-02

BACKGROUND LUMINANCE SENSOR



PURPOSE

- Continuous measurement of background luminance along the runway to support correct RVR computation

COMPLETE SET

- Optical unit
- Spare parts and instruments set
- Software

OPTIONAL EQUIPMENT

- Housing
- Pole
- Interface unit (v.23-RS232)
- Power supply (AC 220V 50Hz-DC 24V)
- Shipping case

CERTIFICATES

- № 13762 State Committee for Standardization of the Republic of Belarus
- № 84590-22 Federal Agency on Technical Regulation and Metrology (Russian Federation)

SPECIFICATIONS

• Luminance range	: 10 - 50 000 cd/m ²
• Measurement accuracy	: ± 15%
• FOV	: 7°
• Sampling period	: 15 s
• Protection	: IP 66
• Life time	: 10 years
• Interface	: V.23, RS-485, RS-232
• Power supply voltage	: 24 ±2.4 V / 230 ±23 V ⁽¹⁾
• Operation environment:	
- ambient temperature	: -60°C to +65°C
- relative air humidity	: 0 -98%
- atmospheric pressure	: 600 - 1100 gPa
• Overall dimensions (L × W × H):	
- optical unit	: 122×128×195 mm
- cover	: 314×140×127 mm
- power supply unit	: 302×224×145 mm
- pole	: 250×220×1 400 mm
• Weight:	
- optical unit	: 2 kg
- housing	: 0.65 kg
- power supply unit	: 6 kg
- pole	: 8 kg

⁽¹⁾ when using the power supply AC 220V 50Hz-DC 24V



SD-02-2006

CEILOMETER



PURPOSE

- Continuous measurement of cloud-base height at airports and meteorological network observation sites
- Operation principle is based on atmospheric backscatter measurement
- Built-in automatic self-test system

COMPLETE SET

- Optoelectronic unit
- Software
- Installation kit
- Spare parts and instruments set

OPTIONAL EQUIPMENT

- PC
- Interface unit (v.23-RS232)

CERTIFICATES

- № 11058 State Committee for Standardization of the Republic of Belarus
- № 78976-20 Federal Agency on Technical Regulation and Metrology (Russian Federation)
- № 545 Interstate Aviation Committee (IAC). Airport and Equipment Certification Committee

SPECIFICATIONS

- Measurement range : 5 - 8 000 m
- Measurement accuracy:
 - 5 to 100 m : ± 5 m
 - 100 to 2 000 m : $\pm 10\%$
 - 100 to 8 000 m : $\pm 5\%$
- Measurement resolution : 5 m
- Measurement cycle duration : 10 s - 24 hours
- Protection : IP 66
- Life time : 10 years
- Interface : V.23, RS485
- Power supply voltage : 230 ± 23 V (50Hz)
- Power consumption : ≤ 150 W
- Operation environment:
 - ambient temperature : -60°C to $+65^{\circ}\text{C}$
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- Overall dimensions (L x W x H) : 530x340x1400 mm
- Weight:
 - ceilometer : 42 kg
 - pole with mounting plate : 26 kg

SD-02-2006M

PORTABLE CEILOMETER



PURPOSE

- Continuous measurement of cloud-base height at airports and meteorological network observation sites

MAIN FEATURES

- Operation principle is based on atmospheric backscatter measurement
- Built-in automatic self-test system

COMPLETE SET

- Optoelectronic unit
- Software
- Installation kit
- Spare parts and instruments set

OPTIONAL EQUIPMENT

- PC
- Interface unit (v.23-RS232)
- Power supply (AC 220V 50Hz-DC 24V)

CERTIFICATES

- №11058 State Committee for Standardization of the Republic of Belarus
- № 78976-20 Federal Agency on Technical Regulation and Metrology (Russian Federation)
- № 545 Interstate Aviation Committee (IAC). Airport and Equipment Certification Committee

SPECIFICATIONS

- | | |
|----------------------------------|----------------------------------------|
| • Measurement range | : 5 - 8 000 m |
| • Measurement accuracy: | |
| - 5 to 100 m | : ± 5 m |
| - 100 to 2 000 m | : ±10% |
| - 100 to 8 000 m | : ± 5% |
| • Measurement resolution | : 5 m |
| • Measurement cycle duration | : 10 s - 24 hours |
| • Protection | : IP 66 |
| • Life time | : 10 years |
| • Interface | : V.23, RS485 |
| • Power supply voltage | : 24 ±2.4 V / 230 ±23 V ⁽¹⁾ |
| • Power consumption | : ≤ 150 W |
| • Operation environment: | |
| - ambient temperature | : -60°C to +65°C |
| - relative air humidity | : 0 - 100% |
| - atmospheric pressure | : 600 - 1100 gPa |
| • Overall dimensions (L × W × H) | : 450×450×560 mm |
| • Weight: | : 26 kg |

⁽¹⁾ when using the power supply AC 220V 50Hz-DC 24V

PELENG SF-03

CUP ANEMOMETER AND WIND VANE



PURPOSE

- Continuous remote measurement of wind direction and speed (instantaneous, extreme, mean), acquired data storage and display

COMPLETE SET

- Cup anemometer
- Wind vane
- Measurement unit with cross-beam
- Installation kit
- Spare parts and instruments set
- Software

OPTIONAL EQUIPMENT

- PC
- Distribution box

CERTIFICATES

- № 10586 State Committee for Standardization of the Republic of Belarus
- № 26715-18 Federal Agency on Technical Regulation and Metrology (Russian Federation)
- № 268 Interstate Aviation Committee (IAC). Airport and Equipment Certification Committee

mSPECIFICATIONS

- Wind speed measurement range : 0.4 - 75 m/s
- Wind speed measurement accuracy:
 - 0,4 m/s to 10 m/s : ± 0.3 m/s
 - 10 m/s to 75 m/s : $\pm 3\%$
- Wind direction measurement range : $0 \div 360^\circ$
- Wind direction measurement accuracy : $\pm 3^\circ$
- Measurement cycle duration : 3 s
- Protection : IP 56
- Life time : 10 years
- Interface : V.23, RS485
- Power supply voltage : 24 ± 2.4 V
- Power consumption : ≤ 25 W
- Operation environment:
 - ambient temperature : -60°C to $+65^\circ\text{C}$
 - relative air humidity : $0 \div 100\%$
 - atmospheric pressure : $600 \div 1100$ gPa
- Overall dimensions (L × W × H):
 - cup anemometer : 325×325×290 mm
 - wind vane : 416×87×260 mm
 - measurement unit with cross-beam : 710×131×200 mm
- Weight:
 - cup anemometer : 1.2 kg
 - wind vane : 1.6 kg
 - measurement unit with cross-beam : 4 kg

PELENG SF-17

ULTRASONIC CUP ANEMOMETER AND WIND VANE



PURPOSE

- Continuous remote measurement of wind direction and speed, acquired data storage and display

COMPLETE SET

- Cup anemometer
- Wind vane
- Installation kit
- Spare parts and instruments set
- Software

OPTIONAL EQUIPMENT

- PC
- Translator
- Power supply unit

SPECIFICATIONS

- Wind speed measurement range : 0.3 - 55 m/s
- Wind speed measurement accuracy:
 - at wind speeds up to 10 m/s : ± 0.3 m/s
 - at wind speed more than 10 m/s : $\pm 3\%$
- Wind direction measurement range : 0 - 360°
- Wind direction measurement accuracy : $\pm 3^\circ$
- wind vane resolution : $\pm 1^\circ$
- cup anemometer resolution : ± 0.1 m/s
- Interface : RS-485
- Transferring information to PC : ASCII code
- Power supply voltage : 24 \pm 2.4 V
- Power consumption:
 - with heating : no more 50 W
 - without heating : no more 10 W
- Protection : IP 66
- Operation environment:
 - ambient temperature : -60°C to +65°C
 - relative air humidity : 0 \div 100%
 - atmospheric pressure : 600 \div 1100 gPa
 - wind speed : up to 75 m/s
- Overall dimensions (L \times W \times H) : 285 \times 285 \times 430 mm
- Weight : 2.7 kg
- MTBF : min 10 000 hours
- Life time : 10 yers

PELENG SF-11

PRECIPITATION GAUGE



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PURPOSE

- Solid, liquid, and mixed precipitation measurement

COMPLETE SET

- Data processing unit
- Wind protector
- Pole
- Installation kit
- Spare parts and instruments set

OPTIONAL EQUIPMENT

- PC
- Interface unit (v.23-RS232)
- Power supply (AC 220V 50Hz-DC 24V)

CERTIFICATES

- № 15380 State Committee for Standardization of the Republic of Belarus
- № 40835-18 Federal Agency on Technical Regulation and Metrology (Russian Federation)

SPECIFICATIONS

- Range of measured precipitation amount:
 - in summer : 0.2 - 125 mm
 - in winter : 0.2 - 12.5 mm
- Measurement accuracy : $\pm(0.10 + 0.05 K)$ mm
(*K* - measured precipitation)
- Resolution : 0.1 mm
- Collector orifice area : 200 ± 1 cm²
- Measurement cycle duration : 15 s
- Protection : IP 55
- Life time : 10 years
- Interface : V.23, RS485
- Power supply voltage : 24 ± 2.4 V / 230 ± 23 V⁽¹⁾
- Power consumption : ≤ 12 W
- Operation environment:
 - ambient temperature : -50°C to +65°C
 - relative air humidity : 0 ÷ 100%
 - atmospheric pressure : 600 ÷ 1100 gPa
- Overall dimensions (L × W × H):
 - data processing unit : 400×300×400 mm
 - wind protector : 1100×1100×550 mm
 - pole : 300×300×1600 mm
 - power supply : 330×220×160 mm
- Weight:
 - data processing unit : 7 kg
 - wind protector : 8 kg
 - pole : 16 kg
 - power supply : 5.5 kg

⁽¹⁾ when using the power supply AC 220V 50Hz-DC 24V

DO-22

PRECIPITATION GAUGE



PURPOSE

- Measurement by weight principle of quantity and intensity of all types of precipitation: liquid, solid, mixed
- Work offline
- Can be used as a part of automated meteorological systems

ADVANTAGES

- Heated receiving hole for measurement of quantity of solid and mixed types of precipitation
- A special mechanism for opening the windshield makes access to the precipitation sensor easy
- Display of information on external LCD indicator
- Attached ladder for easy service maintenance of the precipitation sensor

CERTIFICATION

- Pattern Approval Certificate of the State Committee for Standardization of the Republic of Belarus - II Q 2024
- Pattern Approval Certificate of the Federal Agency on Technical Regulating and Metrology (Russian Federation) - III-IV Q 2024

SPECIFICATIONS

- Range of measured precipitation amount : 0.2 - 1 500 mm
- Sensitivity : 0.1 mm
- Receiving hole area : $200 \pm 1 \text{ cm}^2$
- Protection : IP 66
- Life time : 10 years
- Interface : RS-485; V.23*
- Power supply voltage : 12 - 24 V
- Power consumption : $\leq 50 \text{ W}$
- Operation environment:
 - ambient temperature : -50°C to $+65^\circ\text{C}$
 - relative air humidity : $0 \div 100\%$
 - atmospheric pressure : $600 \div 1100 \text{ kPa}$

* - according to customer's request



AIR TEMPERATURE AND HUMIDITY SENSOR



MAIN FEATURES

- Air temperature and humidity sensor is delivered with platinum resistivity thermometer Pt100 and humidity unit HUMICAP*180

COMPLETE SET

- Air temperature and humidity sensor is protected against radiation
- Temperature and humidity controller

CERTIFICATES

- № 15149 State Committee for Standardization of the Republic of Belarus
- № 86211-22 Federal Agency on Technical Regulation and Metrology (Russian Federation)

SPECIFICATIONS

- Air temperature measurement range: -60°C to +60°C
- Air temperature measurement accuracy:
 - 60°C to -50°C : ± 0.6°C
 - 60°C to -50°C : ± 0.4°C
- Relative air humidity measurement range: : 2 - 99%
- Relative air humidity measurement accuracy:
 - 2% to 90% : ± 4%
 - 90% to 99% : ± 5%
- Measurement cycle duration : 20 s
- Interface : V.23, RS-485
- Protection : IP 65
- Life time : 10 years
- Power supply voltage : 24 ± 2.4 V
- Overall dimensions (L × W × H) : 120×120×320 mm
- Weight : 3 kg

PTV

AIR TEMPERATURE AND RELATIVE HUMIDITY MEASUREMENT DEVICE

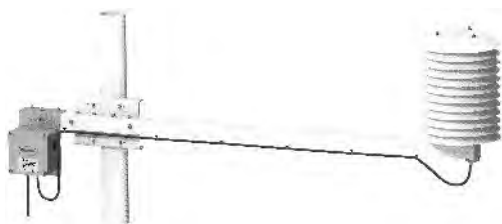


PURPOSE

- Automatic temperature and relative humidity measurement
- The device ensures continuous measurements and can function both autonomously and as part of information and measurement systems
- Measured values are displayed on the controller's screen and then are transmitted to the communication line

COMPONENTS

- Air temperature and humidity sensor
- Air temperature and humidity controller
- Radiation shield
- Bridge
- Power and communication cable



SPECIFICATIONS

- Type of applied air temperature and humidity sensor * : HMP155; ДТВ-05; ДТВВ-01; HMP555; LTH211
- Interface : RS-485-2W
- Informational messagee : ASCII code
- Protection : IP 66
- Life time : 10 years
- Power supply voltage : 12 -24 V
- Power consumption : ≤ 10 W
- Operation environment:
 - ambient temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 60 - 110 kPa
 - wind speed : ≤ 65 m/s
- Dimensions (L × W × H):
 - air temperature and humidity controller : 137×128×190 mm
 - radiation shield : Ø 220×322 mm
 - bridge : 1400×140×166 mm
- Weight:
 - air temperature and humidity controller : 1.7 kg
 - radiation shield : 2.3 kg
 - bridge : 4.7 kg

* The technical specifications of the applied air temperature and humidity sensor are specified in its operation documents

SF-15

SOIL THERMOMETER



PURPOSE

- Soil temperature measurement at depths up to 4 cm, for agricultural purposes and on meteorological network observation sites
- The instrument is capable to process and store data from up to 10 temperature probes

COMPLETE SET

- Panel (with 1.5V AA batteries - 4 pcs.)
- Temperature probe (up to 10 units)
- Software
- RS232 cable
- Case

CERTIFICATES

- № 12316 State Committee for Standardization of the Republic of Belarus

SPECIFICATIONS

- Soil temperature range : -30°C to +30°C
- Measurement accuracy : ± 0.5°C
- Power source - internal : 4.5 - 6.6 V
- Current consumption : ≤ 250 mA
- Interface : RS-232
- Protection of the probe shell : IP 58
- Protection of the panel shell : IP 40
- Life time : 10 years
- Operation environment:
 - ambient temperature : -30°C to +30°C
 - relative air humidity : 0 - 98%
 - atmospheric pressure : 840 - 1100 gPa
- Overall dimensions (L × W × H):
 - temperature hrobe : 32×32×120 mm
 - panel : 120×200×50 mm

SF-19

WATER THERMOMETER



PURPOSE

- Water temperature measurement at different depths in rivers, lakes, wells, holes, and other waters

COMPLETE SET

- Panel (with 1.5V AA batteries - 4 pcs.)
- Temperature probe
- Software
- RS232 cable
- Case

CERTIFICATES

- № 12324 State Committee for Standardization of the Republic of Belarus

SPECIFICATIONS

- | | |
|------------------------------------------------------|------------------|
| • Water temperature range | : -5°C to +35°C |
| • Measurement accuracy | : ± 0.1°C |
| • Sensor immersion range | : 0 - 25 m |
| • Power source - internal | : 4.5 - 6.6 V |
| • Current consumption | : ≤ 250 mA |
| • Interface | : RS-232 |
| • Protection of the probe shell | : IP 68 |
| • Protection of the panel shell | : IP 40 |
| • Life time | : 8 years |
| • Panel operation environment (ambient temperature) | : -25°C to +35°C |
| • Probe operation environment (hydrostatic pressure) | : 0 - 2 500 gPa |
| • Overall dimensions (L × W × H): | |
| - temperature probe | : 32×32×120 mm |
| - panel | : 120×200×50 mm |

ELECTRONIC UNITS

POWER SUPPLY UNIT

ELECTRONIC UNIT

INTERFACE UNIT

TRANSMIT / RECEIVE UNIT

TRANSLATOR

DATA LOGGER

CONVERTER



БЛОК ПИТАНИЯ
ИЭС-1000

БЛОК ПИТАНИЯ
№ 10440004
Сделано в Беларуси
ОАО "БЕЛТЕЛ"

POWER SUPPLY UNIT



PURPOSE

- Designed for supplying stabilized DC voltage 24V from single-phase 230V 50Hz electrical network

OPTIONAL EQUIPMENT

- Photosensor (for obstruction light)
- Heater with thermostat for low temperature operation
- LTE modem with outdoor antenna
- External battery (inside a sealed box)

ADVANTAGES

WIDE RANGE OF OPTIONS

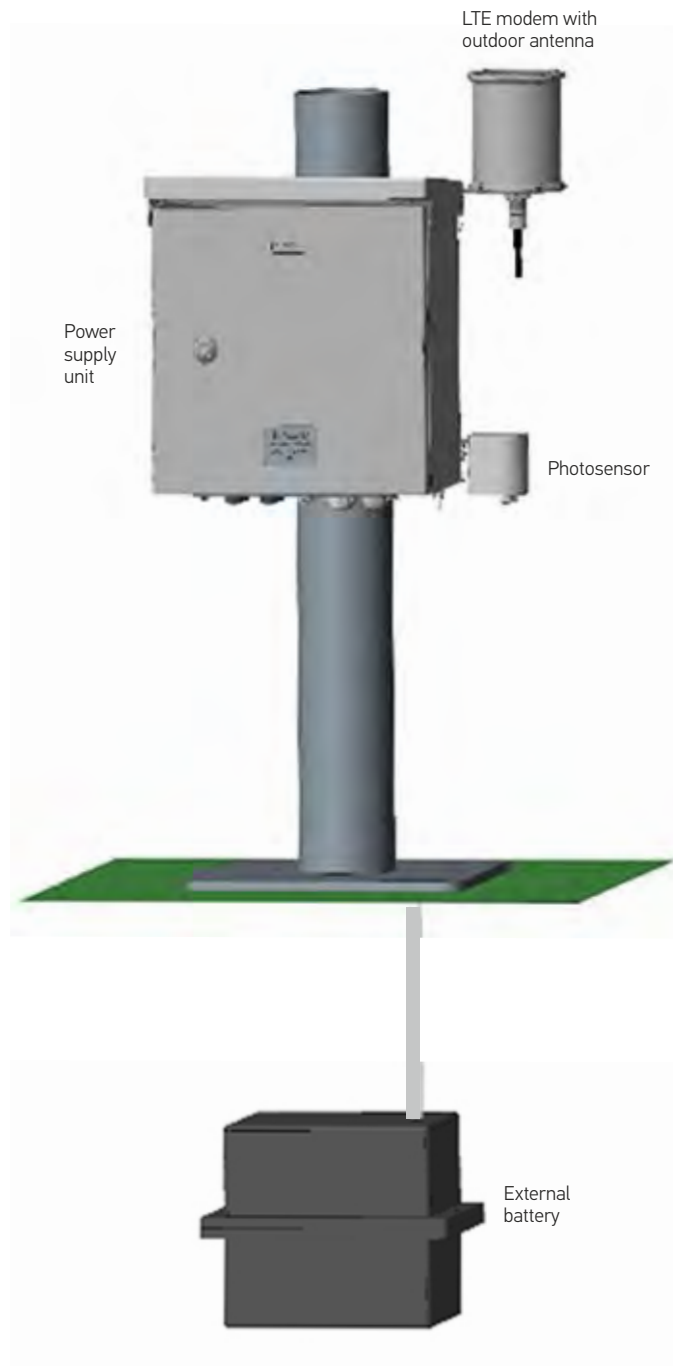
The Customer may choose the contents of delivery and options

OPERATION UNDER LOW TEMPERATURE CONDITIONS

The power supply body and the sealed external battery box are equipped with a thermostatically controlled heater and insulating layer

SPECIFICATIONS

- Input voltage : 230 ± 23 V (50 Hz)
- Output voltage : 24 V
- Maximum output current : 2 A
- Protection : IP 66
- Surge protection : +
- Short circuit protection : +
- Mechanical lock : +
- Roof assembly (weather protection) : +
- Mount (on mast, rack, wall) : +
- Operation environment:
 - ambient temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- MTBF : min 9 000 hours
- Overall dimensions (L × W × H) : 345×310×350 mm
- Weight:
 - power supply unit : 15 kg
 - external battery : 8 kg
 - antenna : 0.2 kg
 - photosensor : 0.1 kg



ELECTRONIC UNIT



PURPOSE

- Conversion of analog signals from devices to digital form
- Commutation of several devices (up to 8 pcs.) into a single system
- Converted signal transfer to PC via RS-485 interface

MAIN FEATURES

- Possibility of combining devices with analog output signal into a single system
- Increased measurement accuracy and resource optimization due to large number of channels

OPTIONAL EQUIPMENT

- External storage for data logging (SD card 16 GB)

SPECIFICATIONS

- Number of channels (connected devices) : 8
- Analog Input range : -50 mV to 50 mV
- Measurement cycle duration : 3 s
- Power supply voltage : 24 ± 2.4 V
- Interface : RS-485
- Protection : IP 65
- MTBF : 10 000 hours
- Life time : 10 years
- Operation environment:
 - ambient temperature : -60°C to +80°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 600 - 1100 gPa
- Overall dimensions (L × W × H) : 200×200×120 mm
- Weight : 3 kg

INTERFACE UNIT



PURPOSE

- The interface unit is designed for the JSC Peleng devices' commutation with the PEVM (personal computer) or meteorological stations when using v.23 modem, that ensures the data transfer at a distance up to 8 km (3 channels v.23 x 1 RS-232)
- It is possible to expand the number of channels by series connection of several units with output to one COM port with a maximum number of 9 or 30 devices, depending on the operation mode

SPECIFICATIONS

- Number of channels (connected devices) : 3
- Series connection : up to 3 interface units
- Interface : RS-232
- Power supply voltage : 230 ± 23 V (50 Hz)
- Power consumption : 3 W
- MTBF : 10 000 hours
- Life time : 10 years
- Operation environment:
 - ambient temperature : +5°C to +40°C
 - relative air humidity : 0 -80%
 - atmospheric pressure : 840 -1 070 gPa
- Overall dimensions (L × W × H) : 255×180×88 mm
- Weight : 1 kg

TRANSMIT / RECEIVE UNIT



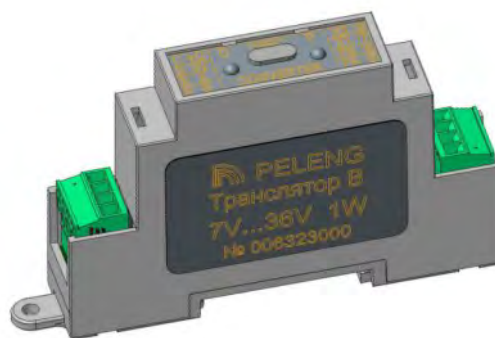
PURPOSE

- The Transmit / Receive Unit is designed to convert and switch message digits received from meteorological sensors via V.23 modem line into RS-232 (RS-485) interface

SPECIFICATIONS

- Number of modules : main / backup
- V.23 modem:
 - number of main channels : 20 pcs.
 - number of backup channels : 20 pcs.
- RS-485 interface:
 - number of main channels : 2 pcs.
 - number of backup channels : 2 pcs.
- RS-232 interface:
 - number of main channels : 2 pcs.
 - number of backup channels : 2 pcs.
- Ethernet interface:
 - number of main channels : 1 pc.
 - number of backup channels : 1 pc.
- Power supply voltage : 12 V
- Power consumption : 8 W
- MTBF : min 10 000 hours
- Life time : 10 years
- Operation environment:
 - ambient temperature : +5°C to +40°C
 - relative air humidity : 0 -80%
 - atmospheric pressure : 600 -1100 gPa

TRANSLATOR



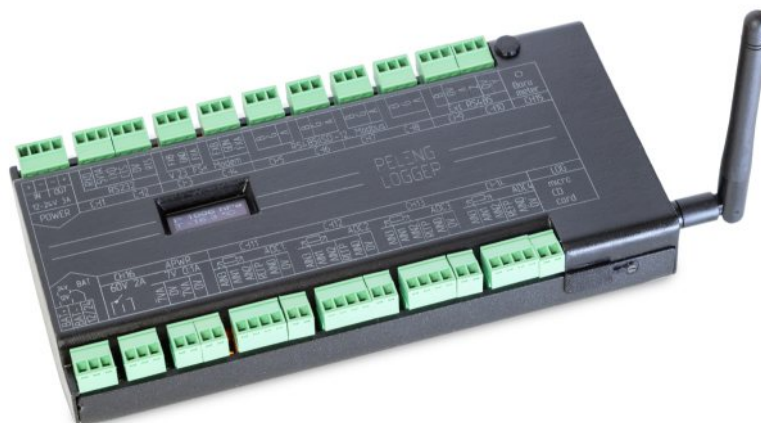
PURPOSE

- Conversion of interfaces and messaging protocols from meteorological sensors

SPECIFICATIONS

- V.23 modem:
 - number of channels : 1 pc.
- RS-485 interface:
 - number of channels : 2 pcs.
- USB interface:
 - number of channels : 1 pc.
- Power supply voltage : 12-24 V
- Power consumption : 0.1 - 1 W
- MTBF : min 10 000 hours
- Life time : 10 years
- Operation environment:
 - ambient temperature : -40°C to +60°C
 - relative air humidity : 0 - 80%
 - atmospheric pressure : 600 - 1100 gPa
- Overall dimensions (L × W × H) : 100×18×59 mm

LOGGER



FUNCTIONS

- Concentrator, analog signal meter, data logger, communicator with external servers and services

VERSIONS

- **Version 1. Energy efficient:**
 - without galvanic isolation
 - power consumption: 50-100 mW
- **Version 2. Basic:**
 - galvanic isolation
 - power consumption: 0.5-1 W
- **Version 3. High-performance:**
 - galvanic isolation
 - computer platform: Raspberry PI
 - power consumption: 5-8 W

ADVANTAGES

ENERGY EFFICIENCY
 COMPACTNESS
 SCALABILITY
 CONFIGURABILITY
 INTERFACE REDUNDANCY
 DIN RAIL MOUNTING

SPECIFICATIONS

- V.23 modem : 2 channels
- RS-485 interface : 6 channels
- RS-232 interface : 2 channels
- Analog-to-digital converter (ADC) : 4 channels
- In-circuit pressure sensor : 1 MEMS barometer
- Switching channels:
 - number of channels (relays) : 2 channels
 - type of relay : solid state relay 60 V / 4 A (a 250 V / 0.2 A solid-state relay may be installed)
- Real time clock (RTC) : 1 pc
- MicroPC c OC Linux (version 3) : 1 pc
- USB 2.0 (version 3) : 2 pcs
- Ethernet (version 3) : 1 pc
- Wi-Fi : 1 pc
- Data logging : micro SD
- Power supply voltage : 12 ÷ 24 V ±10%
- Power consumption : 8 W
- MTBF : min 10 000 hours
- Life time : 10 years
- Operation environment:
 - ambient temperature : -40°C to +60°C
 - relative air humidity : 0 ÷ 80%
 - atmospheric pressure : 600 ÷ 1100 gPa
- Overall dimensions (L × W × H) : 200×94×35 mm
- Protection : IP 21

CONVERTER



PURPOSE

- Conversion of METAR/SPECI weather reports, generated in the central rack of the automated weather observing system for airport and helipad AMIS-PELENG SF-09, into images on the display panel

MAIN FEATURES

- Possibility to form a chain (ring) of series-connected display panels

SPECIFICATIONS

- | | |
|--------------------------|--------------------------|
| • Interfaces | : V.23, RS-485, Ethernet |
| • Output interface | : HDMI |
| • Power supply voltage | : 12 V |
| • Power consumption | : 8 W |
| • MTBF | : min 10 000 hours |
| • Life time | : 10 years |
| • Operation environment: | |
| - ambient temperature | : +5°C to +40°C |
| - relative air humidity | : 0 - 80% |
| - atmospheric pressure | : 600 - 1100 gPa |

VERIFICATION INSTRUMENTS SETS

KFS-1 · SET OF DIFFUSING FILTERS

PELENG SF-05 · SET OF FILTERS

PO-04 · INSTALLATION FOR CONTROL
OF ACTINOMETRIC DEVICES

PO-11 · INSTALLATION FOR VERIFICATION
OF PYRANOMETER AND NET RADIOMETER

KPP · SUPPORT EQUIPMENT SET
FOR VERIFICATION AND REPAIR WORKS

KP-01 · VERIFYING SET



6263 00 02 000
No 2001

KFS-1

SET OF DIFFUSING FILTERS



PURPOSE

- A set of diffusing filters KFS-1 is designed for checking metrological characteristics of PELENG SL-03 nephelometers during calibration (TY BY 100230519.202-2016). Filters from the set attenuate and diffuse the luminous flux in the working area of the nephelometer, thus simulating a certain value of meteorological optical range, which is determined by the nephelometer

COMPLETE SET

- Plate assembly
- Set of diffusing filters (4 pcs.)
- Direct reflection shield
- Opaque plate
- Gaging fixture
- Set of accessories
- Case

CERTIFICATES

- №14399 State Committee for Standardization of the Republic of Belarus
- № 84341-22 Federal Agency on Technical Regulation and Metrology (Russian Federation)

SPECIFICATIONS

- MOR simulated by filters : 10 - 14 000 m
- Limits of permissible relative measurements error of diffusing filters transmission coefficient : $\pm 3\%$
- Functional diameter of diffusing filters : min 125 mm
- Operation environment:
 - ambient temperature : -10°C to $+35^{\circ}\text{C}$
 - relative air humidity : 0 - 80 % (25°C)
- Case dimensions (L x W x H) : 340x260x65 mm
- Weight of the filter set in the case : 2 kg

PELENG SF-05

SET OF FILTERS



PURPOSE

- The PELENG SF-05 set of filters is designed for checking metrological characteristics of the PELENG SF-01 meteorological optical range meters during calibration. The filters in the set attenuate the luminous flux in the device working area, thus simulating a certain value of the meteorological optical range

COMPLETE SET

- Set of filters (3 pcs.)
- Mount
- Case

SPECIFICATIONS

- The range of nominal values of the transmission coefficients of filters:
 - filter 1 : 0.08 - 0.11
 - filter 2 : 0.47 - 0.54
 - filter 3 : 0.87 - 0.94
- Absolute error of the transmission coefficients of the pulse repetition filters in intervals : ± 0.005
- Operation environment:
 - ambient temperature : -10°C to $+35^{\circ}\text{C}$
 - relative air humidity : 0 - 80 % (25°C)
- Life time : 12 years
- Overall dimensions (L x W x H):
 - filter : 140x140x30 mm
 - case : 320x260x260 mm
- Weight of the filter set in the case : 3.5 kg

PO-4

INSTALLATION FOR CONTROL OF ACTINOMETRIC DEVICES



PURPOSE

- Installation for control of actinometric devices PO-4 is designed for measuring the characteristics and verification of actinometric devices (pyranometers, actinometers, balance meters) in laboratory conditions. The design and equipment of the installation make it possible to center and ensure the stability of the centering of the optical axis of the controlled devices with the optical axis of the measuring units included in the installation kit in order to conduct measurements using methods developed on the basis of geometric optics

COMPLETE SET

- Bench assembly
- Shading screen
- Adjustment screen
- Lens
- Casing
- Device for installing a balance meter
- Illuminator
- Sleeve
- Holder
- Slide
- Rider (5 pcs.)
- Voltmeter
- Stabilizer
- Lamp E27-500 W (2 pcs.)

SPECIFICATIONS

- | | |
|-----------------------------|----------------------|
| • Bench length | : 1 200 mm |
| • Bench width | : 500 mm |
| • Installation scale length | : 1 000 mm |
| • Scale division | : 1 mm |
| • Power supply voltage | : 230 ± 23 V (50 Hz) |
| • Operation environment: | |
| - ambient temperature | : +15°C to +25°C |
| - relative air humidity | : 0 - 80 % (25°C) |
| • Life time | : 8 years |
| • Weight | : 100 kg |

PO-11

INSTALLATION FOR VERIFICATION OF PYRANOMETER AND NET RADIOMETER



PURPOSE

- Installation PO-11 is intended to install pyranometers and balance meters in it during verification in natural conditions. The installation ensures that the receiving surfaces of the devices are perpendicular to the sun's rays, shading them from scattered radiation and protecting them from wind

COMPLETE SET

- Tube assembly
- Rack
- Support

SPECIFICATIONS

- Angle of rotation of the receiving part
 - vertical axis : 0 - 360°
 - to the horizon : 0 - 90°
- Working corner field : 10°
- Operation environment:
 - ambient temperature : +60°C to +80°C
 - relative air humidity : 0 - 100% (at 25°C)
- Life time : 10 years
- Overall dimensions (L × W × H) : 566×240×655 mm
- Weight : 12 kg

KPP

SUPPORT EQUIPMENT SET FOR VERIFICATION AND REPAIR WORKS



PURPOSE

- Set is an integral part of the equipment necessary for verification of ceilometer SD-02-2006 according to the verification procedure of МРБ МП.1884-2009

COMPLETE SET

- Housing
- Transmitter (emitting diode)
- Cable
- Adapter

SPECIFICATIONS

- Operation environment:
 - ambient temperature : -15°C to +25°C
 - relative air humidity : 30 -80%
- Life time : 10 years
- Overall dimensions (L × W × H) : 285×278×180 mm
- Weight:
 - housing : 1 kg
 - transmitter (emitting diode) : 0.3 kg

KP-01

VERIFYING SET



PURPOSE

- Metrological verification of PELENG SF-03 cup anemometer and wind vane (ТУ РБ 100230519.165-2000)

COMPLETE SET

- Test-bench for pulse frequency check
- Fixture for wind vane rotation angle check
- Fixture for friction torque check
- Accessories set
- Spare parts set
- Cases

CERTIFICATES

- №15483 State Committee for Standardization of the Republic of Belarus

SPECIFICATIONS

- Reproduction range of shaft speed : 0.0346 - 25.8835 Hz
- Limits of tolerable relative error of shaft speed reproduction : 1%
- Wind speed simulation range : 0.4 - 75 m/s
- Permissible error of input signal to wind speed translation in ranges:
 - 0.76 to 4.89 m/s : ± 0.07 m/s
 - 4.89 to 55.32 m/s : ± 1.5 %
- Weights for friction torque check:
 - for cup anemometer : 2.8-0.2 g
 - for wind vane : 4.5-0.3 g
- Range of wind vane rotation angle check : 0 - 360°
- Permissible error of wind vane rotation angle check : $\pm 1^\circ$
- Power supply voltage : 24 \pm 2.4 V / 230 \pm 23 V⁽¹⁾
- Power consumption : max 20 W

⁽¹⁾ when using the power supply AC 220BV50Hz-DC 24V

METEOROLOGICAL MASTS

MM-1 · METEOROLOGICAL TOWER WITH THE LIGHTNING
ROD AND WINCH

TELESCOPIC PNEUMATIC METEOROLOGICAL MAST

PORTABLE METEOROLOGICAL MAST



MM-1

METEOROLOGICAL TOWER WITH THE LIGHTNING ROD AND WINCH

PURPOSE

- The mast is designed for installation of the meteorological measuring equipment used as a part of meteorological stations for the needs of synoptic and meteorological networks

ADVANTAGES

- High load capacity
- One-man installation
- High corrosion resistance

COMPLETE SET

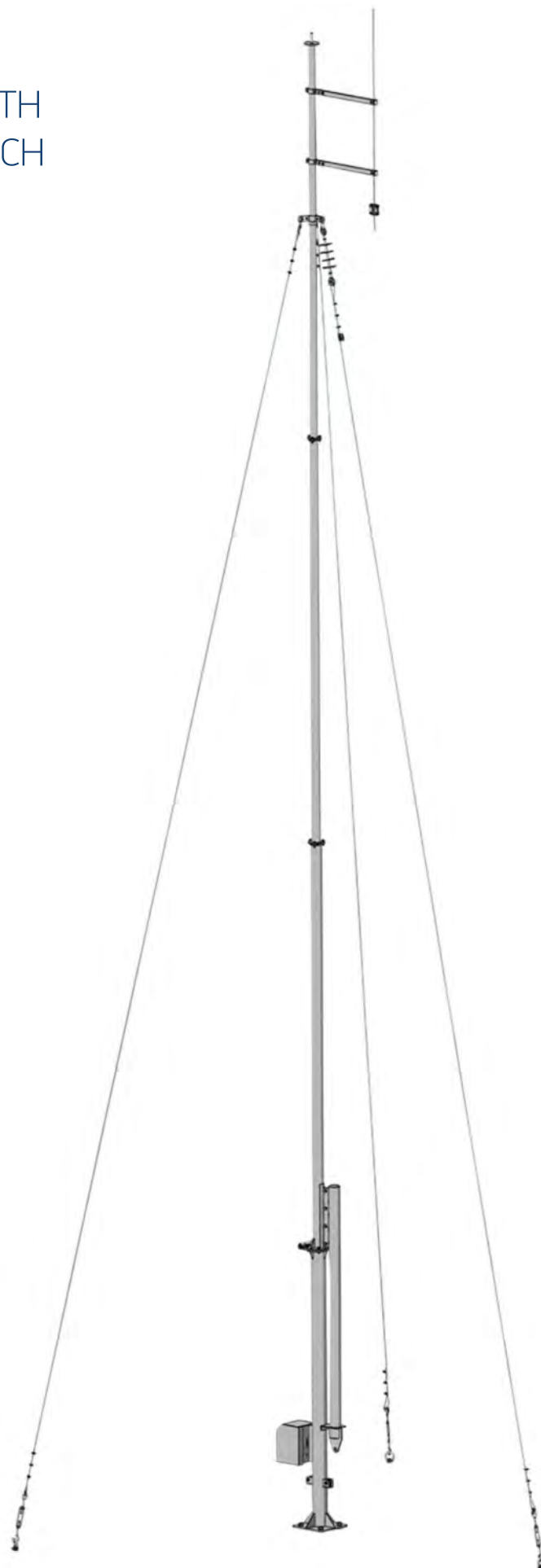
- Mast
- Lightning rod
- Winch
- Cable set
- Installation kit

IMPLEMENTATION OPTIONS

- The main structural elements of the mast MM-1 can be made of powder coated steel or stainless steel

SPECIFICATIONS

- Mast height : 10.5 m
- Wind speed limit : 60 m/s
- Load capacity (distributed) : 75 kg
- Mast weight : 90 kg
- Shipping package dimensions (L×W×H):
 - shipping unit 1 : 200×35×30 cm
 - shipping unit 2 : 300×35×22 cm
 - shipping unit 3 : 50×50×40 cm
 - shipping unit 4 : 250×20×20 cm
- Shipping package weight (gross / net):
 - shipping unit 1 : 55 / 38 kg
 - shipping unit 2 : 61 / 40 kg
 - shipping unit 3 : 39 / 27 kg
 - shipping unit 4 : 43 / 35 kg
- Shipping package total weight (gross / net) : 140 / 90 kg



TELESCOPIC PNEUMATIC METEOROLOGICAL MAST

PURPOSE

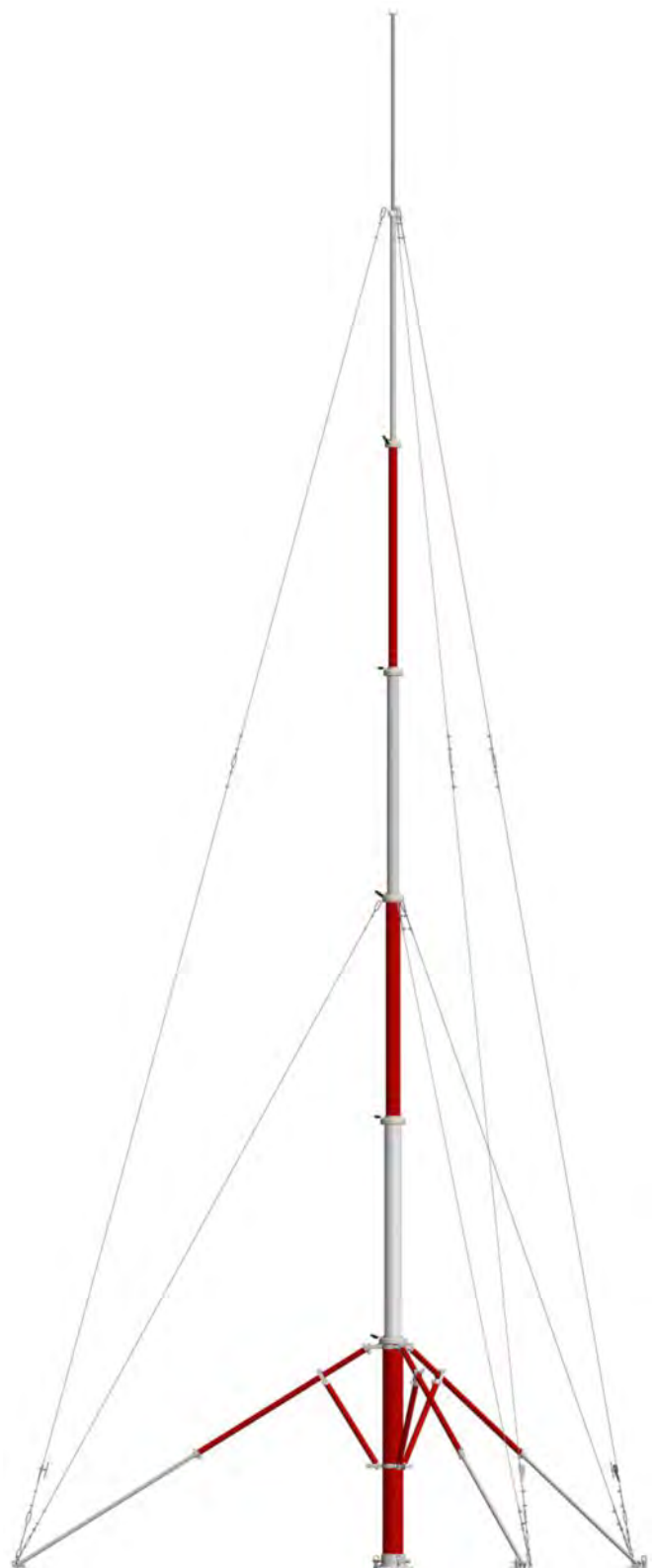
- The telescopic mast is designed for installation of meteorological measuring equipment used as part of mobile meteorological stations for the needs of synoptic and meteorological networks
- The mast is delivered to the deployment site in a compact shipping case
- The telescopic mast is activated with the help of a pneumatic compressor or a hand pump
- The mast installation time: 15 min.
- Due to composite materials and aluminum, low weight and high corrosion resistance of the mast are achieved

COMPLETE SET

- Mast
- Cable set
- Installation kit
- Shipping case
- Lightning rod (optional)

SPECIFICATIONS

- Mast height : 2 - 9,5 m
- Wind speed limit : 60 m/s
- Load capacity (distributed) : 100 kg
- Mast weight : 45 kg
- Shipping package dimensions (L×W×H):
 - shipping unit 1 : 204×44×42 cm
 - shipping unit 2 : 72×52×40 cm
- Shipping package weight (gross / net):
 - shipping unit 1 : 55 / 45 kg
 - shipping unit 2 : 21 / 14 kg
- Shipping package total weight (gross / net) : 76 / 59 kg



Mast in a shipping case



PORTABLE METEOROLOGICAL MAST

PURPOSE

- The telescopic mast is designed for installation of meteorological measuring equipment used as part of mobile meteorological stations
- The mast is delivered to the deployment site in a compact shipping case

COMPLETE SET

- Mast
- Cable stays
- Sensor holder (adapter D62, adapter D18)
- Shipping case

SPECIFICATIONS

- Load capacity (distributed) : max 20 kg
- Sensor holder load (distributed) : max 5 kg
- Sensor holder connecting dimensions:
 - adapter D62 : Ø 62 mm
 - adapter D18 : Ø 18 mm
- Max mast height : 3 195 mm
- Max support diameter : 1 420 mm
- Mast tube diameter : 28 mm
- Tube length : 500 mm
- Mast total weight : 8 kg
- Shipping package weight : 20 kg
- Shipping package dimensions : 945x515x243 mm
- Operation environment:
 - air temperature : -60°C to +65°C
 - relative air humidity : 0 - 100%
 - atmospheric pressure : 60 - 110 kPa
 - wind speed : ≤ 35 m/s

Mast in a shipping case



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