EXACT TIME SERVERS

NTP-CLIENTS, SYNCHRONISATION

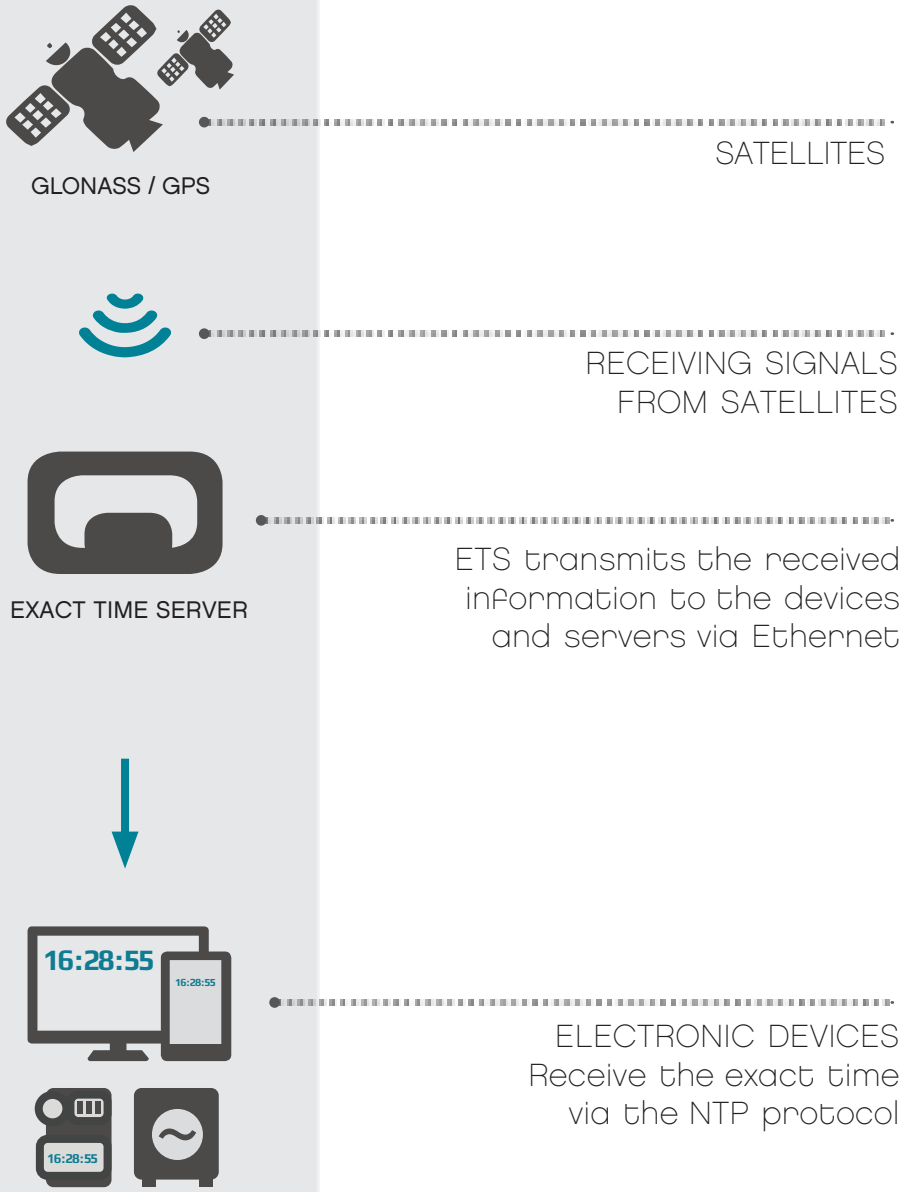
icb com
IoT solutions operator

PURPOSE OF ETS - EXACT TIME SERVER

EXACT TIME SERVER LINE OF ETS:

- Receives the REFERENCE TIME SCALE From the global navigation satellite system Glonass/GPS (or receives external signals from the line);

- GENERATES AND OUTPUTS FREQUENCY AND TIME SIGNALS in different sequences and codes (1PPS (1 Hz), 10 MHz, IRIG, NMEA, NTP, PTP, 2,048 MHz, 2,048 Mbit/s, etc.).



AREAS OF APPLICATION OF THE EXACT TIME SERVER


Weather control system


Business centers, hotels and other administrative buildings


Environmental monitoring


Airports


Agricultural industry


Sport centers


Energy sector


Manufacturing enterprises


Transport services


Military Facilities


Road services


State Rapid Response Service

- Computer and computing networks LAN, WAN, MAN;
- Digital fixed and mobile telecommunication networks SDH, NGN, LTE, WiMAX;
- Tele-radio communication networks DAB, DVB;
- APCS (Automated process control system), ASCAPC (Automatic system for commercial accounting of power consumption, AMIS EPFA (Automated measuring and information system for electric power fiscal accounting);
- Security system;
- Industrial automated production;
- Energy oil and gas systems and complexes;
- Metrology systems;
- Other areas where time-frequency synchronization is necessary.

LINE OF EXACT TIME SERVERS «STV-01»

«STV-01» the main line of ETS with housing 19 inches

- «STV-01» with built-in generator
- «STV-01» with additional functionality
  - BASIC
  - ADVANCED
  - •••

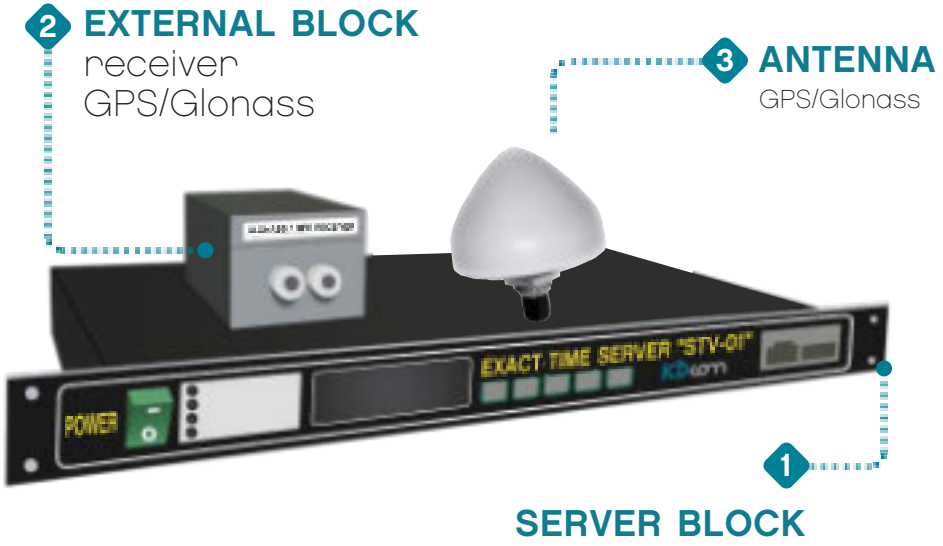
1. **SERVER BLOCK** – an exact time server located on premises, usually in telecommunication cabinets and marked as Exact Time Server “STV-01”;

2. **EXTERNAL BLOCK,** which is a GPS/Glonass signal receiver NAVIOR-24S in a protected all-weather housing, placed outdoors;

3. **ANTENNA** GPS/Glonass with lightning discharger;

4. **CONNECTING CABLES**
   of all-weather design for connecting the server. external blocks and GPS/Glonass antenna to each other.

MEASURING AND COMPUTING COMPLEX
THE ETS line, regardless of the design, structurally consists of the following blocks:



EXACT TIME SERVER «STV-01»

«STV-01» the main line of ETS with housing 19 inches

«STV-01»
with built-in generator

Parameter	Technical Specification
Receiver	GLONASS/GPS external block
Internal generator, accuracy	TCXO, ± 1,5; ± 1
Network protocols	NTP, SNTP
PTP v2, PTP (1588v2) support	no
number of tracking channels	32
Processor	ARM9 400MHz, 64 MB RAM
Operating system	Linux (incl. PPSkit)
Network interfaces	1xEthernet 10/100BaseT
RS-232 interface	1
USB ports	-
Frequency outputs, relay	10 MHz (TTL) и PPS (1 Hz)
Communication interface with GPS/Glonass receiver	RS-422
Power supply	100 .. 264 V AC
Power consumption	20 W
Display	LCD/LED
Internet protocols	IP v4
Operating temperature	0 .. +60°C
Mounting	into the 19-inch chassis of the server cabinet

PURPOSE OF THE PRODUCT

- Measurement (maintenance) of current time and date values with synchronization by signals of GLONASS and/or GPS satellite navigation system
- and output of current date and time values via network interfaces.

COMPLEX «STV-01»

is designed to function as part of **automated measuringand information systems** for electric power fiscal accounting (AMIS EPFA) for **synchronization of current time and date values**, as well as for synchronization of time scales of communication base stations and security systems at security and industrial facilities.

Exact time server «STV-01» with additional functionality

«STV-01» the main line of ETS with housing 19 inches

«STV-01» with additional functionality

- BASIC
- ADVANCED

Various modifications «STV-01»

Possibility of improvement

Parameter	
Receiver	GLONASS/GPS external block
Internal generator, accuracy	TCXO, ± 1,5; ± 1
Network protocols	NTP, SNTP
PTP v2, PTP (1588v2) support	no
number of tracking channels	32
Processor	AMX
Operating system	Linux (incl. PPSkit)
Network interfaces	5 independent ports Ethernet 10/100BaseT
RS-232 interface	2
USB ports	+
Frequency outputs, relay	10 MHz (TTL) и PPS (1 Hz)
Communication interface with GPS/Glonass receiver	RS-422
Power supply	2 power sources (primary and backup)
Power consumption	20 W
Display	LCD/LED
Internet protocols	IP v4

EXACT TIME SERVER «STV-01» on the DIN rail

«STV-01» on the DIN rail

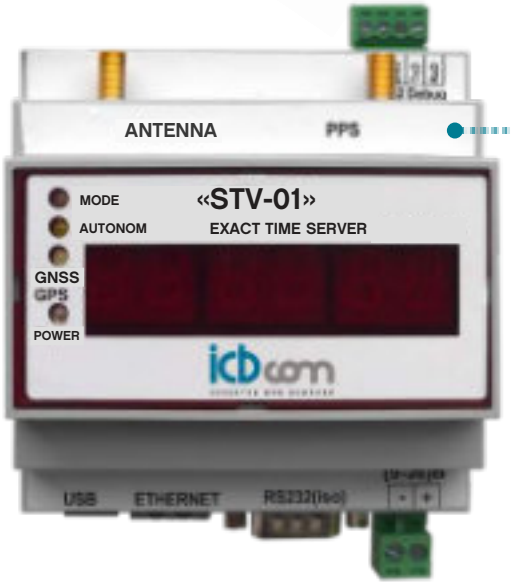
2 ANTENNA
GPS/Glonass

MEASURING AND COMPUTING COMPLEX
Structurally consists of the following blocks:

1. **SERVER BLOCK** – an exact time server placed in a room with a built-in GPS/Glonass signal receiver;

2. **ANTENNA** GPS/Glonass with lightning discharger;

3. **CONNECTING CABLES**
   of all-weather design for connecting the server. external blocks and GPS/Glonass antenna to each other.



1 SERVER BLOCK

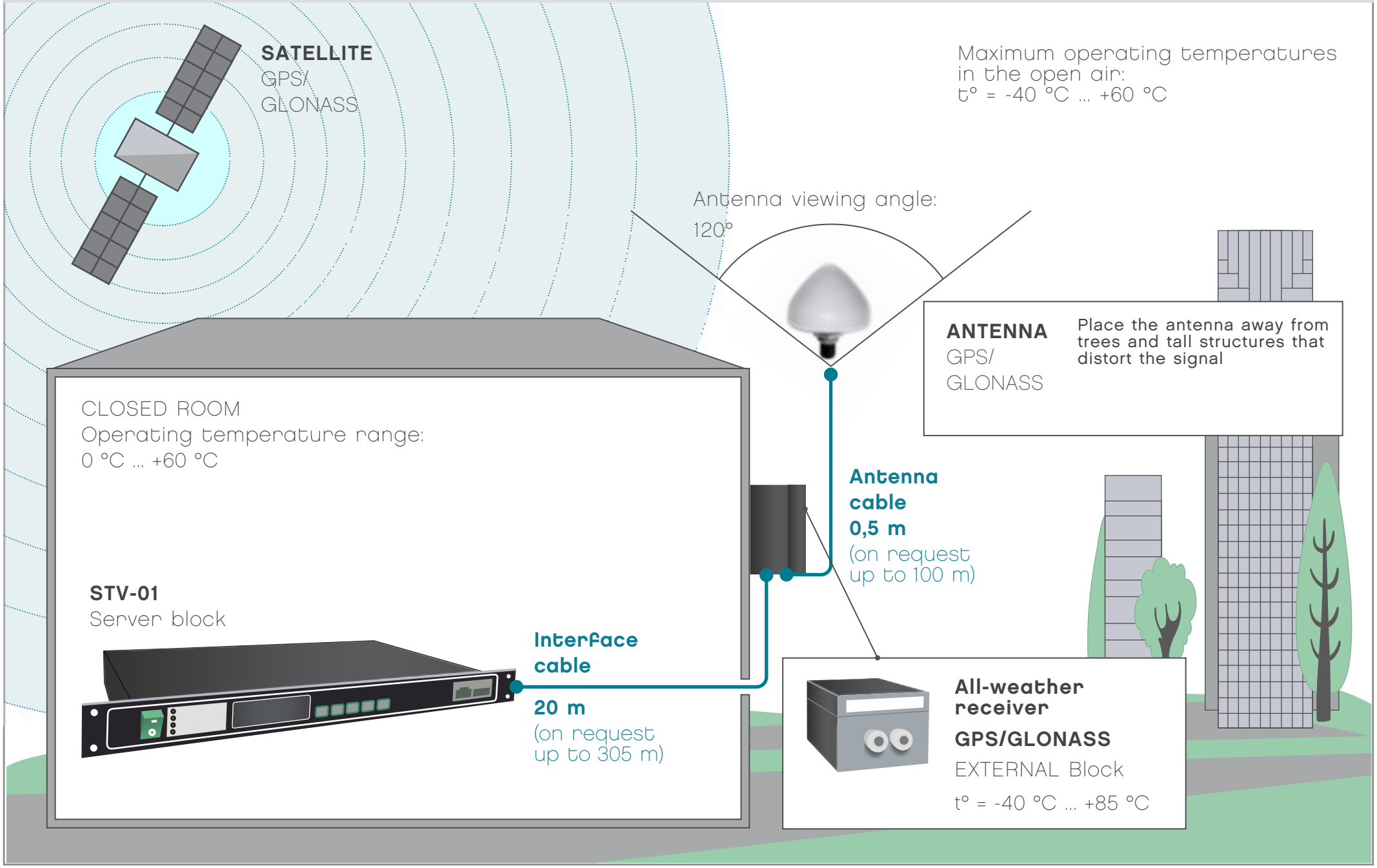
LINE OF EXACT TIME SERVERS «STV-01»

MAIN PARAMETERS OF THE EXACT TIME SERBERS	«STV-01» on the DIN rail 	«STV-01» 	«STV-01» with additional functionality 
OVERALL DIMENSIONS	DIN rail housing	19’ (1U)	19’ (1U)
STANDARD DELIVERY PACKAGE	Antenna with built-in lightning discharger, GLONASS/GPS without receiver block, 20 m antenna cable with installed connectors included	Antenna with built-in lightning discharger, GLONASS/GPS with receiver block, 20 m antenna cable with installed connectors included	Antenna with built-in lightning discharger, GLONASS/GPS with receiver block, 20 m antenna cable with installed connectors included
PRIMARY AND BACKUP POWER SUPPLY	+9 – 36 V DC	100 – 264 V AC	100 – 264 V AC
BUILT-IN RECEIVER	GLONASS/GPS, 32 tracking channels	GLONASS/GPS, 32 tracking channels	GLONASS/GPS, 32 tracking channels
SELECTION OF THE RECEIVING MODE	GLONASS/GPS, GLONASS, GPS	GLONASS/GPS, GLONASS, GPS	GLONASS/GPS, GLONASS, GPS
NETWORK INTERFACE	1 x NTP LAN Ethernet 10/100 Мбит, RJ45	1 x NTP LAN Ethernet 10/100 Мбит, RJ45	2 x NTP LAN Ethernet 10/100 Мбит, RJ45
INTERNAL GENERATOR	TCXO	TCXO	TCXO
LCD DISPLAY	LED LCD-display, 256 x 64 dots, with backlight	LED LCD-display, 256 x 64 dots, with backlight	LED LCD-display, 256 x 64 dots, with backlight
USB PORT	1 pcs	No	2 pcs
RS-232 PORT	1xRS-232 (terminal)	1xRS-232 (terminal)	2xRS-232 (1 terminal port и 1 port for configuration)
PROCESSOR	ARM9 400 Mhz, 64 MB RAM	ARM9 400 Mhz, 64 MB RAM	AMX
PERFORMANCE (S)NTP	Processing 1000 requests per second	Processing 1000 requests per second	Processing 1000 requests per second
OPERATION SYSTEM	Linux	Linux	Linux
FREQUENCY OUTPUTS	1 x 1PPS (1HZ)	1 x 1PPS (1HZ)	1 x 1PPS (1Hz) \ 1 x 10 MHz \ 1 x 2,048 MHz
NETWORK TIME PROTOCOL (NTP)	v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4, SNTP v3 (RFC 1769), SNTP v2c (RFC 1158), SNTP v4 (RFC 2030)	NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905), SNTP v3 (RFC 1769), SNTP v2c (RFC 1158), SNTP v4 (RFC 2030)	v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905), SNTP v3 (RFC 1769), SNTP v2c (RFC 1158), SNTP v4 (RFC 2030), IEEE 1588-2008 PTP default profile
ACCURACY NTP	0.2 ms (LAN) / 10 ms (WAN)	0.2 ms (LAN) / 10 ms (WAN)	0.2 ms (LAN) / 10 ms (WAN)
NETWORK PROTOCOLS OSI LAYER 4 (TRANSPORT LAYER)	TCP, UDP	TCP, UDP	TCP, UDP
NETWORK PROTOCOLS OSI LAYER 7 (APPLICATION LAYER)	SSH (incl. SFTP, SCP), HTTP, SNMP	SSH (incl. SFTP, SCP), HTTP, SNMP	SSH (incl. SFTP, SCP), HTTP, SNMP
SUPPORT FOR AUTO-CONFIGURATION OF NETWORK INSTALLATIONS	IP v4 \ IP v6: Dynamic Host Configuration Protocol - DHCP (RFC 2131)	IP v4 \ IP v6: Dynamic Host Configuration Protocol - DHCP (RFC 2131)	IP v4 \ IP v6: Dynamic Host Configuration Protocol - DHCP (RFC 2131)
TIME PROTOCOL (TIME)	Time Protocol (RFC 868)	Time Protocol (RFC 868)	Time Protocol (RFC 868)
DAYTIME PROTOCOL (DAYTIME)	Daytime Protocol (RFC 867)	Daytime Protocol (RFC 867)	Daytime Protocol (RFC 867)
ADDITIONAL POWER SUPPLIES	No	No	2 источника питания (основной + резервный)
UPDATING INTERNAL SOFTWARE	Free Lifetime Ethernet\USB upgrade	Free Lifetime Ethernet\USB upgrade	Free Lifetime Ethernet\USB upgrade
TIME TO FAILURE	MTBF more than 100 000 h.	MTBF more than 100 000 h.	MTBF more than 100 000 h.

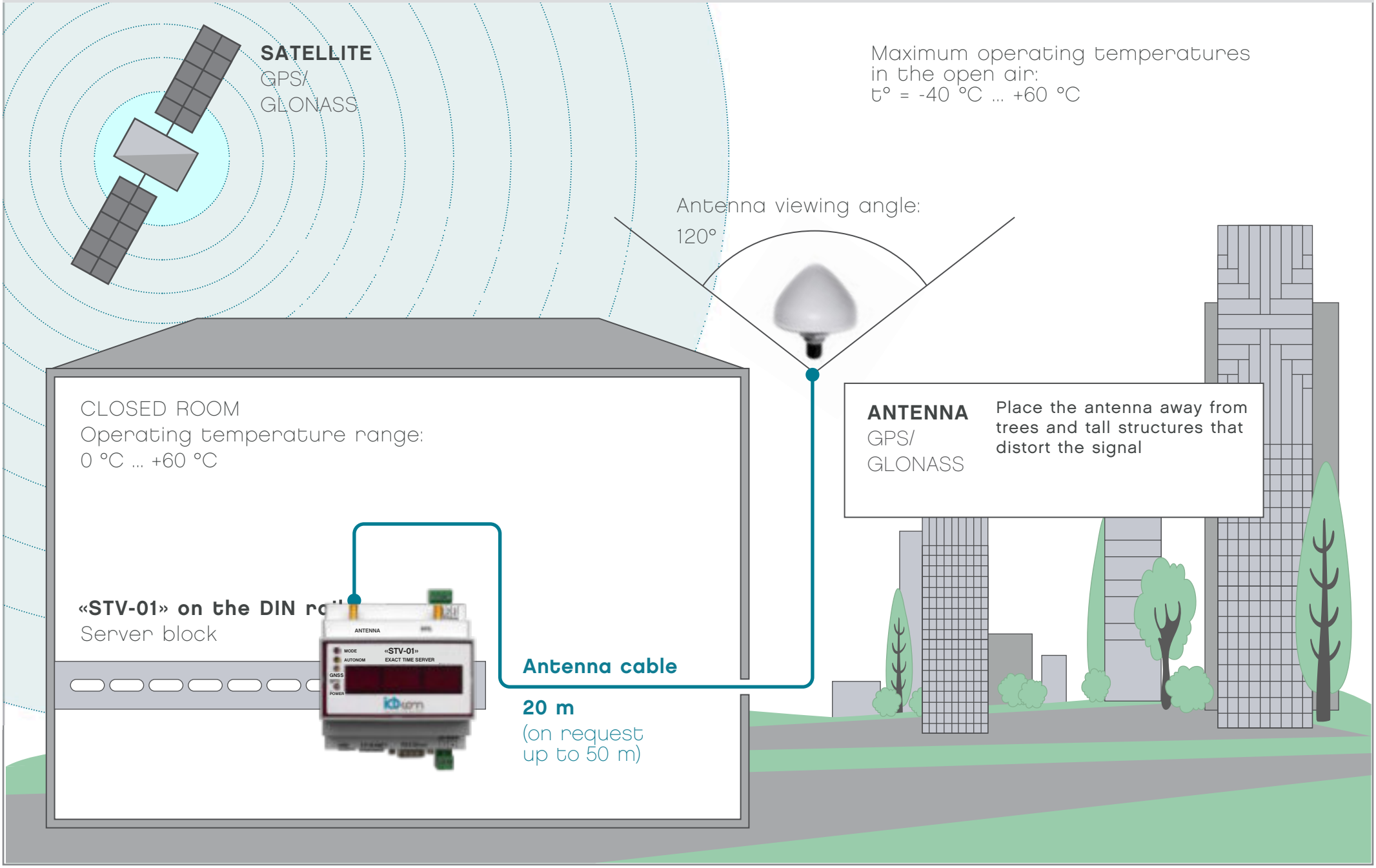
«STV-01» with additional functionality

OPTION	BASIC functionality	ADVANCED functionality (specified when ordering)
Power supply	100 .. 264 V AC	Backup power supply - additional power supply unit 100 .. 264 V AC +9 -18 V +9 -36 V DC +18-36 V DC +36-72 V DC
Internal generator	TCXO	OCXO-LQ OCXO-MQ OCXO-HQ OCXO-DHQ
Interfaces	2xNTP LAN Ethernet 10/100 Mbit, RJ45 2x RS232 2xUSB	+ 2xNTP LAN Ethernet 10/100 Mbit, RJ45 + 4xNTP LAN Ethernet 10/100 Mbit, RJ45 1xNTP LAN Ethernet 10/100 Mbit, RJ45 1xNTP LAN Ethernet 10/100/1000 Mbit, RJ45 1xNTP LAN Ethernet 10/100 Mbit, RJ45 3xNTP LAN Ethernet 10/100/1000 Mbit, RJ45 1 x RS422, 9pin D-Sub 3 programmable pulse outputs (400 V, 150mA) 6 programmable pulse outputs (55 V, 50mA)
Output frequency signals	1 x 1PPS (TTL), 50 Ohm, BNC	+ 1 x 1PPS (TTL), 50 Ohm, BNC + 3 x 1PPS (TTL), 50 Ohm, BNC + 1 x 10MHz (TTL), 50 Ohm, BNC + 3 x 10MHz (TTL), 50 Ohm, BNC 4 x 10MHz (sine) 1.2Vpp, 50 Ohm, BNC
Output telecommunication signals		4 x 2,048MHz 120 Ohm, RJ45 4 x 2,048Mbit/s 120 Ohm, RJ45 4 x 2,048MHz 75 Ohm, BNC 4 x 2,048Mbit/s 75 Ohm, BNC 1 x 2,048MHz 120 Ohm, RJ45 1 x 2,048MHz 75 Ohm, BNC 1 x 2,048Mbit/s 120 Ohm, RJ45 1 x 2,048Mbit/s 75 Ohm, BNC
Output IRIG signals		1 x Time Code AM (B12x), 3Vpp, 50 Ohm, BNC 1 x Time Code DCLS (B00x), TTL, 50 Ohm, BNC 2 x Time Code AM (B12x), 3Vpp, 50 Ohm, BNC 2 x Time Code DCLS (B00x), TTL, 50 Ohm, BNC

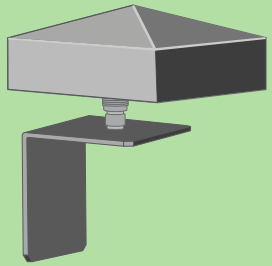
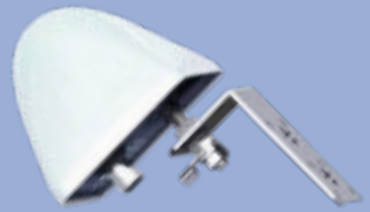
Communication organization scheme «STV-01» and «STV-01» with additional functionality



Communication organization scheme «STV-01» on the DIN rail



Satellite antennas

COMPARATIVE CHARACTERISTICS OF ANTENNAS DIFFERENT MANUFACTURERS					
Model	**KUPOL-APA-30-M2**	**TW3402**	**SHVEA.464659.004**	**GPS-ET.50**	**RADIUS-50 ANTENNA GLONASS/GPS**
SUPPLIER COUNTRY	RUSSIA	CANADA	RUSSIA	RUSSIA	RUSSIA
OPERATING FREQUENCY RANGE	1575.42 MHz ... 1602 MHz	1574 MHz ... 1606 MHz	1570 MHz ... 1611 MHz	1598 MHz ... 1609 MHz	1590 MHz (± 16 MHz): GLONASS L1 14 carrier (-7..+6) 1602 MHz (± 4 MHz), band (± 0,5 МГц); GPS L1 carrier 1575 MHz, band (± 1 MHz)
GAIN FACTOR	35 dB	26 dB	15 dB	33 dB	40 dB (± 4 dB) GLONASS L1 43 dB (± 4 dB) GPS L1
RATED WAVE VOLTAGE	50 Ohm	50 Ohm	50 Ohm	50 Ohm	50 Ohm
SUPPLY VOLTAGE	2.5 V ... 25.0 V	2.5 V ... 16 V	3.1 V ... 5.0 V	3.3 V	2.7 V ... 14.0 V
TEMPERATURE RANGE	-40 °C ... +50 °C	-40 °C ... +85 °C	-40 °C ... +55 °C	-70 °C... +90 °C	-45 °C ... +65 °C

SATELLITE NAVIGATION RECEIVERS

«SNP-01-v2» – satellite navigation receiver

“SNP-01” is used to get the **current values of the exact UTC time and date.** The data is sent to the satellite receiver using the GLONASS, GPS, GALILEO and BeiDou satellite navigation systems. The information is transmitted to a computer or other paired devices via **RS-232 and RS-422 ports.**

The operation of the receiver is based on the **parallel reception and operational processing** of information simultaneously by **88 channels** of signals coming from GPS, GLONASS, GALILEO and Beidou satellite navigation systems.

“SNP-01” is widely used as an integral element of **automated systems of various types** (data collection and transmission controller (DCTC) "PUMA", SKK BS, "Meteophone", other **monitoring and control systems**).

PARAMETER	TECHNICAL SPECIFICATION
Power supply voltage	12..60 V DC
The limits of the permissible error in determining the coordinates in the plan with a probability of 50%	<3 m
Navigation message format	NMEA 0183 v 4.1
Operating temperature range	-30 ... + 75 °C
Error of synchronization of the second timestamp to the GPS, GLONASS, UTC, TC time scales, by level 60%	±20 ms
Overall dimensions	100 x 33 x 64 mm
Fastening	Mounting on the DIN rail

SATELLITE NAVIGATION RECEIVERS

GLONASS/GPS receiver

The purpose of the **GLONASS/GPS receiver** is to obtain a **reference time scale** from the global navigation satellite system Glonass/GPS by means of a Glonass/GPS antenna connected to it.

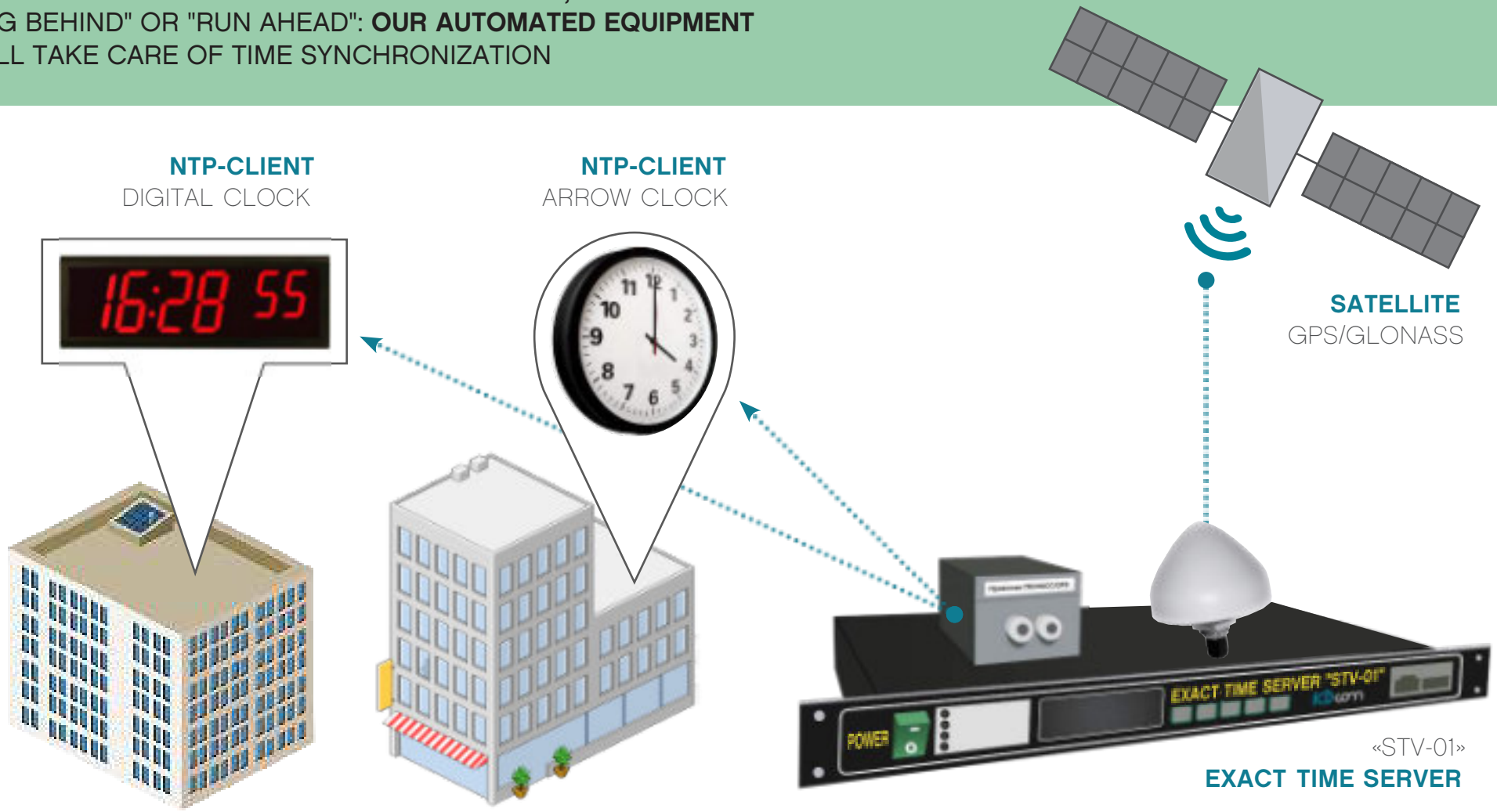
It is applicable as an integral element of **automated time synchronization systems and various monitoring and control systems**

PARAMETER	TECHNICAL SPECIFICATION
Power supply voltage	9..40 VDC
Interface	RS-422
Output signal	PPS (differential pair)
Type of receiver in the device	NV08C-CSM
Supported global navigation satellite systems	GLONASS, GPS, GALILEO, COMPASS
Supported exchange protocols	EC61162-1 (NMEA 0183), BINR (standard of CJSC "KB NAVIS»), RTCM SC 104
Connector type on the unit for power supply and interfaces	2PM – cylindrical
Type of connector on the antenna connection unit	N-type
Maximum length of the interface cable	Up to 200 m
Operating temperature range	-40 до + 60 °C
Housing material	aluminum
Housing protection	IP65 (sealed)

NTP-CLIENTS, TIME SYNCHRONIZATION

NTP digital/arrow clocks are an indispensable solution for any enterprise or network of organizations - they show a **single time**, are synchronized with the **ETS**, which is located in the district IT department and regulates the time in an automated mode.

YOU **NO LONGER NEED TO ADJUST THE CLOCK,** THEY WILL STOP "LAG BEHIND" OR "RUN AHEAD": **OUR AUTOMATED EQUIPMENT** WILL TAKE CARE OF TIME SYNCHRONIZATION

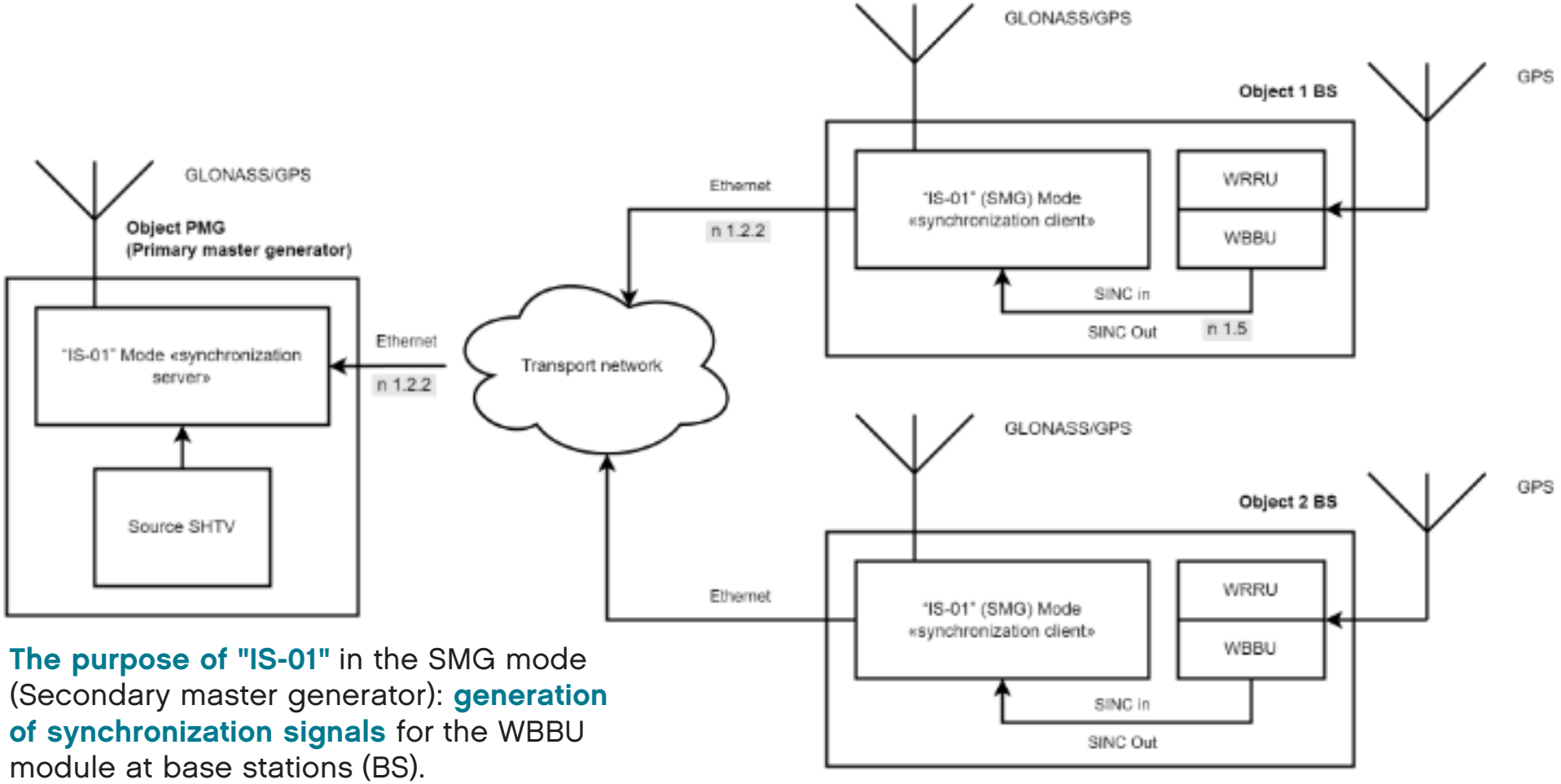


«STV-01»
EXACT TIME SERVER

A COMPREHENSIVE SYNCHRONIZATION SOLUTION
for THE TELECOM OPERATOR

Task to solve:

Building a common synchronization network of base stations using the **“IS-01”** device of the **SYNCHRONIZATION SOURCE**



The purpose of "IS-01" in the SMG mode (Secondary master generator): **generation of synchronization signals** for the WBBU module at base stations (BS).

A COMPREHENSIVE SYNCHRONIZATION SOLUTION
for THE TELECOM OPERATOR

Equipment
For BS object (SMG):

Device "IS-01"
Synchronization source
+
Splitter
(Signal splitter)

Equipment
For BS object (PMG):

Device "IS-01"
Synchronization source
+
GPS/Glonass antenna
for outdoor installation

"IS-01"
Synchronization Source

Antenna
«GPS/GLONASS G2-1»
+ комплект крепежа

Splitter
(Signal splitter)

A COMPREHENSIVE SYNCHRONIZATION SOLUTION for THE TELECOM OPERATOR

Name of characteristic	Value
Structural design	Housing in a 19" inch rack
AC power supply voltage of the complex Main input «Pit. Vh.1»	36-60 V DC
AC power supply voltage of the complex Backup input «Pit. Vh.2»	36-60 V DC
Operating system	Linux
Limits of the absolute error in the information of synchronization signals in the absence of correction based on the signals of reference sources (autonomous operation)	No more than 1 microsecond/2 days
Network interfaces	Ethernet 10/100/1000
Output signal 1PPS – “PPS.GNSS”	+
Output signal 1PPS – “PPS.Gen”	+
Output signal 1PPS – “PPS.Tr.Set’”	+
Output signal 1PPS – “PPS.GNSS”	+
Output signals “SyncOUT+”, “SyncOUT-” for module WBBU synchronization	+
SMA socket connector for connecting a Glonass/GPS antenna	+
Web-interface for device configuration	+
RS-232 interface	+
LCD display for displaying the status of “IS-01” and device settings	+
Adjustment buttons on the front panel	+
Overall dimensions excluding antenna and elements	255x480x45 mm
Number of tracking channels of the Glonass/GPS/GALILEO receiver	32

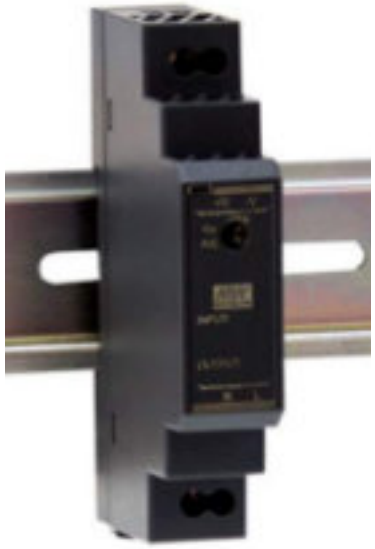
TIME SYNCHRONIZATION SOLUTION for RTRS

TASK
to solve:

Receiving the exact time, synchronization
by means of the proposed set of devices:

+

+



Satelolite navigation
receiver **«SNP-01-v2»**

Antenna
«GPS/GLONASS G2-1»
+ mounting kit

Источник
питания
«HDR-15-25»

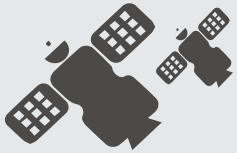
ADVANTAGES OF **TIME SYNCHRONIZATION SYSTEMS**

ADVANTAGES OF USING
our EXACT TIME SERVERS and NTP CLOCKS:

- Reception of the **reference time scale** from the global navigation satellite system Glonass/GPS
- **32 tracking channels operating in parallel mode**
- The products are **protected from password cracking,** which you **choose** and **install** yourself
- During the **configuration** process, you can choose a convenient **time display format,** configure **automatic screen shutdown,** which helps to save energy consumption
- **Wide operating temperature range** and **passive cooling**
- Production in Russia from **100% domestic components**
- By purchasing our s**ervers and NTP clocks,** you get **a guarantee** for the provision of **technical support** throughout **the entire life cycle of the product**
- **Product Certification**
- **The price of the system** is significantly lower compared to competitors

DEVELOPMENT OF CUSTOM SYNCHRONIZATION SYSTEMS

SATELLITES



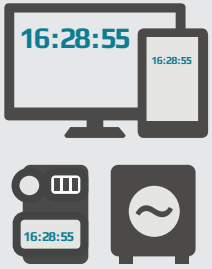
GLONASS / GPS

RECEIVING SIGNALS
FROM SATELLITES

ETS transmits the received information to the devices and servers via Ethernet

EXACT TIME SERVER

ELECTRONIC DEVICES
Receive the exact time via the NTP protocol



We will develop **a time synchronization system** to meet your requirements

ICBCOM COMPANY

CBCOM - "AiSiBiKom" is a modern innovative company working in the field of automation control and remote control..

We have been in a fast-growing market for **more than 10 years M2M and IT technologies,** led by the **Russian owner, develop and produce** advanced equipment ourselves, which is installed at more than **70,000 facilities** to date.

We have a lot of **fresh ideas and projects,** and the approach to our clients is always **individual.**

Our staff consists of highly qualified **specialists and engineers,** and we have experience of implemented projects for large Russian companies.

YEAR OF FOUNDATION:
2006

NUMBER OF STAFF:
75 SPECIALISTS

MAIN OFFICE:
MOSCOW

BRANCH OFFICES:
SAMARA
(development center)
KRASNODAR

PRODUCTION
MORE THAN 1,000 M2

learning center

QUALITY MANAGEMENT SYSTEM:
complies with ISO 9001:2008

icbcom
IoT solutions operator

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