**KREIT Engineering and Implementation Company** 

### **TELEPORT SOFTWARE**

## Data exchange with TEKON-20 series devices Operation Manual

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#### **1** Introduction

This Operation Manual is intended for familiarization with the structure, operation principles of the Teleport application designed for configuration and data viewing from the TEKON-20 series devices.

#### 2 General description of the Teleport application

The Teleport application (the executable file TTP20.exe) is intended for operation with the TEKON-20 series controllers. The software provides two access levels for work with the device: 'Service Engineer' and 'User'.

When entering the application, the 'Service Engineer' access level is set automatically; and moving to the 'User' level is performed from the 'Access level' menu. The 'User' level allows only to view the data, and the 'Service Engineer' level allows to record configurations into the device, edit available parameters, etc.

Table 1 provides some terms used in the Teleport application description.

Table 1

Term	Description
1. T-20 database	A set of files intended for representation of the controller
	configuration in the form of tasks. It is delivered to the user
	in the form of archive file; may also be used in an unstuffed
	form.
2 Controller task queue.	A queue is a sequential list of tasks taken from a ready solu-
Flexible tasks	tion library or compiled by the user in a special application,
	Dialogue 19. It is loaded into a calculation device and makes
	part of its software. The tasks included into the task queue
	are called <b>flexible tasks</b> . The flexible task queue is stored in
	the database as a file with the extension <b>tsk</b> .
3 <b>Rigid</b> tasks (templates)	<b>Rigid</b> tasks are a part of the device basic software, which are
	permanently present in each item and are components of its
	operating system. The composition of rigid tasks depends
	only on the device version and cannot be changed. The de-
	scription of rigid tasks is stored in the TASK directory of the
	T-20 database as a file with the module name and the exten-
	sion tsk.
4 Module, controller	Physical device
5 Algorithm	Algorithms are subroutines (procedures and functions) rec-
	orded into modules. The algorithms have input and output
	parameters (algorithm parameters). In connection with
	memory-related limitations, different modules have different
	algorithms. $T = 1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$
6 Lask	<b>Lasks</b> are links to algorithms (or procedure calls) which
	nave specific parameter numbers.
7 Task parameters	Task parameters may be input or output. The level of ac-
	cess to the parameter is determined in rigid tasks by the al-
	gorithm developer, and in flexible tasks, by the user who
	creates the task queue. The access level may be different in
	relation to parameter reading and recording.

8	Task	queue	identification	The task queue <b>identification number</b> is a code correspond-
nu	mber	1		ing to this separate task queue, entered into the controller
				$\mathbf{S}$
91	Project			Project is a separate directory on the disk containing the following files <u>under the same name</u> : tsk – the task queue from the ready solutions library created by the Dialogue19 application, read from the controller. tas – the task queue formed by the Ri-97 recorder prm – the parameter values txt – the description of the project, a text file mnp – the description of the user menu mna – the description of the archive menu mns – the data from the hourly archives sns – the data from the monthly archives ins – the data from the interval archives pns – the data from the 30-minute archives sas – the user's event archive wrt – the desktop parameter values.
				All files, except the task queue, may be absent in the project

The application allows the Service Engineer to prepare the controller for operation at site

to:

- Record the task queue into the controller,
- Form or 'clear' the indication menu.
- Record the values of the required parameters.
- Clear the archives.
- Record the task queue 'identification number'.
- Perform information automatic saving and recovery in the module

When working with the controller, the task queue may be read from the controller connected to a computer, or taken from the database on the disk.

Using the Teleport application, the User and the Service Engineer can read data from the controller; view the archives, both in full and for a specified period of time; view the system event and intervention logs; if the user's event archive forms a part of the task queue, its records may also be viewed. For convenience of simultaneous viewing data from different tasks, it is possible to form 'desktops' (user's parameter groups). The number of desktops in one project is unlimited; the 'desktop' parameters read from the controller can be saved on the disk or read from the disk with the purpose to record their values into the controller. Starting from the Teleport application version 2.25, the User and the Service Engineer may view the archives collected on the flash disk by means of the RI-97 recorder.

The application allows the User and the Service Engineer to create a new description of the project or correct the existing one, to save all the project components on the disk. The menu descriptors are unavailable for the User because his level of access to the menu parameters is '2'.

The application allows to exchange with devices under the following communication types:

- Connection via the CAN BUS adapter
- Connection via the RS-232 / Mbus adapter
- Connection via the RS-232 (technical) interface.
- Connection via the AM-80 CAN BUS RS-485 adapter.
- Connection via the Ethernet (K-104, AE-67) controller.
- Connection via the GPRS K-105 controller with a static IP-address

Beside the executable file TTP20.exe, the directory should contain the following files without which correct operation of the Teleport application is impossible:

Dop.ini - additional information – a list of numbers of the menu algorithms, event archives, decoding of the controller denial parameters.

Event.ini - decoding of the Tekon-19 system event archive

7z.dll - the library for working with the DB T-20 database in the form of archive file

WayTTP20.ini- the list of 'rigid' parameters, using which is allowed for module configuration automatic recording

Kapta.ini - the title page of the programming card

During operating the application, several auxiliary work files are created.

#### **2.1 MAIN FUNCTIONS PERFORMED**

The Teleport application main functions and availability of certain functions for the User or the Service Engineer are shown in Table 2.

In Table 2, the 'Service Engineer' access level functions are indicated in the column under the number 2, and the functions available for the 'User' access level are indicated in the column under the number 1.

Table 2

List of the Talenart application functions	Access	level
List of the Teleport application functions	1	2
1 Searching modules in the network and the task queue reading from the	+	+
device		
2 Project loading from the disk:		
Task queue	+	+
Project description	+	+
'Desktop' descriptors	+	+
Value of desktop parameters	_	+
Indication menu description	-	+
3 Automatic reading the task queue, parameter values, archive values, indi-	-	+
cation menu and event log from the module and saving them on the disk		
4 Automatic recovery of earlier read parameter values, archives and indica-	—	+
tion menu into the module, as well as viewing information saved on the		

disk		
5 'Deskton'		
Creating and correcting the 'desktop' descriptors	+	+
Reading the 'deskton' parameters	+	+
Correcting the parameter values in the device	+	+
Saving the parameter values on the disk	+	+
6 Reading the task paremeters	+	+
Correcting the parameter values in the device	_	+
7 Viewing the system event and intervention logs	+	+
8 Indication menu		
Reading from the controller	_	+
Correcting the menu and repeated recording into the controller	_	+
Saving on the disk and viewing	_	+
9 Viewing the archive parameters for a specified period	+	+
10 Clearing the archive parameters	_	+
11 Viewing the user's event archive	+	+
12 Recording the task queue into the controller	_	+
13 Saving the task queue on the disk	+	+
14 Changing the 'short' task names in the controller	_	+
15 Recording the task queue identifier	_	+

The Teleport application has the main menu and the toolbar.

- The main menu options:
  - Settings
    - 1. The database path
    - 2. Setting of exchange parameters
    - 3. Additional general settings
  - System
    - 1. Searching modules in the network
    - 2. Loading the system from the disk
    - 3. Saving the system on the disk
  - Module
    - 1. Automatic saving and recovery of information from the module
    - 2. Saving the module information on the disk
    - 3. Recording into the module
    - 4. Loading the project description from the disk
    - 5. Creating the programming card
    - 6. Loading the description of the project 'desktops' from the disk
    - 7. Creating the 'desktop'
    - 8. User's menu editing
    - 9. Archive menu editing
  - Access level
    - 1. Service Engineer access level
    - 2. User access level
  - Exchange
    - 1. Switching to the autonomous operation mode
    - 2. Switching to the exchange mode

• Exit

The toolbar buttons and functions performed:

be: specifying the database path

specifying the exchange parameters

- A additional general settings
- loading the project from the disk

searching the modules in the network

saving the project on the disk

and  $\frac{1}{2}$  initializing or, on the contrary, disconnecting from the computer COM or USB port (moving to the exchange mode or to the autonomous operation mode).

output data to the printer

Selection of several functions is performed from the 'popup' menu, which is called by right clicking a certain field. The 'popup' menu composition is given in the respective sections.

#### 2.2 LEVELS OF ACCESS TO DATA IN THE CONTROLLER

Each **parameter** of any device has two access levels: either by reading or by recording, these attributes are set for **rigid** tasks by the developer, and for **flexible** tasks by the service engineer during the task queue compilation. Data on the parameter access level is stored both in the database and in the controller itself. By changing the parameter access level, the user obtains the possibility to work only with parameters 'visible' to him at this access level; therefore, the amount of tasks and task parameters visible to the User is much lower than those visible to the Service Engineer.

The Teleport application provides no possibility to change the flexible parameter access level in the **task queue**, which was set when creating the project. If such need arises, the Dialogue19 should be used, where you need to change the required attributes and save the changed project on the disk. Next the modified task queue may be recorded into the device using the Teleport or the Dialogue19.

#### **2.3 ORDER OF THE TASK QUEUE RECORDING INTO THE MODULE**

For downloading ready projects into the Tekon-19 module, the computer should contain the database of the Tekon-20 family modules and the Teleport application. The database and the application are located on the disk supplied with the device; otherwise, they are available at the company website <u>www.kreit.ru</u>.

The database can be provided both as a Zip archive file and as a set of special files subdivided into the following directories:

ALG - the subdirectory containing a set of descriptors of the module algorithms

MOD – the subdirectory containing a set of module descriptors

TSK – the subdirectory containing descriptors of module templates

Three directories given above are located in the archive file.

USER - the subdirectory recommended for storing finished projects

The Teleport is located on the disk in the directory Application\TTP20

Beside the executable file TTP20.exe, the directory contains the following components: TTP20.pdf – the application description

Dop.Ini – the service information containing a list of the indication menu algorithm numbers, failure parameter numbers for certain module types

Event.ini – the system event log decoding

Name.ini – the suggested list of names for the menu formation

Karta.txt - the title page for printing the programming card

Absence or damage of one of the listed files causes incomplete operation of the Teleport.

The Tekon-20 database and the Teleport application should be installed using the installation utility of SetupTTP20\_2\_xx.exe, where 2\_xx is the application version.

For the task queue loading into the module via the Teleport application (TTP20.exe), the following actions shall be performed:

- 1. When the Teleport application first launch, the T-20 database availability should be checked. If it is absent, specify the **database path** manually or reinstall the application.
- 2. When the Teleport application first launch, the **module connection type** and exchange attributes (port number, speed, etc.) should be specified; otherwise, they should be changed in the process of operation (see cl. 3.3. Communication types and additional settings)
- **3.** If the device network number is unknown, then, prior to the task queue recording, it is required to carry out the **Automatic searching system modules** (see cl.3.6 Searching modules in the network)
- **4. Loading the ready task queue from the disk** (see cl. 3.5 Loading the system from the disk)
- 5. **Recording the loaded task queue** into the module (see cl. 3.14 Recording into the controller)

#### **3 Description of the Teleport application** Main menu Teleport main window has the following view: Toolbar Task tree 🖞 Телепорт -20 v2.15 Information about a module Настройки Система Модуль Уровень доступа Обмен or a separate task 📼 🔍 🚔 🚧 5 🗐 🕞 0000 / ТЭКОН-19 исполн 05(20.10.20 🛧 Молупь 🖹 Система ТЭКОН-19 / сист Т19 ЭКОН-19 исполн 05 🖹 Общие настройки для расчетов Тип модуля Журнал событий ТЭКОН-19/Э В Измерения аналоговые ТЭКОН-ТЭКОН-19 исполн 05(20.10.2004 10:15:59) Название модуля 0000 Сетевой номер модуля 🚯 Измерения импульсные ТЭКОН Информация о проекте 🛄 00 / Расчет температуры подач Состояние отказов модуля Тэкон-19 мод 05 2 трубы закрытая ХВС 🛅 01 / Ограничение t подачи / tпод 🎹 02 / Усреднение t подачи на отр № пар. 0500 <mark>.</mark> 🎹 03 / Архив часов t подачи / tпод 🛄 04 / Архив суток t подачи / tпод 📖 05 / Архив месяцев t подачи / tr 🛅 06 / Расчет температуры с обра 🎹 07 / Ограничение t обратки / toбр 🏢 08 / Усреднение t обратки на отј ПП 09 / Архив часов t обратки / toбi 🛄 ОА / Архив суток t обратки / toбµ 🛄 0B / Архив месяцев t обратки /1 🎹 ОС / Токовый линейный датчик ) 🎹 ОD / Перевод давления в абс МГ ПОЕ / Токовый линейный датчик ) 🛄 ОF / Перевод давления в абс МГ 🎹 10 / Расчет расхода воды подач 🎹 11 / Архив суток G подачи наро 🛄 12 / Архив месяцев G подачи на Заполнение памяти модуля ОЗУ 5% X03V 6% пзуд 10% пзуп 0% 🛄 13 / Накопление расхода подачи 🛄 14 / Архив часов G подачи тонн 🏢 15 / Архив суток G подачи тонн 🎹 16 / Архив месяцев G подачи то 🏢 17 / Тепло в закрытой водяной ( 🛲 18 / Архив суток (на 1 год) / Оот 🗸 > Текущий уровень доступа: Пользователь

Fig. 1 – Teleport application main window

Right clicking the module name in the task 'tree' area causes appearing the popup menu, containing the following options:

- Information automatic saving and recovery on the disk
- Saving the xxx module information on the disk
- Reading the project description from the disk
- Reading the desktop description from the disk
- Constructing the programming card
- Creating the desktop
- Data printing
- Parameter searching
- Output

The 'popup' menu when the task selection:

- Task searching
- Showing the task as a list of parameters
- Reading the archive data from the flash disk
- Output

Each option of the main or 'popup' menu and the functions of the toolbar buttons are described in the following sections. Depending on the item selected (module, task, event archive, numeric archive), the corresponding insert appears in the 'Module information ... ' field; the 'Module' insert is always available.

The menu option 'Showing task as a list of parameters' is available at the Service Engineer's level and is intended for technical purposes. The menu option 'Reading the archive data from the flash disk' is available only for the tasks of number parameter archiving.

The mode 'Information automatic saving and recovery in the module' is available only at the Service Engineer's level.

The explanation of the icons in the module and task tree field:

- task queue has been read from the disk
- task queue has been read from the device without errors
- task queue has been read from the device with errors, or the parameter list of task 'short names' is absent.
- rigid task
- flexible task (background)
- flexible task (timer)
- flexible task (upon request).

#### **3.1 PROGRAM ENTRY AND ACCESS LEVEL CHANGE**

When entering the application, the 'Service Engineer' parameter access level is set automatically. The menu option 'Access level' is intended for changing the access level.

If the controller is password protected, then it is required to specify the controller access password for correct operation at the Service Engineer level. More details about entering the controller access password are given in cl. 3.9 'Setting and general information of the module condition'





#### 3.2 SETTING THE TEKON-20 DATABASE PATH

The Teleport application operation requires to specify the TEKON-20 controller family database path. When installing the program on the computer, the database path is registered automatically. If the database paths are not registered or registered incorrectly, then the mode **TEKON-20 database path** is called automatically. To change the database path, the menu op-

tion 'Settings'->'Database path' or the button <sup>b</sup>: on the toolbar may be used.

If the T-20 database is represented as an archive file, the 'archive file' marker and the path to it, together with the directory for saving the user's settings should be indicated.

Путь к базе данных системы Тэкон-20	×
База данных тэкон-20 в виде архивного файла	Версия Базы данных Т-20 033 от 23.07.2018
Архив оазы данных тэкон-20	
Архивный файл C:\Users\ong\AppData\Roaming\k	Kreit\BD_T20.zip
Путь к каталогу настроек пользователя	
C:\Users\ong\AppData\Roaming\Kreit\BD-T20\USE	R 🚊
L	Demount
	Применить

#### Figure 2 Database path in the form of archive file

If the T-20 database has the form of directory, the path should be set in the following way:

4

#### Figure 3 Database path in the form of separate directories

The database contains 4 subdirectories:

- ALG subdirectory containing a set of module algorithm descriptors
- MOD subdirectory containing a set of module descriptors
- TSK subdirectory containing the module template descriptors

USER – subdirectory containing the project; it may be located separately from the T-20 database.

After the DB path has been specified, the application displays an information message about the database version, if such information is available.

#### **3.3 CONNECTION TYPE SETTING AND ADDITIONAL SETTINGS**

For exchange with the devices, the exchange parameter configuration is required. To enter this mode, the button on the main window on the toolbar, or the option 'Settings' -> 'Settings of exchange parameters' of the main menu are intended.

Each connection type requires setting its own attributes:

For exchange via the **Can-Bus adapter**, the following data should be specified: the port number, the computer network number on the bus, and the exchange frequency on the Can-Bus

🍟 Назначение параметров обмена	The second second	
Вид соединения © Can-Bus C Rs-232 / Mbus	<ul> <li>Rs-485</li> <li>Контроллер Ehernet K-104</li> </ul>	С Контроллер GPRS K-105 С Адаптер AE-67
Подключение через Can-Bus Назначение порта Выбор последовательного порта СОМ6 Параметры обмена Скорость обмена по шине CAN-BUS (Кбод	<ul> <li>Если номер порта превь</li> <li>300</li> </ul>	шает 8, то введите номер вручную, например COM10
Сетевой номер компьютера на шине Са	an-Bus 00	
Список сетевых номеров для поиска моду Отображение сетевых номеров в С Десятичном виде • Ш	пей в сети естнадцатеричном виде	Количество повторных запросов при ошибках обмена 2 🚖 Максимальное время ожидания ответа (в секундах) 1
Сетевые номера для поиска модулей в сети 0-10	1 задаются в виде N1,N2,N3-N4 :	🗌 Сохранять протокол обмена на диске
Отменить Сохранить		

#### Figure 4 Destination of exchange parameters via the Can-Bus adapter

Connection type **Rs 232/Mbus** should be specified: the port number, the exchange speed, the number of stop bits.

Using Rs-232, connection is possible via either an adapter or directly via the process connector. For Mbus, only single device connection is possible.

When connecting via a adapter, it is required to specify its network number from the Rs side, or it is possible to give the specific network number or the search range.

For the connection type via the **Rs-485 adapter**, the same attributes as for Rs-232 are specified. Connecting controllers via the adapter or operation with the adapter only are possible. For the connection via the adapter, the adapter network number should also be specified.

Teleport

	and the second sec	
С сар-Виз	C Rs-485	C KONTROTTER GPRS K-105
Rs-232 / Mbus	C Контроллер Ehernet K	104 О Адаптер АЕ-67
Полключение через Rs-232 / Mbus		
Выбор последовательного порта СОМ	11 💌 Если номер порта п	ревышает 8, то введите номер вручную, например СОМ10
Параметры обмена		
Скорость обмена 9600 💌 🤄 1	о стоп бит О 2	
Способ подключения		
COT UNDOR OF STAR CAN PUS	· · · · · · · · · · · · · · · · · · ·	Ерицици и врибор цороз PS 020
Certs depes againep PT1.2 - CAN-BOS		Единичный приоор через Ко-252
-Сетевой номер адаптера в режиме "Авт	оматический поиск модуля "	
Указать номер		Поиск по диапазону сетевых №
Сетевой номер адаптера	10 Rs-232 01	
<ul> <li>не рассчитывается</li> </ul>	О в данных	С вместо КС
Список сетевых номеров для поиска м	одулей в сети	
Отображение сетевых номеров в		Количество повторных запросов при ошибках обмена 2
С Десятичном виде	🕅 Шестнадцатеричном виде	Максимальное время ожидания ответа (в секундах) 1
Сетевые номера для поиска модулей в	сети задаются в виде N1,N2,N3	N4 : Сохранять протокол обмена на диске
0-10		
Отменить Сохранить		

#### Figure 5 Destination of exchange via the Rs-232 or Mbus adapter

The Teleport application allows to carry out the exchange via the **Ethernet K-104** controller

🍓 Назначение параметров обмена			
Вид соединения			
C Can-Bus	C Rs-485		C Контроллер GPRS K-105
C Rs-232 / Mbus	Контроллер Eh	ernet K-104	О Адаптер АЕ-67
Подключение через Контроллер Ehernet K	-104		
IР адрес   192 . 168 . 0 . 56	Порт СВ1Г	🔽 16-рич	ный вид
Протокол © UDP / IP С TCP / IP			
Способ подключения			
Сеть через порт CAN-BUS		O Ce	ть через порт RS(через адаптер с сететевым №)
Сеть через порт RS(напрямую или чер	ез адаптер без сет.№)	O Pa	бота только с К-104
Сетевой номер адаптера в режиме "Автом • Указать номер	иатический поиск модул	ія " С По	иск по диапазону сетевых №
Сетевой номер контроллера К-104 Расчет СRC	на шине Can 00		
не рассчитывается	С в данных		🔿 вместо KC
Список сетевых номеров для поиска мо	цулей в сети		
Отображение сетевых номеров в			количество повторных запросов при ошиоках оомена
С Десятичном виде 📀	Шестнадцатеричном ви	цде	Максимальное время ожидания ответа (в секундах) 3
Сетевые номера для поиска модулей в се	ети задаются в виде N1	,N2,N3-N4 :	🔲 Сохранять протокол обмена на диске
0-10			
Отменить Сохранить			,

Figure 6 Connection via the Ethernet K-104controller

The exchange via the Ethernet K-10 controller is required to specify the following:

IP address, the data receiving port number, the UDP/TCP protocol — as programmed in K-104, the method of Tekon connecting to K-104.

The following connection options are permitted:

- Network via the K-104 controller Can-Bus port
- Network via the Rs port in this case, the controller may be connected either directly or via the adapter with the network number (e.g., via the AI-80 adapter). The teleport application operates only with the Tekon-20 series controllers. If the Tekon 10, the Tekon-17 or metering instruments by third-party manufacturers are connected to the K-104, then special software is required for exchange with them, e.g. the ISKRa software.
- Work only with the K-104 controller

When connecting the Tekon to the Ethernet controller via the RS-232 port, the method of CRC forming during the exchange via the FT1.2 protocol should be specified; when connecting the K-104 as a module on the Can-Bus, its network number should be specified.

For the **K-105 controller** in GPRS mode with a static address, the exchange setting is similar to those of the K-104. For work with the K-105 in the GPRS mode with a dynamic address or in the CSD mode, special software is required, e.g. the ISKRa software.

For polling via the **Ethernet AE-67** adapter, it is required to specify the IP address, port number and network number via Can-Bus. The AE-67 Ethernet adapter supports only the UDP exchange protocol.

🐴 Назначение параметров обмена	The State and the second second	
—Вид соединения О Can-Bus О Rs-232 / Mbus	С Rs-485 С Контроллер Ehernet K-104	<ul> <li>С Контроллер GPRS К-105</li> <li></li></ul>
Подключение через Адаптер АЕ-67		
IР адрес   178 . 248 . 6 .	203 Порт CAF8 🔏 🔽 16-рич	ный вид
Сетевой номер адаптера	АЕ-67 на шине Can 00	
Список сетевых номеров для поис Отображение сетевых номеров в- С Десятичном виде	ка модулей в сети • Шестнадцатеричном виде	Количество повторных запросов при ошибках обмена 2 主 Максимальное время ожидания ответа (в секундах) 7
Сетевые номера для поиска модул	ей в сети задаются в виде N1,N2,N3-N4 :	🗌 Сохранять протокол обмена на диске
0-10		
Отменить Сохранить		

Figure 7 Setting exchange via the Ethernet AE-67 adapter

Additional options:

Displaying the network numbers during the module search – in decimal or hexadecimal format

Ranging the network numbers for module search

'Number of repeated inquiries in case of exchange errors': if exchange errors occur (no response from the controller, checking sum miss, etc.), a specified number of repeated parameter inquiries are performed, and only then, an error message is displayed.

'Maximum time for response from the controller' is recommended to be increased only if the exchange speeds are low.

'Saving exchange protocol on the disk': this option should be set only when exchange issues, in order to export a text file with the exchange protocol to developers for situation analysis. The file is named DD\_MM\_YY.txt (where DD is the day, MM is the month, YY is the year of the file creation), and it is created in the user's directory (Application Data\Kreit\LogsTTP20).

#### **3.4 ADDITIONAL SETTINGS**

For convenience of work with the Teleport application, it is possible to set some common additional options. The configuration mode is called with the button  $\bigcirc$  on the toolbar or through the main menu 'Settings'  $\rightarrow$  'Additional general settings'.

Дополнительно       Название задачи в списке         Обязательный запрос о сохранении данных, перед завершением программы       Название задачи в списке         Автоматический запуск опроса после выбора задачи       Короткое         Интервал запроса архивных параметров       Короткое         Установить направление приравнивается конечному       Количество знаков после запятой         Количество значение даты приравнивается конечному       Количество знаков после запятой         Правила формирования начальной даты запроса архивов       от 0 до 1       б       от 1 до 100       5       €         Часовые архивы (сут)       16       Интервальные архивы (сут)       1       Оличество суток/(месяцев)       При чтении данных с диска предлагать         Часовые архивы (сут)       365       Получасовые архивы (сут)       8       Масс. кол-во отображаеных элементов массива         Для пользовательской задачи       64         Для пользовательской задачи       64         Для пользовательской задачи       64         Для пользовательской задачи       64         Отображение индексов архивов       Отображать индексы с       по         Применить       Получасовые врхивы сут)       16       от 0       16       от 1 до

Figure 8 Window of additional general settings

'Task name in the list' means the rules under which the task names in the main application window task tree are generated. 'Color of the selected table row': due to the fact that users have different monitors and color preferences, the selected table row or cell color can be customized.

'Automatic poll launch': when this option is set, after selecting a task from the task tree list, the parameter poll is performed automatically. Otherwise, it is performed by clicking the button **Read**.

'Mandatory query during saving...': when this option is set, a warning on the need to 'save system on the disk' is always displayed before exiting the program.

'Decimal places': different accuracy is set for convenience of work with small and large numbers.

'Interval of a archive parameters inquiry':

It is possible to set the direction of equalization of an archive inquiry start and end dates with the button  $\Xi$ , and the rules of forming an archive inquiry start date: the start date in the inquiry interval is set to the maximum possible date, or a day shift from the current inquiry date is specified.

'Maximum number of the displayed array elements': many system array parameters have the large dimension, and it is possible to set permissible limits in order not to output extra information. If the attribute 'Display index range' is set, the system and user's tasks are covered only by this range.

If it is required to hide the Service Engineer access password, it is recommended to set the option 'Password display prohibited', and the password on the module page to be displayed with '\*' characters.

Archive index display: the service information when displaying the numeric archives.

#### **3.5 LOADING THE SYSTEM FROM THE DISK**

For working with the device, a ready project can be selected (even if it contains only one file, the task queue zzz.tsk) from the disk.

The button on the toolbar  $\stackrel{\frown}{\sim}$ , the option of the main menu 'System'  $\rightarrow$  'Loading the system from the disk' (see figure 7). It has the following designations:

- 1. <u>The user's settings directory path</u> initially, it is the path that set when setting the Tekon-20 database path.
- 2. <u>Content of the user's settings directory</u> a list of the subdirectories and projects in cl.1.
- 3. <u>System name</u> the general name of selected projects which to be placed into the main window module and task tree.
- 4. <u>System composition</u> a list of the selected projects.
- 5. <u>Project information</u> if a text file with information exists, its content is placed into this window.
- Search by the identification number for convenience of selecting a required project, using the search by the task queue identification number is possible. Buttons ▼ and ▲ indicate the direction of search by a selected row in the field <u>Content of the user's settings</u> <u>directory.</u>

**Project** (or **project group**) is selected by drag-and-drop. After selecting the required project in the table <u>Content of the user's settings directory</u>, the mouse cursor should be moved, with the left mouse button held, through the screen to the <u>System composition</u> table. After releasing the left button, the object name appears in the list of selected projects. One **project** (or directory containing several projects) may be placed into the <u>System composition</u> table by double clicking the selected object.

Deleting the selected projects takes place after selecting an option from the popup menu in the field <u>Directory contents</u>. The selected projects are saved for further work by clicking the button 'Save'.

Добавить модули в систему	×
Путь к каталогу настроек Пользователя	Название Системы
D:\MailBox\AE\BD\User	Система
Содержание каталога настроек Пользователя	Состав Системы
Image: Constraint of the second s	
	Информация по проекту
	× × ×
Поиск по идентификационному коду Очередь задач в (.tsk) □ Развернуть все "узлы" Очередь задач, считанная регистратором РИ-97 (.tas)	Загрузить

Figure 9 Project selection window

The Teleport application allows to load the task queues from the box solution library created by special applications (Dialogue19), read from the Tekon and saved on the disk, these are files with the extension .tsk which are denoted by the symbol

The task queue image is read by the information recorder, the extension .tas, is denoted by  $\boxed{\mathbf{v}}$ 

After the system is loaded from the disk, it is required to check correctness of each loaded module network numbers since creating the box solution library, the default module network number is 1. With changing the module number, it is recommended to save the task queue on the disk in order to ensure correctness of the module network numbers when reloading.

#### **3.6 SEARCHING MODULES IN THE NETWORK**

If it is required to determine which devices are currently connected to the computer, or to read the task queue from one of them, then it needs to use the function 'Searching modules'. This mode is available only if initialization of a port (and the Can adapter at Can-Bus communication

type) has passed successfully and the port status button is  $\Im$ . The button of the function 'Module search' on the toolbar has the image  $\bigstar$ , the main menu option 'System' -> 'Searching modules in the network'

	Поиск моду	лей в сети			
П	оиск модуле	й в сети		Доп.параметры для	поиска
빌	ид связи	:Контроллер Ehernet K-104 (порт CAN)	ПР-адрес	19 Количество	запросов 1
Ди	апазон пои	ска 1,2		Время ожидания	ответа(мс) 1000
		(Список сетевых номеров задается в виде N1,N2-N	3,N4-N5,N6)	Представление сет	гевого номера
06	бнаружено м	иодулей : 1		С Десятичный	<ul> <li>Шестнадцатеричны</li> </ul>
Пс	одключение	через Контроллер Ehernet K-104 (порт CAN)			
	Поиск сете	вого номера адаптера(ведущего блока) Сете	вой номер	00	
	Сетевой	Тип модуля	Заводско	Чтение очереди	Чтение названий
	Nº		и номер	задач отсутствует очерель	задач
	00	1104 / Контроллер Ethernet (исп 04)	3602	задач	
	01	0725 / ТЭКОН-19 исполн 05М	1364	Выполнено	Выполнено
•					~ ~ 4
ġ	Поиск мод	<b>улей 🛛 😭 Очередь задач</b> 🛛 🖉 Циклический оп	ipoc BE	ыход 🖪 🗸 🗄	×

Figure 10 Window of searching modules in the network

The module search procedure:

Press the 'Search modules' button for the sequence poll of all the specified network numbers. If a controller with xx number 'responds', a line with the module type and serial number appears, a corresponding warning for the network numbers which did not 'respond' is displayed. The module search may be stopped by releasing the button 'Task search' or clicking the button 'Task queue'.

If the controllers are connected via the adapter, the Ethernet controller, GPRS, then it is required either to specify the adapter specific network number, or to set the network number search mode. In case if the number is specified and the adapter is detected, the other modules are searched; in the second case, first the adapter specific network number is searched, and the search of controllers connected to it starts only after its detection. If, after the module search has completed, the option 'Task queue' is not performed, i.e., the flexible task queue loaded into the module is not read, then only 'rigid' tasks are present in such modules. If a module has been found, the description of which is absent in the TEKON-20 database, then only the module type number, without the name and the rigid task list, is present in the main program window module list. In this case, a new database for this module type should be obtained from the manufacturer.

The task queue reading may be stopped by releasing this button to its original position or clicking any other button.

Additional buttons:

• when module search, display only the revealed modules in the list;

set the mark 'place' into the main window module and task list;

• remove the mark from all previously marked modules.

Only checked modules may be placed into the main window module and task list, and the 'check' marker may be set only for modules found in the network.

The button 'Cyclic exchange' is intended for communication channel testing.

#### **3.7 PORT INITIALIZATION**

The Teleport application allows to work both with a connected module and in the autonomous mode. Switching from one mode to another is performed by clicking the button ( ( ) on the toolbar or by selecting the required mode in the main menu, the option 'Exchange'->'Transfer to the exchange / autonomous operation mode'.

The status of this button on the toolbar indicates whether exchange with the controller is possible at a certain moment of time  $\Im$ , or the autonomous mode is selected  $\Im$ . If an incorrect port number is specified or the Can-Bus connection type is specified and the Can adapter is disconnected, then port initialization errors occur. In this case, a corresponding message is displayed, and the button form changes to  $\Im$ . If the port number is incorrect, then after the correct port number is set, the button form change to  $\Im$ . In the Can-Bus case, sometimes it is enough

only to start the adapter and, by clicking the button  $\mathbb{N}$ , to make the port and the Can-Bus adapter to perform repeated initialization. In case of work through the USB port, when the converter incorrect settings, the system may require the repeated port initialization (it is observed frequently if rather a long time passed since the last exchange).

When working with the K-104 controller, the K-105 controller with the TCP exchange protocol, a connection session is not set automatically, so prior to performing the module search

in the network, it is required to set the exchange mode manually, by pressing the button Repeated port initialization is performed in the following way:

The first button clicking allows to close the port, and repeating - to call the port initialization procedure.

The port closure allows another application (e.g., the ISKRa dispatching complex) to perform exchange with devices without closing the Teleport application. After the port has been closed, the program moves to the autonomous mode, with all its functions saved in the autonomous mode, except the exchange functions.

#### **3.8 DESKTOP CREATION AND CORRECTION**

For convenience of data viewing from different tasks of one module, it is possible to generate 'desktops' (user's parameter groups). The functions of desktop formation, correction, deletion, and reading the desktop descriptors from the disk are called from the 'popup' menu in the certain module task area or from the main menu 'Module'-> 'Create Desktop' (see Figures 11, 12).

🐴 Настройка "рабочего стола"	
Список параметров и задач	Список рабочих столов
🖃 Тэкон для тестирования Температура и инд архив	
😟 сист T19 / Система ТЭКОН-19	
• РасшТ19М / Расширение системы ТЭКОН-19М	
• общнастр / Общие настройки для расчетов ТЭКОН-19	
Журн соб / Журнал событий ТЭКОН-19	
- Анал 05 / Измерения аналоговые ТЭКОН-19 исп 05	
• Имп 05 / Измерения импульсные ТЭКОН-19 исп 05	
• Осн меню / Индикация ТЭКОН-19 (осн меню)	
• Меню арх / Индикация ТЭКОН-19 (меню архивов)	
🗄 ЦиклМеню / Индикация ТЭКОН-19 (циклическое меню)	
Св калиб / Сведения по калибровке АЦП	
🗄 - ЖурнВмеш / Журнал вмешательств ТЭКОН-19	
🗄 ·· 00 / t 1 / Расчет температуры с ТСМ\ТСП	
🗄 01 / t1 огр / Ограничение параметра Х	
🗄 ·· 02 / t1 уср / Усреднение параметра на отрезках време	
⊕ 03 / t1 час / Архив часов (на 32 календарных суток)	
. 04 / t1 сут / Архив суток (на 1 год)	
⊕. 05 / t1 мес / Архив месяцев (на 12 месяцев)	
👾 06 / t1 инт / Архив интервалов (на 1440 значений)	
🚊 07 / t2 / Расчет температуры с ТСМ\ТСП	
⊕. 08 / t2 огр / Ограничение параметра Х	
⊕. 09 / t2 уср / Усреднение параметра на отрезках време	
⊕ 0А / t2 час / Архив часов (на 32 календарных суток)	
庄 • 0В / t2 сут / Архив суток (на 1 год) 🔍	
Image: Image	
Поиск алгоритма	Название "пабочего стопа"
Алгоритм	
Номер алгоритма 📃 🚖	Короткое название Изменить
	Сохранить настройки рабочего стола

Figure 11 Desktop creation

If the desktop has not been created, it may be created in one of the two ways:

By using the 'popup menu' in the 'Desktops list' area or by selecting the required parameter and drag-and-dropping it (or double clicking the parameter) to the desktop list. If the desktop is not exactly specified during the drag-and-drop procedure, then the request appears to create a new desktop or to place the parameter into one of the already existing.

It is also possible to change the parameter order in the desktop by moving them with a mouse.

The desktop name may also be changed.



Figure 12 Desktop correction

If parameters in the created desktop are absent, then prior to closing this form, an inquiry to delete the 'empty' desktop appears. If the answer is 'Yes', then the empty desktop is deleted, otherwise, the output from the creation-correction mode is not performed.

Deleting the desktop or its parameters is performed when calling the corresponding popup menu option.

#### **3.9 SETTINGS AND GENERAL INFORMATION OF THE MODULE CON-**DITION

When selecting a module in the list 'Module and task tree', the following module information is output: the module type, name, network number, % of filling all memory types with flexible parameters and project information.

If exchange with the module is performed via the FT1.2-Can-Bus adapter, then the adapter network number window, available for correction, appears additionally.

The User of any access level may view the current module denials: the button  $\Im$  is intended for this. The numbers of parameters containing failures for each module type are listed in the Dop.ini file in the sections named OTK\_NNNN, OTK\_NNNx or OTK\_NNxx. Search of a specific module failure decoding starts with the search of a section with full matching to the module type number, then the first three, and the first two module type digits matching.

E.g., for the AM-70 adapter with module type 0613, the section [OTK\_0613] is searched first, next - [OTK\_061x] and, if they are absent, the section [OTK\_06xx].

The parameter name is written in the row par=xxxx, and the bit-by-bit denial decoding is written in rows with numbers

0 = text 1 = text15 = text

If 1 is set in one of the failures state positions, then the module failure state table displays the respective row.

📫 Телепорт -20 v 2.81	
Настройки Система Модуль Уровень дост	гупа Обмен Выход
🎉 📼 🔍 🚅 👭 🖬 🖏	Вид связи :Контроллер Ehernet K-104 (порт CAN) / IP-адрес 192.168.0.56
⊡ Система ф. @ 00 / 3602	Модуль
ОТ / Тэкон для тестирования Темпера	Тип модуля 0725 / ТЭКОН-19 исполн 05М
🥳 work_0 / Рабочий стол 1 🥳 work_1 / Рабочий стол 2 📑 сист Т19 / Система ТЭКОН-19	Стандартное имя Тэкон для те очереди задач стирования Попьзовательское Температура имя очереди задач и инд архив
РасшТ19М / Расширение системы Т общнастр / Общие настройки для р	Сетевой номер модуля 01 (Нех) Информация о проекте
💾 тест / Тестовые режимы ТЭКОН-1	Состояние отказов модуля
— 🗎 Журн соб / Журнал событий ТЭКО — 💾 Анал 05 / Измерения аналоговые Т	№ пар.0516 👰
Имп 05 / Измерения импульсные Т Колимация / Инаникация ТЭКОН 10 (	
Меню арх / Индикация ТЭКОН-19 (	
📑 ЦиклМеню / Индикация ТЭКОН-19 (	Ψ
💾 Св калиб / Сведения по калибровке	
— 🗄 ЖурнВмеш / Журнал вмешательс	
00/t1 /Расчет температуры с	
01/t1 огр /Ограничение парамет;	
02/t1 уср / усреднение параметр	
05/t1 мес. / Архив месяцев (на 11	
06/t1 инт / Архив интервалов (на	P
07 / t2 / Расчет температуры с	
08 / t2 огр / Ограничение парамет;	очередизадач
	Заполнение памяти модуля ОЗУ 2% ХОЗУ 6% ПЗУД 3% ПЗУП 0%
ОС / t2 мес / Архив месяцев (на 1)	Заполнение очереди задач Задачи 8% Параметры 6% 7%
0D / t2 инт / Архив интервалов (н	И Наличие пароля Уровень 2 (надовник)
ОБ / Арх соб / Архив событий поль	Режим работы Работа 💡 🛃
10 / arhTime / Архив интервалов (н	🔽 Подключение через Контроллер Ehernet K-104 (порт CAN)
	Сетевой номер К-104 (Нех) 00
۰	Сохранить настройки модуля
Текущий уровень доступа: Наладчик	

Figure 13 View of the insert 'Module'

The following functions become available for the Service Engineer:

<u>Task queue identifier</u> – to recalculate , read from the module B, search in the directory by the task queue identification number B. It should be noted that the identification code is entered to the module when recording the task queue automatically as well. If the module has no F028 'Task identifier' parameter, this window are not displayed.

The Service Engineer has a possibility to learn about the device operation mode (Operation, Stop) by using the button ? and transfer from the condition 'Operation' to 'Stop' and back.

If the module is password-closed at the Service Engineer level, then it is required to specify a password, i.e., to 'check' the marker 'Password availability' and to enter the password value: 8 characters without spaces.

The project information may be adjusted and viewed, both in a small and in a large window, and for moving to the 'large window' mode, it is enough to double click the 'Project information' field.

#### 3.10 TASK DATA VIEWING

If a task is selected in the 'Module and task tree' list, the data is viewed on the data viewing page 'Data'. The other pages are used for viewing the descriptors of the menu, numeric archives and event archives.

The User may read the available parameter values. As a rule, the User has no right to correct the parameter values, unless, the User access rights to the recording operation have been assigned when the task queue creation.

The Service Engineer has the right to read and correct the available parameter values and to change the flexible task short name in the controller.

If the Teleport application settings (see subsection 3.4 'Additional settings') contain the set marker 'Automatic polling start', then, following the task selection, an attempt to read the data from the device is made. If the marker is not set, reading is performed by clicking the button '**Read**'. Reading may be stopped by repeated clicking this button (the inscription on the button '**Interrupt**' while reading). If it is required to run constant parameter reading, click the button '**Run**' ('**Stop**').

The button '**Cyclic exchange'** is intended for communication channel testing or viewing any parameter in real time.

The button '**Read** (Data from the disk)' allows to display data from the file with the extension .prm if such a file is available in the loaded project.

During the first access to the module at the Service Engineer's access level, the following inquiry is displayed:

#### If the controller is protected by a password, it must be specified. Will you enter the access password?

In order to enter the password, go to the 'Module' page and enter the level 2 device access password.

If the device is 'closed' with a password, and its value is specified incorrectly in the Teleport application, a message appears indicating mismatch of the requested and actual access levels. In order to continue the exchange, it is required to enter the correct access password or enter the program with the User's access level. In the latter case, it is not required to enter the password for accessing the parameters, but the possibilities of work at this level are limited in comparison with the Service Engineer's access level.

'Desktop' parameters are viewed on the same page, but two additional buttons are provided for the desktop: **Save** and **Read** data from the disk. The desktop parameter values may be saved and copied to the device. This mode is convenient for recording some fixed values into the device, such as the estimated day, estimated hour, interval duration, speed constants, etc. After once constructing a list of the parameters with values, this function allows to save time and avoid errors during the commissioning.



Figure 14 View of the 'Data' insert

If it is required to correct a parameter, new data is entered into the 'value' row, the entered value is marked by red color and 'checked'. Only the parameters, the values of which have been changed, are recorded into the controller. If it is required to refuse from entering one of the corrected parameters, the 'check' symbol should be removed. After clicking the button '**Record**', the selected parameters are recorded and all the task parameters are read repeatedly. Entry into the parameter value edit mode is performed after clicking the selected cell; exit from the edit mode is performed when selecting another table cell or clicking any button.

The value of some parameters, such as the **Frequency constant value under RS-232** and **CAN-BUS configuration and speed**, may be selected from the offered list of possible values of these parameters; repeated clicking the selected cell opens a drop-down list with the acceptable values; exit from the edit mode is performed only by clicking another table cell.

It is possible to set an arbitrary **Date** from the calendar (details of work with the Calendar are given in subsection 3.11 'Viewing the numeric archives'). The calendar is called by repeated clicking a table cell in the edit mode.

Setting the current computer **Date** and **Time** is performed simply by double clicking the selected cell.

The index parameters may be placed into the list in the 'minimized' condition (only one array element), or to view the entire array. First the parameter is displayed in the 'minimized' condition, and only the element value with the index 0 is displayed. When entering another index value, the corresponding value is displayed. Viewing the entire array is performed by calling the corresponding 'popup' menu option.

The popup menu options:

- Print out the data table is printed
- Display/hide index arrays to work with arrays
- Clear array only for the Service Engineer, zeroes the array values
- Tasks containing the nnnn parameter on the page 'Task list...', a task list is formed which includes the specified parameter

Figure 15 View of the insert 'Task list'

Search of tasks containing the specified parameter – the reference function, first allowing to find errors at the task queue programming.

For tasks based on the algorithm 0299 'Combining 32 bits with signaling', a possibility to form a viewing mask depending on the set parameters is provided. For calling this mode, the option **Create TS mask** appears in the popup menu. When calling one of this menu option, a window with a list of all input bit parameters of the given task appears. Beside the pointer 'byte number – bit number', each parameter is provided with a field for setting the marker of inclusion into the viewing mask, the 'check' symbol; the parameter number and the name from the task in which the given parameter number is defined are specified as the parameter name.

The viewing mask numeric value is determined depending on the parameters that are marked for introduction into the mask. After clicking the button 'Enter into the table', the changed values of bit parameters or the viewing mask button are transferred to the main table as the values prepared for recording into the device (marked with color and with the record marker set)

🍟 Просмотр и формирование маски телесигнализации	
Поразрядное представление маски просмотра объед	инения 32 битного параметра с сигнализацией
байт 0, бит 0 🔲 050 Е/Общотк / сист Т19	байт 2, бит 0 🔲 8030 /
байт 0, бит 1 🔲 0501 / АлгОтказ / общнастр	байт 2, бит 1 🔲 8030 /
байт 0, бит 2 🦳 80307	байт 2, бит 2 🔲 8030 /
байт 0, бит 3 🦳 8030 /	байт 2, бит 3 🔲 8030 /
байт 0, бит 4 🔲 8004 / Обрыв / t 1	байт 2, бит 4 🛛 🔲 8030 /
байт 0, бит 5 🔲 800А/ < Xmin / t1 orp	байт 2, бит 5 🔲 8030 /
байт 0, бит 6 🔲 800В / > Xmax / t1 огр	байт 2, бит 6 🔲 8030 /
байт 0, бит 7 🔲 8030 /	байт 2, бит 7 🛛 🔲 8030 /
байт 1, бит 0 🔲 801С / Обрыв / t2	байт 3, бит 0 🛛 🔲 8030 /
байт 1, бит 1 📄 8022 / < Xmin / t2 orp	байт 3, бит 1 🛛 🔲 8030 /
байт 1, бит 2 🔲 8023 / > Xmax / t2 orp	байт 3, бит 2 🛛 🔲 8030 /
байт 1, бит 3 🔲 8030 /	байт 3, бит 3 🛛 🗖 8030 /
байт 1, бит 4 🔲 8030 /	байт 3, бит 4 🛛 🗖 8030 /
байт 1, бит 5 🔲 8030 /	байт 3, бит 5 🛛 🗖 8030 /
байт 1, бит 6 🔲 8030 /	байт 3, бит 6 🛛 🔲 8030 /
байт 1, бит 7 🔲 8030 /	байт 3, бит 7 🔲 8030 /
Цифровое значение маски просмотра 73 07 00 00	Поместить в таблицу

Figure 16 Generation of the remote signalling mask

In the 'System' task, if the controller network number is changed, the connection may be lost for the specified connection type, because the most modules do not require to repeat poweron after changing the network number values; for this reason, the Teleport application, starting from version 2.27, provides checking for network number change. With this purpose, the OB-MEN section is introduced in a file dop.Ini, in which for each module and communication type, the parameter numbers are specified, determining the exchange (network number, speed constants, CRC calculation type). When changing data in the 'System' task, the exchange parameters are always recorded at the end of the list. Next it is checked whether the module changed the network number; if yes, the application automatically changes this number in the module description on the insert 'Module' and in the task queue list with the further exchange with the module, using the new network number. If the network number in the module has not been changed automatically, or other exchange parameters have been replaced as well, then a message is displayed that the changed exchange parameters will become effective after repeated power-on in the module.

#### **3.11 VIEWING THE NUMERIC ARCHIVES**

The numeric archives (hourly, daily, monthly, interval, 30-minute) can be viewed in the form of table. The possibility to view all data from the archive or at a certain time point is provided.

The additional function of clearing the archives is available to the Service Engineer.

🐴 Телепорт -20 v 2.81		
Настройки Система Модуль Уровень до	ступа Обмен Выход	
🏝 📼 🔍 🖻 🛤 日 🚳	Вид связи :Контро 192.168.0.56	оллер Ehernet K-104 (порт CAN) / IP-адрес.
🖃 🗁 Система	Модуль Архив часовой Справка	
<u>⊡</u>	Содержимое архива за час	Отчетный период
— — — — — — — — — — — — — — — — — — —	№ парам. 8015 Глубина архива	768 Начало периода: Время:
	Входной параметр "за предыд час"	4 ноября 2018 ▼ 16 🜩
🕒 сист T19 / Система ТЭКОН-19	№ парам. 8010 Значение 0	Окончание периода:
Расші 19М / Расширение системы І фобщнастр / Общие настройки для р.		
💾 Журн соб / Журнал событий ТЭКО		20 ноября 2018 ▼ 10 ▼
Анал 05 / Измерения аналоговые Т	Дата	Значение
Имп 05 / Измерения импульсные Т В ЖуриВмани / Журиал вманиаталься	20.11.2018 00 -01	22,46550
	20.11.2018 01 -02	22,41586
01/t1 orp / Orpanuvenue papametr	20.11.2018 02 -03	22,38267
02/11 vcp / Усреднение параметр	20.11.2018 03 -04	22,33244
03 / t1 час / Архив часов (на 32 ка	20.11.2018 04 -05	22,31815
04 / t1 сут / Архив суток (на 1 год)	20.11.2018 05 -06	22,29149
— 05 / t1 мес / Архив месяцев (на 12	20.11.2018 06 -07	22,30010
	20.11.2018 07 -08	22,30798
	20.11.2018 08 -09	22,45523
	20.11.2018 09 -10	22,67631
	20.11.2018 10 -11	22,85150
···· 🛄 0А / t2 час / Архив часов (на 32 ка	20.11.2018 11 -12	23,00050
0В / t2 сут / Архив суток (на 1 год	20.11.2018 12 -13	23,09323
0C / t2 мес / Архив месяцев (на 12	20.11.2018 13 -14	23,13716
0D / t2 инт / Архив интервалов (на	20.11.2018 14 -15	23,21387
UE / 32 ОИТА / ООЪЕДИНЕНИЕ 32 ОИТ	20.11.2018 15 -16	23,28605
10 / arhTime / Архив сообнии поль	1	
< >		Прочитать
Текущий уровень доступа: Пользовате	эль	

Figure 17 View of the 'Hourly archive' insert

The same as in the 'Data viewing' function, the Service Engineer may change the 'short' task name in the controller.

The popup menu options:

- Reading data for a period
- Printing out
- Clearing the archive
- Displaying data for the entire period
- Displaying data for a specified period The last two points are intended for viewing data from the disk, both for the values saved on the flash disk and for the archived values read in the mode 'Information automatic saving and recovery'. The extensions of files with the archive values are given in clause 3.11.1 Viewing the archives saved on the flash disk.

In the additional settings mode of the Teleport application, some options for forming the archive inquiry start and end dates are set.

For reading the monthly archives, the month and year of the initial and final intervals are specified. The month is selected from the list; the year is selected by the buttons  $\blacklozenge$ 



Figure 18 Month selection for a monthly report preparation

For the remaining archives, the reference point date is set; this date may be selected in the following way:

- If the required date belongs to the opened month, the date is selected by clicking the required number,
- To change the month is possible by using the buttons < or > or by selecting a month from the list by clicking the current month name.
- To change the year is possible by clicking on the 'year' opens access to the year value editing window.



Figure 19 Month selection for hour and daily report preparation

It is possible to change the reporting period beginning and end hour for the hour archives using the buttons  $\clubsuit$ , for the half-hour or interval archives, the hour and minutes should be edited manually and separately by replacing or scrolling with the button  $\clubsuit$ .

Отчетный период	
<u>Начало периода:</u>	Время:
10 декабря 2006 💌	17: <mark>30 🛨</mark>
<u>Окончание периода:</u>	=
11 neva6ng 2006 💌	17:30

Figure 20 Selection of hour and minutes for half-hour and interval report preparation

#### **3.11.1 VIEWING THE ARCHIVES SAVED ON THE FLASH DISK**

Using the RI-97 recorder, it is possible to read and save archive data on the flash disk. The task of collecting data on the computer from the flash disk is implemented in the dispatch complex 'ISKRa'. The Teleport application provides a possibility of viewing this data.

For each device, a directory is created on the flash disk, with its name being the serial number of a device storing the read archive data. The file names consist of the serial and identification numbers, separated by the 'underscore'. The file extension depends on the archive type: **hns** for the hourly archives

sns for the daily archives

**mns** for the monthly archives

ins for the interval archives

pns for the 30-minute archives

When first reading data from the device, using the RI-97 recorder, the identification number of files equals to 0000, and the data is read from the controller in full.

When subsequent readings, the identification number is increased, and data in the file are 'read out', starting from the previous reading date.

For data viewing, load the corresponding task queue from the disk (see cl. 3.5 'Loading the system from the disk'), go to the 'Autonomous operation' mode (from the main menu 'Ex-

change'->'Transfer to the autonomous operation mode' or by clicking the button in the toolbar. Transferring to the autonomous operation mode is desirable in order to prevent the application from reading the current time from a disconnected controller.

Next choose the required archive from the controller task list. After right clicking the task 'tree' area, the 'popup' menu appears. Select the menu option 'Reading the archive data from the flash disk'.

If the flash disk is connected, the standard file search window is displayed. The file with the archive data is selected from the required directory, and then, the data from the file is placed into the archive table. If it is required to choose data for a specific period, then perform the following actions:

- 1. Specify the beginning and end of the reporting period
- 2. Call the 'popup' menu by right clicking the archive table areas
- 3. Select the menu option 'Display the data from the disk for a specified period'
- 4. Confirm the file selection

#### 3.12 VIEWING THE EVENT ARCHIVE AND THE INTERVENTION LOG

The event archives are viewed in the form of tables. It is possible to view both the entire archive and a specified amount of recent events. When viewing the system event log, the event parameters, type and code, together with the event decoding (if the file event.ini is available) are displayed in the table hexadecimal form. The text event decoding is absent in the user's event log; only a bitwise event representation is displayed. If during the automatic data reading from the module, there is an instruction to read and save the contents of the event archives on the disk, then the saved data may be viewed from this mode (by clicking the button 'From the disk' or from the popup menu option 'Display the data from the disk'). The files are saved on the disk with the extensions

.sas for the system event log and intervention archive

.uas for the user's event archives

For viewing convenience, either all events or a specified number of last events may be selected.

🗳 Телепорт -20 v 2.81		x
Настройки Система Модуль Уровень дос	ступа Обмен Выход	
🎼 📼 🔍   🛩 🗛   🖬   🐛   🤤	<u>Bud cbs/su .kortpointep Enemet k-104 (hopt CAN) / IP-adpec</u> <u>192.168.0.56</u>	Ð
⊡ — Система ф 00 / 2602	Модуль Журнал событий Справка	
⊡ Q 00 / Зоо2 ⊡ Q 01 / Тэкон для тестирования Темпера	дата события 0901 Вид события 0903	
🦉 work_0 / Рабочий стол 1	Время события 0902 Код события 0904 Глубина архива 256	
сист Т19 / Система ТЭКОН-19	Все события Прочитать 10 последних событый Прочитать	
Расші тэм / Расширение системы т общнастр / Общие настройки для р		
— 🏽 Журн соб / Журнал событий ТЭКО	0 08.11.18 12:26:51 01 01 03 00 00 включение питания	
🍈 🍈 Анал 05 / Измерения аналоговые Т	1 08.11.18 11:47:44 01 00 00 00 0 отключение питания	
🍈 💾 Имп 05 / Измерения импульсные Т	2 08.11.18 11:47:31 01 01 03 00 00 включение питания	
	3 08.11.18 11:45:59 01 00 00 00 отключение питания	
00 / t 1 / Расчет температуры с	4 10.10.18 13:21:35 04 F0 25 00 00 через CAN-BUS записан параметр F	0 25
01/t1 огр /Ограничение параметр	5 10.10.18 12:26:05 04 F0 25 00 00 через CAN-BUS записан параметр F	0 25
02/t1 уср / Усреднение параметр	6 09.10.18 04:04:06 01 01 03 00 00 включение питания	
03/f1 4ac / Архив 4acob (на 32 ка	7 09.10.18 04:04:04 01 00 00 00 0 отключение питания	
04/11 Cyr / Apxills Cyrok (Ha 1104	8 28.08.18 08:43:16 01 01 03 00 00 включение питания	
	9 28.08.18 08:42:26 01 00 00 00 отключение питания	
08/12 ого / Ограничение параметг		
09 / t2 vcp / Усреднение параметр		
0A / t2 час / Архив часов (на 32 ка		
0B / t2 сут / Архив суток (на 1 год		
0C / t2 мес / Архив месяцев (на 1)		
0D / t2 инт / Архив интервалов (на		
ОЕ / 32 бита / Объединение 32 бит		
10 / arhTime / Архив интервалов (н		
	III	- F
•		
Текущий уровень доступа: Пользовате	ель	ſ

Figure 21 View of the 'System event log' insert

In the Tekon-19, the intervention log is implemented showing the modified parameters: the date and time of intervention, the old and new parameter value.

Настройки Система Модуль Уровень дос	тупа С	Обмен Выхо	А				
🖹 📼 🔍 😅 🛤  🖬 🐇	5	<u>Bi</u> 19	<u>ид связи :Ко</u> 2.168.0.56	онтро	плер Eherne	<u>et K-104 (порт САМ</u>	<u>I) / IP-адрес</u> (КРЕЙ
□- <sup>C</sup> → Система	Модул	њ Журнал в	мешательств	3 Спр	авка		
⊕ ♥ 00 / 3602 Ё ● 01 / Тэкон для тестирования Темпера	Да	ата вмешат.	0906 E	Вид вме	еш. 0908	Старое знач. 090А	курнала 0905
- 🦉 work_0 / Рабочий стол 1	Bpe	мя вмешат. 🛛	0907 № п	арам/и	инд 0909	Новое знач., 090Е	архива 1024
Сист Т19 / Система ТЭКОН-19 РасшТ19М / Расширение системы Т	⊟ Во	се события	Прочитать	5	последних со	обытый	Прочитать
общнастр / Общие настройки для р В Журн соб / Журнал событий ТЭКО	Nº	Дата	Время	Код	№ парам / индекс	Старое	Новое
📲 Анал 05 / Измерения аналоговые Т	0	10 10 18	13:21:35	04	E025	FF FF FF FF	FF FF FF FF
	1	10 10 18	12:26:05	04	F025	FF FF FF FF	FF FF FF FF
— 📑 ЖурнВмеш / Журнал вмешательс	2	28 08 18	08:40:18	24	8005	10 00000	0
	3	28.08.18	08:39:49	24	8002	80,00000	70.00000
🛄 01/t1 огр /Ограничение параметр	4	28.08.18	08:33:12	24	F01A	81	00
	<u> </u>						
03 / t1 час / Архив часов (на 32 ка							
04/t1 сут /Архив суток (на 1 год)		Вывест	и на печать				
05/11 мес / Архив месяцев (на 12		Перела		vcel			
07/12 / Расиет температиры с	L	переда	го доппыс в С	ACCI .			
09/12 vcp / Усреднение параметр							
in our correction and among the second secon							

Figure 22 View of the 'Intervention log' insert

The event logs may be printed or exported to Excel for analysis. The specified options are called from the popup menu.

The User's event archive is either displayed in codes or read from the controller.

-Чемера порематрар арушра, собщий по	
Время 803В Текущий маркер 803	события Состояние Состояние Состояние Записать Записать
Дата 803А Глубина архива 256	803С Прочитать
Название параметра	№ пар Значение
Проверяемый параметр	8032 00 00 00 00
Текущее состояние событий	8036 00 00 00 00
Телесигнализация общая	8037 0
Телесигнализация по маске	8038 0
Текущий маркер записи	8039 220
Все события	Записать Прочитать Расшиф
No Дата Время Событие	Событие 🔺
Hex)	(побитовое представление)
0 08.11.18 12:26:56 00 00 00	0000 0000 0000 0000 0000 0000 0000 0000
1 08.11.18 12:26:55 01 00 00 00	0000 0001 0000 0000 0000 0000 0000 0000
2 08.11.18 11:47:36 50 01 00 00	0101 0000 0000 0001 0000 0000 0000 0000
3 08.11.18 Вывести на печать	000 0000 0000
4 08.11.18	000 0000 0000
5 08.11.18 Передать данные в	cel 00 0000 0000
6 08.11.18 Расшифровать архи	событий пользователя 00 0000 0000
7 08.11.18 11:45:53 20 04 00 00	0000 0000 0000 0000 0000 0000 0000 0000
8 09.10.18 04:04:11 00 00 00 00	0000 0000 0000 0000 0000 0000 0000 0000
9 09.10.18 04:04:10 01 00 00 00	0000 0001 0000 0000 0000 0000 0000 0000
10 28.08.18 08:43:21 00 00 00 00	• • • • • • • • • • • • • • • • • • • •

#### Figure 23 View of the 'The User's event archive' insert

However, data of the user's events may also be viewed in the form of parameters, by calling the mode from the popup menu 'Decode the event archive.'

азначение параметров архива событий		Дата	Название	Значение
— 050E / Общ отк / сист T19	÷	02.07.18		
— 0501 / АлгОтказ / общнастр	+	03.07.18		
	+	11.07.18		
800A/ < Xmin / t1 orp	+	21.08.18		
800B/>Xmax/t1 orp	÷	27.08.18		
№ 801С / Обрыв / t2	÷	28.08.18		
8022 / < Xmin / t2 orp	÷	09.10.18		
8023 / > Xmax / t2 orp	÷	08.11.18		
	÷	02.07.18		
	÷	03.07.18		
	÷	11.07.18		
	+	21.08.18		
	÷	27.08.18		
	Ξ	28.08.18		
		08:10:11	8004 / Обрыв / t 1	1
		08:10:11	801С / Обрыв / t2	1
		08:43:20	8004 / Обрыв / t 1	0
		08:43:20	801С / Обрыв / t2	0
	÷	09.10.18		
	Ξ	08.11.18		
		11:45:53	8004 / Обрыв / t 1	0
		11:45:53	801С / Обрыв / t2	0
		11:45:54	8004 / Обрыв / t 1	1
		11:45:56	801С / Обрыв / t2	1
юсоб сортировки данных		11:45:58	801С / Обрыв / t2	0
По дате С По параметру		11:47:35	801С / Обрыв / t2	1
		12:26:55	8004 / Обрыв / t 1	0
		12:26:55	801C / Обрыв / t2	0

Figure 24 Decoding the user's event archive

#### **3.13** INDICATION MENU EDITOR

For setting the indication menu (user's or archived), the 'Indication menu editor' mode is designed. This mode is available only to the Service Engineer.

This mode is called from the main menu 'Module'->'Editing user's (archived) menu' or by selection of the corresponding task in the Module and task tree.

The menu may be read from the controller, read from the file, or a new menu may be created. If the **project** has been loaded from the disk (see subsection 3.5 'Loading system from a disk') and the menu descriptors file is included into the **project**, the menu is automatically read from the file.

The menu is given in the form of table, the table dimension is specified in the file of additional settings dop.ini. It is not recommended to change the number of columns and rows, because this value is constant in the controller.

The top row indicates the module name, network number and type. The 'Parameter numbers' field is given for reference, it contains the parameter numbers, the number of elements in the menu, the row length.

The option 'Color marking' is intended to mark those parameters, the numbers of which are missing in the list of module parameters. If the marker is not set, the missing parameters are not shown in the table and the numbers of the non-existing parameters are replaced with FFFF when the menu is recorded into the controller.

The 'Menu' table cells contain the names to be output to device indicator. The parameter number and decimal places may be viewed by selecting the desired item in the table and clicking

it. The standard parameter names may be saved in the file menu.ini and may be used when setting the menu of other devices.

👛 Per	актор меню инди	кации								X
(Daŭ a	Kournonnen //									
Фаил	контроллер д	ополнительно е	ыход		0					
	ооллер Тэкондля еню льзовательское эхивное килическое эзначение цветом:	я тестирования Т Размерность Строк С 20 Г Двумерный	емпература и инд Столбцов 10 і массив	архив Номера парамет Индицируемый параметр Число знаков после запятой	Сетево ров 0700 Символ имени 0701 Количео	ой № 01 Тиг строки 0702 тво элементов в м	подуля 0725/ТЗ Длина 12 строки 200	КОН-19 исполн 05	σM	
		· · · · · · · · · · · · · · · · · · ·								
	Меню:			Польз	овательское 20	) x 10				<u>^</u>
<u> </u>	0	1	2	3	4	5	6	7	8	
1	ti rpag	t2 rpag								
<u></u>	ti пред инт	t2 пред инт								
3	t1 men ovr	t2 men ovr								
4	t1 пред мес	t2 пред орг								
5	Rt1 OM	Rt2 OM								
6										
7	Ro OM	Ro.OM								
8	W100	W100								E
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
1						1	1			
№ па  8009 стро t1 ог	араметра Групп 9 Групр 9	а Индицируем	ный текст	индицируемых зн 00000000.00	наков Контролл Меню Прочит	іер ать  Записать	Текущ. значени	я		

Figure 25 Menu editor

Entering a new or modifying the existing element of the indication menu should be carried out in the following way:

- Parameter number may be entered manually;
- Selecting from the offered list by clicking the button |...|.

When entering a new menu element, first the task is selected from the list, followed by the parameter and the button 'OK' or double clicking the selected parameter. If the required number has not been found in the parameter list, then it is required to install the respective filters (all parameters or only output parameters, number formats, parameter access level), and to select the parameter.

If the parameter number was entered manually and the number of such parameter is missing in the **task queue**, a message is output. When entering a new parameter, a 'short' parameter name is placed into the field 'indiced text'. It is possible to change the text by entering a new name or choosing a name from the drop-down list. For convenience of selecting a name from the list, **groups** are formed (e.g., names of temperatures are combined into a group T, expenses into a group G, etc.). The names for the menu are stored in the file menu.ini. For parameters, having a floating-point format, it is required to specify decimal places in the displayed value.

A new or changed value is placed into the table by clicking the button  $\checkmark$  or when going to the other element of the menu. The button  $\checkmark$  is intended to cancel the changes. 'Clear' the selected element – , save the name in the file menu.ini – . Teleport

🍓 Выбо	ор параметра					
🔽 Пок	🔽 Показать фильтры выбора параметров					
Задач	Задача t1 огр / Ограничение параметра X 🔹					
Пользо	рвательское меню					
Выбра С все С тол	ть из задач Формат чисел параметры ✓ число с плавающей запятой ✓ Битовые параметры ько входные ✓ Шестнадцатеричное и десятичное представление	Уровень доступа <ul> <li>Наладчик</li> <li>Пользователь</li> </ul>				
№ пар	Название параметра					
8003	Входной параметр					
8005	Xmin					
8006	Xmax					
8007	Замена при X < Xmin					
8008	Замена при Х > Хтах					
8000	Ограниченный параметр хогр					
800R						
	Выход за лиах					
Выбра	ть					

#### Figure 26 Parameter selection from the list

If the group name is not specified, the parameter is placed into the group 'NAME\_'. It is possible to correct the file of indication names menu.ini with the text editor. The group names are taken into square brackets, followed by the numbered parameter names. The sequence numbers should not be repeated.

It is possible to read or record the menu into the controller by pressing the button from the main menu (**Controllers**-> Read/Record). In some cases it may be required to view the current parameter values output to the menu. The button 'Current values' is intended for this; to exit the mode of viewing the current values and to enter the edit mode, it is sufficient to click this button once again.

#### Teleport

📫 Редактор меню индикации								
Файл	Файл Контроллер Лополнительно Выход							
Kour								
КОНТ	контроллер Тэкон для тестирования температура и инд архив Сетевои № 01 Тип модуля 0725713кОн							
	ICHIO	Размерность-		Номера параме	гров			
Č A	рхивное	Строк С	столоцов	индицируемыи	0700 Символ	строки 0702	длина 12	
04	иклическое	20	10	параметр	имени	I	строки	
06	означение цветом	и: 🔽 Двумерный	і массив	число знаков после запятой	0701 Количес	тво элементов в м	еню 200	
	Merro :	1		Польз	ROBATETLCKOP 20	) v 10		
	0	1	2	3	4	5	6	<u> </u>
0	t1 град	t2 град						
	23,33	25,06						
1	t1 пред инт	t2 пред инт						
	23,33	23,33						-
2	t1 пред час	t2 пред час						=
	23,31	23,31						
3	t1 пред сут	t2 пред сут						
	22,43	22,43						
4	t1 пред мес	t2 пред мес						
	22,12	22,12						
5	Rt1 OM	Rt2 Out						
	109,23	109,91						
6								
7	Ro Om	Ro.OM						
<u> </u>	100,00	100,00						
	W100	W100						
	1,39	1,39						
9								
10								Ŧ
1	1	1		I			1 E	
								_
						Контроллер		
					Меню			
					Прочит	ать Записать	Текущ. значения	я
1					<u> </u>			

**Figure 27 Viewing the current parameter values** 

Saving on the disk, reading from the disk, importing/exporting from/to Excel, creating a new menu are options of the main menu **File**.

The popup menu options:

- Cut
- Copy
- Paste
- Print menu.

#### 3.14 RECORDING INTO THE MODULE

The function 'Recording into the controller' is available to the Service Engineer. Before recording, it is required to specify options for recording:

- The task queue it is possible to load the current queue, to choose another queue from the disk or to delete the task queue in the module (loading the 'empty' task queue).
- The indication menu it is possible to clear or load from files if <u>they are included into</u> <u>the **project** composition</u>.

When loading an 'empty queue' or in case of absence of menu descriptors in the project, only one option is available – to clear the menu.

'Clear archive data' is a function required during the commissioning period. As a rule, when a task queue is loaded, the device memory space allocated for the archives is filled with random numbers, so it is recommended to clear the archives before putting the device into operation. The options 'Short task names' and 'Task identifier' are separated from the others: when recording the task queue into the controller, these options are always performed, but it may be required to change the short names without affecting the task queue, or to rewrite the task identifier.

After clicking the 'Execute' button, recording confirmation is requested. The button 'Viewing' is intended for viewing the task queue internal structure and can be useful to specialists for analysis.

🤹 Телепорт -20 v 2.81	
Настройки Система Модуль Уровень до	ступа Обмен Выход
🏗 📼 🔍 😂 👫 🖬 🕷	Вид связи :Контроллер Ehernet K-104 (порт CAN) / IP-адрес 192.168.0.56
O1 / Тэкон для тестирования Темп work_0 / Рабочий стол 1 work_1 / Рабочий стол 2 cuct T19 / Система ТЭКОН-19 РасшТ19М / Расширение систем общнастр / Общие настройки дл тест / Тестовые режимы ТЭКОІ Журн соб / Журнал событий ТС Анал 05 / Измерения аналоговь Имп 05 / Измерения импульснь Осн меню / Индикация ТЭКОН-1 Меню арх / Индикация ТЭКОН-1 ЦиклМеню / Индикация ТЭКОН- Св калиб / Сведения по калибро	Модуль Запись в контроллер         Тэкон для тестирования Температура и инд архив         Очередь задач         © Текущая         © Текущая         © Выбрать с диска         © Удалить очередь в контроллере         № 03 / t1 час / 8015         № 04 / t1 сут / 8016         № 04 / t1 сут / 8016         № 05 / t1 мес / 8022         № 05 / t1 мес / 8017         № 05 / t1 мес / 8027         № 05 / t1 мес / 8027         № 06 / t1 мнт / 8032         № 06 / t1 мнт / 8035         № 00 / t2 инт / 8035         № 00 / t2 инт / 8035
₩урнВмеш / Журнал вмешатег     00 / t1 / Расчет температурь     01 / t1 огр / Ограничение парам     02 / t1 уср / Усреднение парам     03 / t1 час / Архив часов (на 3;     04 / t1 сут / Архив суток (на 1)     05 / t1 мес / Архив месяцев (н     06 / t1 мес / Архив месяцев (н	Короткие имена задач
UG /11 инт / Архив интервалов     07 /12 / Расчет температурь     08 /12 огр / Ограничение парам     09 /12 уср / Усреднение парам     04 /12 час / Архив часов (на 3     06 /12 сут / Архив суток (на 1     06 /12 инт / Архив интервалов     06 /12 инт / Архив интервалов     06 /12 инт / Архив интервалов     06 /12 инт / Объединение 32 €	Не загружены файлы,содержащие описание меню. Для загрузки меню, воспользуйтесь ре: 🔺
Текущий уровень доступа: Наладчик	

Figure 28 – Parameter selection from the list

#### **3.15 SAVING THE PROJECT ON THE DISK**

The function 'Save the project on the disk' allows to save the following project information in the separate directory:

- Task queue
- Project description
- Menu descriptors
- Desktop description

Desktop parameter values

Since the menu descriptors and the parameter values are read from the controller, these options may be performed only when connection with the controller is established. The project and directory names should be entered or selected from the offered list.



Figure 29 Saving the project on the disk

#### 3.16 PROGRAMMING CARD

Constructing the controller programming card is available for any User's level of the Teleport application.

The programming card may be printed or saved on the disk as a text file. After calling the function 'Programming card', a list of the parameters included into the programming card is filled in, reading the parameter values from the controller is performed by clicking the button  $\neq$ , while reading the parameter, the figure on the button changes to  $\neq$ . Reading may be interrupted by repeated clicking this button.

Saving the programming card on the disk – the button  $\blacksquare$ , printing –

<b>В</b>   ⊽ н	🗃 훋 로 🛤 🕙				à
Иден	Заводской номер прибора гификационный номер оч.задач				
	Название параметра	Nº nap	Инд.	Значение	
	Алгоритм № 0240 Система ТЭКОН-19	Задача :си	ст Т19		
1	Заводской номер	F001		0005	
2	Сет номер CAN-BUS	0000		02	
3	Рез разряды номера CAN-BUS	0002		00	
4	Маска номера CAN-BUS	0001		FF	
5	Рез разряды маски CAN-BUS	0003		00	
6	Конфигурация и скорость CAN-BUS	0004		41E0	
7	Сетевой номер RS-232	0005		01	
8	Описатель интерфейса RS-232	0006		08	1
9	Константа частоты RS-232	0007		FDOO	
10	Идентификатор задач	F028	0	45 FF AB 9B	
11	Тип модуля	F000		0705	
12	Версия программы	F002		27	
13	Версия алгоритма расчета	F024		01	
14	Код пользователя	F01C		02	
15	Режим работы	F01A		00	
16	Дата НН ЧЧ ММ ГГ	F017		23.01.07	
17	Время сс мм чч	F018		16:21:05	
18	Длительность последнего цикла, секунд	F01F		1,0000	
19	Длительность последнего цикла, часов	F01E		0,00028	
20	Текущее время внутри 30 минут, секунд	050F		1265,00	
21	Текущее время внутри интервала, секунд	0510		65,0000	
	1.				1

#### Figure 30 Programming card

In order to exclude some parameters (e.g., 'backing arrays' included into the task composition), from the programming card, the function 'Setting the content of programming cards' is provided.

🖞 Формирование карты программирования 📃 🗖 🔀						
<u>Список алгоритмов модуля 0706 / ТЭКОН-19 исполн 06</u>						
0218 / Расчет расх природ газа чи 021C / Расчет расхода произвол чі 021D / Расчет электрознергии чисі 021E / Расчет электрознергии чисі 021E / Расчет электрознергии чисі 021E / Расчет электрознергии чисі	Алгоритм <u>0224 / Усреднение параметра на отрезках вр</u> Отмеченные параметры алгоритма будут вкл в карту программирования	<u>емени</u> Іючены				
0220 / Количество тепла в трубе (о	Название параметра в описателе алгоритма	№ валг.				
0221 / Тепло в закрытой водяной (	🔽 Усредняемый параметр (мгновенное значение)	0				
0222 / Тепло в открытой водяной с	🔲 Вспомогательный внутренний параметр	5				
02237 Накопление расхода на отр 0224 / Усреднение параметра на с	🔽 Среднее за текущий интервал	13				
0225 / Архив месяцев (на 12 месяц	🔽 Среднее за предыдущий интервал	14				
0226 / Архив суток (на 1 год)	🔽 Среднее за текущий час	15				
0227 / Архив часов (на то календа) = 0228 / Архив часов (на 32 календа)	Среднее за предыдущий час	16				
0229 / Архив часов (на 64 календа)	Среднее за текущие сутки	17				
0230 / Архив интервалов (на 1440 :	🔽 Среднее за предыдущие сутки	18				
02317 Индикация ТЭКОН-Т9 (осно 02327 Индикация ТЭКОН-19 (мені	🔽 Среднее за текущий месяц	19				
0233 / Архив 30-минуток на 16 суто	🔽 Среднее за предыдущий месяц	20				
0234 / Архив 30-минуток на 96 суто 0235 / Архив месяцев (на 48 месяц 023F / Журнал событий ТЭКОН-19 0240 / Система ТЭКОН-19 Поиск алгоритма по номеру						
Поиск	✓ ×	Сохранить				

Figure 31 Exclusion of parameters from the programming card

For each module type, a list of the **algorithms**, implemented in this module type, is issued, and for a selected **algorithm**, a list of parameters with numbers inside the algorithm (for more details, see the Instructions for Use of the device) is issued. An algorithm is selected from the list or after entering the number and clicking the 'Search' button. The parameters included into the programming card are marked with a 'check' symbol.

The list of excluded numbers is stored in the file karta\_dop.ini in the Karta section.

If required, a title page may be added to the programming card. The title page is a text file which may include some characters. An example of the title page is given in the file karta.txt. To include the values of some parameters into the programming card, special links in the file text are used:

@Z - printing the module serial number

*ⓐ*I - printing the task queue identification number

@M - printing the module type

 $@D \$  - printing the date of constructing the programming card in the format DD/MM/YY

 $@DT \$  - printing the date and time in the format DD/MM/YY hh:mm

# **3.17 AUTOMATIC SAVING AND RECOVERY OF INFORMATION INTO THE MODULE**

For the Service Engineer's access level in the Teleport application, starting from the version 2.27, the option of automatically saving all values of parameters and archives on the disk is now available. The saved values may be viewed and recorded back into the module, both in the automatic recovery mode, and for each task separately, in the mode 'Task data viewing' or 'Viewing the numeric archives'.

This mode is called from the main menu 'Module'-> 'Automatic saving and recovery of information into the module' or from the 'popup' menu in the list of loaded tasks.

Main menu of the 'Automatic saving...' mode contains the following clauses:

- Exchange with the module Reading data from the module Data recording into the module
- Data viewing Parameters Archives

The menu option 'Exchange with the module' is invisible when assigning the 'Autonomous operation' mode in the Teleport application main menu. The menu option 'Exchange with the module' is unavailable if no exchange with the selected module has been performed. In this case, it is required to check connection of the module to do this, specify the parameter access password on the insert 'Common settings' at the Service Engineer access level, if required, and check the button 'Settings reading'. If connection with the module is established, the menu option 'Exchange with the module' becomes available.

Before reading data from the module, specify the path to the directory in which the data to be saved (the default location is a directory specified in the 'Database path' mode), the name of a subdirectory in the main directory (enter manually if required, choose from the list or refuse – the option 'no'), and specify the name under which the system data to be saved on the disk (enter manually or select from the list).

The file and subdirectory names are offered in the form of module serial number or module type\_ serial number.

After specifying or checking the path to save data, it is required to specify the data which to be saved on the disk: task queue, parameter values, menu, numeric and event archives. If the archives in the specified task queue are absent, this option is unavailable.

The button  $\checkmark$  is intended for setting the mark for all available options, and the button  $\times$  removes the mark from all the options marked earlier.

🗳 Автоматическое сохранение и восстановление данных	
Обмен с модулем Просмотр данных Выход	
Заводской № модуля <b>1364</b> Версия ПО <mark>А4</mark> Н	омер модуля 0725
Путь к каталогу настроек D:\MailBox\AE\BD\User\0725_0000\Тэкон	для тестирования. Температура и инд архив Time 😑
Название файла на диске ирования Температура и инд архив 💌	название подкаталога 0725_1364 🗾 🖃
Общие настройки Чтение из модуля Фильтры для автоматической	записи
Прочитать из модуля и сохранить на диске	
<ul> <li>Очередь задач</li> <li>Сохранить текущую очередь</li> <li>Прочитать из модуля</li> <li>Значения параметров</li> <li>Суточные архивы</li> <li>Меню индикации</li> <li>Месячные архивы</li> <li>Системный журнал событий</li> <li>Интервальные архивы</li> <li>Архивы событий пользователя</li> <li>Получасовые архивы</li> <li>Часовые архивы</li> </ul>	Прервать
Суточные архивы сохранены в файле D:\MailBox\AE\BD\User\0725_000	)0\Тэкон для тестирования Температура и инд архив Time\0725_1364\Тэкон для те 🦷
Месячные архивы чтение данных из модуля Месячные архивы сохранены в файле D:\MailBox\AE\BD\User\0725 00	00\Тэкон для тестирования Температура и инд архив Time\0725 1364\Тэкон для те
Интервальные архивы чтение данных из модуля	

#### Figure 32 Data reading from the module

Data reading and recording is accompanied by messages when the procedure being performed, and the exchange protocol is forcibly created on the disk. When reading data from the module in the 'Parameter values' mode, all the 'rigid' and 'flexible' task parameters, available for reading, are read and saved on the disk, and when recording into the 'flexible' tasks, all parameters available for the Service Engineer level are restored, while for the 'rigid' tasks, it is required to form a list of the resettable parameters on the insert 'Filters for automatic recording'.

🖞 Автоматическое сохранение и восстановление данных							
Обмен с модулем Просмотр данных Выход							
Заводской № модуля <b>1364</b> Версия ПО А4 Номер модуля <b>0725</b>							
Путь к каталогу настроек D:\MailBox\AE\BD\User\0725_0000\Тэкон для тестирования Температура и инд архив Time 😑							
Название файла на диске Тэкон для тестирования Температу 💌	🛛 название по	дкаталога 0725_1364 💽 🚅					
Общие настройки Чтение из модуля Фильтры для автоматически Список параметров, включаемых при ав	Общие настройки Чтение из модуля Фильтры для автоматической записи Список параметров, включаемых при автоматическом восстановлении данных в "жестких" задачах						
№ Название параметра	№ пар	Исключены параметры при чтении из мод.					
1 Сетевой номер RS-232	0005	F003 Программное обеспечение					
2 Описатель интерфеиса RS-232	0006	F004 Очередь задач Б005 Начала тайм залач Б12 Ги					
3 Константа частоты RS-232	0007	F005 Начало тайм задач 5121 ц F006 Начало тайм залач 64 Гц					
4 Пароль уровня 2 Наладчик	F025	F007 Начало тайм задач 8 Гц 🗉					
5 Температура холодного источника, градусов С	0300	F008 Начало тайм задач 1 Гц					
	0306	F009 Начало задач по запросу					
7 Алмосферное давление, мм рг ст	E020	F00A Таблица параметров задач					
9 Расцетный цас	F023	FOOD Таблица описания поких параметров FOOC Ллина области очерели задач					
10 Расчетный день	F022	F00D Длина таблицы параметров задач					
11 Запрет\разрешение петнего времени (0\1)	0303	F00E Длина описания гибких параметров					
		F00F ІДлина гибких парам в РПД (байт) 🚽					
		Добавить в список Удалить Сохранить					

Figure 33 Assignment or the 'rigid' task parameters for recovery

To add or remove a parameter from the list, use the button with the same name, or the 'popup' menu in the parameter list is intended. For next use, the list of filters should be saved. The set filters are saved in the file wayTTP20.ini in the [Filters\_nn] section, where nn are the first two digits in the module number.

In the automatic information recovery mode, the archive parameter module and the menu have the option 'Clear'. It should be noted that not all modules (except the Tekon-19 and the Tekon-19B) support the archive clearing command. Before applying this command to other modules, it is required to make sure that it can be executed in the Operation Manual of the module.

Автоматическое сохранение и восстановление дан	нных					
Обмен с модулем Просмотр данных Выход						
Заводской № модуля <b>1364</b> Версия Г	ПО А4 Номер модуля 0725					
Путь к каталогу настроек D:\MailBox\AE\BD\User\0725_0000\Тэкон для тестирования. Температура и инд архив Time 🔲						
Название файла на диске Тэкон для тестирован	ия Температу т название подкаталога 0725_1364					
D:\MailBox\AF\BD\User\0725_0000\Takon_для тестик	рования Температура и инд архив Time/0725 1364/Гэкон для тестирования Температура и инд архии					
Общие настройки Запись в модуль Фильтры для	навтоматической записи					
	Прочитать с диска и записать в модуль					
Пастроики и параметры	Часовые архивы Саписать С Очистить Суточные архивы Суточные архивы Суточные архивы Суточные архивы Саписать С Очистить С Записать С Очистить					
Чтение заводского номера модуля	Х Запись в модуль Х В В					

#### Figure 34 Information recording into the module

The button  $\checkmark$  is intended for marking all available options, and the button  $\checkmark$  removes the mark from all the options marked earlier.

The buttons  $\square$  and  $\square$  are intended for setting the attribute Clear or Record into all marked archive types. When restoring data into the module, only the parameters available for recording at the Service Engineer level is recorded.

In the 'Data viewing' mode, it is possible to view the data read from the module and saved on the disk. When viewing the archived data, the archive type should be specified, and the required file and saved archive name should be selected. Data may be viewed both for the entire period and for a specified date range.

When viewing the non-archived parameter values, the file should be selected, and all data or the data to be recorded into the module, may be selected.