"Promobot" LLC

Promobot telepresence service

Manual

2019

Table of contents

1 General information

1.1 Terms and definitions

Telepresence - a remote robot control session.

Service – Promobot telepresence service.

Robot – Promobot robot used as part of telepresence.

Operator – a person who uses the telepresence service.

User – a person interacting with a robot.

Account – an account for authorization in the service, provided to the operator individually by Promobot Company.

Speech synthesis – the conversion of text into an audio recording, which contains a representation of the original text in the form of human speech, followed by its reproduction.

Interaction – the state of the robot, which starts at the beginning of communication with the user. The interaction starts when an audio signal is received on the robot's microphone, when a person is detected by a camera or sensors, or when the robot's screen is tapped.

The list of events that trigger the interaction may vary depending on the robot settings.

Emotion – an animated image on the robot's face screen (led screen on the robot's head), reflecting a certain emotion.

Motion mode – the state of operation of the algorithms of the robot's autonomous movement. At any given time, the robot is in one of the two modes:

- **Automatic (Auto)** – the mode of autonomous movement. In this mode, the robot is able to move independently.
- **Manual** – manual movement mode. In this mode, the robot moves only on command from the operator.

Control mode – the state that determines the level of control of the operator over the robot. As part of telepresence the robot is in one of the two modes:

- **Partial control** – a mode in which the operator controls the robot simultaneously with the robot interaction algorithms.
- **Full control** – the mode in which the robot's interaction algorithms are disabled, switching to the manual mode of movement occurs, and the robot thus acts only on the operator's command.

1.2 Purpose and capabilities of the service

This service is designed for remote monitoring and control of Promobot robots. The robot can be controlled in two modes: partial control and full control. In the partial control mode, the operator's actions will complement the robot's actions performed automatically. In the full control mode, all autonomous actions of the robot are disabled, except for speech recognition.

The service provides one or more operators with the ability to control one or more robots simultaneously. Only one operator can control one robot at a time, and one operator can control several robots at the same time. To control the robot, it is necessary to take control, blocking this opportunity for other operators. In this case, other operators will only be able to view the status of the robot, as well as the status of the robots, which are controlled in a fully automatic mode.

The service provides the operator with the following features:

(for all available robots)

- Tracking the status;
- Viewing the dialogues between the robot and users, as well as an operator commands;
- Viewing images from cameras and robot screen;

(for robots, which are controlled by the operator)

- Audio from the operator microphone to the speakers of the robot;
- Data transfer from the operator's webcam to the robot's screen;
- Pronunciation of phrases on behalf of the robot;
- Display of emotions on the face screen of the robot;
- The execution of movements;
- Issuing coupons, printing checks, taking and printing photos (if there is the appropriate equipment);
- Showing web pages on the screen;
- Movement of the robot around the area.

1.3 Requirements to the workplace of the operator

Stable operation of the service is possible under the following conditions:

- Broadband Internet connection with the minimum speed of 4 Mbps;
- Google Chrome browser version 76.0 or higher or Firefox version 68.0 or higher;
- Webcam (optional, required when broadcasting images from the operator);
- Microphone (optional, required when broadcasting audio from the operator, as well as for voice input).

1.4 Terms of use of the service and obligations of the operator

The service is provided solely for the purpose of remote control of the robot, as well as monitoring the status of robots. The service may not be used for the purpose of secret data collection,

including: recording video, audio or text information without prior permission. When using the service, it is necessary to take into account the legal restrictions of the country where the robot is located. Transfer of rights to use the service is not allowed.

Prior to using the service, the operator must be notified that when using the functions of moving the robot and movements, there is a risk of damaging the robot, as well as harm to the health of others and/or damage to property. The operator is responsible for the actions performed by the robot during control.

The operator must:

- Use the service only for its intended purpose;
- Consider the legal restrictions of the country where the robot is located;
- When using the telepresence service, be guided by the operating rules and requirements prescribed in the technical documentation;
- In case of an error in the service, stop using it and report the error to Promobot technical support;
- Promptly inform Promobot technical support about the loss of access to the operator's personal account.

2 Authorization screen

2.1 Login into the system

When you go to the page of the service, you will see the login screen.
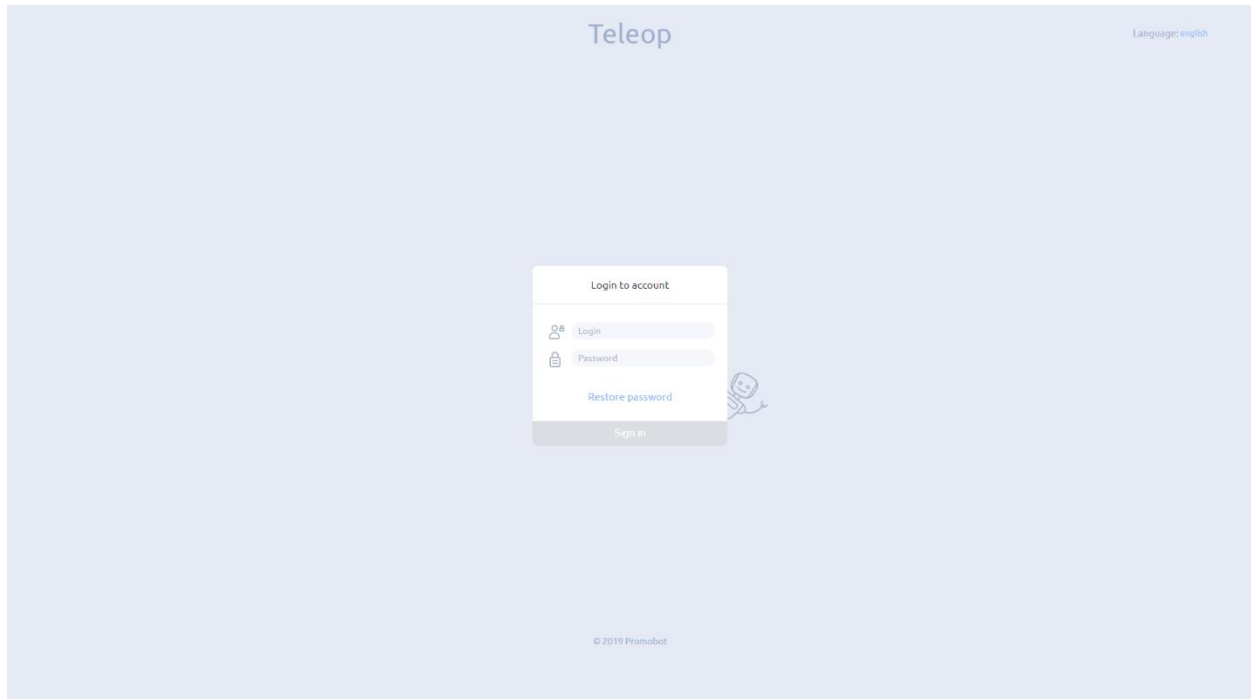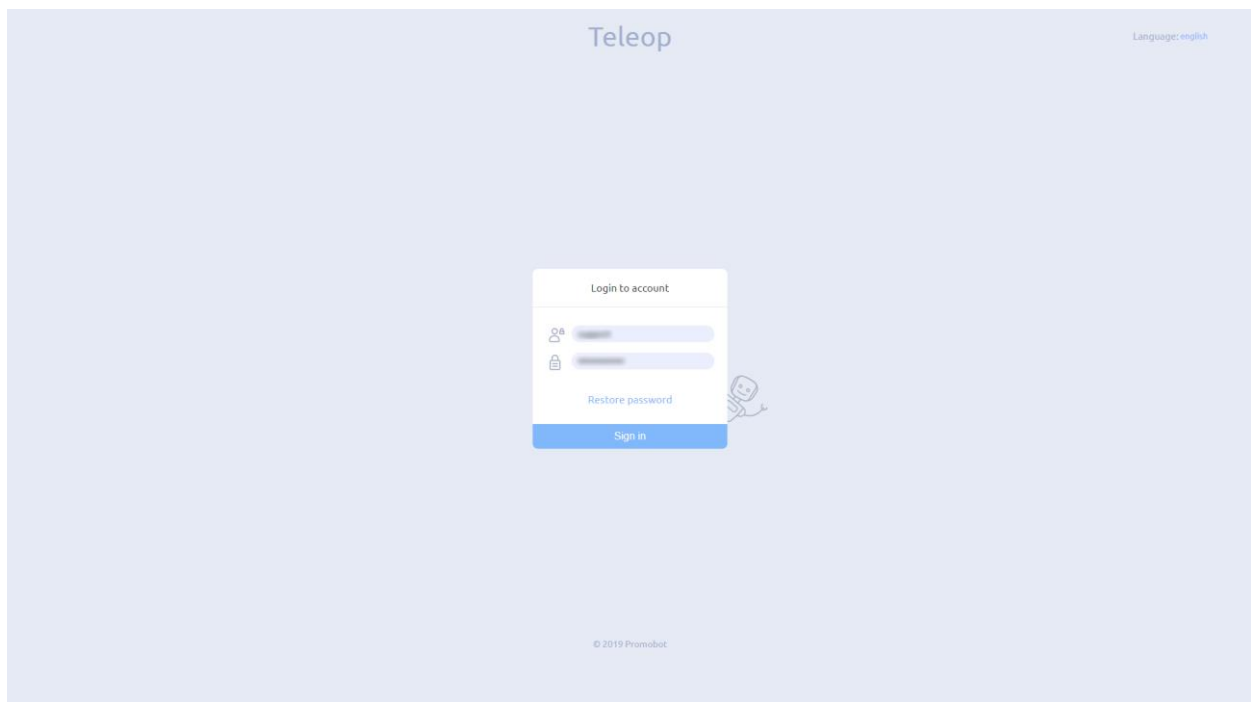

The login screen of the operator in the service

In the upper right corner of the screen, there is a menu for selecting the language of the interface. To change the language of the interface, click on the current language, and then select the preferable language from the drop-down list.
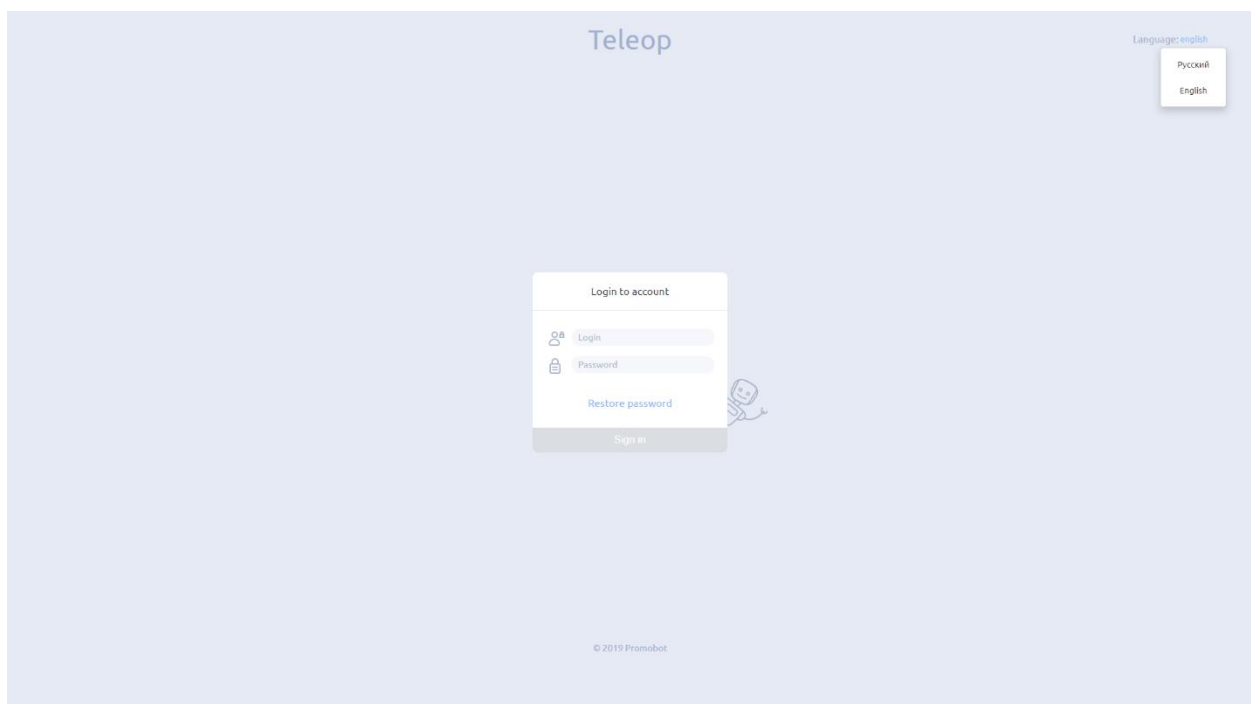

List of available interface languages

To log in, you need to enter your username and password in the appropriate fields, and then, to confirm the action by clicking the "Login" button.

The "Login" button will only become active after entering the login data

If the username and password are entered correctly, the main screen of the service will open (described in section 3).
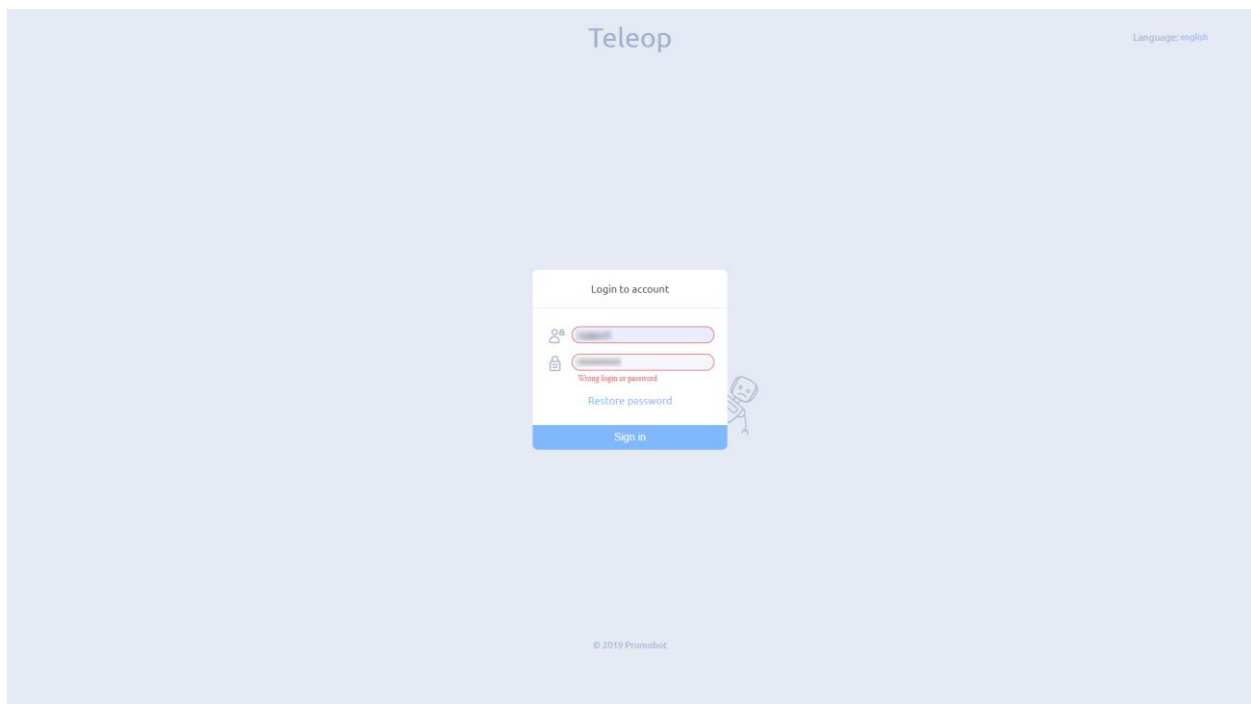
If you enter the wrong combination of username and password, the input fields will be highlighted with a red border, under the input fields will appear a notification.
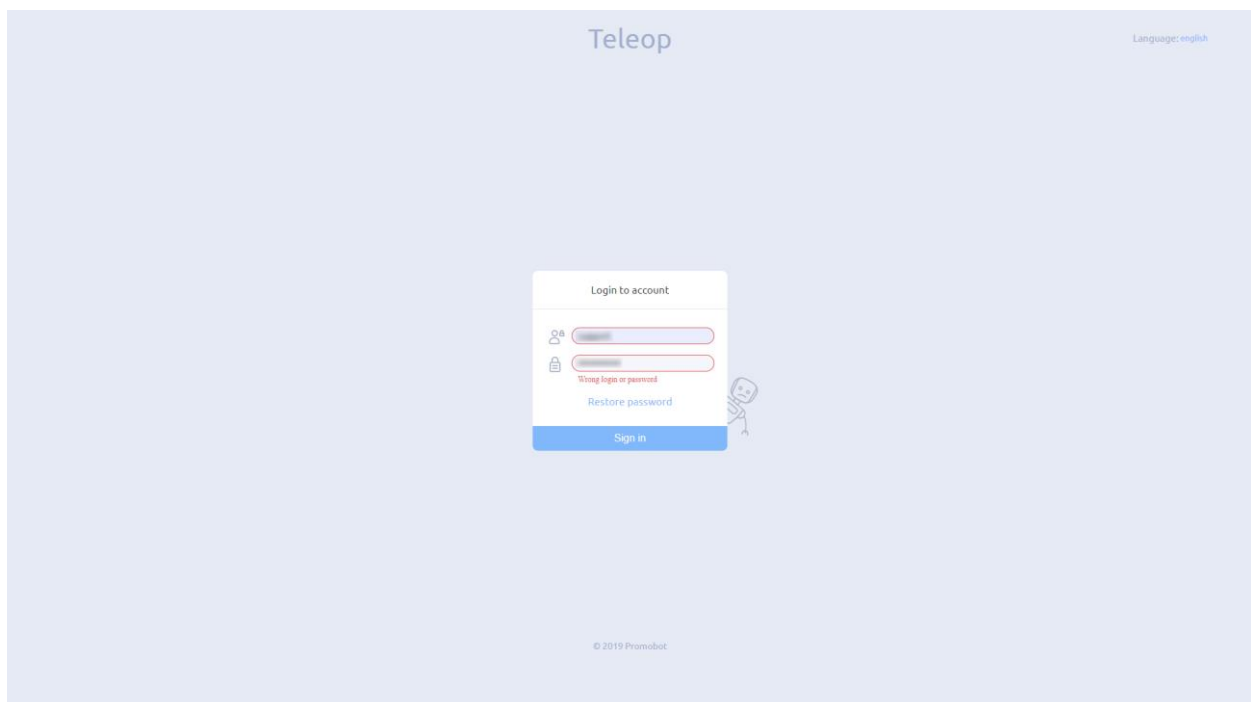

Notification of incorrect login data

2.2 Password recovery

If your password has been forgotten or compromised, we recommend that you use the password recovery function ("Recover password" button).

A form for entering an email address to send a message with instructions on how to recover your account

In the window that opens, enter the email address that is specified in the account settings, and then click "Send".
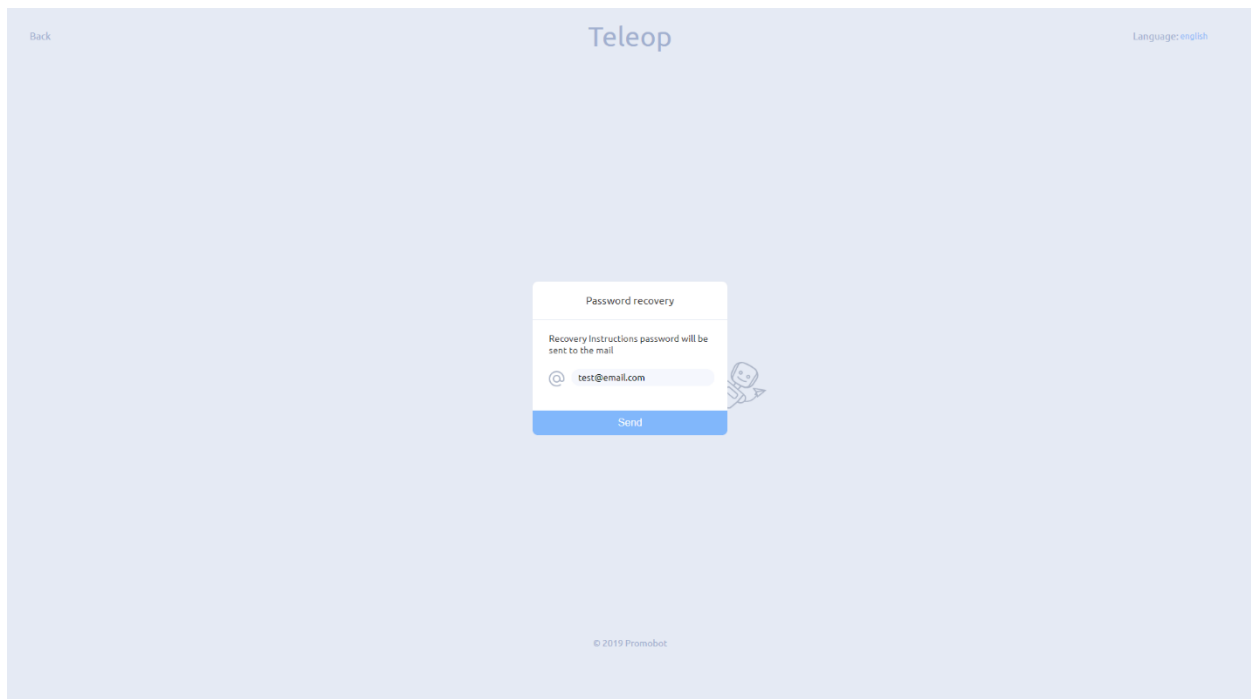

The "Send" button will become active only after entering the email address

The password recovery feature is under development and will be added in one of the next updates!
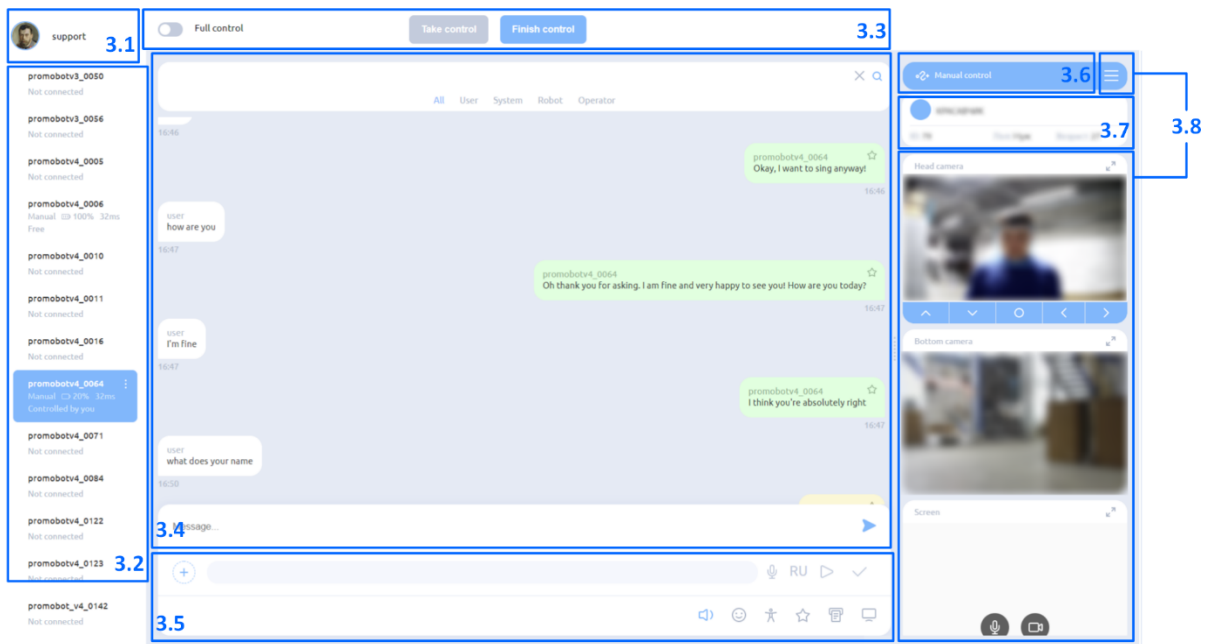
3 Main screen

Immediately after authorization, the main screen of the service is loaded. Until one of the robots is selected, all fields except the control panel and operator panel will remain inactive.
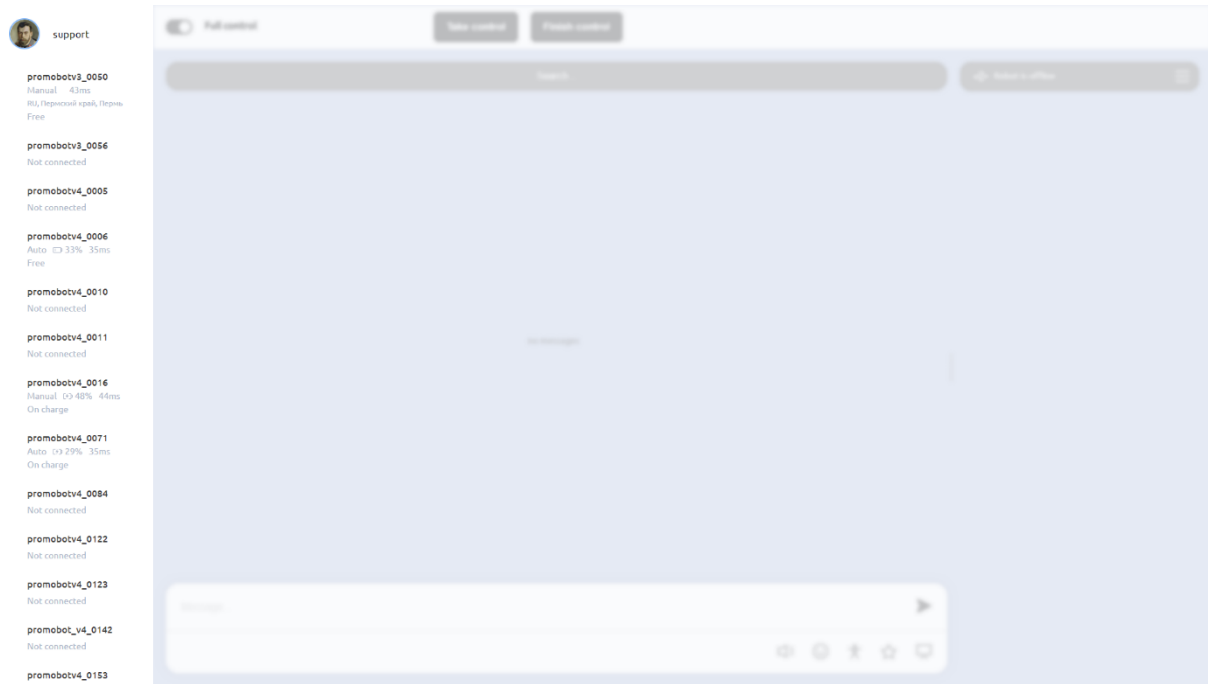
Main screen before selecting the robot via robot control panel

The main screen is divided into several functional elements:

| Title	Purpose	The section with the description
Operator panel	Operator account management.	3.1
Robot control panel	Display the status of all operator's robots, perform setup and diagnostics, complete robot control.	3.2
The capture control panel	Capture control of the robot.	3.3
The chat panel	Display of the operator commands and dialogue between the operator and user.	3.4
Command bar	Selecting and sending commands to the robot.	3.5
Manual control	Robot movement control in manual mode.	3.6
User information panel	Display of information about the user.	3.7
Widget panel	Display of information from cameras on the robot and its screen.	3.8

Functional elements of the main screen after selecting the robot

3.1 Operator panel

Operator panel allows you to manage your operator account. On the panel there is a profile picture, microphone on/off buttons and operator's webcam.

Clicking on the profile picture opens a drop-down menu.
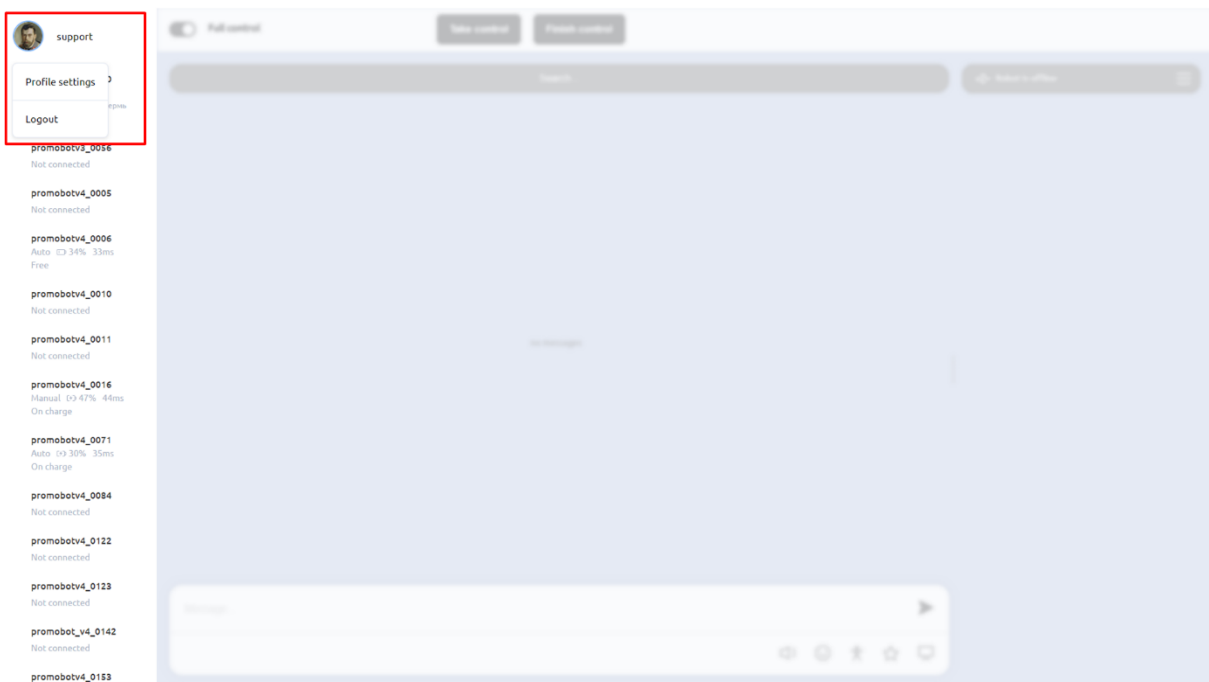
Drop-down menu when you click on the operator profile

Clicking on "Profile settings" will open the window for editing the operator profile settings.
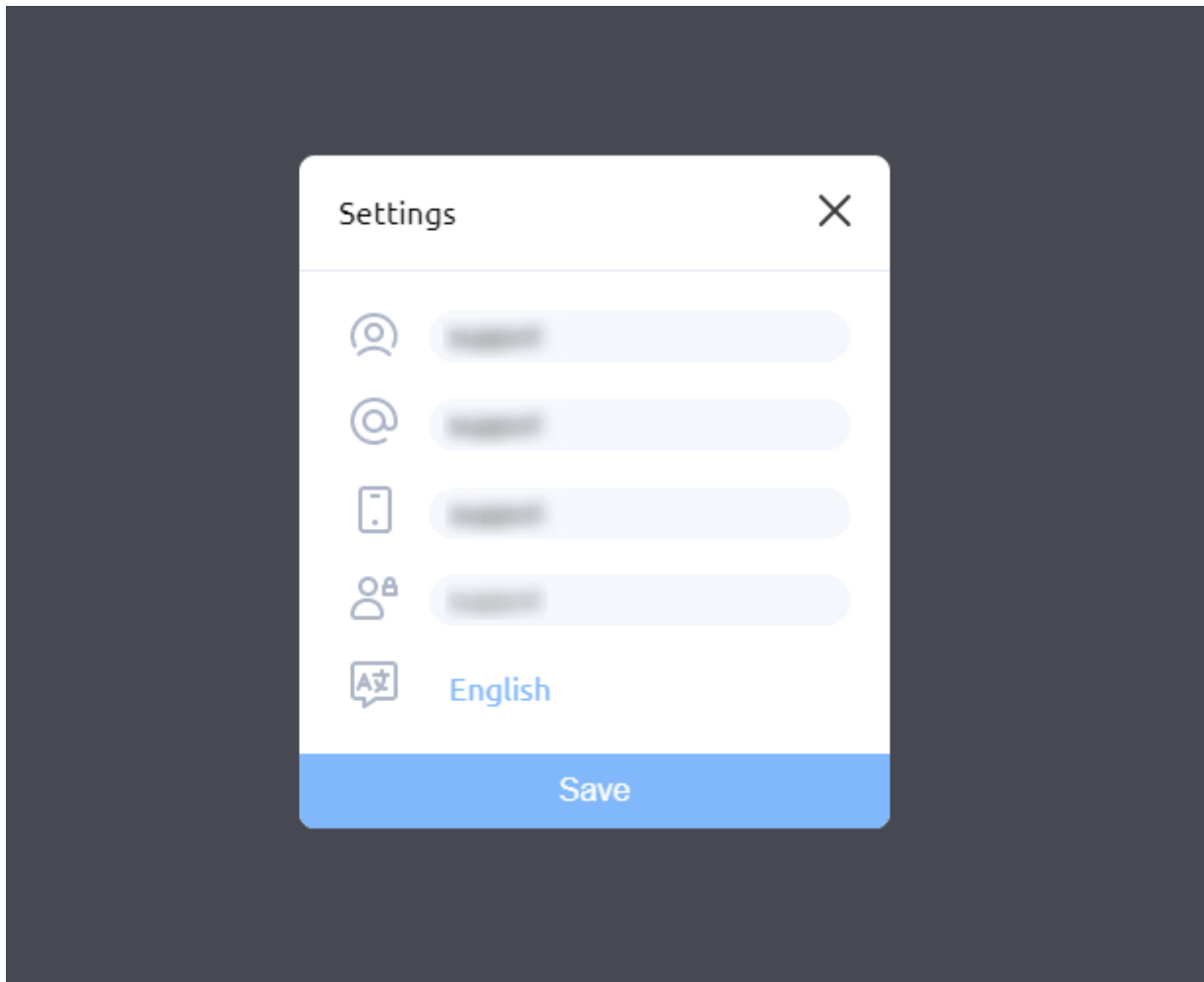
The configuration window of the operator profile

The operator's name, contact Email and phone number are specified in the operator's settings. Also, the settings display the data for authorization and the language of localization of the interface. The operator cannot change Email, username and password.

Clicking on "Exit" terminates the operator's work with the service. A logout confirmation window will appear before you exit.
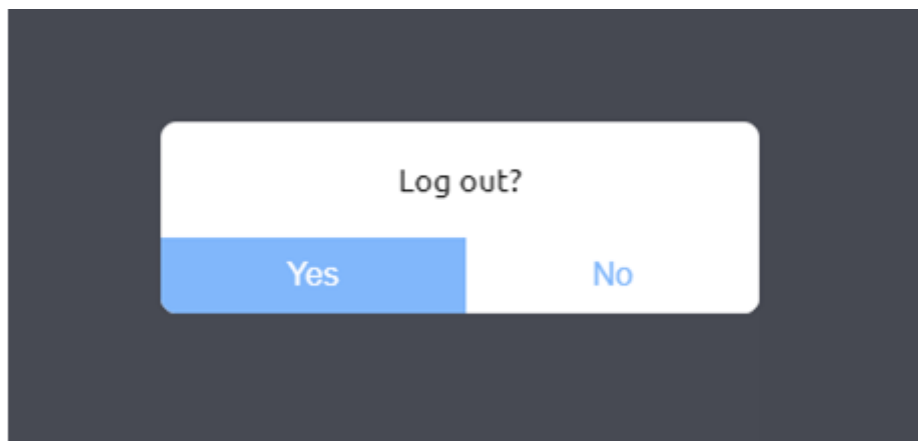

The logout confirmation

3.2 Robot control panel

The robot control panel contains a list of all robots available to the operator. The following information is displayed for each robot in the list:

| Parameter	Description
The name of the robot	The system name of the robot.
The current mode of movement	The current mode of movement in which the robot is now. The robot can be in one of two modes: — Auto - automatic movement mode. In this mode, the robot moves independently, according to internal algorithms. This mode does not provide operator control of the robot; — Manual – manual control mode. In this mode, the robot moves only at the command of the operator.
Battery level	The current battery level of the robot. The charge level is indicated as a percentage.
Control status	Current source of robot control. Depending on who controls the robot, there are three possible statuses: — Controlled by you - at the moment the robot is under your control; — Controlled by another operator - the robot is already occupied by another operator, contact him to transfer control of the robot; — Free - the robot is in auto mode, perform an action from the "Getting control of the robot" section.
The status of the interaction	The current status of interaction of the robot. For robots that are "free" at the beginning of the interaction " New conversation!" will be displayed, for robots controlled by you - the beginning of the user's recognized phrase.
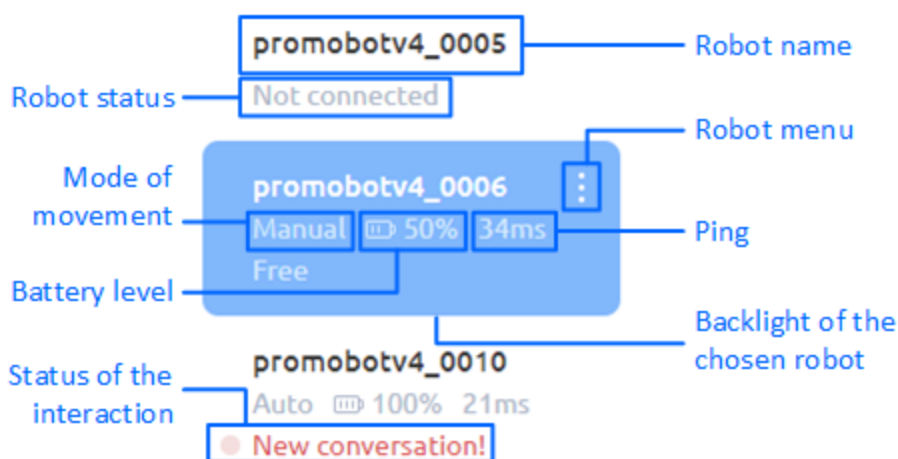
Symbols on the robot control panel

You can access the settings in the robot menu by clicking on the corresponding button (see above). In the menu that opens, select "Settings".
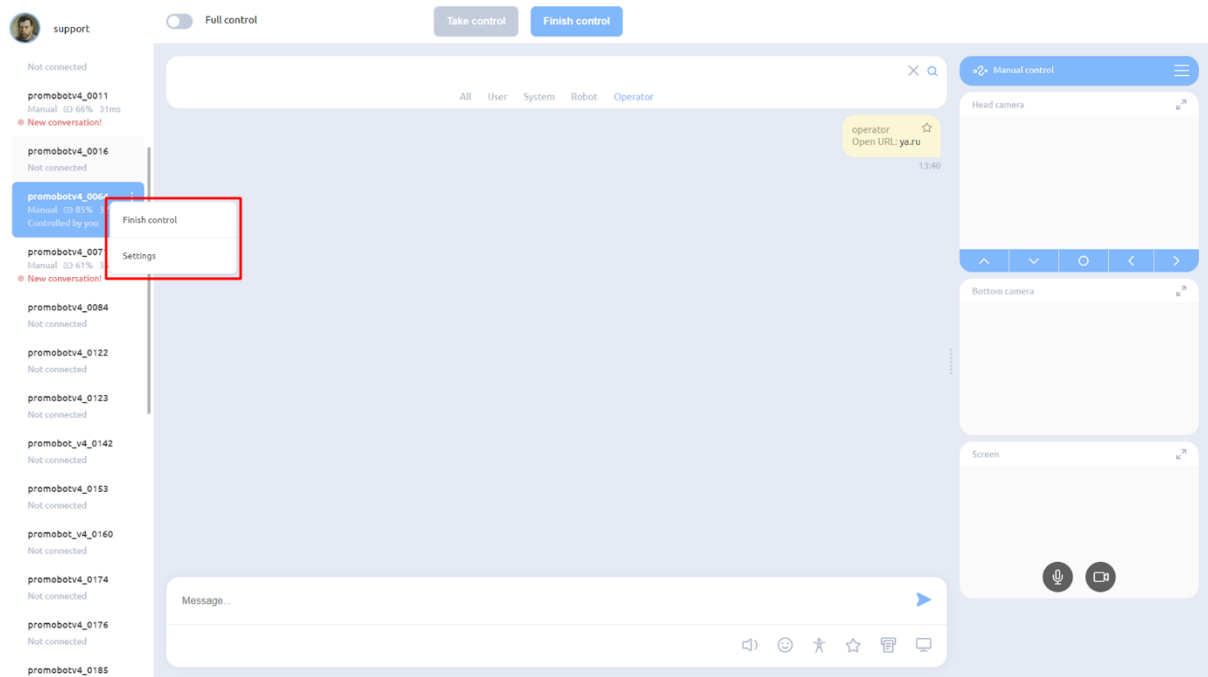
Robot menu, at the bottom of which there is the "Settings" item

The menu is available even if the robot is not currently under your control.
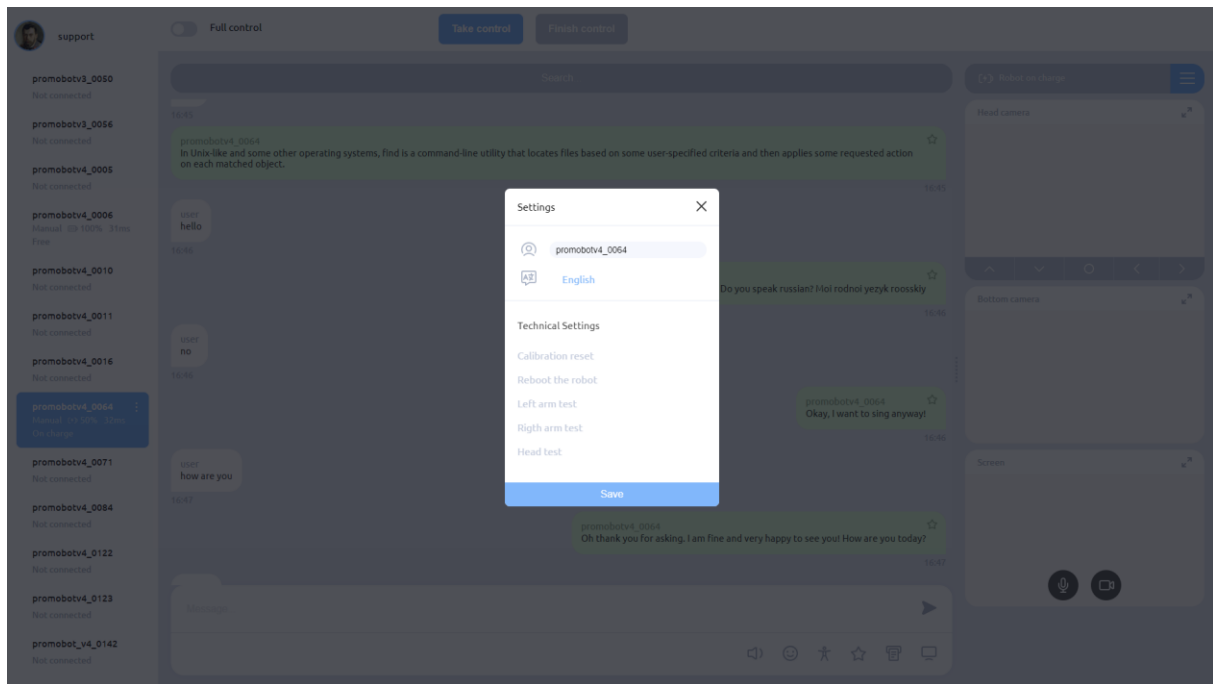
Robot settings allow you to change the language of communication, calibrate the moving parts of the robot, as well as their testing.

The window is closed by clicking on the "cross" in the upper right corner.

3.3 The capture control panel

To start controlling the robot, select it on the control panel, and then click the "Take control" button located on the control panel. Please note that you can only take control if nobody is controlling the robot at the moment. The robot you are currently observing (you do not need to take control of the robot to observe) is highlighted in blue on the panel.
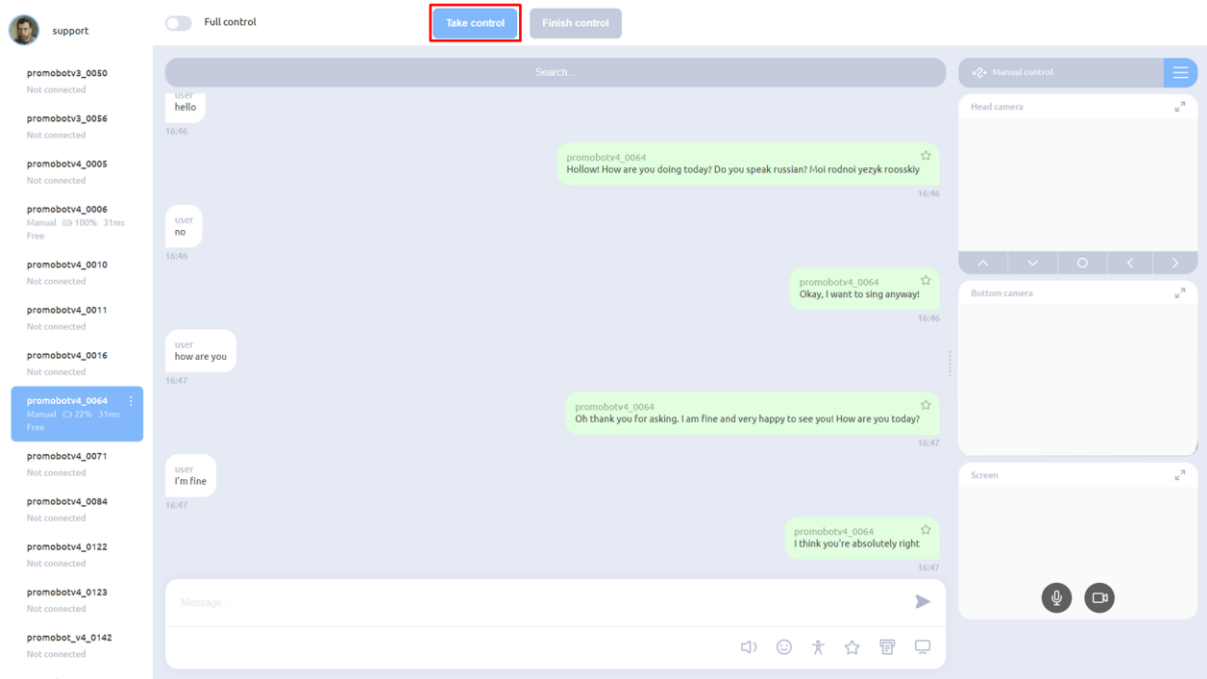
The "Take control" button is active and allows you to take control of the robot

To take control of a robot which is already under the control of another operator, that operator must transfer control of the robot to you or terminate it.

To complete the control of the robot and its transfer to the auto mode, select the appropriate item in the robot menu (the robot menu is described in detail in paragraph 3.2). You must confirm the action in the pop-up window before you can complete the control.
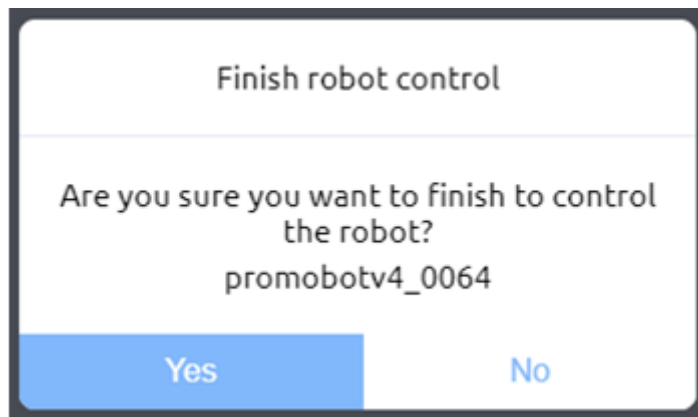
A confirmation window when you finish to control the robot

You can transfer control by clicking on the corresponding button at the top of the screen.

The control transfer feature is under development and will be added in one of the next updates!
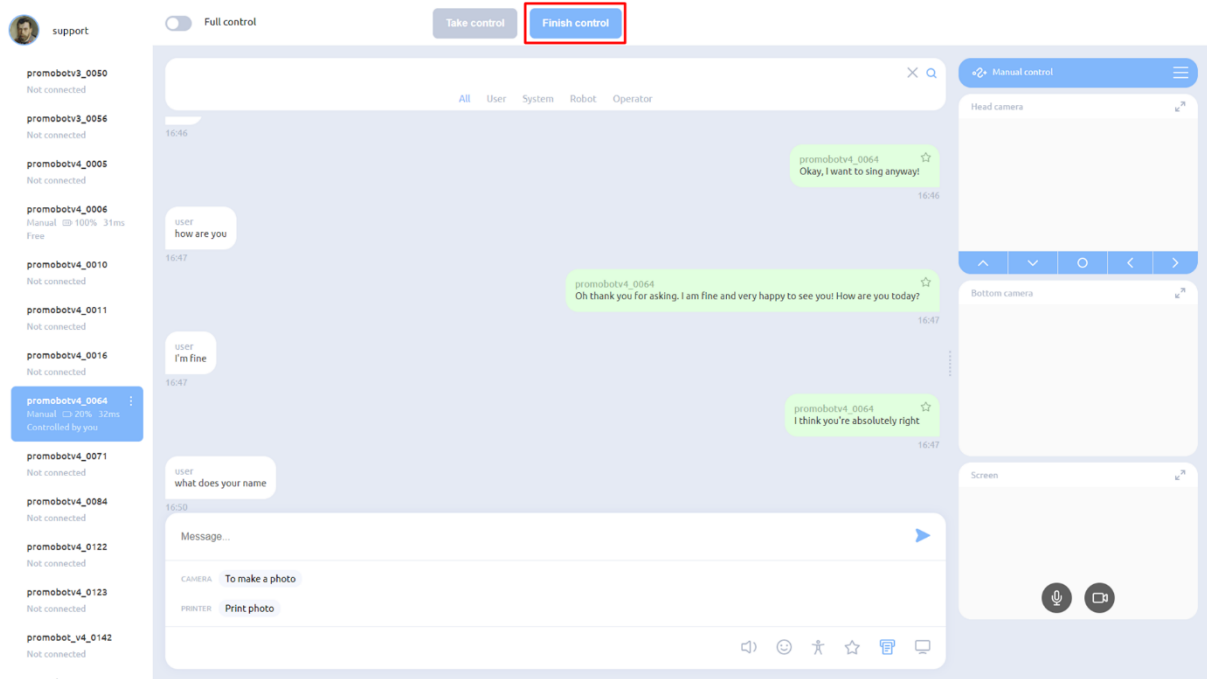
The "Finish control" button becomes active after taking control of the robot

The "Full control" switch allows you to disable phrases and actions performed by the robot itself.
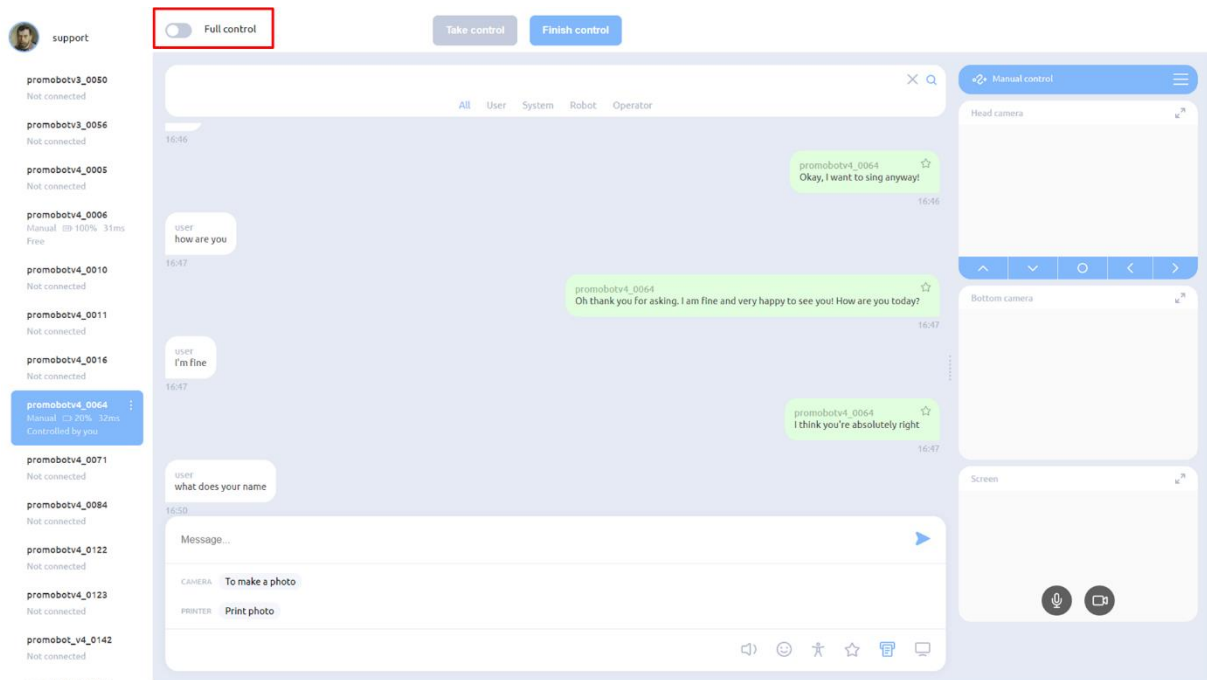
The "Full control" switch is in the off position, so the robot continues to respond to user phrases, greet, say promotional phrases, make movements and other actions available to it in autonomous mode

3.4 Chat panel

The chat displays the operator's commands, system messages, system messages, as well as the recognized phrase of the user. The search bar is located at the top of the panel. Clicking on the bar opens the message filter and the search bar field.
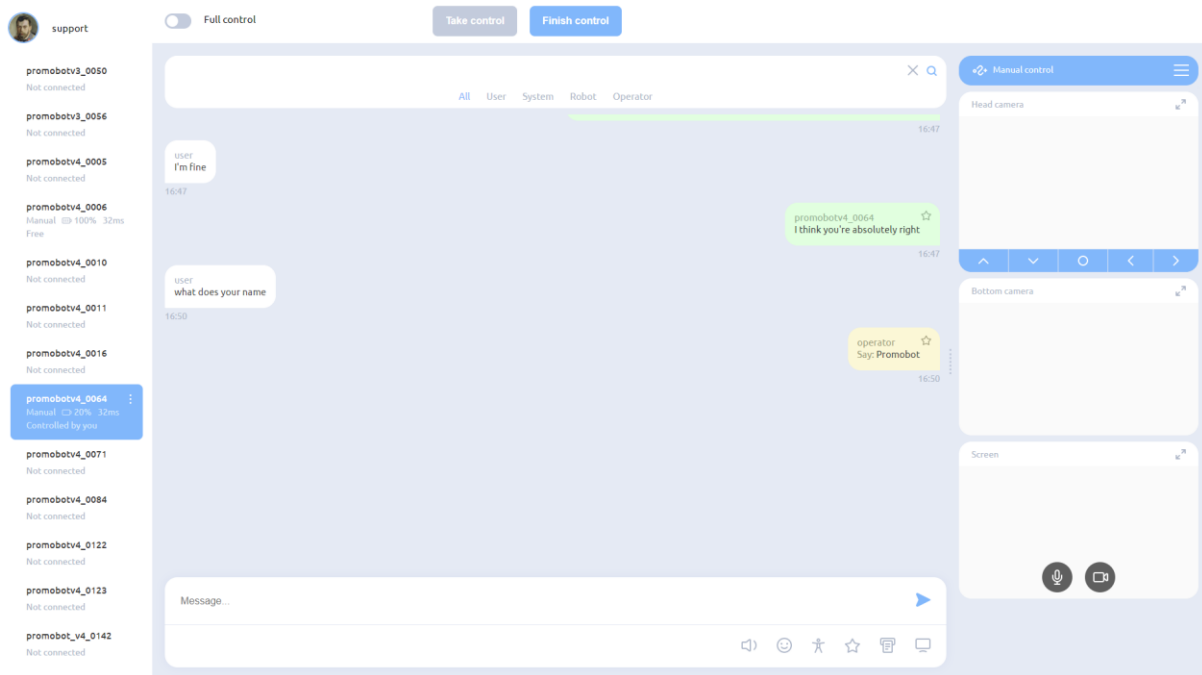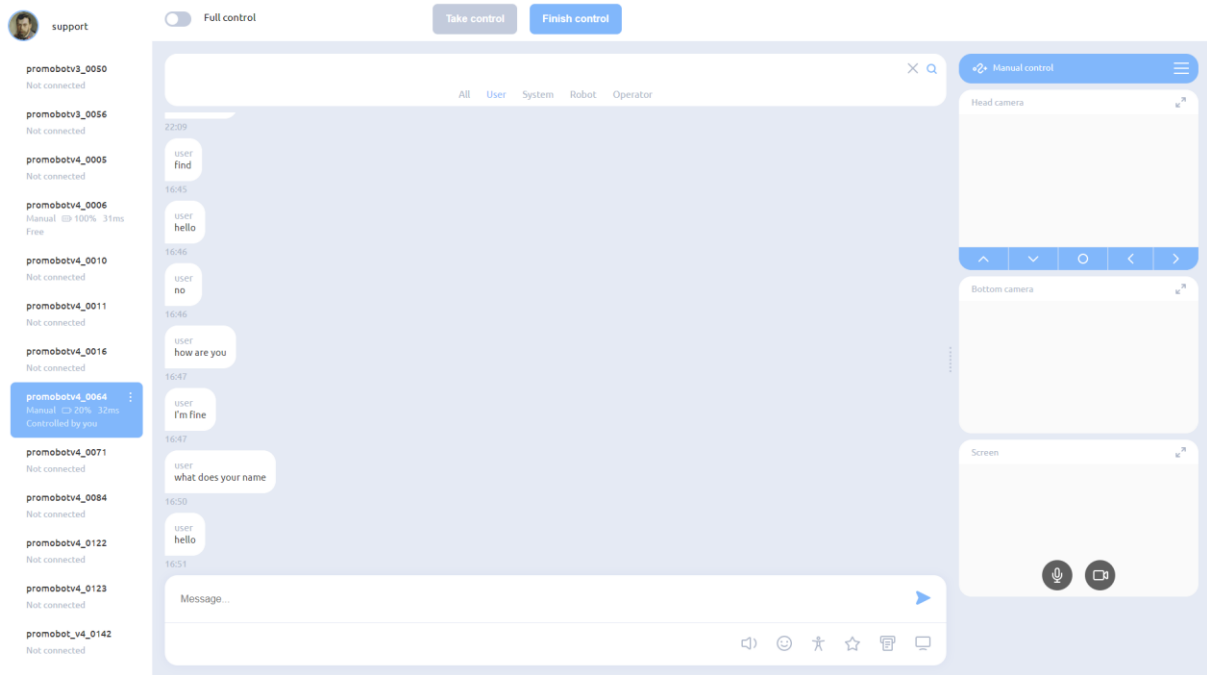
The "All" tab displays messages of all types

A message filter allows you to select one or more types of chat messages to be searched. By default, all message types are selected in the filter.
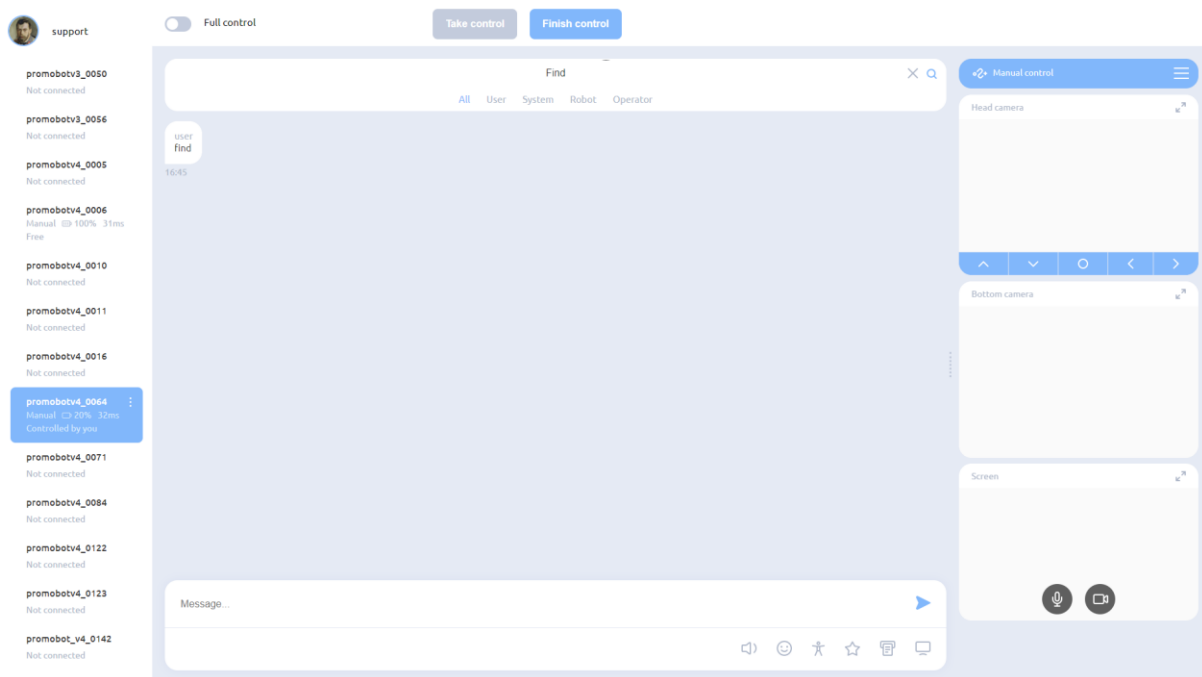

Search on all messages

Messages on the left are user phrases recognized by the robot. The title of the text cloud indicates the name of the user if he introduced himself to the robot.
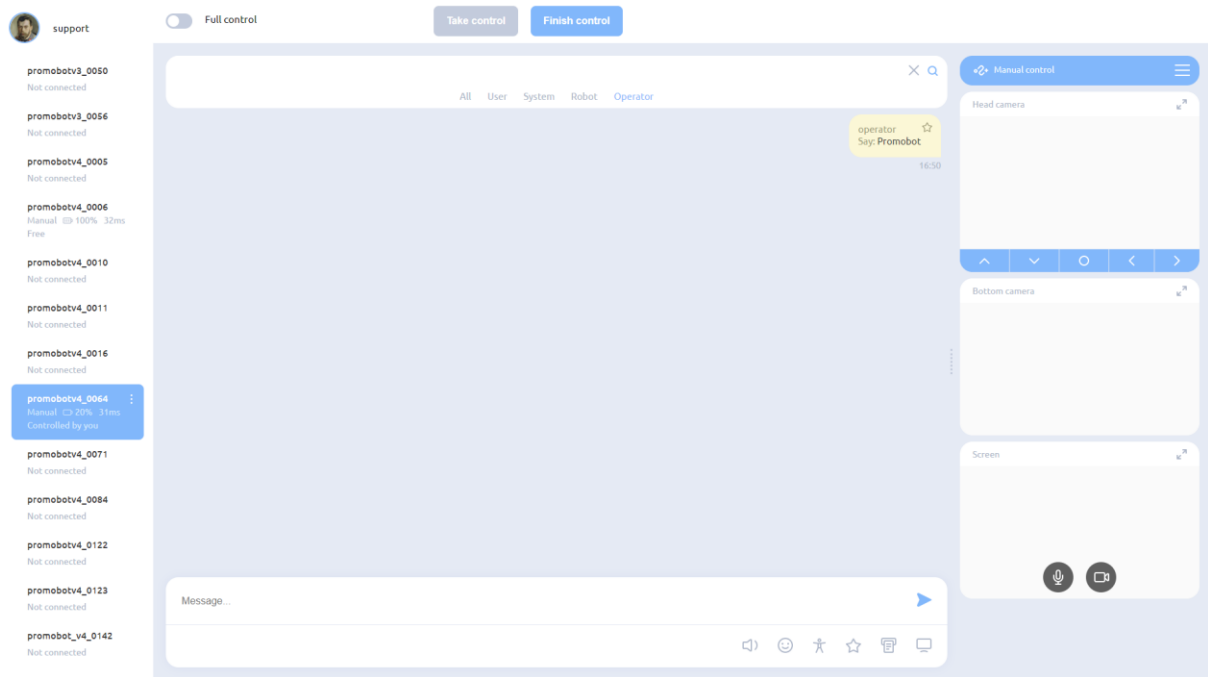
View messages only from users

Messages on the right are operator commands or phrases pronounced by the robot. Operator commands and self-generated robot phrases differ in the color of the text cloud and are additionally signed in its header. For information on the commands available to the operator, refer to paragraph 3.5. You can mark an operator's message as a favorite by clicking on the star icon in the upper right corner of the text cloud. Favorite messages are displayed in the corresponding section of the command bar (see 3.5.4).
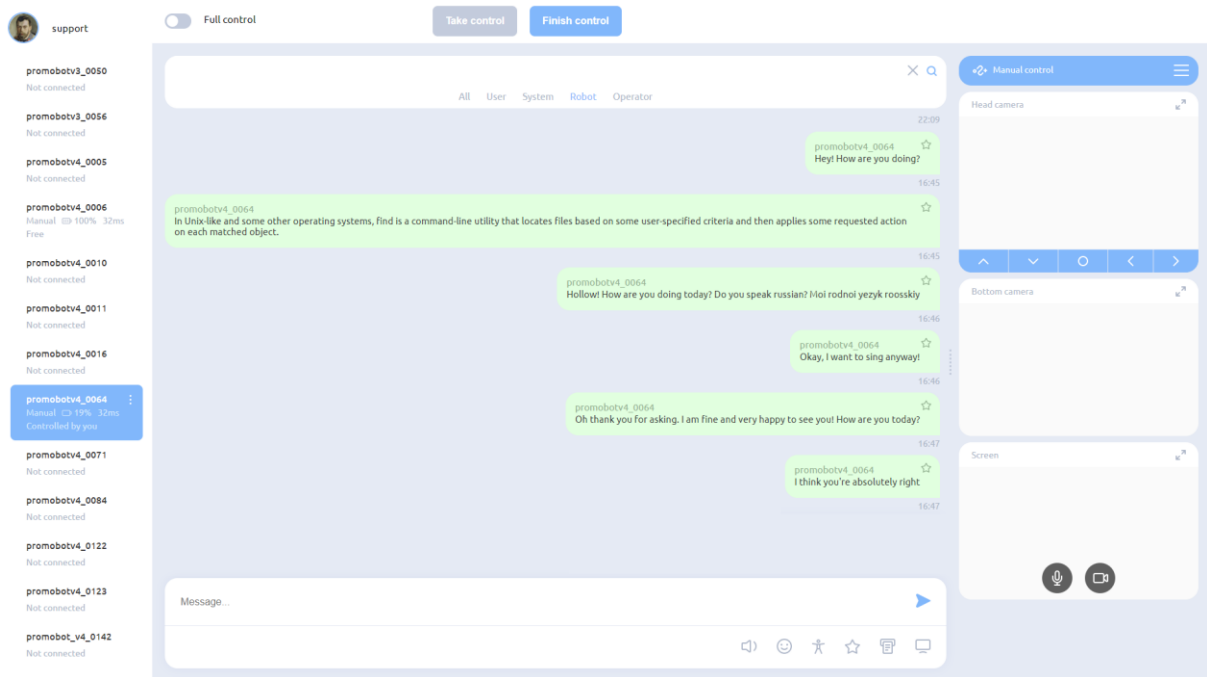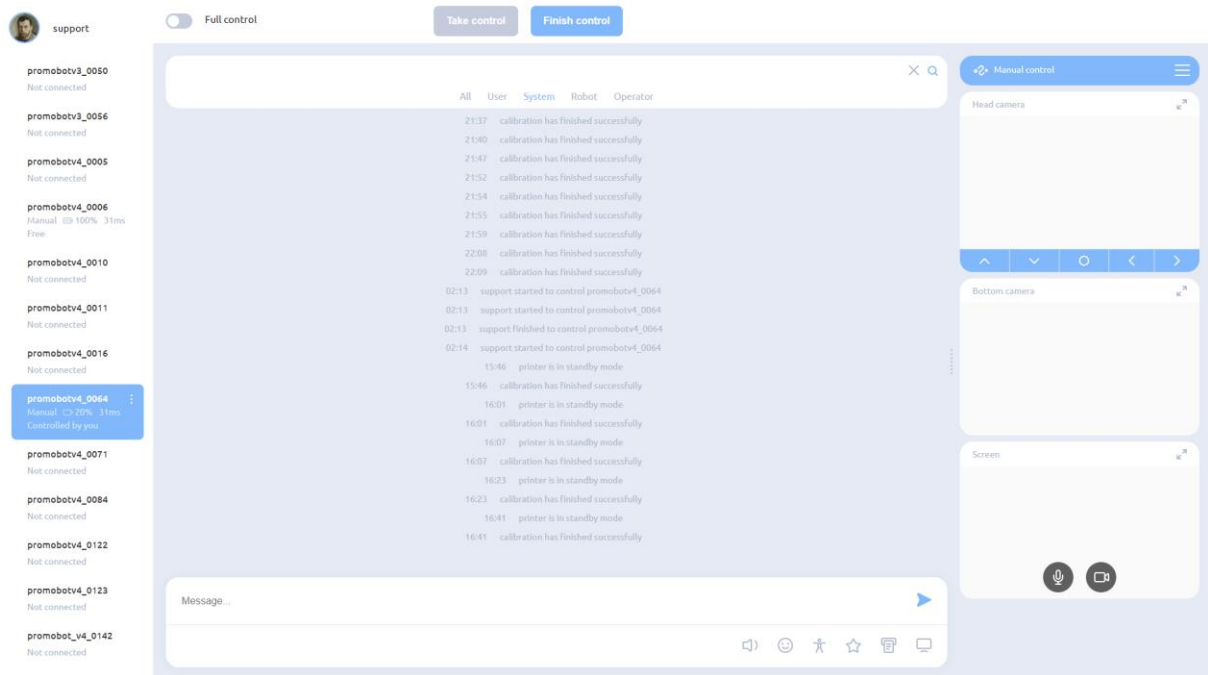

Filter to view messages only from the robot

Filter to view messages only from the operator

System messages are located in the center of the window and are of gray color. System messages, for example, include notifications about taking control of the robot and finishing the control session.


Filter to view only system messages

The execution of scripts or emotions caused by operator commands are colored in blue.

Errors that occurred during the execution of operator commands are highlighted in red.

Each message in the chat window is time-stamped. The time is displayed to the left of the message or under it.
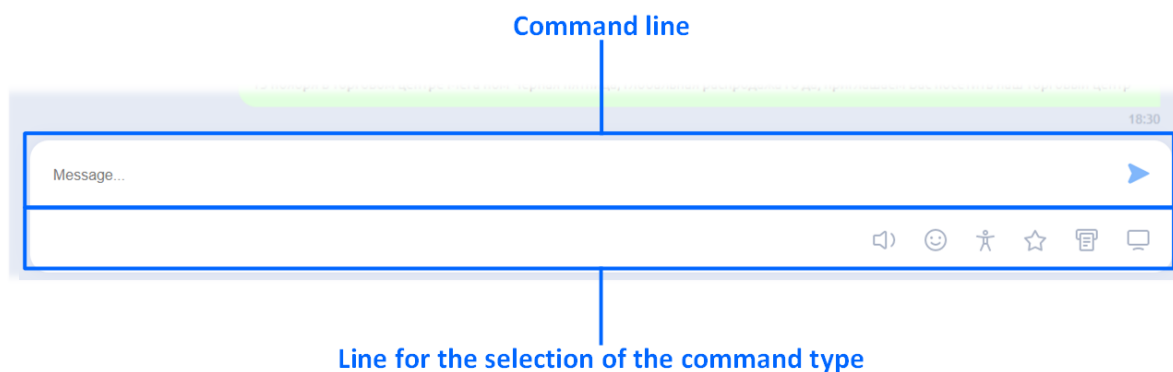
3.1 Command bar

The command bar allows the operator to send commands to the robot in the form of text messages.
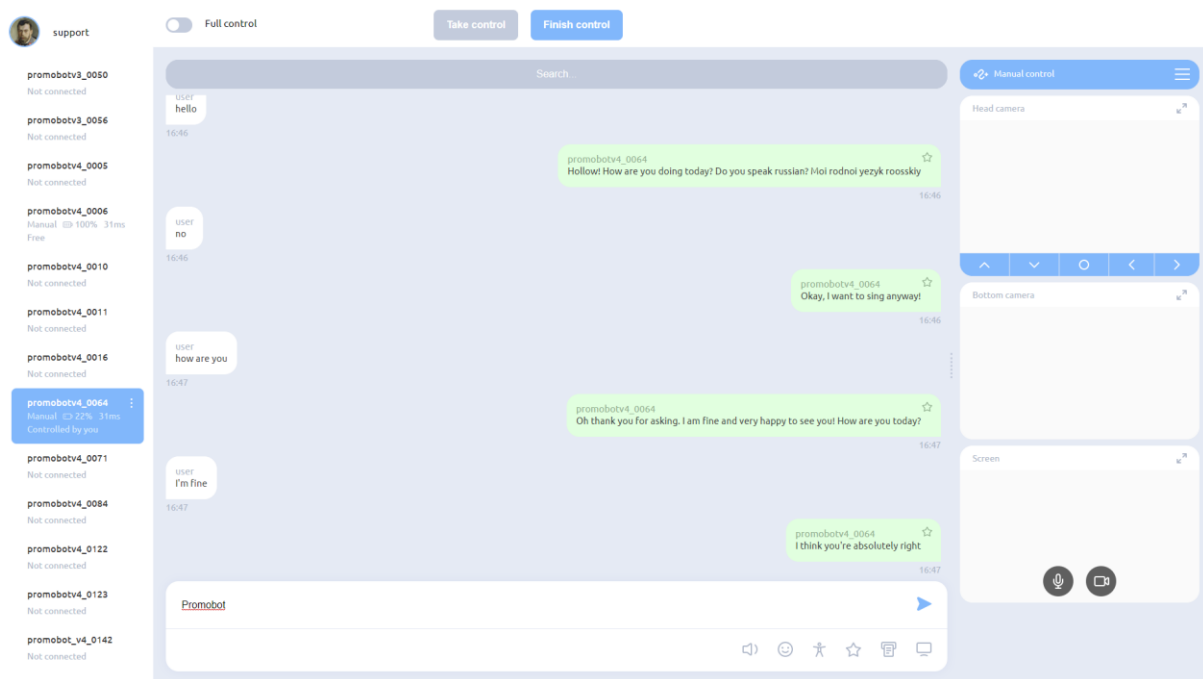
An example of a command input

The bar is divided into two parts:


The command line is a command input field.

The command is a text of the form:

<Command>: <Action/text/emotion>

List of available commands:

The command type	Command	Example
Speech. The robot will say the specified text	Say	Say: Hello
Emotion. The emotion will appear on the face of the robot	Show	Show: Sad
Action. The robot will perform the selected action from the list	Do	Do: Dance
Display. A web page will be displayed on the screen	Open URL	Open: ya.ru
To do. The robot will issue a coupon, card or photo (the robot will take a photo on its own, and then - will send it to print)	To do	To do: Ticket "in the queue 1" To do: Map To do: Photo

To send a command, press the blue arrow to the right of the command line or press Enter on the keyboard. The input field is cleared by pressing the Esc key.
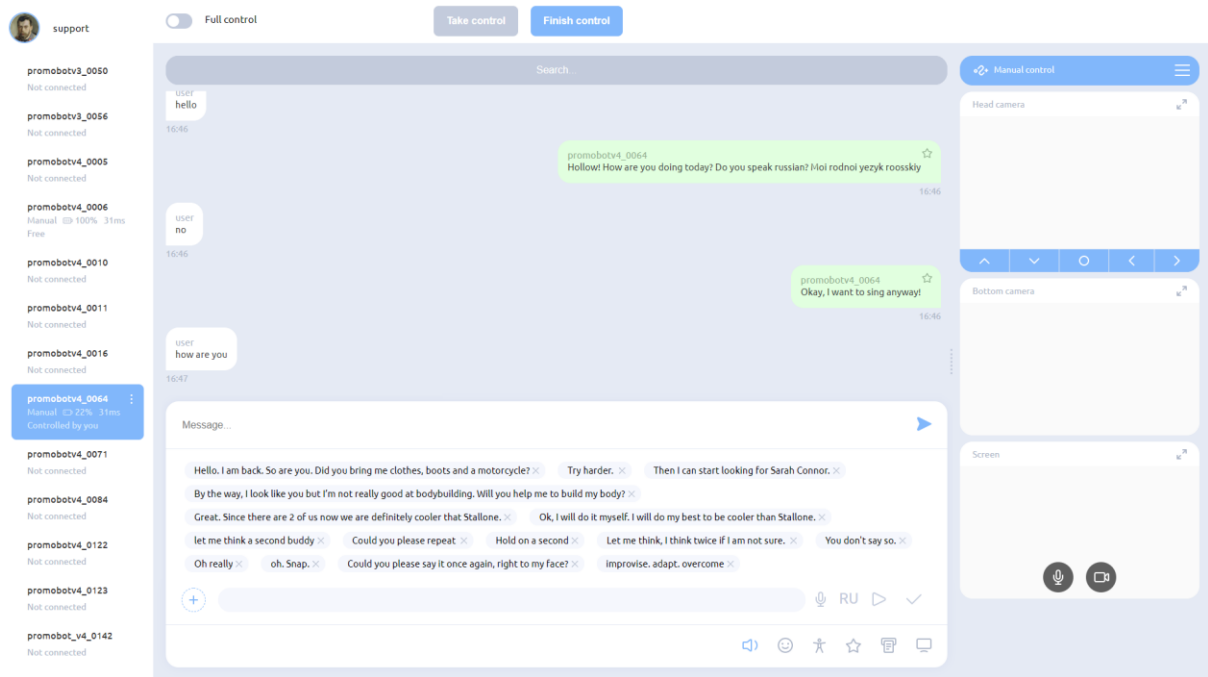
Command input field

"Send command" Button
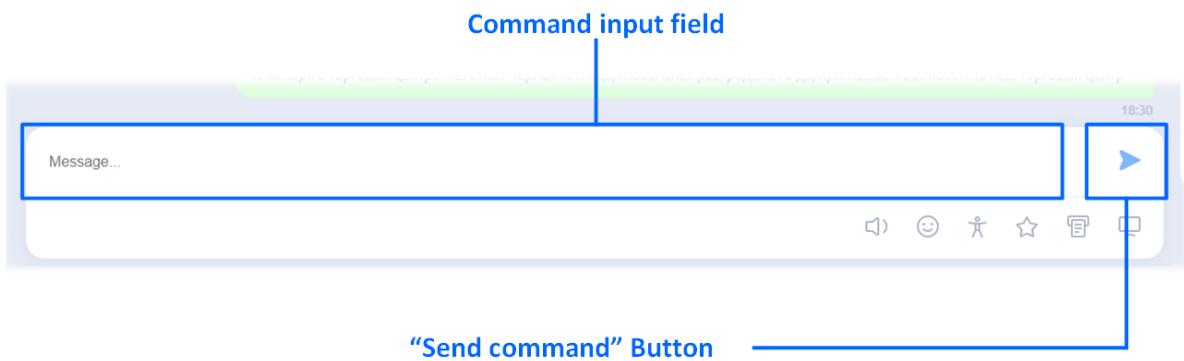
The line for the selection of the command type contains sections for different types of commands.

Emotion **Favorite** **Display**


Speech **Action** **To do**
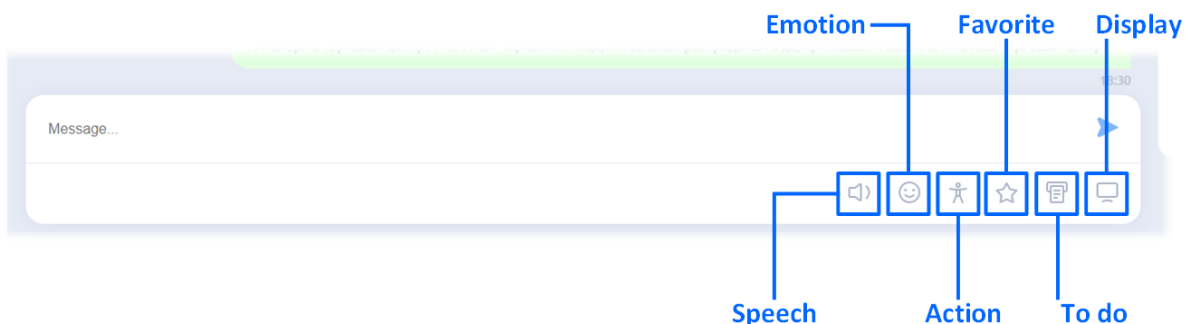
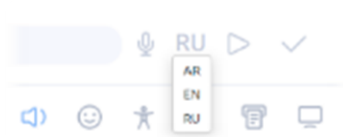## 3.5.1 Command section "Speech"

Clicking on the "Speech" button opens the section to select a phrase from previously saved or set a new one in one of the ways.

The section contains a list of operator phrases that he saved earlier. When you click on the cloud with the phrase, it will get to the command line. Clicking on the "cross" to the right of the phrase will remove it from the list. Adding a phrase from the input field to the saved list is done by clicking the "+ " button. The phrase in the input field can be entered using the keyboard and voice recording. **To record the voice, the operator's workplace must be equipped with a microphone**. Recording and recognition of the phrase occurs while the microphone button is pressed, when you stop pressing, the phrase will appear in the input field.
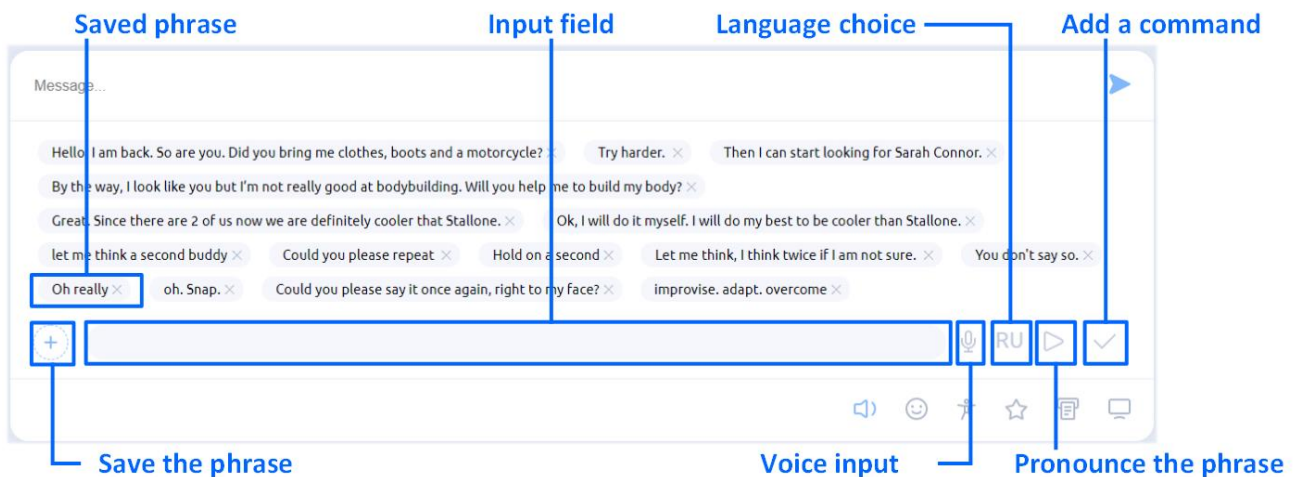
The language selection button displays the language for which speech synthesis will take place.
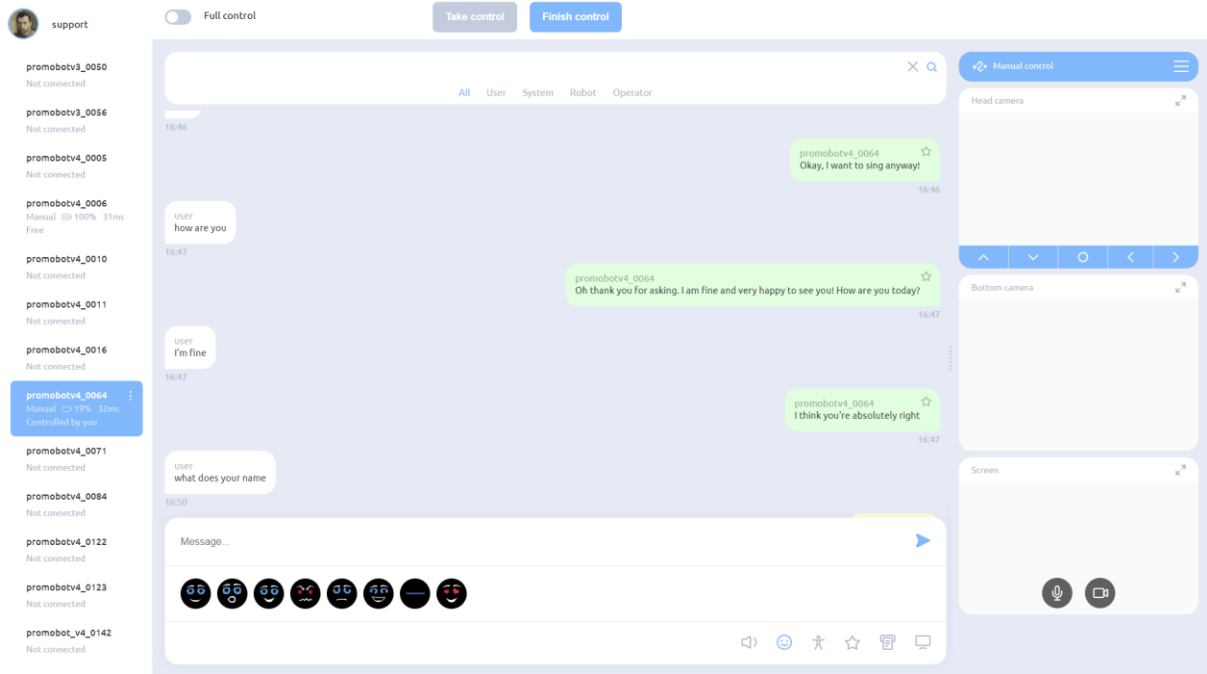

The play button pronounces the phrase with the robot's speech synthesis.
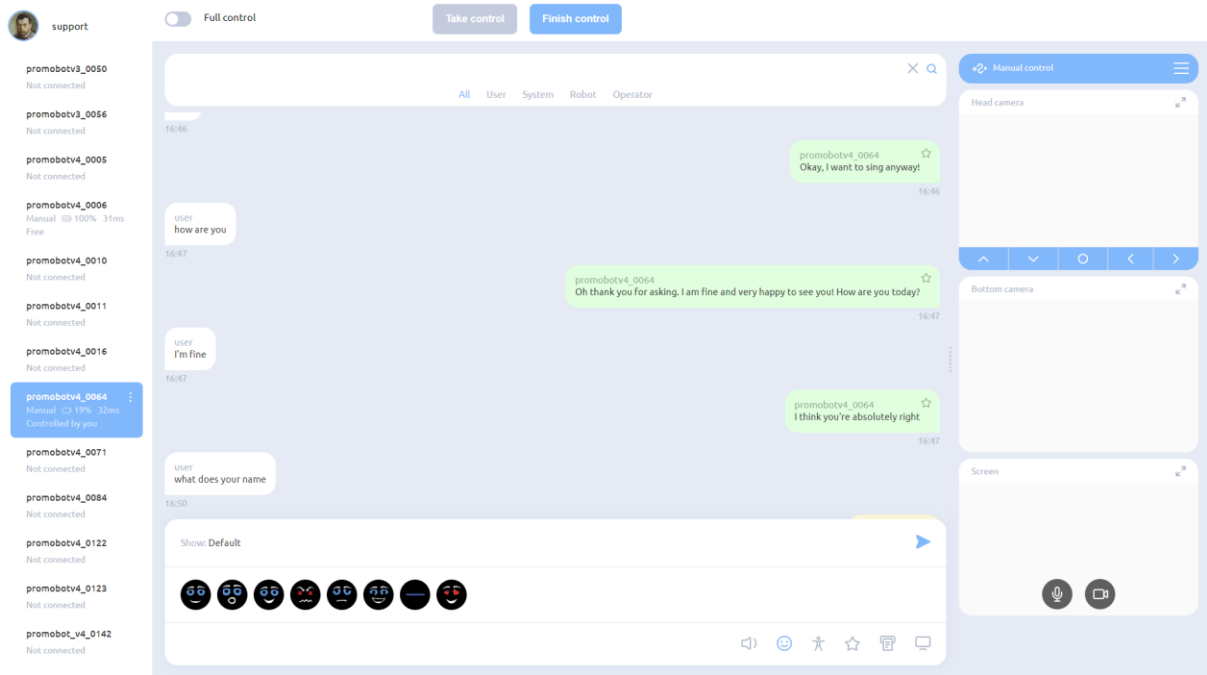
21

The "Add command" button sends the phrase to the command line.

3.5.2 Command section "Emotions"

Clicking on the "Emotions" button opens the section for selecting emotions to display on the robot's face screen.
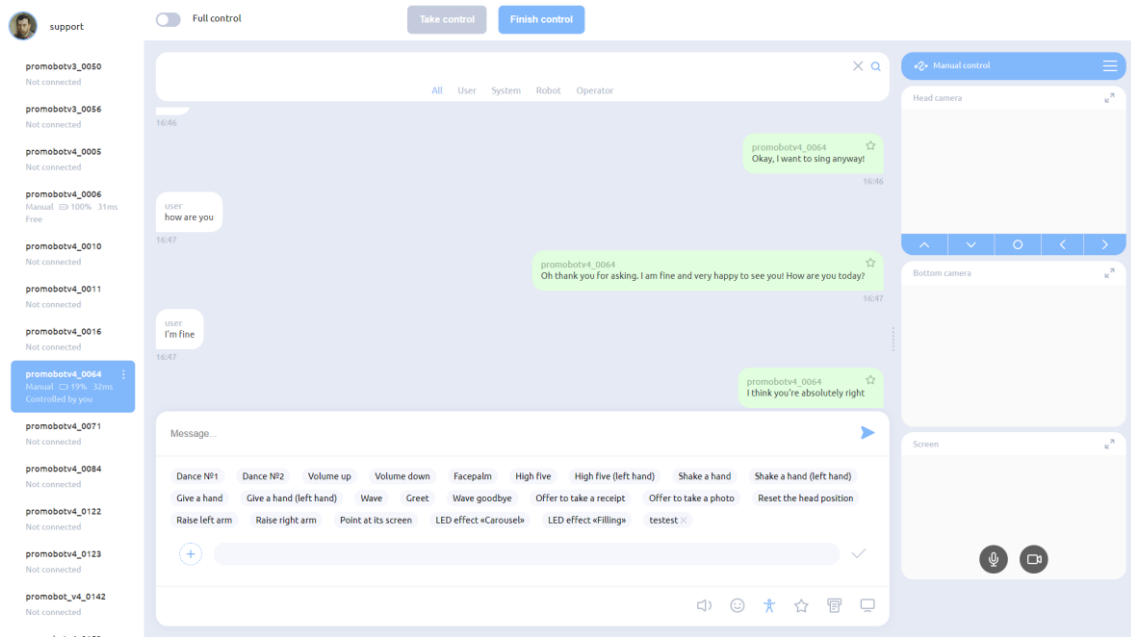

When you hover over an image of an emotion, its name is displayed. When you click on the image, the corresponding command will be added to the command line.
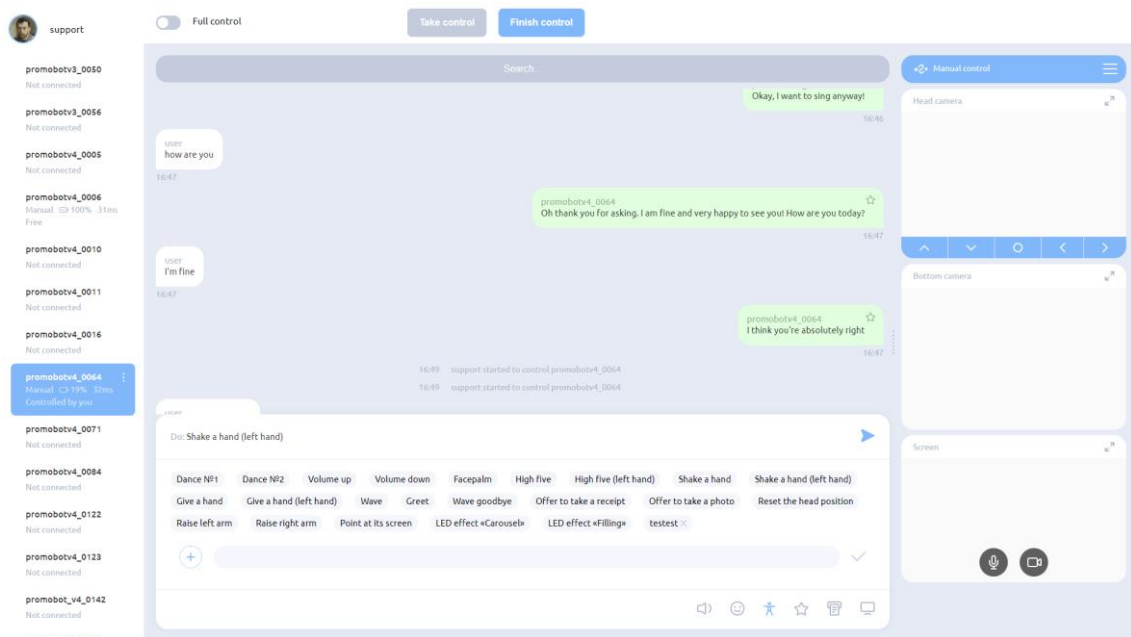

3.5.3 Command section "Actions"

Clicking on the "Actions" button opens the section for selecting standard robot movements.

22

Clicking on the action will add the corresponding command to the command line.

When using certain features of this section, you should consider the risk of damage to the robot, as well as harm to the health of others and / or damage to property. The operator is responsible for the actions performed by the robot.

3.5.4 Command section "Favorites"

Clicking on the "favorites" button opens the favorite commands section.
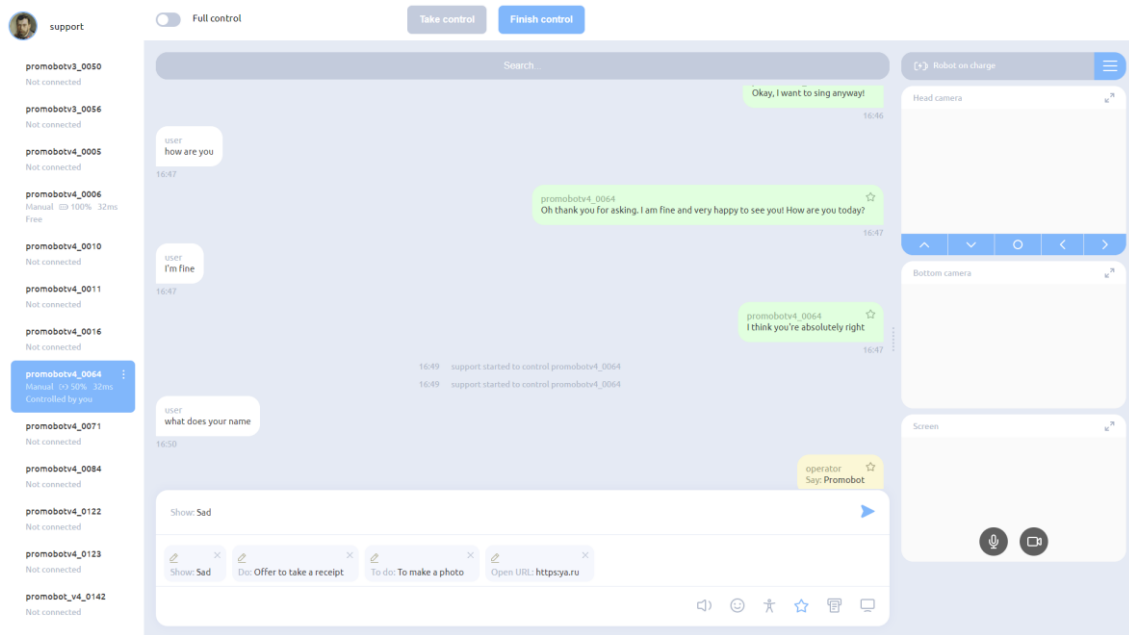
The section contains previously used commands that have been marked as favorites (with an asterisk). You can learn more about adding a command to your favorites in section 3.4.

Clicking on a command will add it to the command line. You can delete a command from the favorites list by clicking on the cross on the right side of the command window (you will need to confirm the deletion in the dialog box).

You can assign hotkeys (Alt + _) to commands in this section. In the upper right corner of the cloud with the command, there is a button to assign shortcut keys to the command (pencil). When you click on it, a field will appear to assign a letter (A-Z) or a number (0-9), which in combination with Alt will send the command immediately to execution, bypassing the command line. If you enter a character that is already involved, the field will be colored red, invalid characters will not be printed. If the combination is free, a check-mark will appear next to the input field, when you click on which the combination will be saved. To cancel saving, just click anywhere on the screen.

3.5.5 Command section "To do"

Coupons, cards or photos are available for issuing. On clicking, the selected command will be added to the command line. Execution of the command will lead to the issuance of a coupon, card or taking a photo (from the head camera of the robot), followed by the issuance of the photo.

Clicking on the "To do" button opens the section of issued materials.
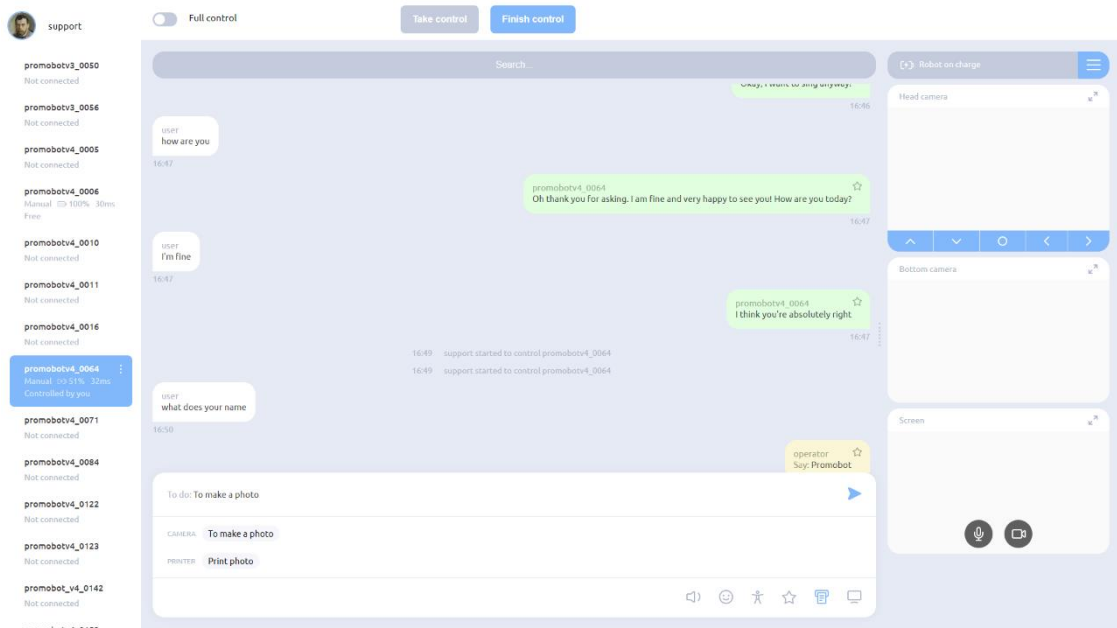
If the robot is not equipped with the appropriate devices, the "To do" menu will be limited. If for some reason the issuance is not possible, for example, there is no paper or toner in the printer, the corresponding system message will be displayed in the chat (for details, see paragraph 3.4).

3.5.6 Command section "Screen"

Clicking on the "Screen" button opens the section displaying web pages on the robot screen.
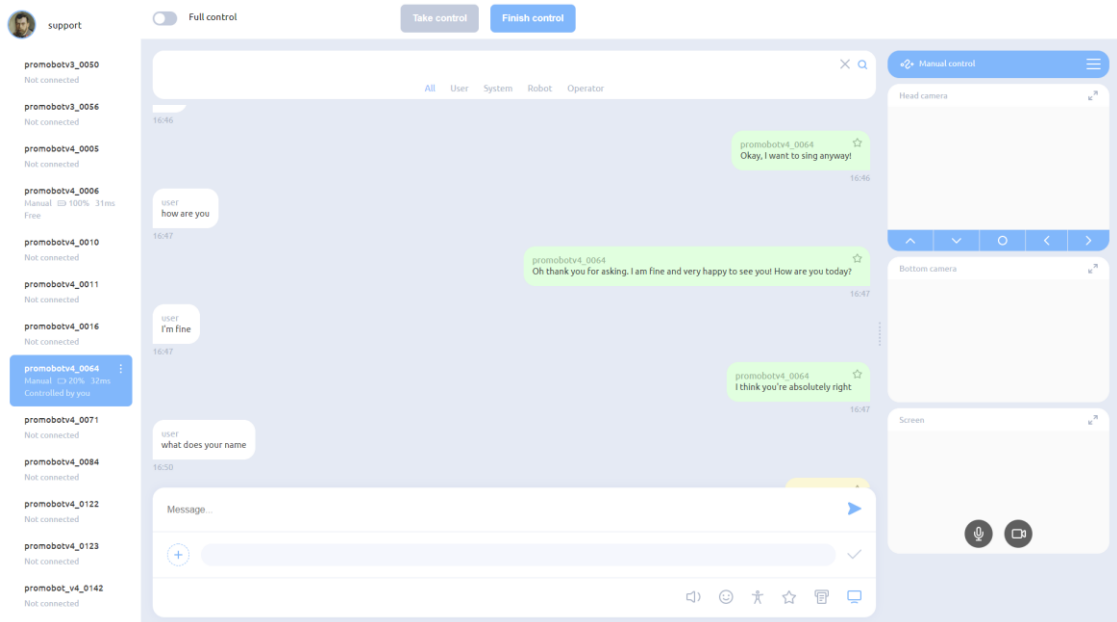

This section allows you to display the specified web page on the robot screen, and also contains a list of saved web pages.

To display a resource on the robot screen, enter its URL in the input field or select it by clicking on the cloud with the address from the list of previously saved. Sending the address from the input field to the command line occurs by pressing the confirmation button to the right of the input field.

To save the address for later use, click on the " + " button to the left of the input field.
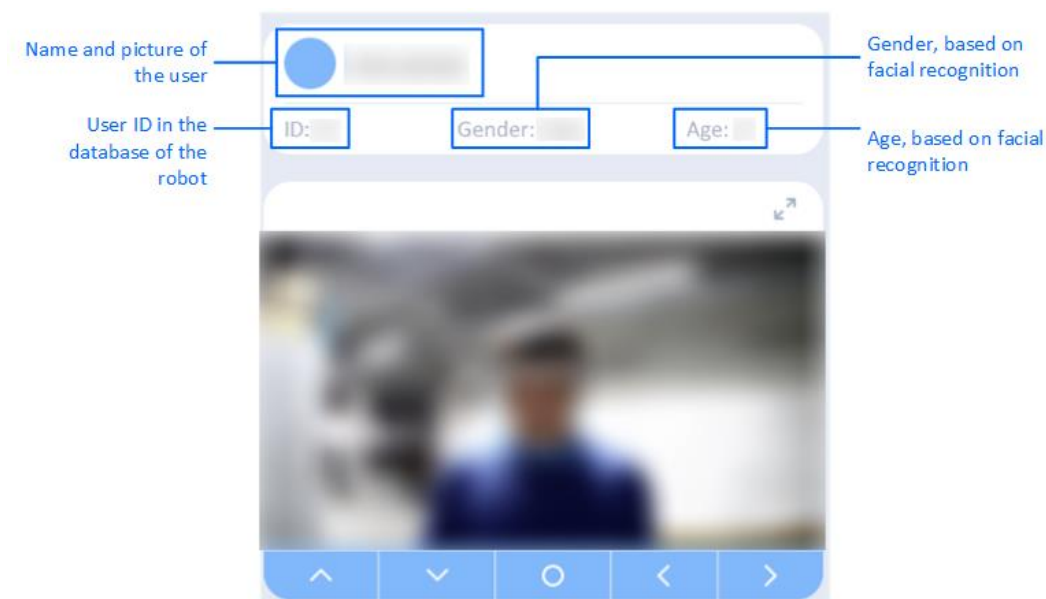
3.6 Manual control

Clicking on the "Manual control" button turns on the mode of manual control of the robot movement. For a description of manual control, see section 4. **Manual control is not possible while the robot is charging.**
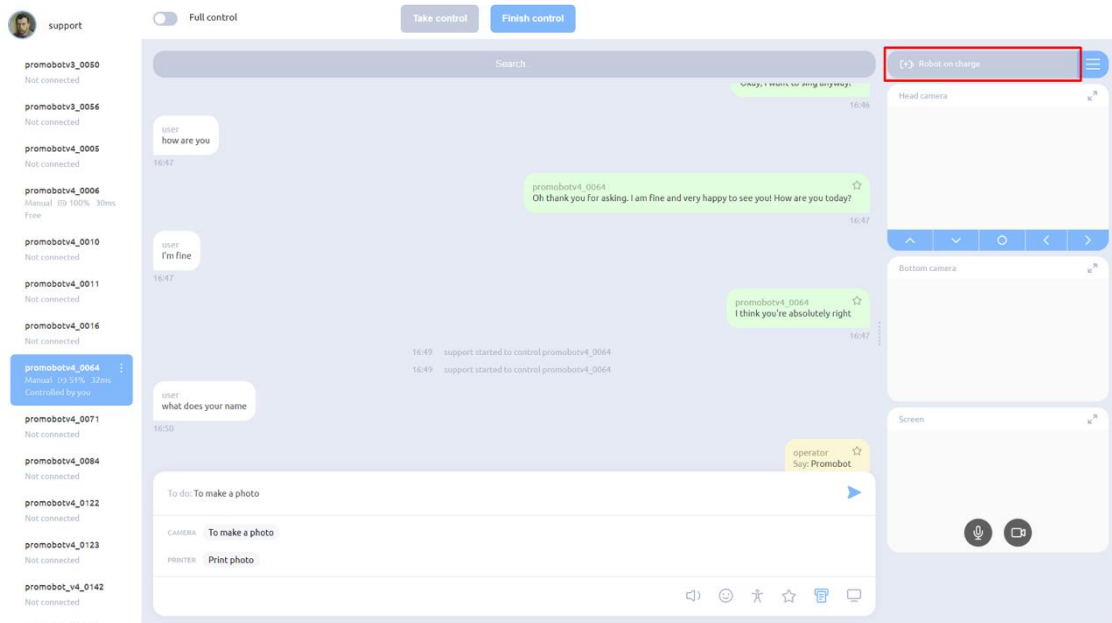
The manual control button is inactive because the robot is charging

3.7 User information panel

The panel contains information about the user with whom the robot communicates at the moment. The panel is displayed only if there is a face in front of the robot. The displayed user information includes: face image from the database, name, ID in the database, gender and age based on facial recognition.

3.8 Widgets

To the right of the "Manual control" button is the widget control button, clicking on which opens a drop-down list. In the drop-down list, you can select the widgets that will be displayed in the widget panel.
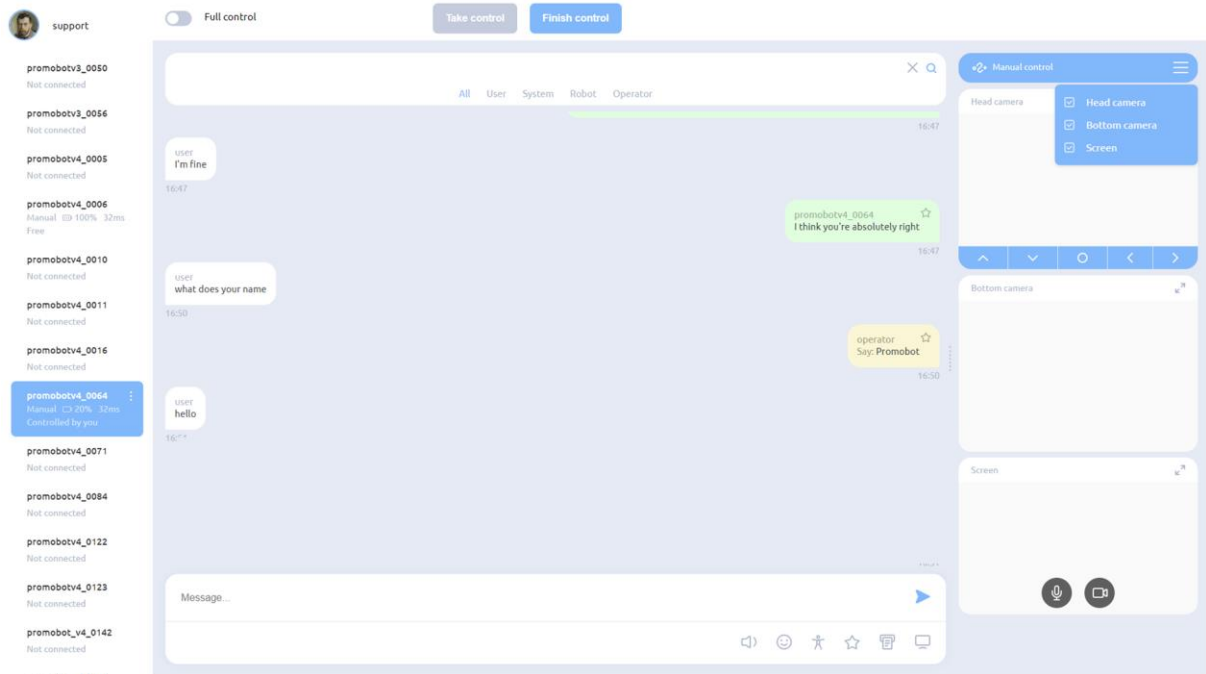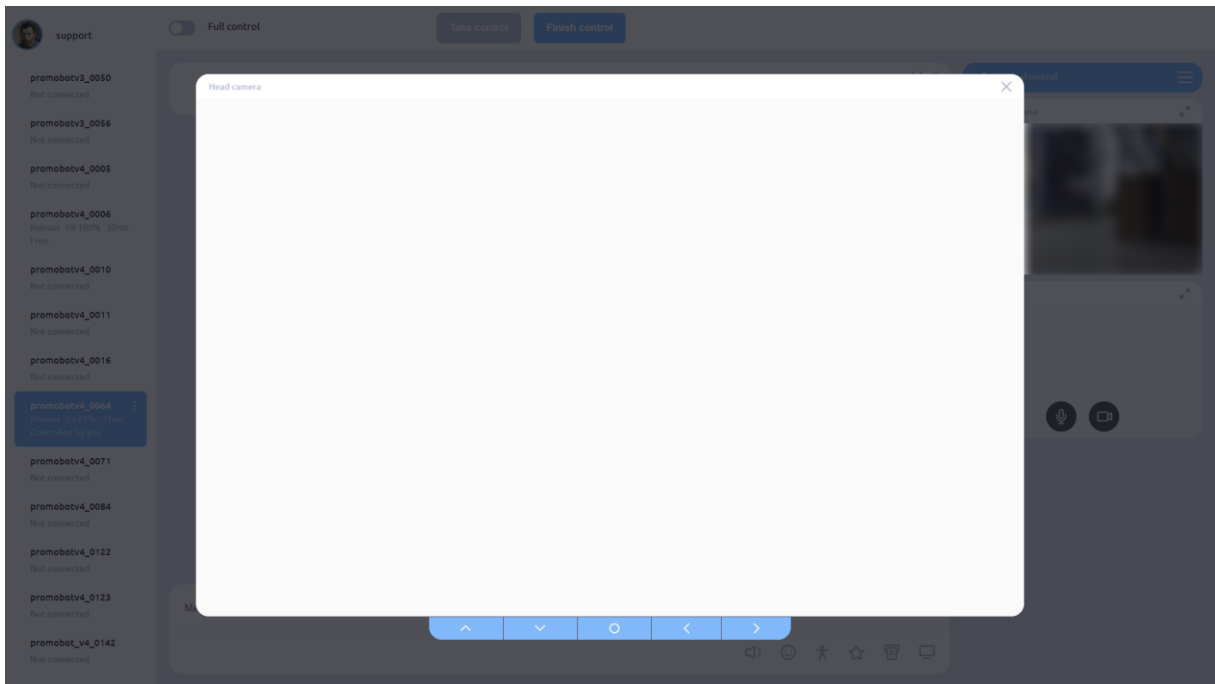

3.8.1 Camera: head

The widget is designed to show the image from the camera on the robot's head. Below the image there are buttons to control the position of the head.
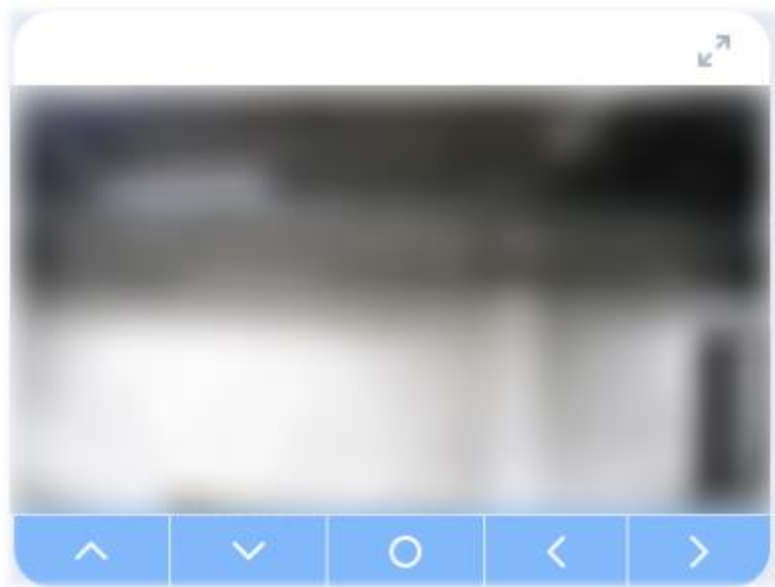
The head control buttons become active only after gaining control of the robot

The arrow buttons rotate the head (change its declination) in the appropriate direction, the button in the center returns the robot's head to the central position.

Clicking on the button in the upper right corner of the widget will expand it to full screen.
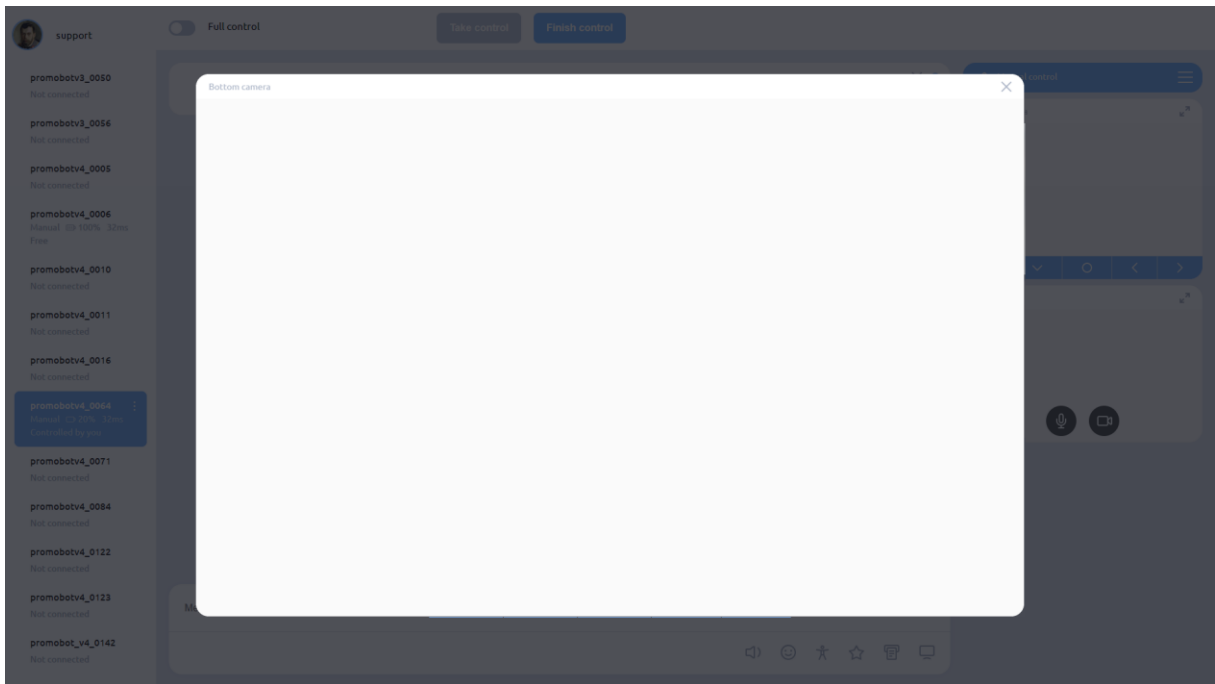
"Camera: head" Widget in full-size mode

To minimize the widget back, you need to click on the "cross" in the upper right corner of the window.

3.8.2 Camera: torso

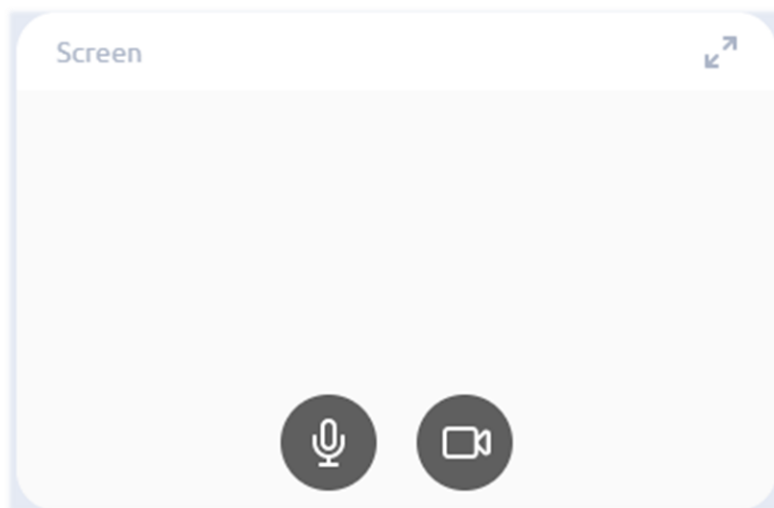The widget is designed to show the image from the camera on the robot's torso.

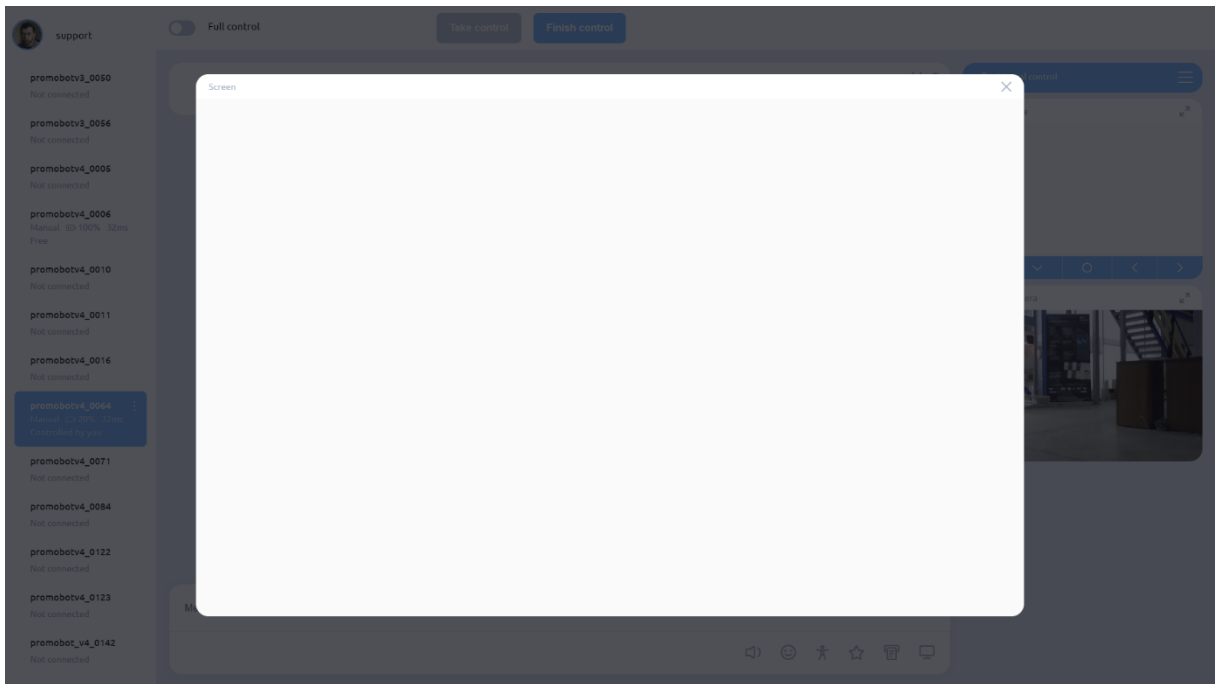Similar to the widget in 3.8.1, the widget can be expanded to full screen:

"Camera: torso" Widget in full-size mode

3.8.3 Screen

The widget is designed to show the image from the robot screen. Buttons at the bottom of the widget allow you to enable audio and video transmission from the operator to the robot.

Similar to the widget in 3.8.1, the widget can be expanded to full screen:

"Screen" widget in full-size mode

3.8.4 Map

The widget is under development and will be added in one of the next updates!

The widget is designed to view the navigation map of the robot and determine its location in space. The widget is available if you have a downloaded map of the room and the corresponding equipment on the robot.


Hovering over a point highlights its name

Similar to the widget in 3.8.1, the widget can be expanded to full screen:

4 Manual control mode

To switch to the manual mode of robot control, you need to click on the "Manual control" button on the main screen of the service. When switching to manual mode, the robot switches from auto to manual mode and remains in it until the main screen is displayed (the status of the robot will be displayed for all operators on the side control panel).
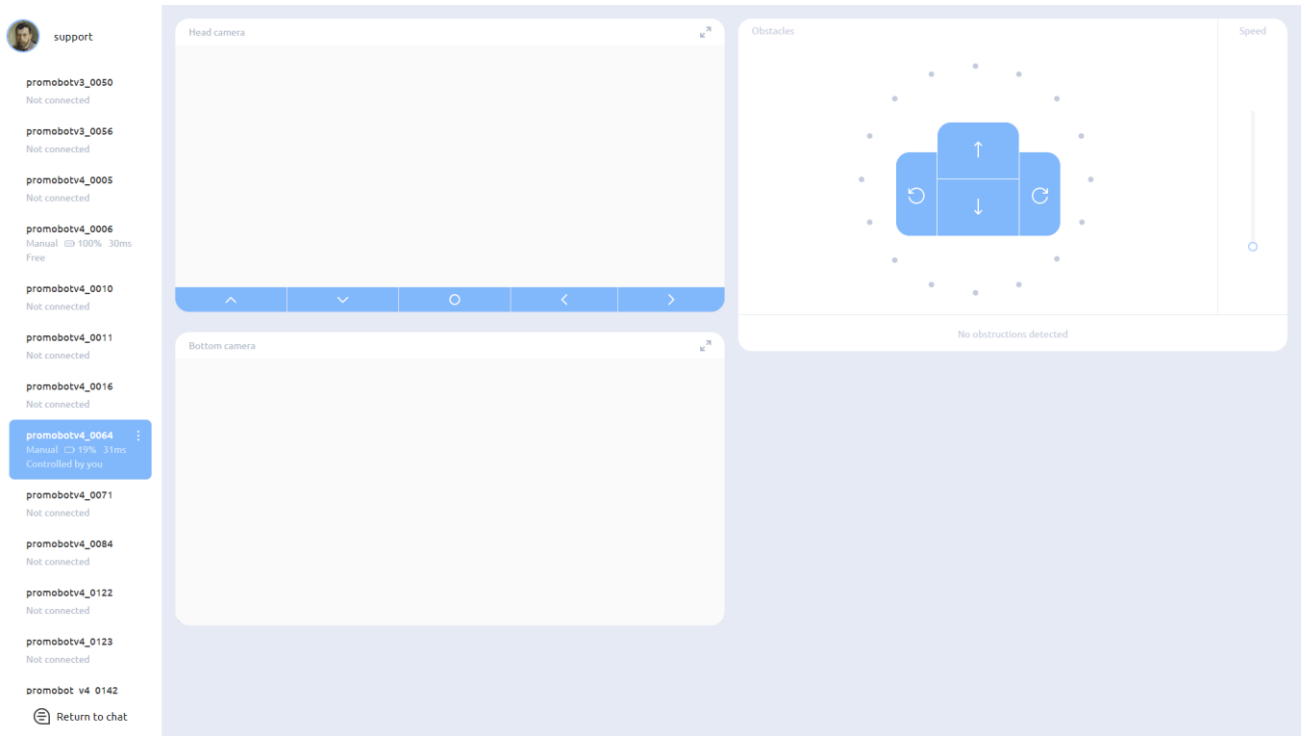
Robot manual control screen

The manual mode allows the operator to move the robot using the control buttons. Movement is carried out by buttons in the corresponding widget (point 4.4).

On this screen, similar to the main one, there is an operator panel, a robot control panel and a widget panel. The capabilities of the operator panel are exactly the same as those on the main screen.

The robot control panel, in addition to robot status information, also displays the latest chat message from the home screen.

You can return to the home screen by clicking the "Return to chat" button in the lower left corner of the screen.

4.1 "Camera: Head" Widget

The widget duplicates the similar one from paragraph 3.8.1.

4.2 "Camera: Torso" Widget

Widget duplicates the same from paragraph 3.8.2.

4.3 Map Widget

The widget is under development and will be added in one of the next updates!

The widget is designed to view the navigation map of the robot and determine its location in space.

Hovering over a point highlights its name

If you have a map, you can send the robot to any point specified on the map. The house indicates the charging station, when you click on it, the robot will head for charging.

Before sending the robot, you will need to confirm the action.

During movement, the route is displayed as an arrow on the map.

Display of the route on the map

4.3 "Control" Widget

This widget is divided into two parts. The left part of the widget allows you to control the movement of the robot directly, using the control buttons (forward, backward, left and right turns around its axis).

When using certain features of this section, you should consider the risk of damage to the robot, as well as harm to the health of others and/or damage to property. The operator is responsible for the actions performed by the robot.

The dots around the control buttons correspond to the sensors on the robot's body. The gray color of the dot means that no obstacles are detected, the orange color – there is an obstacle, the red color – the obstacle blocks further movement.
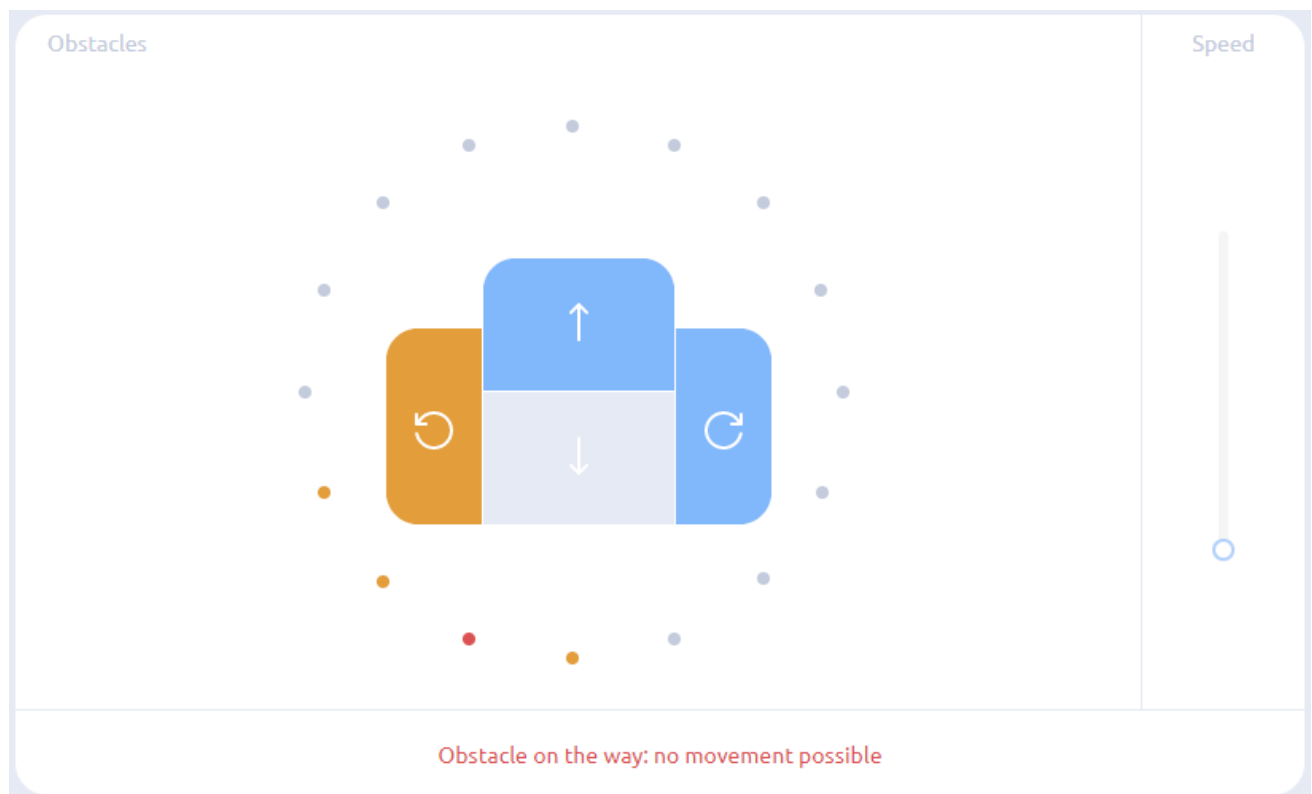

The rear sensors have been triggered (highlighted in red), so it is not possible to move backward

An obstacle along the way: be careful
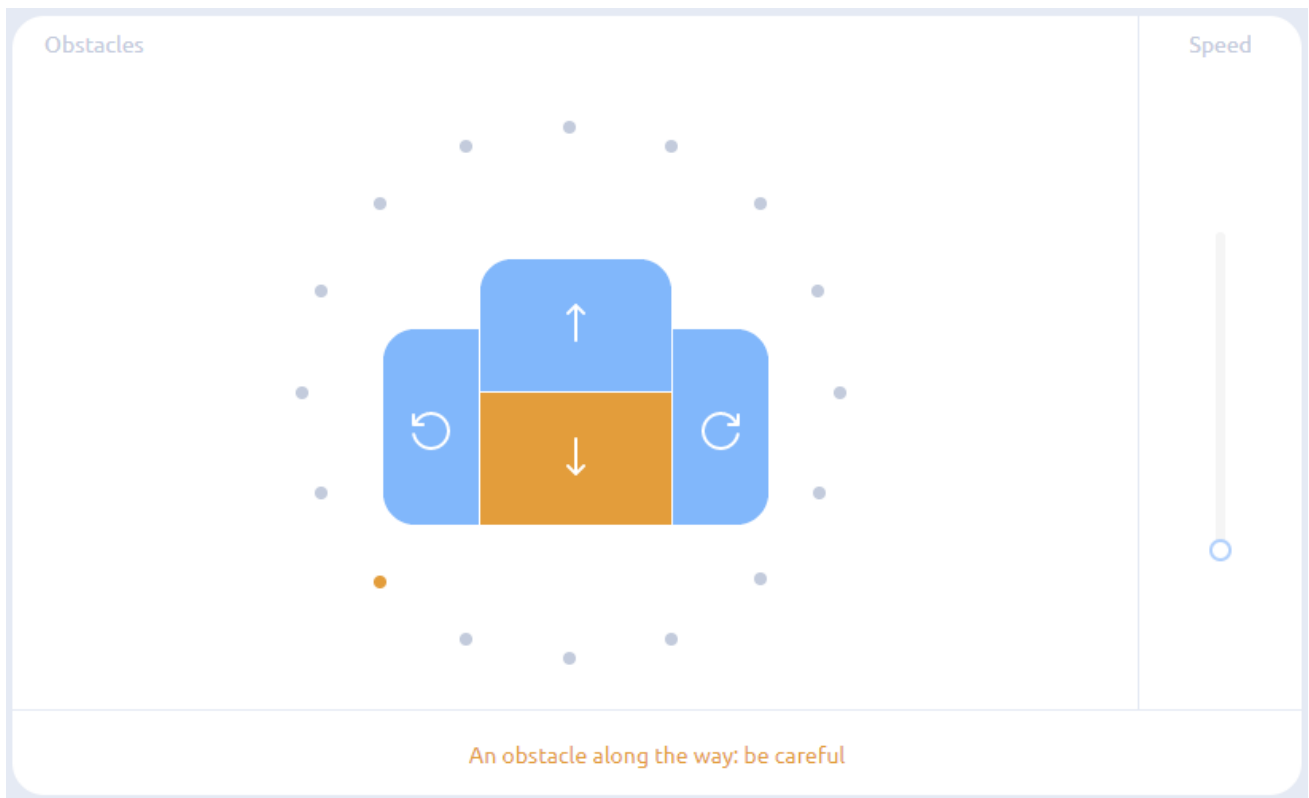
The rear sensors have detected the presence of an obstacle (highlighted in orange), so the button of moving back signals a possible danger, and a warning is displayed at the bottom

The right part of the widget contains the speed controller of the robot. Moving the adapter will cause the speed to change.

Obstacles

Speed

No obstructions detected
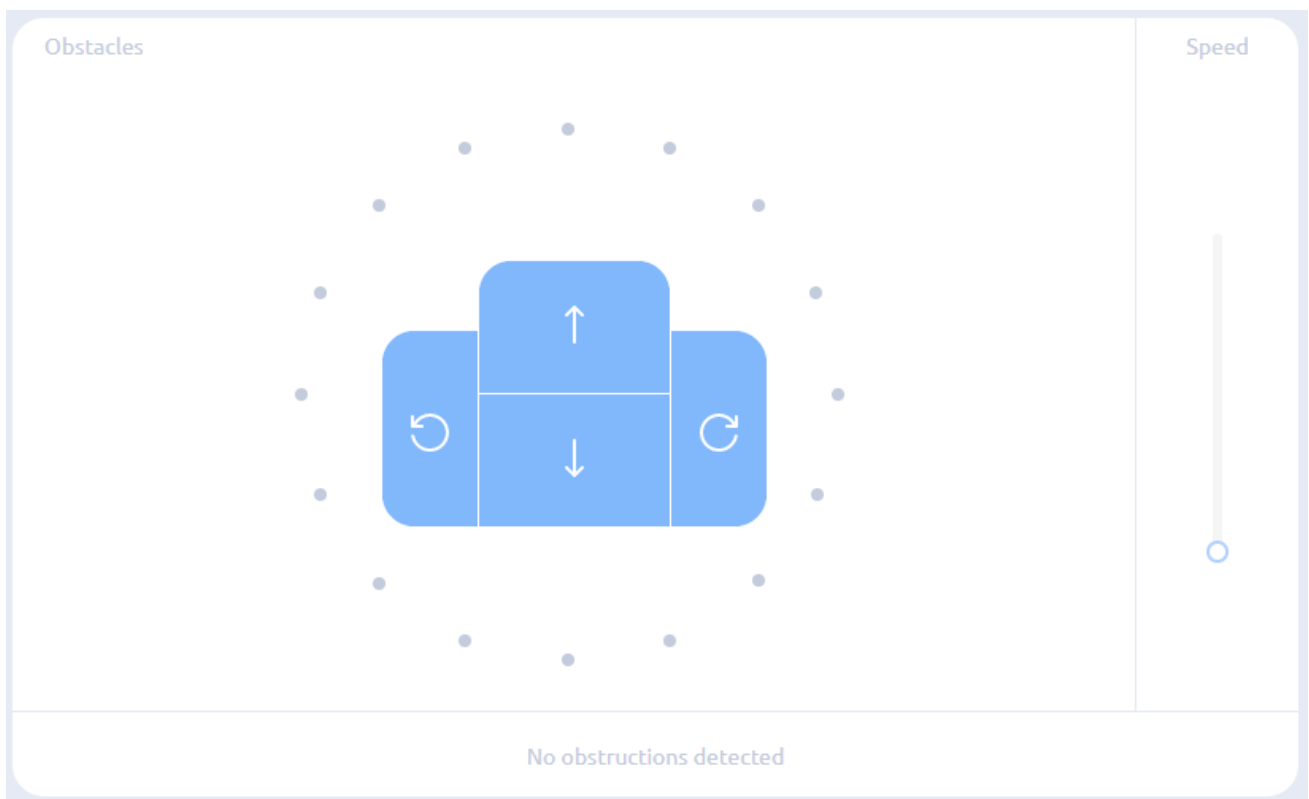
No obstacles are detected, the movement is not limited

5 Contact information

The website of Promobot: https://promo-bot.ru