SaguaroX

Motorized XY translation sample stage for µCT stations

MANUAL

Y
X

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CE Declaration of Conformity

CactuX s.r.o. declares that the product listed below has been designed and manufactured in compliance with the relevant harmonized standards and European Directives as follows.

Object of declaration: Product name: *SaguaroX*

This device carries the CE mark since November 2020: CE

The equipment might not conform to the European Directives if any part of the supplied equipment is replaced with a part not supplied by CactuX s.r.o.

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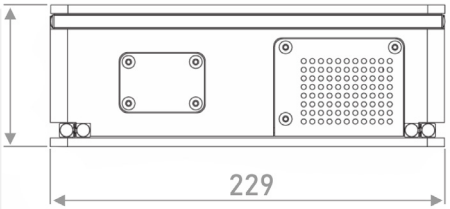
CACTUX

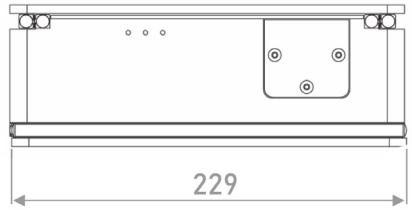
1. Introduction

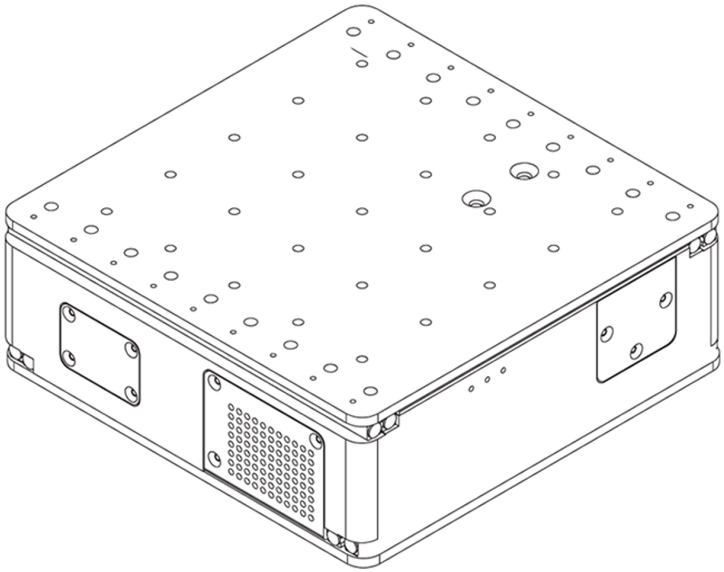
SaguaroX is motorized translation stage designed for quick and easy sample mounting and centering of the samples in CT systems respect to the X-ray tube. *SaguaroX* is controlled wirelessly via software or joystick from outside of the CT cabinet.

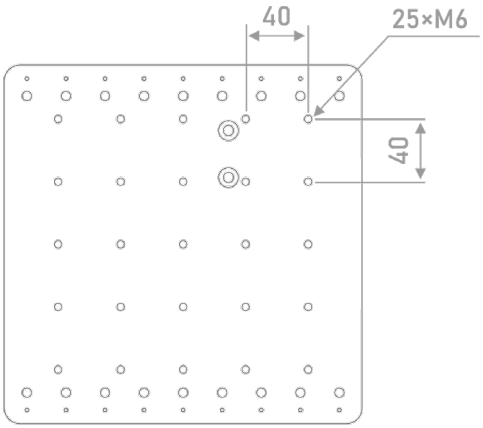
1.1 Parameters

x, *y* travel	100 mm × 100 mm
Sample area	220 mm × 220 mm
Maximum load	15 kg
Weight	9 kg
Dimensions	229 mm × 229 mm × 82 mm (w/o adapters)
Stage battery	Li-ion (14.6 V/5.54 Ah)
Runtime	Ca 4.5 h continuous run
Input power	50 W
IP Code	IP20









2. Safety

2.1 Environmental Conditions

Location	Indoor use only
Maximum altitude	2,000 m
Temperature range	5°C to 40°C
Maximum humidity	80% RH at 31°C

Note: If the unit has been stored at a low temperature or in an enviroment of high humidity, it must be allowed to reach ambient conditions before being powered up.

Electrical components of the device must not be rinsed with water.

Operation outside these enviromental limits may adversely affect operator safety.

Nevertheless, if any liquid has entered *SaguaroX*, switch off *SaguaroX* and disconnect the power supply cable. Contact support@cactux.cz and request repairs.

2.2 General Warning

During handling this *SaguaroX*, always unplug *SaguaroX* from the power source for your safety and turn *SaguaroX* off.

Do not use this *SaguaroX* when its motor is emitting smoke or is unusually hot to the touch or is emitting any unusual odor or noise or is in any other abnormal state. Stop using *SaguaroX* immediately, switch off the motor power and then disconnect the electronics power supply. Contact support@cactux.cz and request repairs.

Do not exceed the limitations as specified in this manual.

SaguaroX must be used only inside the cabinet of the CT device.

SaguaroX may only be operated by a person with the required qualification.

SaguaroX must not be used by a person with implanted electronic medical devices since it may interfere with it (in example ICDs and Pacemakers).

2.3 Battery

SaguaroX includes the Li-ion battery with 5.54 Ah capacity.

Avoid mechanical damage of the battery. It may cause the fire and personal injury.

2.4 Communication

Wireless communication is provided by Spirit 1 module, which uses the frequency of 868 MHz. This frequency is commonly used in conventional equipment.

Before first switch on, check all the equipment within the signal area of radio transmitter which could possibly use the same range of frequency.

2.5 Transport

For shipping or transporting *SaguaroX* and its accessory components, the original packaging should be used.

2.6 Placing

SaguaroX must be placed at least 15 cm away from the wall of the cabinet and from tube and detector. Pay attention when handling *SaguaroX* to avoid damaging the CT device.

2.7 Disposal

Once device has reached the end of its lifetime, please contact support@cactux.cz about disposal. Please observe and comply with the national and federal laws and regulations that are equivalent to EC directives.

Like all electronic devices, the *SaguaroX*, its accessory components and consumables must never be disposed of with general household waste.

3. Package content

SaguaroX will be delivered to your site in packaging designed for safe transport. All accessories will be included in this package except the optional accessories.

Standard Delivery :

1. *SaguaroX*
2. Radio transmitter
3. Flash drive with *Arizona* software
4. Mandrel
5. Desktop Stand
6. Cables (*SaguaroX* charger + USB cable)
7. Magnetic Adapters D 20 mm, D 50 mm, D 150 mm
8. Steel Plate D 330 mm + 4 screws

Optional accessory:

I. Joystick
II. CT-Igel hedgehogs

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2.

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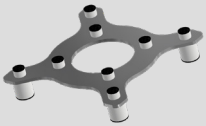

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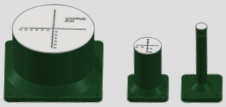

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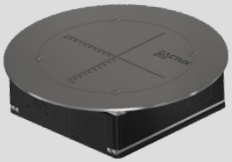

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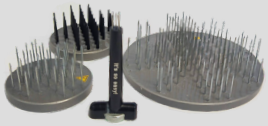
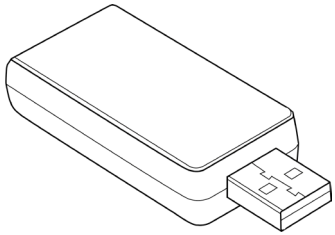


4. Installation

4.1 Radio transmitter

Radio transmitter provides communication between *Arizona* software and *SaguaroX*. Place the radio transmitter inside the shielding cabinet of the CT machine on appropriate place within sight of *SaguaroX*. The USB cable from the transmitter has to be lead through the shielding cabinet to the acquisition computer.



4.2 Joystick (optional accessory)

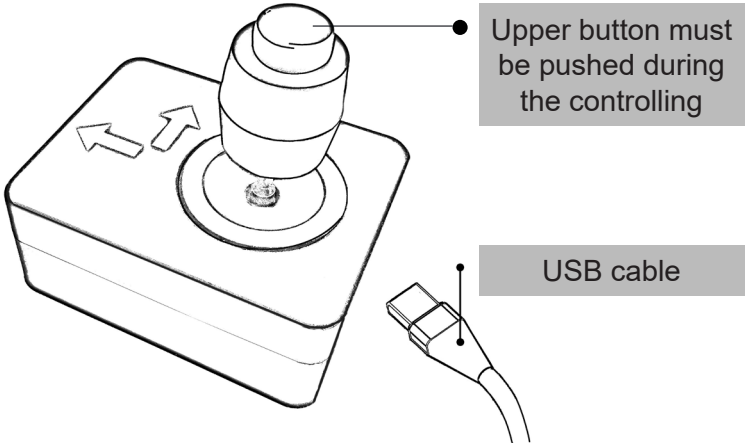
Joystick does not need to be powered by extra power cable. It is powered via USB cable connected to the radio transmitter. Joystick is placed on control panel of CT machine and cable has to be connected to acquisition computer.

- Plug the USB cable, which is already plugged into acquisition computer, into Joystick.

Control

It is needed to keep the upper button of the joystick pushed during the controlling of the *SaguaroX*, in order to prevent unwanted stage movements.

For the fast movement of *SaguaroX* you must rotate the ring right, to switch to slow movement you must rotate the ring left.



4.3 Arizona software

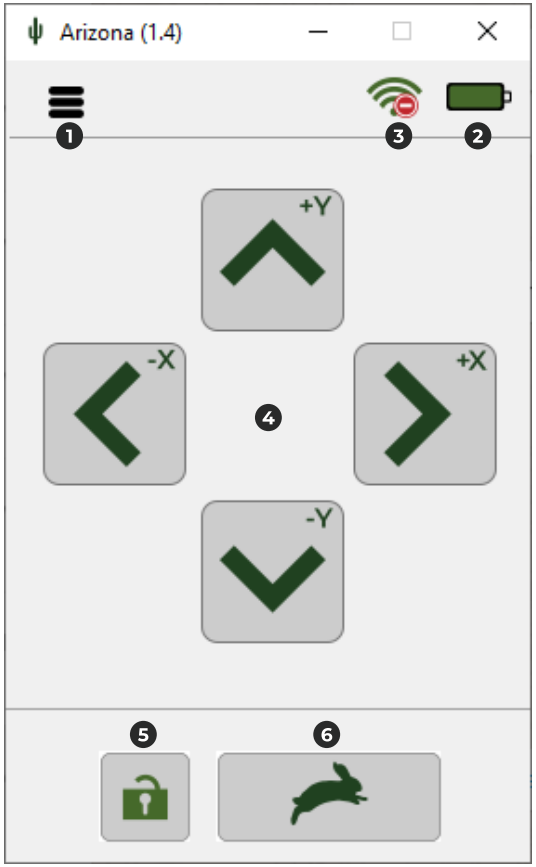
The software and configuration file are located on a flash drive, which is part of the package. The latest version of the software can be also found on the webpage www.cactux.cz/arizona-software, whereas the configuration file is only on the flash drive since it is unique for each *SaguaroX*.

How to start

Detailed information on installing the Arizona software and setting the connectivity of the transmitter to the acquisition computer can be found in a separate manual.

Control

The software displays the positive and negative directions of the axes, which correspond to the symbols on the translation stage.



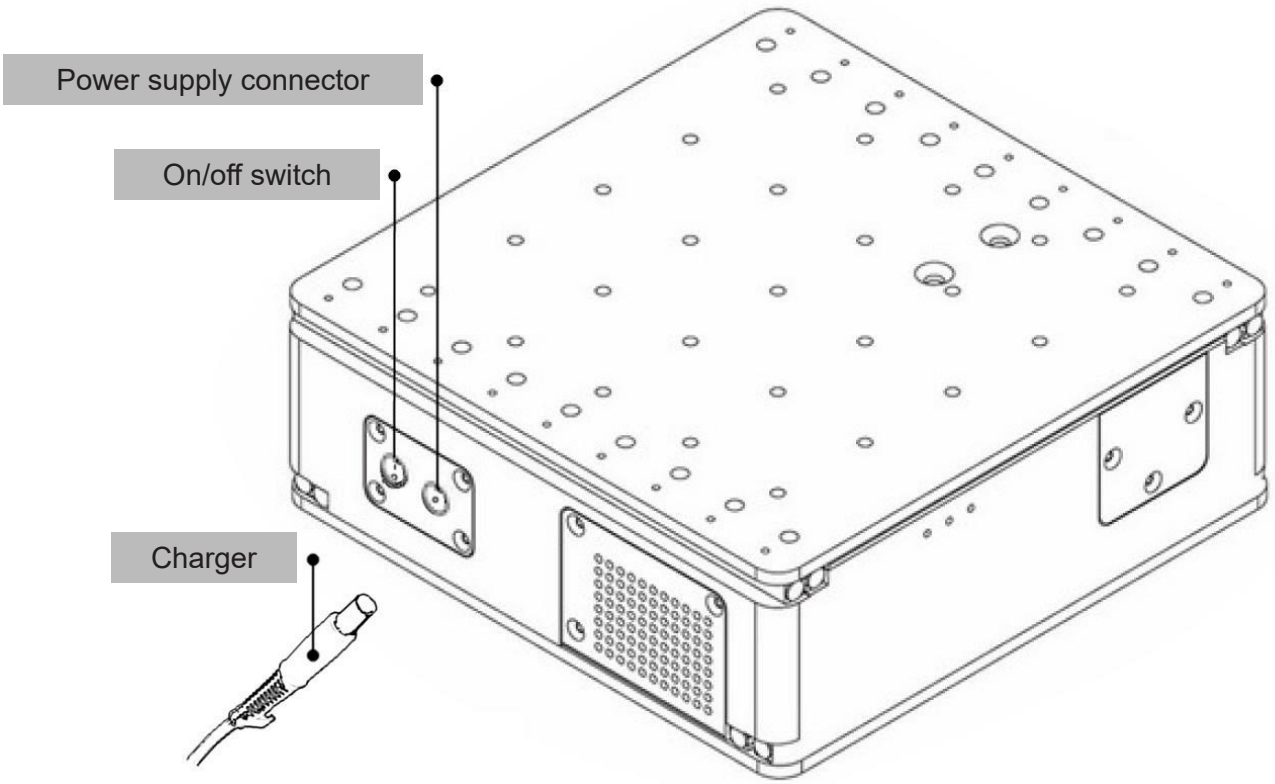
❶ About window
❷ Battery level indicator
❸ Signal indicator – shows the strength of connection
❹ Control arrows – move translation stage
❺ Lock button – locks control buttons (arrows and keyboard control).
❻ Speed switcher – changes regimes between fast and slow.

Keyboard control

- Keyboard arrows can be used instead of screen buttons.
- Control (Ctrl) works same as number 5 button.
- Spacebar switches speed regimes.
- Ctrl + S opens settings window (where the port name can be set).

4.4 SaguaroX

- Switch the *SaguaroX* on.
- In case the battery is low (see 5.1 Diodes), plug the Charger into the Power supply connector.
- As soon as the blue diode starts to flash, *SaguaroX* receives signal and it is ready to use.
- In case the battery is full (see 5.1 Diodes) and blue diode does not flash, move the transmitter closer to the *SaguaroX*.

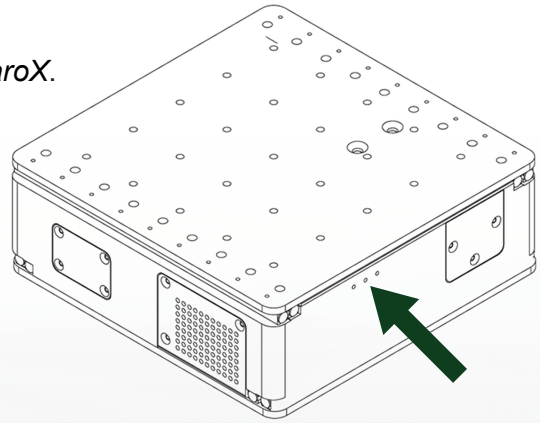


SaguaroX is designed for horizontal use only.

5. Usage

5.1 Diodes

Three diodes (blue, green, red) are located on the side of *SaguaroX*.



Blue diode

Blue diode indicates the signal from the radio transmitter. Diode always flashes when the stage receives the transmitter signal.

Green diode

Green diode indicates *SaguaroX* is switched on.

Red diode

Red diode indicates the status of battery. In case the charger is not connected and the red diode is flashing, the battery is low and translation stage must be connected to the charger. In case the charger is connected, the red diode is on and indicates charging. Red diode turns off when the battery is fully charged.

5.2 Charging

SaguaroX must be switched on during the charging process. Charging is allowed only via the supplied charger.

***SaguaroX* can not be operated when it is charging.**

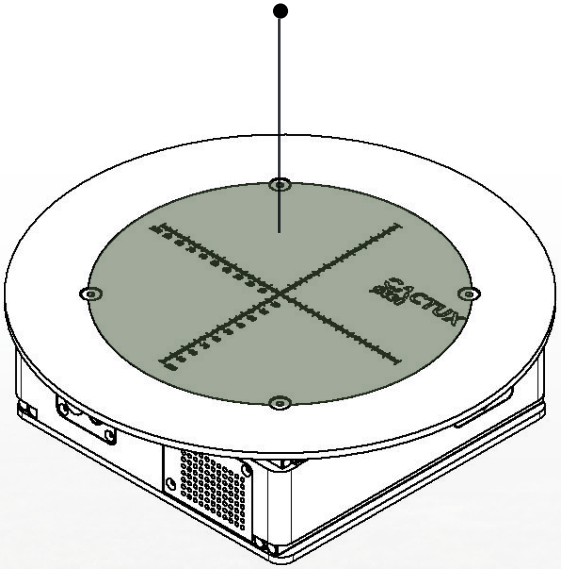
While the charger is plugged in, movement of *SaguaroX* is disabled. When the battery is fully charged, unplug the charger and proceed to use *SaguaroX* as specified in the manual.

In case of daily use it is recommended to charge *SaguaroX* every night.

5.3 Sample placement

The maximum weight of the load on *SaguaroX* is 15 kg. For a sample heavier than 10 kg, the circular steel plate must be attached to the *SaguaroX* with four screws and the sample must be placed in the marked circle on the circular steel plate.

The sample must be placed in the marked circle on the circular steel plate.



About CactuX s.r.o.

CactuX s.r.o. is a start-up company developing and producing addons for microCT instruments. Our first product is translation stage *SaguaroX* – a new unique motorized sample stage designed specifically for µCT stations. It provides quick and easy sample mounting and motorized movement.

CactuX was founded in March 2020 by the researchers from Laboratory of X-ray micro and nano computed tomography at CEITEC Brno University of Technology who have long-term experience with R&D in the computed tomography field.

Contact

support@cactux.cz

www.cactux.cz

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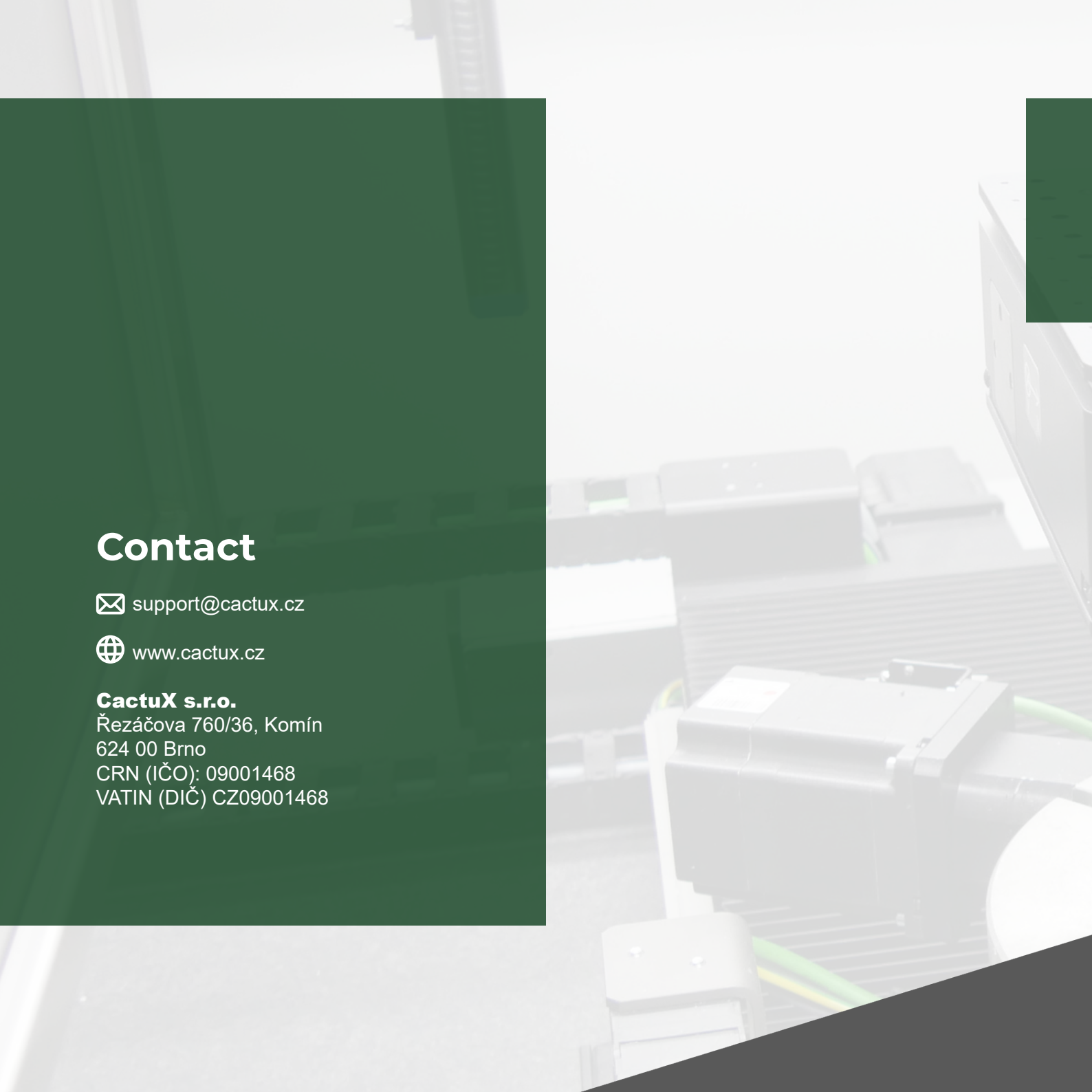

Contact

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