

# ROXY Exceed EC system

## Pre-installation requirements

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## SITE PREPARATION REPLY FORM - ROXY Exceed EC SYSTEM

Dear Customer,

To assure a successful and hassle-free installation of your ROXY Exceed EC system we created a pre-installation checklist to help you to prepare your facility. Please read the complete document carefully and verify if all site requirements are met at your laboratory. For confirmation fill in this reply form and return it to Antec Scientific. In case of questions about the information in this document or reply form, contact Antec Scientific or its distributors for help.

Please tick the check boxes and fill out the details completely.

Hereby I/we confirm that all of the below mentioned site requirements have been fulfilled and are in agreement with this document:

- Storage requirements
- Environmental conditions
- Size requirements (laboratory and bench space)
- Electrical installation and power requirements
- Computer requirements
- MS requirements
- Availability of all chemicals/operating supplies necessary for the installation & performance test

|                    |                    |
|--------------------|--------------------|
| Organization _____ | Name _____         |
| Address _____      | Job position _____ |
| Zip code _____     | Telephone _____    |
| City _____         | E-mail _____       |
| Country _____      | Place, Date _____  |
|                    | Signature _____    |

**Please return a signed copy of the reply form to Antec at least 4 weeks prior to installation. By e-mail ([support@antescientific.com](mailto:support@antescientific.com)). The Antec support team is not able to start an installation without customer's confirmation!**

**In case the installation cannot be started or completed successfully because the installation site requirements are not met, Antec Scientific reserves the right to charge the customer for additional installation costs (travel, labour etc.)**



## Symbols

The following pictograms are used in this installation guide:



Caution, calls attention to a procedure, which, if not correctly executed, could result in damage to the equipment or personal injury. Do not proceed beyond a "CAUTION" sign until the indicated conditions are fully understood and met.



This sign warns about the risk of electric shock. It calls attention to a procedure or practice which, if not adhered to, could result in loss of life by electrocution. Do not proceed beyond a danger sign until the indicated conditions are fully understood and met.



The attention sign signals relevant information. Read this information.

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## Introduction

Congratulations on your purchase of the Antec Scientific ROXY Exceed EC system. The ROXY Exceed EC system is a dedicated solution for electrochemistry (EC) coupled with mass spectrometry providing a powerful platform to simulate various oxidation and reduction processes in life sciences.

To assure an efficient and successful onsite installation of the ROXY Exceed EC system by engineers of Antec Scientific or its distributors, we have written this guideline with pre-installation requirements. This document contains hardware and site requirements as well as information about chemicals required for installation and performance test of the ROXY Exceed EC system. It is the customers responsibility that all the pre-installation requirements are met and all chemicals are available onsite on the day of installation.



Fig. 1. ROXY Exceed EC system (ROXY Exceed potentiostat) with syringe pump.



**The installation site must comply with all applicable local laws and regulations with regard to electrical and mechanical installations, building safety, and use of potentially hazardous materials/chemical and disposal thereof, etc.**

## Storage requirements

The ROXY Exceed EC system is shipped in two shipping boxes to your facility with the following dimensions:

| Equipment                | Dimensions storage box                              |
|--------------------------|---|
| ROXY Exceed potentiostat | 59 (D) x 41 (W) x 56 (H) cm (23.2 x 16.1 x 22.0 in) |
| Syringe pump             | 37 (D) x 37 (W) x 37 (H) cm (14.6 x 14.6 x 14.6 in) |

Make sure to have enough space to store the packed instrumentation under the following storage conditions:

| Parameter           | Requirement               |
|---------------------|---------------------------|
| Storage temperature | -10 – 50 °C (14 – 122 °F) |
| Storage humidity    | 20 – 80%, non-condensing  |

## Environmental requirements

The ROXY Exceed EC system is specified for operation under the following conditions:

| Parameter             | Requirement              |
|-----------------------|--------------------------|
| Operating temperature | 10 – 35 °C (50 – 95 °F)  |
| Maximum Altitude      | 2000 meter (7500 ft)     |
| Operating humidity    | 20 – 80%, non-condensing |



**For optimum analytical performance it is recommended that the ambient temperature of the laboratory be between 20-25 °C and be held constant to within  $\pm 2$  °C throughout the entire working day. Note: For optimal temperature stability of the cell cabinet the oven temperature should be set at least 7 degrees higher as ambient temperature.**



**Do not place the system next to heating or cooling pipes or expose the instrument to direct sun light or expose it to air drafts (AC system / open windows).**

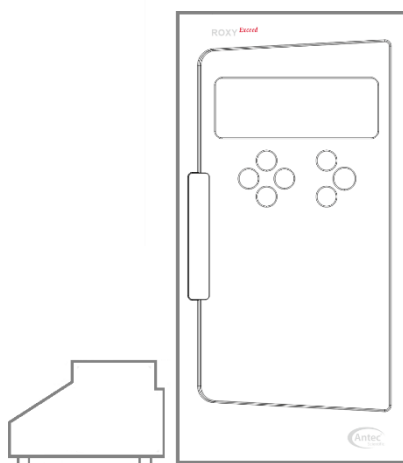


## Size Requirements

The size requirement for a ROXY Exceed EC system are as follow:

| Description  | Dimensions (D x W x H)              | Weight              |
|--------------|-------------------------------------|---------------------|
| ROXY Exceed  | 44 x 22 x 43 cm                     | 14.4 kg             |
| Potentiostat | (17.3 x 8.7 x 16.9 inch)            | (31.7 lbs)          |
| Syringe pump | 19 x 23 x 15 cm<br>(9 x 8 x 5 inch) | 2.7 kg<br>(6.0 lbs) |

1. The system should be installed on a stable, flat and smooth table, which is able to hold the weight of the system and other peripheral which might stand next to it (like computer equipment etc.).
2. Sufficient space around the system must be kept clear for ventilation and safe working. If other equipment is placed next to the system:
  - keep at least 5 cm, if there is another device on one side.
  - Keep at least 10 cm, if there are devices on both sides
3. The optimal arrangement of the system components is shown in figure 2. The syringe pump is placed next of the potentiostat. In such arrangement the LC connections are optimized.



*Fig. 2. Front view of the advised ROXY Exceed EC system configuration.*

4. The electrochemical flow cell should be positioned as close as possible to the inlet of the ionization source of the MS. The ROXY Exceed potentiostat controlling the cell should also be positioned as close as possible to the MS, in any case within a distance of max 2.5 meter of the ESI inlet.
5. The PC for control and data-acquisition of the system should be placed in the vicinity of the ROXY Exceed potentiostat, within a distance of max 2.5 meter.



**Tip: Installation of the ROXY Exceed system + PC on a suitable movable laboratory cart/table has multiple advantages:**

- Easy access to all sides of the instrumentation
- System can be easily manoeuvred next to the (ESI inlet) MS
- Flexibility with respect to use of both ROXY Exceed EC system and MS.



## Electrical and power requirements

The customer is responsible for providing appropriate electrical power and power outlets for all ROXY Exceed system modules in the laboratory.

1. The installation of electrical supplies and fixtures in the laboratory must be in compliance with all local regulations and safety standards.
2. The power source should exhibit minimal power transients and fluctuations. The AC mains supply voltage source should not fluctuate more than +/- 10% from the nominal voltage. If your mains voltage is unstable (>10% of nominal voltage) use an Uninterruptable Power Supply (UPS) The mains supply must include a correctly installed protective earth conductor.



**To protect against power transients (voltage spikes and power surges) it is advised to connect the equipment over an electrical surge protector.**

3. The ROXY Exceed EC system modules are equipped with a universal AC/DC switched-mode power adapter rated for 100–240 V AC and 50/60 Hz. Every system module is delivered with a set of 2 power cords for the following regions:
  - EUR (CEE7/7 plug to IEC60320 C13 plug)
  - US (NEMA 5-15 plug to IEC60320 C13 plug)



**For regions with deviating mains plugs/sockets like (for example UK, Switzerland, Brazil etc.) make sure to have the appropriate power cords available on-site at the date of installation. Make sure these power cables are properly grounded and meet the relevant safety standards which apply in your country. In case of questions contact your local distributor.**

4. The maximum power consumption of the ROXY Exceed EC system (ROXY Exceed potentiostat heater on full power) is < 200 Watt. The typical power consumption is < 50 Watt.
5. Connect the potentiostat to a grounded AC wall socket with a line voltage of 100 – 240 VAC (as specified in the sections above) using the supplied power cables. The instrument should be connected to a protective earth via the socket. Make sure the detector is placed in such a way that the mains power connection can be reached easily to disconnect it from the mains power by removing the power cable.



**Only use manufacturer-supplied cable(s) to connect with other devices. Thoroughly connect shielding to common. Manufacturer will not accept any liability for damage, direct or indirect, caused by connecting this instrument to devices and with cables which do not meet relevant safety standards.**

## Computer requirements

The following PC hardware requirements should be met for the installation of the ROXY Exceed EC system controlled by Dialogue Elite software:

1. Operating system: Microsoft Windows 7 or newer, 32 or 64-bit. An US or European Microsoft® Windows™ version is recommended. The Windows operating system should be updated with the latest Service Packs.
2. USB port: 1 free USB port (USB 2.0). In this port, the LAN adapter (pn 250.0206) must be connected. The LAN adapter consist in a 3 USB ports and a LAN connection for the installation of the syringe pump, the Dialogue Elite USB license dongle and the ROXE Exceed.
3. Internet access: For software and drivers download, access to manuals and instructions. If no internet access is available on the computer controlling the ROXY Exceed EC system:
  - Make sure that internet access is available from another desktop computer on the installation site.
  - The USB ports on the PC's are not blocked for access and installation of third-party software due to IT security measures.
4. A PDF reader to access and read manuals and instructions in digital versions (PDF). Can be downloaded for free from the following website: <https://get.adobe.com/reader/>
5. Excel (Microsoft Office): to opening and analysis Dialogue data and certificates. A trial version can be downloaded from the following website: <https://products.office.com/en-us/excel>



**Installing software requires a computer with administrator access. Make sure that the PC and its USB ports is authorized/able to install third-party software. Inform your IT department well in advance to arrange authorization to avoid unnecessary delays during the installation.**



**For uninterrupted operation of the ROXY Exceed EC system and control software Antec Scientific advises to turn off:**

- Screensavers
- (USB, LAN) hibernate mode
- Auto hard disk shut down (energy saving)
- Automatic Windows updates
- Avoid exhaustive scanning by virus scanners\*

\*) In your antivirus SW, turn off the option "Check Files at Change" for the relevant Dialogue Elite data storage directory.

## Mass spectrometer requirements

The ROXY Exceed EC system can be connected to a mass spectrometer (MS) equipped with a suitable atmospheric pressure ionization source (ESI, DESI, APCI, APPI). A mass spectrometer is not a part of the ROXY Exceed EC system.

1. At the day of installation, a suitable MS should be available and ready at the customer site to run a performance test with the ROXY Exceed EC system.
2. The customer must assure that during the installation a skilled and authorized MS user is on-site to operate the MS instrument, perform test measurement and to make the required start trigger connections between MS and ROXY Exceed EC system.
3. For optimal use of the system the ROXY Exceed EC system and MS should operate in a master-slave configuration, in which the ROXY Exceed EC system is the master device controlling the experiment.
4. A dedicated ROXY Exceed trigger cable is delivered with the ROXY Exceed EC system to set-up a trigger connection to start the data-acquisition on the MS. The ROXY Exceed trigger cable has a MS start output (relay/contact closure) with a screw terminal connector for easy connection to a free TTL start input of the MS. The customer has to take care for:
  - Matching open-ended I/O cable (MS side)
  - Technical information about the configuration, set-up and use of the I/O (MS side)
  - Diagram/pin-layout of the I/O connector on the MS.



**In case your MS user documentation does not contain details about the I/O configuration and use of the I/O available on your MS instrument, contact your MS manufacturer for help.**



**Electrical Shock Hazard: Always use grounding union connection between the electrochemical cell and mass spectrometer.**

## Laboratory equipment & consumables

For the performance qualification test and maintenance of the electrodes and cells of the ROXY Exceed EC system, the (on-site) preparation of solutions and standards is required.

1. The preparation of the solutions and standards might require the use of:
  - Microbalance,
  - pH meter and relevant pH calibration standards,
  - Analytical pipettes and tips ( $\mu\text{L}$  – mL range)
  - Clean glassware
  - Powder-free gloves (Neoprene or Nitrile)
  - Safety glasses
  - Other general laboratory items.
  
2. Cleaning of the electrodes and cell will require the following consumables:
  - Soft paper tissue, lint-free wipes
  - A wash bottle with deionized water,
  - A wash bottle with ethanol/methanol,
  - Ultrasonic bath.



**Laboratory equipment should be used by trained laboratory personnel only. Use proper eye and skin protection when working with solvents. Additional safety requirements or protection may be necessary depending on the chemicals used in combination with this equipment. Make sure that you understand the hazards associated with the chemicals used and take appropriate measures with regards to safety and protection.**

## Chemicals requirements

For the on-site performance test of the ROXY Exceed EC system a customer supplied test solution is required. For a check of the system in oxidative mode or reductive mode a different performance test solution is required.

1. All required chemicals should be available at the lab at the moment of installation.
2. For EC/MS only chemicals of sufficient quality should be used. Note that chemicals that are highly pure (for UV detection) may contain electrochemically active impurities! Use only 18 MOhm.cm TOC-free ultrapure water.
3. See the next section for detailed information about the chemicals that are recommended by Antec Scientific.

## Test solutions for oxidative mode

To execute a performance test in oxidative mode the following solution should be available:

1. Mobile phase: about 100mL of 20mM Ammonium formate (pH 7.4 adjusted with ammonium hydroxide) in 50% acetonitrile.
2. Sample: 20mL of 10µM Amodiaquine in the solution described in point 1.

## Test solution for reductive mode

To execute a performance test in reductive mode the following solution should be available:

1. Mobile phase: about 100mL of 1% formic acid in 50% acetonitrile.
2. Sample: 20mL of 5µg/mL insulin in the mobile phase described in point 1.



**Prepare the solutions preferable a day before the installation day. The sample solution of both Amodiaquine and Insulin should be stored at 4°C in the dark (light sensitive).**



## List of chemicals

*Table. I. Recommended chemicals used for performance test.*

| # | Substance                                     | Order number*         | Grade   | MW      |
|---|---|-----------------------|---|---------|
| 1 | Amodiaquine<br>di-hydrochloride<br>di-hydrate | A2799 (Sigma-Aldrich) | Analytical standard                             | 464.81  |
| 2 | Ammonium<br>formate                           | 70221 (Sigma-Aldrich) | 99.0%, for MS                                   | 63.06   |
| 3 | Ammonium<br>hydroxide                         | 44273 (Fluka)         | ≥ 25% in H <sub>2</sub> O<br>additive for LC/MS | 35.05   |
| 4 | Insulin from<br>bovine pancreas               | I6634 (Sigma-Aldrich) | BioReagent, suitable<br>for cell culture        | 5733.49 |
| 5 | Formic acid                                   | 94318 (Fluka)         | 98%, for MS                                     | 46.03   |
| 6 | Acetonitrile                                  | 268260025 (Acros)     | 99.9%, HPLC grade                               | 41.05   |
| 7 | Water   |                       | TOC <10ppb,<br>>18 MOhm-cm                      | 18.02   |

\*) In the case the chemicals (of this particular brand) are not available in your country, purchase an equivalent with the same purity/grade.



**Refer to chemical product Material Safety Data Sheets (MSDS) and follow all safety guidelines when handling, storing, and disposing of chemicals.**