



## EUROPA

### External Use of RObotics for Payload Automation



#### Description

Conceived for the International Space Station (ISS), EUROPA (External Use of RObotics for Payload Automation) is the ASI robotic Technological demonstration for the ISS.

EUROPA is composed of:

- Robotic Arm (derived from SPIDER arm)
- Controller
- Data Handling & Power Units
- Task board for robotic experiments

Europa main capabilities are:

- grasping and positioning of objects in the working environment ;
- perform operations requiring contact with the working environment;
- execution and control of programmed operations for payload servicing based on tasks and actions architecture;
- robotic operation control and monitoring both from ground, with the EUROPA Ground Segment, and from on-board with the Crew Man Machine Interface.

## EUROPA External Use of Robotics for Payload Automation

### EUROPA baseline experiments

Robot system characterisation and robotic technology demonstration Science payload investigation.  
The science payload consists of an experiment aiming to measure diffusion and Soret coefficients of liquid mixtures.

### Robotics S/S main features

Controller based on NASREM architecture  
Direct Hybrid Force-Position Control: direct control of the interaction forces  
Full exploitation of arm redundancy  
High-rate computational power hardware based on Motorola Power PC750  
Arm and effector based on the SPIDER design  
Force-Torque Sensor (FTS) mounted on the arm wrist, derived from the SPIDER FTS  
Robot Calibration Platform

### Facility S/S Main Features

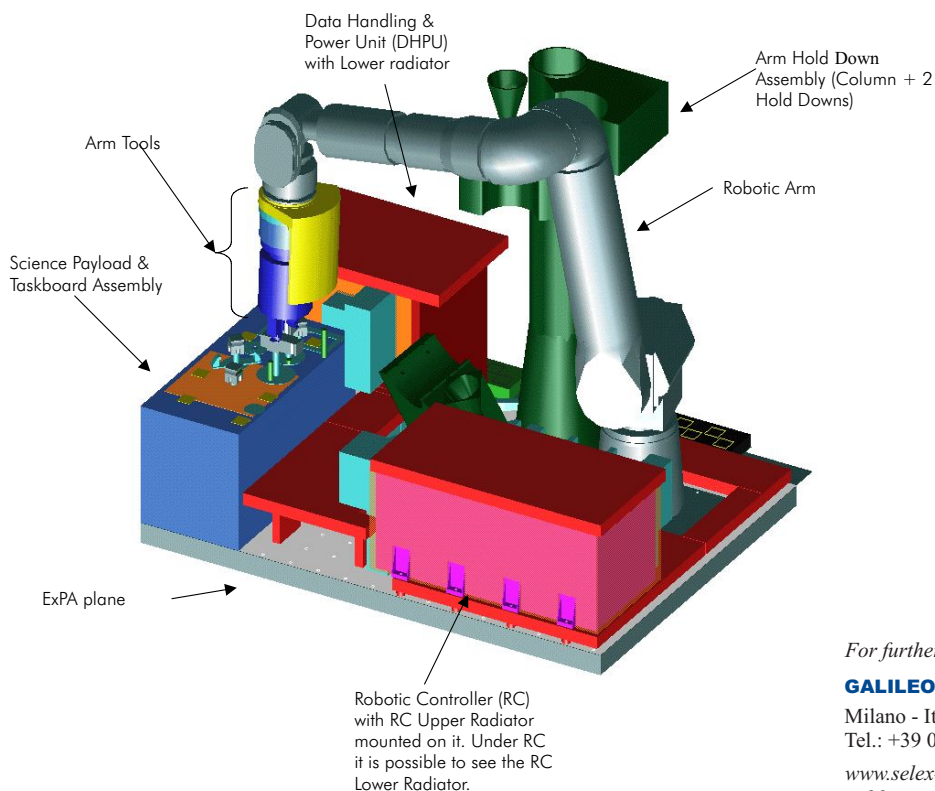
Handling of communication interface between the Europa Facility and the ISS  
Activation and supervision of the Europa robotic mission  
Monitoring of critical parameters (e.g. temperature) and resources (e.g. power consumption and data rate)  
Managing the off-line interface for setting and safety parameters, to guarantee high level safety of robot operations  
Distributing operational / stay alive and contingency power lines to all units of the Europa Facility, including heaters.

### APPLICATION FIELD

International Space Station

### R&D INVESTMENT

Europa is being developed - under an ASI (Italian Space Agency) contract - by an industrial consortium led by Galileo Avionica.



For further information, please contact:

#### GALILEO AVIONICA

Milano - Italy  
Tel.: +39 02 30242357 - Fax +39 02 30242093  
[www.selex-sas.com](http://www.selex-sas.com)  
[galileoavionica@galileoavionica.it](mailto:galileoavionica@galileoavionica.it)

