Large relocatable symmetrical robotic arm with 7 degrees of freedom

ERA acts as a tool for: Installation, deployment and replacement of elements of the Russian Segment of the Space Station, inspection of the Russian Segment, support/transfer of EVA cosmonauts, transfer of Orbital Replacement Units and other assembly tasks.

The arm consists of 2 End Effectors, 2 Wrists, 2 Limbs and 1 Elbow joint together with electronics and cameras. Both ends act as either a "hand" for the robot or the base from which it can operate.
European Robotic Arm

**Dimensions**
- Total length: 11,300 mm
- Reach: 9,700 mm
- Tip position accuracy: 5 mm
- Maximum tip speed: 100 mm/s

**Mass budget**
- Launch mass: 630 kg
- Max. P/L handling capability: 8,000 kg

**Communications infrastructure**
- Power, data and video signals cabling and special fixtures on End Effector and Base Point.

**Electrical power**
- Average operation power: 475 W (120 V DC)
- Peak operation power: 800 W (120 V DC)

**Main construction materials**
- Limb: Carbon fibre tube and Aluminium interfaces
- Wrist, Elbow and End Effector: Composed of many different materials
- Thermal Protection: Beta Cloth Blankets

**Main contractor**
- Dutch Space (Leiden, The Netherlands), leading a consortium of many subcontractors

**Specifications**

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ERASMUS User Centre and Communication Office

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**Utilisation Relevant Data**

### LAUNCH CONFIGURATION
- Launched in so called «Charlie Chaplin» configuration with power off
- **Launch vehicle:** Proton
- **Launch site:** Baikonur
- **Launch date:** 2012

### ON-ORBIT CONFIGURATION
- Attached to different locations on the Russian Segment
- Home base: Permanent Multipurpose Module (PMM)

### FLIGHT HARDWARE
- End Effector with electronics box (2)
- Base Points (2 on launcher interface and multiple on ISS)
- Wrist (comprising roll, yaw and pitch joints) with joint electronics (2)

### CLU:
- Camera and Lighting Units (4) are provided for proximity control and overviews

### IMMI:
- Intra Vehicular Activity Man Machine Interface via a laptop computer

### EMMI:
- Extra Vehicular Activity Man Machine Interface via a control panel

### CONTROL INFRASTRUCTURE
- From the inside of the station with the IMMI via a laptop computer and the Control Post Computer
- From the outside of the station with the EMMI via a control panel and the Control Post Computer

### Illustrations: ESA/D. Ducros

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**Utilisation Relevant Data**

http://erasmus.spaceflight.esa.int