

# Etat de l'art Bras robot low-cost

## Modèles commerciaux fermés

### Niryo Ned 2

- 6DOF + Pince

<https://niryo.com/fr/produit/bras-robotise-6-axes/>

<https://github.com/NiryoRobotics>

### DAGU Six-servo Robot Arm



- 5DOF Manipulateur + 1DOF Pince

- 6 servos
  - 3x 13 kg.cm torque metal gear, 40.4 \* 19.8 \* 36 mm, 48g, 0.22s/60°
  - 1x 3.2 kg.cm, 39.5 x20.0x35.5mm, 41g, 0.27s/60°
  - 2x 2.3 kg.cm, 28 x14x29.8mm, 18g, 0.13/60°
- Carte de contrôle AREXX Intelligence Centre

<https://seafire.unistra.fr/d/693101e6046d4819a3af/>

<https://arexx.com/product/robot-arm/>

[www.arexx.com.cn](http://www.arexx.com.cn)

## Modèles Open Source

<https://github.com/ AntoBrandi/Robotics-and-ROS-2-Learn-by-Doing-Manipulators>

### Trossen Robotics ALOHA

#### Stationary

[https://docs.trossenrobotics.com/trossen\\_arm/main/specifications.html](https://docs.trossenrobotics.com/trossen_arm/main/specifications.html)

[https://docs.trossenrobotics.com/aloha\\_docs/2.0/specifications.html#aloha-stationary](https://docs.trossenrobotics.com/aloha_docs/2.0/specifications.html#aloha-stationary)

[https://docs.trossenrobotics.com/aloha\\_docs/2.0/operation/stationary.html](https://docs.trossenrobotics.com/aloha_docs/2.0/operation/stationary.html)

#### Solo

Dimensions	1019D x 1066H x 1225W mm
Leader Arms	WidowX 250 S - Aloha Version
Follower Arms	ViperX 300 S - Aloha Version
Camera	2x Intel RealSense D405
Chassis	Modular
Computer	Coming Soon
USB Hubs	Yes 1X

[https://docs.trossenrobotics.com/aloha\\_docs/2.0/specifications.html#aloha-solo](https://docs.trossenrobotics.com/aloha_docs/2.0/specifications.html#aloha-solo)

[https://docs.trossenrobotics.com/aloha\\_docs/2.0/operation/solo.html](https://docs.trossenrobotics.com/aloha_docs/2.0/operation/solo.html)

# Trossen Robotics (Interbotix) X-Series Arms

[https://docs.trossenrobotics.com/interbotix\\_xsarms\\_docs/specifications.html](https://docs.trossenrobotics.com/interbotix_xsarms_docs/specifications.html)

[ALOHA WidowX-250 6DOF](#)

[ALOHA ViperX-300 6DOF](#)

## Waveshare RoArm

- 5DOF + pince Waveshare
- [https://github.com/waveshareteam/roarm\\_ws](https://github.com/waveshareteam/roarm_ws)
- <https://www.waveshare.com/product/roarm-m3.htm?sku=30444>

## ROBOTIS Open Manipulator-P

- 5DOF + pince
- [Modbus-RTU](#)
- [https://emanual.robotis.com/docs/en/platform/openmanipulator\\_p/overview/](https://emanual.robotis.com/docs/en/platform/openmanipulator_p/overview/)

## ROBOTIS Open Manipulator-X

[https://emanual.robotis.com/docs/en/platform/openmanipulator\\_x/specification/#specification](https://emanual.robotis.com/docs/en/platform/openmanipulator_x/specification/#specification)

- 4 DOF Manipulateur + 1 DOF Pince
- 6x Dynamixel XM430-W350 <https://emanual.robotis.com/docs/en/dxl/x/xm430-w350/>
- Carte de contrôle Robotis OpenCR1.0  
<https://emanual.robotis.com/docs/en/parts/controller/opencr10/>

## SO-ARM100

<https://github.com/TheRobotStudio/SO-ARM100>

- 5 DOF Manipulateur + 1 DOF Pince
- 6 servos Feetech STS3215 [https://www.feetechrc.com/en/2020-05-13\\_56655.html](https://www.feetechrc.com/en/2020-05-13_56655.html)
- Waveshare Serial Bus Servo Driver Board  
[https://www.waveshare.com/wiki/Bus\\_Servo\\_Adapter\\_\(A\)](https://www.waveshare.com/wiki/Bus_Servo_Adapter_(A))
- OU
- Feetech FE-URT-1 <https://www.feetechrc.com/FE-URT1-C001.html>

[https://github.com/huggingface/lerobot/blob/main/examples/10\\_use\\_so100.md](https://github.com/huggingface/lerobot/blob/main/examples/10_use_so100.md)

<https://medium.com/@sarohapranav/my-experiences-and-tips-for-creating-a-robotic-so100-arm-3df779a4aae7>

[https://github.com/JafarAbdi/ros2\\_so\\_arm100](https://github.com/JafarAbdi/ros2_so_arm100)

## pince compatible SO-ARM

- Waveshare <https://www.waveshare.com/gripper-a.htm?sku=30386>

# Cartes de contrôle

## OpenCR1.0

<https://emanual.robotis.com/docs/en/parts/controller/opencr10/>

- STM32F746ZGT6 / 32-bit ARM Cortex®-M7 with FPU (216MHz, 462DMIPS)  
[Reference Manual](#), [Datasheet](#)
- Programmer : ARM Cortex 10pin JTAG/SWD connector  
USB Device Firmware Upgrade (DFU)  
Serial
- Digital I/O
  - 32 pins (L 14, R 18) \*Arduino connectivity
  - 5Pin OLLO x 4
  - GPIO x 18 pins
  - PWM x 6
  - I2C x 1
  - SPI x 1
- Communication Ports
  - USB x 1 (Micro-B USB connector/USB 2.0/Host/Peripheral/OTG)
  - TTL x 3 (B3B-EH-A / DYNAMIXEL)
  - RS485 x 3 (B4B-EH-A / DYNAMIXEL)
  - UART x 2 (20010WS-04)
  - CAN x 1 (20010WS-04)

## Waveshare Serial Bus Servo Driver Board

[https://www.waveshare.com/wiki/Bus\\_Servo\\_Adapter\\_\(A\)](https://www.waveshare.com/wiki/Bus_Servo_Adapter_(A))

- Supports connecting to a host or MCU
- up to 253 ST/SC series serial bus servos

- RS485
- UART pour contrôle depuis Arduino, ESP32, STM32 (RX-RX, TX-TX)
- USB pour contrôle via Raspberry, Jetson ou PC
- 9~12.6V voltage input (the input voltage and the servo voltage must be matched)

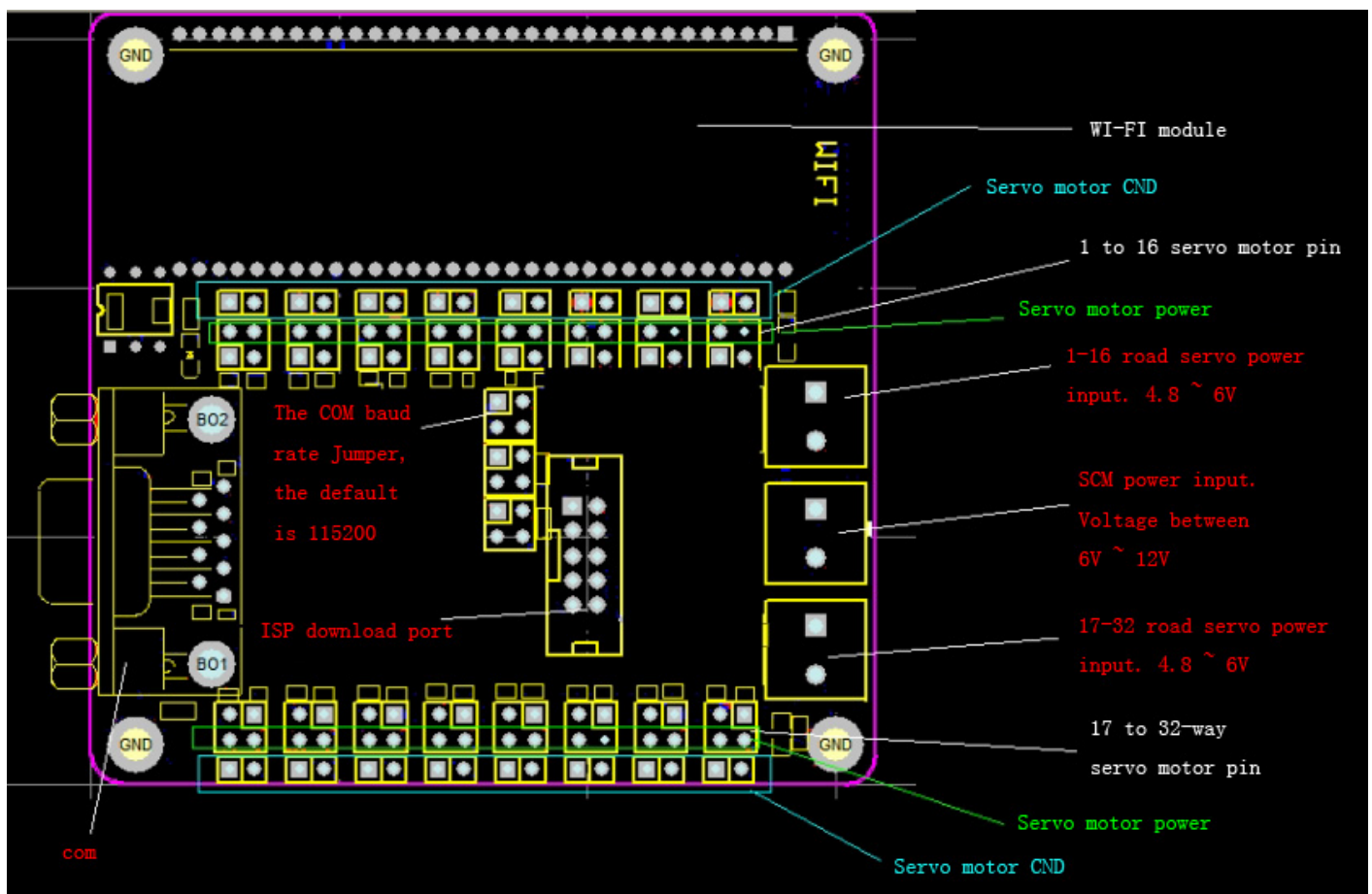
## Feetech FE-URT-1

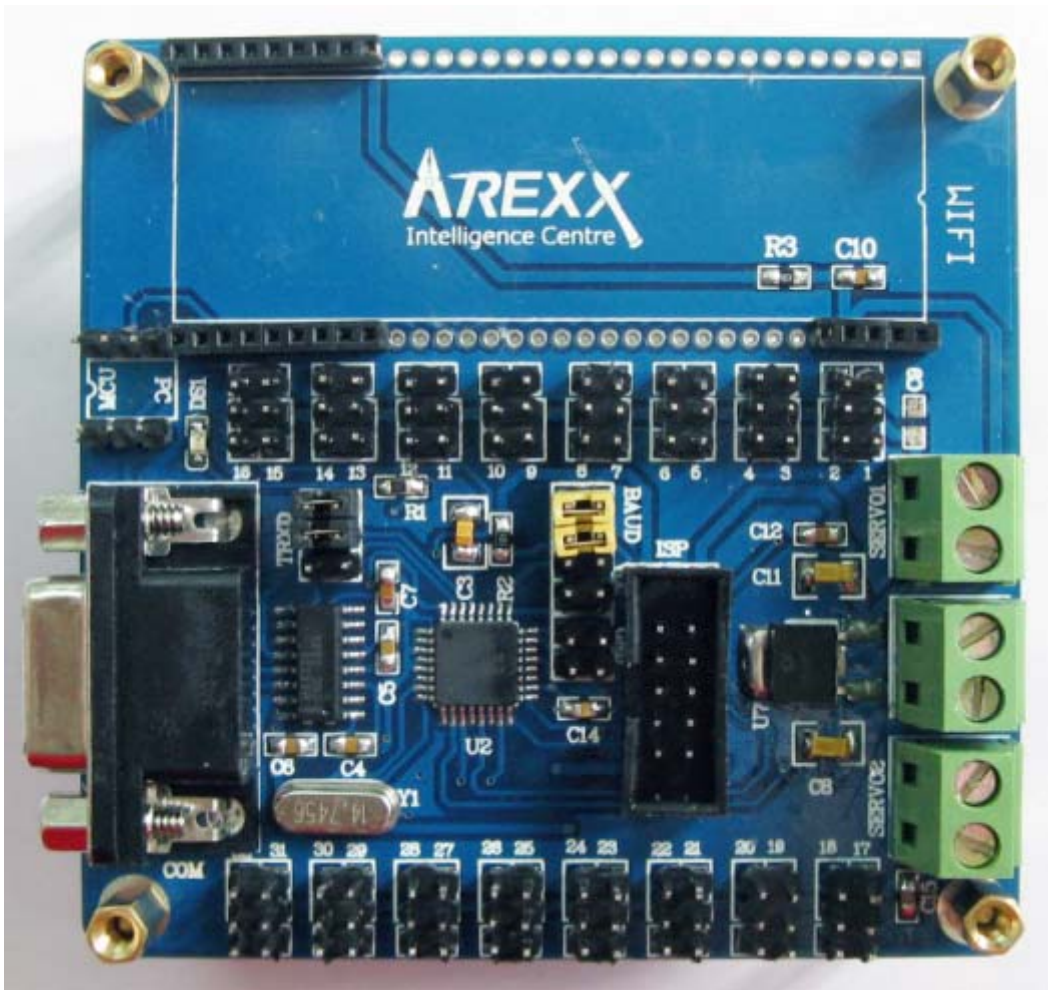
<https://www.feetechrc.com/FE-URT1-C001.html>

## AREXX Intelligence Centre

<https://seafire.unistra.fr/d/693101e6046d4819a3af/>

- atmega168 MCU
- RS232
- default baud rate is 115.2k
- Wifi wireless control reserve the ISP downloaded, you can download the MCU controller program using the STK500 ISP cable





- dual - Power Supply
  - 6 ~ 12 V SCM power
  - 4.8 ~ 6 V, 1.2A servo motor power [servo motor power supply Road 1-16 respectively, a 17-32 road supply port])

## Servomoteurs

### Dynamixel XM430-W350

<https://emanual.robotis.com/docs/en/dxl/x/xm430-w350/>

- 4.1 [N.m] (at 12.0 [V], 2.3 [A])
- 46 [rev/min] (at 12.0 [V])
- 10.0 ~ 14.8 [V]
- Operating Modes
  - Current Control Mode
  - Velocity Control Mode
  - Position Control Mode (0 ~ 360 [°])
  - Extended Position Control Mode (Multi-turn)
  - Current-based Position Control Mode

- PWM Control Mode (Voltage Control Mode)
- baud rate 9,600 [bps] ~ 4.5 [Mbps]
- TTL Half Duplex Asynchronous Serial Communication with 8bit, 1stop, No Parity
- RS485 Asynchronous Serial Communication with 8bit, 1stop, No Parity

## Feetech STS3215

[https://www.feetechrc.com/en/2020-05-13\\_56655.html](https://www.feetechrc.com/en/2020-05-13_56655.html)

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