

ROBOTIS e-Manual

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DYNAMIXEL

DYNAMIXEL SYSTEM

EDUCATION KITS

SOFTWARE ROBOTIS

ROBOTS Community

GitHub

Kinetic

Melodic

Noetic

Dashing

Foxy

Humble

Windows

O : Available

Δ : Need to check

X : Unavailable

Features

Kinetic

Melodic

Noetic

Dashing

Foxy

Galactic

Humble

Teleop

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O

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SLAM

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Navigation

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Simulation

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Manipulation

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Home Service Challenge

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Autonomous Driving

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Machine Learning

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X

Examples

Kinetic

Melodic

Noetic

Dashing

Foxy

Galactic

Humble

Interactive Markers

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X

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X

Obstacle Detection

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Position Control

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Point Operation

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Patrol

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Follower

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Panorama

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Auto Parking

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Auto Parking(Vision)

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Multi TurtleBot3

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Edit on GitHub

TOP

3. Quick Start Guide

TurtleBot3 ROS1 Noetic Quick Start Guide for Noetic

3. 1. PC Setup

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WARNING: The contents in this chapter corresponds to the `Remote PC` (your desktop or laptop PC) which will control TurtleBot3. Do not apply this instruction to your TurtleBot3.

Compatibility WARNING

- `Jetson Nano` does not support native Ubuntu 20.04. Please refer to [NVIDIA developer forum](#) for more details.

NOTE: This instruction was tested on Linux with `Ubuntu 20.04` and `ROS1 Noetic Ninjemys`.

3. 1. 1. Download and Install Ubuntu on PC

1. Download the proper `Ubuntu 20.04 LTS Desktop` image for your PC from the links below.
 - [Ubuntu 20.04 LTS Desktop image \(64-bit\)](#)
2. Follow the instruction below to install Ubuntu on PC.
 - [Install Ubuntu desktop](#)

3. 1. 2. Install ROS on Remote PC

Open the terminal with `Ctrl`+`Alt`+`T` and enter below commands one at a time.

In order to check the details of the easy installation script, please refer to [the script file](#).

```
$ sudo apt update
$ sudo apt upgrade
$ wget https://raw.githubusercontent.com/ROBOTIS-GIT/robotis_tools/
$ chmod 755 ./install_ros_noetic.sh
$ bash ./install_ros_noetic.sh
```

If the above installation fails, please refer to [the official ROS1 Noetic installation guide](#).

3. 1. 3. Install Dependent ROS Packages

```
$ sudo apt-get install ros-noetic-joy ros-noetic-teleop-twist-joy \
ros-noetic-teleop-twist-keyboard ros-noetic-laser-proc \
ros-noetic-rgbd-launch ros-noetic-rosserial-arduino \
ros-noetic-rosserial-python ros-noetic-rosserial-client \
ros-noetic-rosserial-msgs ros-noetic-amcl ros-noetic-map-server \
ros-noetic-move-base ros-noetic-urdf ros-noetic-xacro \
ros-noetic-compressed-image-transport ros-noetic-rqt* ros-noetic-
ros-noetic-gmapping ros-noetic-navigation ros-noetic-interactive-
```

3. 1. 4. Install TurtleBot3 Packages

Install TurtleBot3 via Debian Packages.

```
$ sudo apt install ros-noetic-dynamixel-sdk
$ sudo apt install ros-noetic-turtlebot3-msgs
$ sudo apt install ros-noetic-turtlebot3
```



Click here to expand more details about building TurtleBot3 package from source.

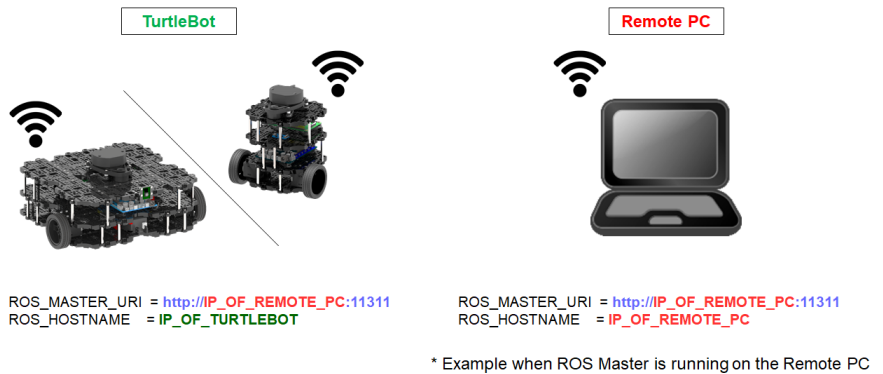
3. 1. 5. Network Configuration

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1. Connect PC to a WiFi device and find the assigned IP address with the command below.

```
$ ifconfig
```

```
enp3s0  Link encap:Ethernet  Hwaddr d8:cb:8a:f3:d3:00
        inet addr:192.168.0.165  Bcast:192.168.0.255  Mask:255.255.255.0
        inet6 addr: fe80::b5ed:414a:b396:f212/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:118368 errors:0 dropped:0 overruns:0 frame:0
        TX packets:62573 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:114480539 (114.4 MB)  TX bytes:8118317 (8.1 MB)
        Interrupt:19

lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:8912 errors:0 dropped:0 overruns:0 frame:0
        TX packets:8912 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1
        RX bytes:1713294 (1.7 MB)  TX bytes:1713294 (1.7 MB)

wlp2s0  Link encap:Ethernet  Hwaddr ac:2b:6e:6d:08:ee
        inet addr:192.168.0.100  Bcast:192.168.1.255  Mask:255.255.255.0
        inet6 addr: fe80::77a:d5c:9ca8:bd9c/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:468 errors:0 dropped:0 overruns:0 frame:0
        TX packets:630 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:107986 (107.9 KB)  TX bytes:89522 (89.5 KB)
```

2. Open the file and update the ROS IP settings with the command below.

```
$ nano ~/.bashrc
```

3. Press **Ctrl** + **END** or **Alt** + **/** to move the cursor to the end of line.
 Modify the address of `localhost` in the `ROS_MASTER_URI` and

`ROS_HOSTNAME` with the IP address acquired from the above terminal window.

```
if [ -f ~/.bash_aliases ]; then
  . ~/.bash_aliases
fi

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
  if [ -f /usr/share/bash-completion/bash_completion ]; then
    . /usr/share/bash-completion/bash_completion
  elif [ -f /etc/bash_completion ]; then
    . /etc/bash_completion
  fi
fi

if [ -x /usr/bin/mint-fortune ]; then
  /usr/bin/mint-fortune
fi

alias eb='nano ~/.bashrc'
alias sb='source ~/.bashrc'
alias gs='git status'
alias gp='git pull'
alias cw='cd ~/catkin_ws'
alias cs='cd ~/catkin_ws/src'
alias cm='cd ~/catkin_ws && catkin_make'

source /opt/ros/kinetic/setup.bash
source ~/catkin_ws/devel/setup.bash

export ROS_MASTER_URI=http://192.168.0.100:11311
export ROS_HOSTNAME=192.168.0.100
```

4. Source the bashrc with below command.

```
$ source ~/.bashrc
```

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