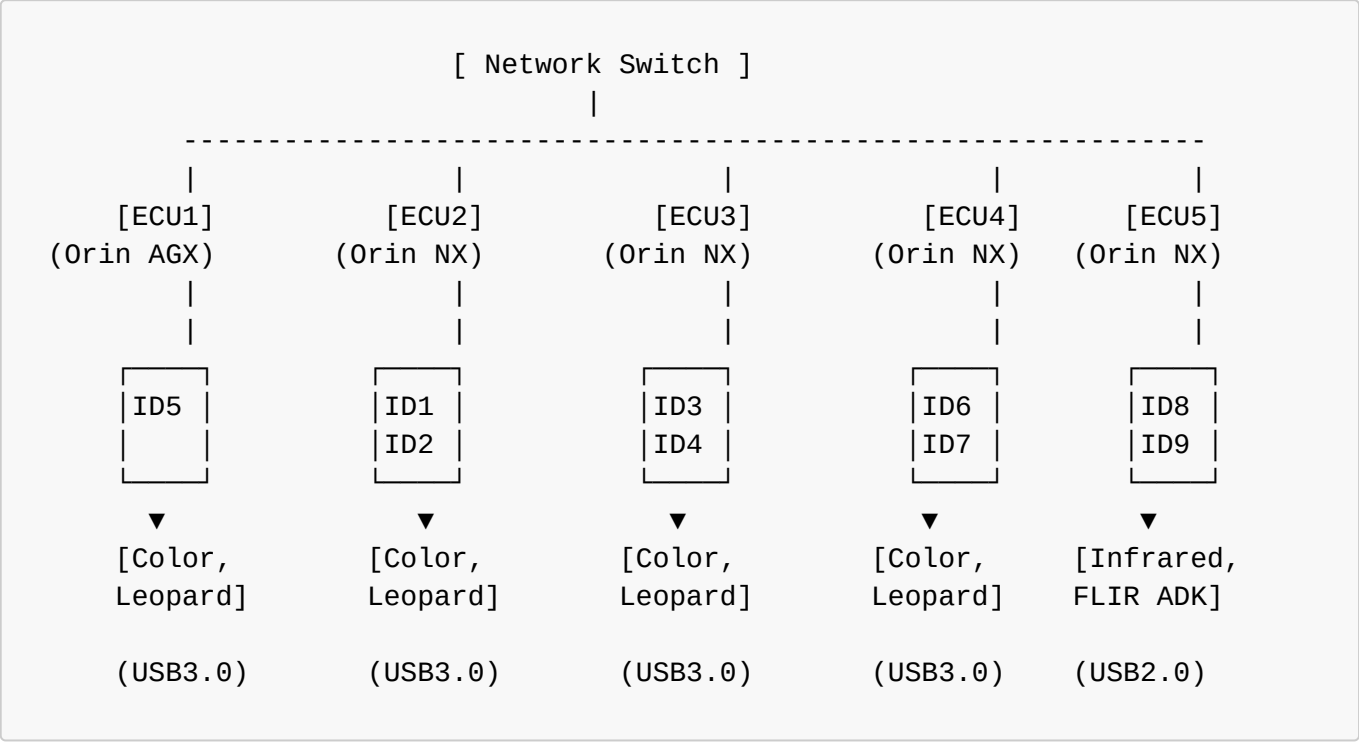


Yanmar YT5114R

Revised date: 2025-04-17

Configuration of the ECUs and Cameras



ECU

Connect SSH

```
ECU1: ssh jetson@192.168.1.168
ECU2: ssh jetson@192.168.1.169
ECU3: ssh jetson@192.168.1.170
ECU4: ssh jetson@192.168.1.171
ECU5: ssh jetson@192.168.1.172
PW: yahboom
```

Device info

Device type

```
ECU1:
jetson@jetson-desktop:~$ cat /proc/device-tree/model
Jetson AGX Orin Developer Kit

ECU2:
jetson@jetson-desktop:~$ cat /proc/device-tree/model
```

NVIDIA Orin NX Developer Kit

ECU3:

```
jetson@ubuntu:~$ cat /proc/device-tree/model
NVIDIA Orin NX Developer Kit
```

ECU4:

```
jetson@ubuntu:~$ cat /proc/device-tree/model
NVIDIA Orin NX Developer Kit
```

ECU5:

```
jetson@jetson-desktop:~$ cat /proc/device-tree/model
NVIDIA Orin NX Developer Kit
```

L4T and Jetpack version

ECU1: JetPack 5.1.2

```
jetson@jetson-desktop:~$ head -n 1 /etc/nv_tegra_release
# R35 (release), REVISION: 4.1, GCID: 33958178, BOARD: t186ref, EABI:
aarch64, DATE: Tue Aug  1 19:57:35 UTC 2023
```

ECU2: JetPack 5.1.1

```
jetson@jetson-desktop:~$ head -n 1 /etc/nv_tegra_release
# R35 (release), REVISION: 3.1, GCID: 32827747, BOARD: t186ref, EABI:
aarch64, DATE: Sun Mar 19 15:19:21 UTC 2023
```

ECU3: JetPack 5.1.1

```
jetson@ubuntu:~$ head -n 1 /etc/nv_tegra_release
# R35 (release), REVISION: 3.1, GCID: 32827747, BOARD: t186ref, EABI:
aarch64, DATE: Sun Mar 19 15:19:21 UTC 2023
```

ECU4: JetPack 5.1.1

```
jetson@ubuntu:~$ head -n 1 /etc/nv_tegra_release
# R35 (release), REVISION: 3.1, GCID: 32827747, BOARD: t186ref, EABI:
aarch64, DATE: Sun Mar 19 15:19:21 UTC 2023
```

ECU5: JetPack 5.1.1

```
jetson@jetson-desktop:~$ head -n 1 /etc/nv_tegra_release
# R35 (release), REVISION: 3.1, GCID: 32827747, BOARD: t186ref, EABI:
aarch64, DATE: Sun Mar 19 15:19:21 UTC 2023
```

Camera (Leopard Imaging, FLIR)

SetID, Camera mount position, By-id, Tile angle

```
ID, Mount_Position, Camera_by-id, Tilt_degree
1, Cabin_Center_Forward, usb-Leopard_Imaging_LI-AP020X_0B84192400090032-
video-index0, 40deg
```

```
2, Not_used, usb-Leopard_Imaging_LI-AP020X_0B83233400090032-video-index0, -
3, Cabin_Rear_Backward_Far, usb-Leopard_Imaging_LI-AP020X_0A012F2A00090021-
video-index0, 20deg
4, Cabin_Rear_Backward_Near, usb-Leopard_Imaging_LI-
AP020X_0B83381600090032-video-index0, 30deg
5, FrontWeight_Center_Forward, usb-Leopard_Imaging_LI-
AP020X_0B82300F00090032-video-index0, 40deg
6, Cabin_Right_Lateral, usb-Leopard_Imaging_LI-AP020X_0B84232400090032-
video-index0, 40deg
7, Cabin_Left_Lateral, usb-Leopard_Imaging_LI-AP020X_0B83240D00090032-
video-index0, 40deg
8, Cabin_Center_Forward, usb-FLIR_Boson_346033-video-index0, 15deg
9, Cabin_Left_Forward, usb-FLIR_Boson_346035-video-index0, -
```

Camera ROS topic

Raw image

Leopard Imaging

```
/leopard/id{args number}/image_raw
```

FLIR ADK

```
/boson/id{args number}/image_raw
```

Compressed image

Leopard Imaging

```
/leopard/id{args number}/image_raw/compressed
```

FLIR ADK

```
/boson/id{args number}/image_raw/compressed
```

Calibration raw image

Leopard Imaging

```
/leopard/id{args number}/image_rect_color
```

FLIR ADK

```
/boson/id{args number}/image_rect_color
```

Calibration compressed image**Leopard Imaging**

```
/leopard/id{args number}/image_rect_color/compressed
```

FLIR ADK

```
/boson/id{args number}/image_rect_color/compressed
```

Raw_image (left) vs Calibration_image (right)

ID3



ID5



rostopic list log

Leopard imaging

```
sip2@sip2-2021:~$ rostopic list
/leopard/id5/camera_info
/leopard/id5/image_color
/leopard/id5/image_color/compressed
/leopard/id5/image_color/compressed/parameter_descriptions
/leopard/id5/image_color/compressed/parameter_updates
/leopard/id5/image_color/compressedDepth
/leopard/id5/image_color/compressedDepth/parameter_descriptions
/leopard/id5/image_color/compressedDepth/parameter_updates
/leopard/id5/image_color/theora
/leopard/id5/image_color/theora/parameter_descriptions
/leopard/id5/image_color/theora/parameter_updates
/leopard/id5/image_mono
/leopard/id5/image_mono/compressed
/leopard/id5/image_mono/compressed/parameter_descriptions
/leopard/id5/image_mono/compressed/parameter_updates
/leopard/id5/image_mono/compressedDepth
/leopard/id5/image_mono/compressedDepth/parameter_descriptions
/leopard/id5/image_mono/compressedDepth/parameter_updates
/leopard/id5/image_mono/theora
/leopard/id5/image_mono/theora/parameter_descriptions
/leopard/id5/image_mono/theora/parameter_updates
/leopard/id5/image_proc_debayer/parameter_descriptions
/leopard/id5/image_proc_debayer/parameter_updates
/leopard/id5/image_proc_rectify_color/parameter_descriptions
/leopard/id5/image_proc_rectify_color/parameter_updates
/leopard/id5/image_proc_rectify_mono/parameter_descriptions
/leopard/id5/image_proc_rectify_mono/parameter_updates
/leopard/id5/image_raw
/leopard/id5/image_raw/compressed
/leopard/id5/image_raw/compressed/parameter_descriptions
/leopard/id5/image_raw/compressed/parameter_updates
/leopard/id5/image_raw/compressedDepth
/leopard/id5/image_raw/compressedDepth/parameter_descriptions
/leopard/id5/image_raw/compressedDepth/parameter_updates
/leopard/id5/image_raw/theora
```

```

/leopard/id5/image_raw/theora/parameter_descriptions
/leopard/id5/image_raw/theora/parameter_updates
/leopard/id5/image_rect
/leopard/id5/image_rect/compressed
/leopard/id5/image_rect/compressed/parameter_descriptions
/leopard/id5/image_rect/compressed/parameter_updates
/leopard/id5/image_rect/compressedDepth
/leopard/id5/image_rect/compressedDepth/parameter_descriptions
/leopard/id5/image_rect/compressedDepth/parameter_updates
/leopard/id5/image_rect/theora
/leopard/id5/image_rect/theora/parameter_descriptions
/leopard/id5/image_rect/theora/parameter_updates
/leopard/id5/image_rect_color
/leopard/id5/image_rect_color/compressed
/leopard/id5/image_rect_color/compressed/parameter_descriptions
/leopard/id5/image_rect_color/compressed/parameter_updates
/leopard/id5/image_rect_color/compressedDepth
/leopard/id5/image_rect_color/compressedDepth/parameter_descriptions
/leopard/id5/image_rect_color/compressedDepth/parameter_updates
/leopard/id5/image_rect_color/theora
/leopard/id5/image_rect_color/theora/parameter_descriptions
/leopard/id5/image_rect_color/theora/parameter_updates

```

FLIR ADK

```

/flir_boson/camera_info
/flir_boson/image_raw
/flir_boson/image_raw/compressed
/flir_boson/image_raw/compressed/parameter_descriptions
/flir_boson/image_raw/compressed/parameter_updates
/flir_boson/image_raw/compressedDepth
/flir_boson/image_raw/compressedDepth/parameter_descriptions
/flir_boson/image_raw/compressedDepth/parameter_updates
/flir_boson/image_raw/theora
/flir_boson/image_raw/theora/parameter_descriptions
/flir_boson/image_raw/theora/parameter_updates

```

ROSBAG record

```

rosvbag record /leopard/id7/image_raw --split --size=1024 -o id7_rgb

rosvbag record /flir_boson/image_raw --split --size=1024 -o id8_infrared

```

Camera Device info

ID1(Leopard Imaging)

```

sip2@sip2-2021:/dev/v4l/by-id$ v4l2-ctl --device=/dev/video4 --list-
formats-ext
ioctl: VIDIOC_ENUM_FMT
    Type: Video Capture

    [0]: 'YUYV' (YUYV 4:2:2)
        Size: Discrete 1920x1020
            Interval: Discrete 0.033s (30.000 fps)

```

ID4(Leopard Imaging)

```

sip2@sip2-2021:/dev/v4l/by-id$ v4l2-ctl --device=/dev/video4 --list-
formats-ext
ioctl: VIDIOC_ENUM_FMT
    Type: Video Capture

    [0]: 'YUYV' (YUYV 4:2:2)
        Size: Discrete 1920x1020
            Interval: Discrete 0.033s (30.000 fps)

```

ID5(Leopard Imaging)

```

jetson@jetson-desktop:~/catkin_frei$ v4l2-ctl --list-devices
NVIDIA Tegra Video Input Device (platform:tegra-camrtc-ca):
    /dev/media0

LI-AP020X (usb-3610000.xhci-3.2):
    /dev/video0
    /dev/video1
    /dev/media1

jetson@jetson-desktop:~/catkin_frei$ v4l2-ctl --device=/dev/video0 --list-
formats-ext
ioctl: VIDIOC_ENUM_FMT
    Type: Video Capture

    [0]: 'YUYV' (YUYV 4:2:2)
        Size: Discrete 1920x1020
            Interval: Discrete 0.033s (30.000 fps)

```

ID6(Leopard Imaging)

```

sip2@sip2-2021:/dev/v4l/by-id$ v4l2-ctl --device=/dev/video4 --list-
formats-ext

```

```
ioctl: VIDIOC_ENUM_FMT
  Type: Video Capture

  [0]: 'YUYV' (YUYV 4:2:2)
    Size: Discrete 1920x1020
      Interval: Discrete 0.033s (30.000 fps)
```

ID7(Leopard Imaging)

```
sip2@sip2-2021:/dev/v4l/by-id$ v4l2-ctl --device=/dev/video4 --list-
formats-ext
ioctl: VIDIOC_ENUM_FMT
  Type: Video Capture

  [0]: 'YUYV' (YUYV 4:2:2)
    Size: Discrete 1920x1020
      Interval: Discrete 0.033s (30.000 fps)
```

ID8(FLIR ADK)

```
sip2@sip2-2021:/dev/v4l/by-id$ v4l2-ctl --device=/dev/video5 --list-
formats-extioctl: VIDIOC_ENUM_FMT
  Type: Video Capture

  [0]: 'YU12' (Planar YUV 4:2:0)
    Size: Discrete 640x512
      Interval: Discrete 0.017s (60.000 fps)
      Interval: Discrete 0.033s (30.000 fps)
  [1]: 'Y16 ' (16-bit Greyscale)
    Size: Discrete 640x512
      Interval: Discrete 0.017s (60.000 fps)
      Interval: Discrete 0.033s (30.000 fps)
  [2]: 'NV12' (Y/CbCr 4:2:0)
    Size: Discrete 640x512
      Interval: Discrete 0.017s (60.000 fps)
      Interval: Discrete 0.033s (30.000 fps)
```

ID9(FLIR ADK)

```
sip2@sip2-2021:/dev/v4l/by-id$ v4l2-ctl --device=/dev/video4 --list-
formats-ext
ioctl: VIDIOC_ENUM_FMT
  Type: Video Capture

  [0]: 'YU12' (Planar YUV 4:2:0)
    Size: Discrete 640x512
```



```
Interval: Discrete 0.017s (60.000 fps)
Interval: Discrete 0.033s (30.000 fps)
[1]: 'Y16 ' (16-bit Greyscale)
Size: Discrete 640x512
Interval: Discrete 0.017s (60.000 fps)
Interval: Discrete 0.033s (30.000 fps)
[2]: 'NV12' (Y/CbCr 4:2:0)
Size: Discrete 640x512
Interval: Discrete 0.017s (60.000 fps)
Interval: Discrete 0.033s (30.000 fps)
```