

- 1.
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  - 3.3. :
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    - 3.3.2. : X
- 4. : (8)



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- Astra Linux Special Edition .10015-01 ( 1.7), .10015-10
- Astra Linux Special Edition .10015-17
- Astra Linux Special Edition .10015-37 ( 7.7)
- Astra Linux Special Edition .10015-03 ( 7.6)
- Astra Linux Special Edition .10015-01 ( 1.6)
- Astra Linux Special Edition .10015-16 . 1
- Astra Linux Common Edition 2.12

## 1.



!

, .

`udev`, , . () 33, , .

IIO Linux, `iio-sensor-proxy` - <https://gitlab.freedesktop.org/hadess/iio-sensor-proxy/#iio-sensor-proxy>.

, , (.: <https://gitlab.freedesktop.org/hadess/iio-sensor-proxy/#accelerometer-orientation>).

, .

, ( ).

	x	y	z
(1)	x1	y1	z1
(2)	x2	y2	z2
(3)	x3	y3	z3

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="x1,y1,z1;x2,y2,z2;x3,y3,z3"
```

, `iio-sensor-proxy` () :

	x	y	z
(1)	1	0	0
(2)	0	1	0
(3)	0	0	1

`udev` :

**/etc/udev/rules.d/99-astra-orientation.rules**

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="1,0,0;0,1,0;0,0,1"
```

, , , .

## 2. :

, , ACPI - Advanced Configuration and Power Interface (.: <https://ru.wikipedia.org/wiki/ACPI>).

, DSL ( ACPI), :

DSL

```
cat /sys/firmware/acpi/tables/DSDT > dsdt.dat
iasl -d dsdt.dat
```

*iasl* - Intel ACPI /, ACPI , :: <https://linux.die.net/man/1/iasl>.  
*iasl -d dsdt.dat*  
*dsdt.dat dsdt.dsl (ASL)*  
ASL - ACPI Source Language, ACPI, :: <https://wiki.osdev.org/AML>.

(dsdt.dsl) :

- 1. DEVICE\_ID/VENDOR\_ID,
- 2. ROTM (Rotation Matrix).

, -, .3.

Lenovo IdeaPad 3IGL5-LTE:

ROTM

```
Method (ROTM, 0, NotSerialized)
{
    Name (RBUF, Package (0x03)
    {
        "0 -1 0",
        "1 0 0",
        "0 0 1"
    })
    Return (RBUF) /* \_SB_.PCI0.I2C5.DEV_.ROTM.RBUF */
}
```

, :

	x	y	z
(1)	0	-1	0
(2)	1	0	0
(3)	0	0	1

/etc/udev/rules.d/99-astra-orientation.rules

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="0,-1,0;1,0,0;0,0,1"
```

, , (.3).

3. : udev

- 1. ( ). , , , ( iRU, , );
- 2. , , , .

3.1. :

() udev, /etc/udev/rules.d/99-astra-orientation.rules ( ):

	x	y	z
--	---	---	---

(1)	1	0	0
(2)	0	1	0
(3)	0	0	1

#### /etc/udev/rules.d/99-astra-orientation.rules

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="1,0,0;0,1,0;0,0,1"
```

## 3.2. :

, , , , .

() (. 3.1).

### 3.2.1. : 90°

:

	x	y	z
(1)	1	0	0
(2)	0	1	0
(3)	0	0	1

:

	x	y	z
(1)	<b>cos (90)</b>	<b>-1 * sin (90)</b>	0
(2)	<b>sin (90)</b>	<b>cos (90)</b>	0
(3)	0	0	1

:

	x	y	z
(1)	0	-1	0
(2)	1	0	0
(3)	0	0	1

#### /etc/udev/rules.d/99-astra-orientation.rules

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="1,0,0;0,1,0;0,0,1"
```

#### /etc/udev/rules.d/99-astra-orientation.rules

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="0,-1,0;1,0,0;0,0,1"
```

### 3.2.2. : 180°

:

	x	y	z
(1)	1	0	0
(2)	0	1	0
(3)	0	0	1

:

	x	y	z
(1)	<b>cos (180)</b>	<b>-1 * sin (180)</b>	0
(2)	<b>sin (180)</b>	<b>cos (180)</b>	0
(3)	0	0	1

:

	x	y	z
(1)	-1	0	0
(2)	0	-1	0
(3)	0	0	1

#### /etc/udev/rules.d/99-astra-orientation.rules

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="1,0,0;0,1,0;0,0,1"
```

#### /etc/udev/rules.d/99-astra-orientation.rules

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="-1,0,0;0,-1,0;0,0,1"
```

### 3.2.3. : 270°

:

	x	y	z
(1)	1	0	0
(2)	0	1	0

:

	x	y	z
(1)	<b>cos (270)</b>	<b>-1 * sin (270)</b>	0

:

	x	y	z
(1)	0	1	0
(2)	-1	0	0

(3)	0	0	1
-----	---	---	---

**/etc/udev/rules.d/99-astra-orientation.**

**rules**

```
ENV{IIO_SENSOR_PROXY_TYPE}=="
*accel*",
ENV{ACCEL_MOUNT_MATRIX}="1,0,0;
0,1,0;0,0,1"
```

(2)	<b>sin (270)</b>	<b>cos (270)</b>	0
(3)	0	0	1

(3)	0	0	1
-----	---	---	---

**/etc/udev/rules.d/99-astra-orientation.**

**rules**

```
ENV{IIO_SENSOR_PROXY_TYPE}=="
*accel*",
ENV{ACCEL_MOUNT_MATRIX}="0,1,0;
-1,0,0;0,0,1"
```

### 3.3. :

. 3.2 ( / ), Y (. 3.3.1).

, , , . 3.2., X (. 3.3.2).

#### 3.3.1. : Y

, ( . 3.2.).

	x	y	z
(1)	x1	y1	z1
(2)	x2	y2	z2
(3)	x3	y3	z3

Y ( , ) -1, . .:

- **y1 \* -1;**
- **y2 \* -1.**

, :

	x	y	z
(1)	x1	<b>y1 = -1 * y1</b>	z1
(2)	x2	<b>y2 = -1 * y2</b>	z2
(3)	x3	y3	z3

**/etc/udev/rules.d/99-astra-orientation.rules**

```
ENV{IIO_SENSOR_PROXY_TYPE}=="*accel*",
ENV{ACCEL_MOUNT_MATRIX}="x1,-y1,z1;x2,-y2,z2;x3,y3,z3"
```

#### 3.3.2. : X

, , ( . 3.2.).

	x	y	z
(1)	x1	y1	z1
(2)	x2	y2	z2
(3)	x3	y3	z3

X ( , ) -1, . .:

- **x1 \* -1;**
- **x2 \* -1.**

, :

	x	y	z
(1)	<b>x1 = -1 * x1</b>	y1	z1

(2)	<b>x2 = -1 * x2</b>	y2	z2
(3)	x3	y3	z3

#### **/etc/udev/rules.d/99-astra-orientation.rules**

```
ENV{ IIO_SENSOR_PROXY_TYPE }=="*accel*",
ENV{ ACCEL_MOUNT_MATRIX }="-x1,y1,z1;-x2,y2,z2;x3,y3,z3"
```

## 4. : ( 8)

( ), 8 :

1. **/sys/bus/iio/devices/iio:device0/in\_accel\_sampling\_frequency\_available**
2. **/sys/bus/iio/devices/iio:device0/in\_accel\_sampling\_frequency**

, .

, , .

,

```
sudo mkdir /etc/mig
sudo touch /etc/mig/mig-t8x-accel-sampling-freq-fix.sh
```

, /etc/mig/mig-t8x-accel-sampling-freq-fix.sh :

#### **/etc/mig/mig-t8x-accel-sampling-freq-fix.sh**

```
SET_FREQ_FILE="/sys/bus/iio/devices/iio:device0/in_accel_sampling_frequency"
AV_FREQ_FILE="/sys/bus/iio/devices/iio:device0/in_accel_sampling_frequency_available"

freqLine=$(cat $AV_FREQ_FILE)
minFreq=0

for freq in $freqLine
do
    minFreq=$freq
    break
done

echo $minFreq > $SET_FREQ_FILE
```

:

,

```
sudo touch /etc/systemd/system/mig-t8x-accel-sampling-fix.service
sudo chmod 644 /etc/systemd/system/mig-t8x-accel-sampling-fix.service
```

, :

#### **/etc/systemd/system/mig-t8x-accel-sampling-fix.service**

```
[Unit]
Description=Fix accel sampling frequency for MIG T8x

[Service]
Type=simple
ExecStart=/bin/bash /etc/mig/mig-t8x-accel-sampling-freq-fix.sh

[Install]
WantedBy=multi-user.target
```

, :

```
sudo systemctl enable mig-t8x-accel-sampling-fix.service
```

.  
: [generate\\_mig-t8x-fix-accel-sampling-frequency.sh](#)