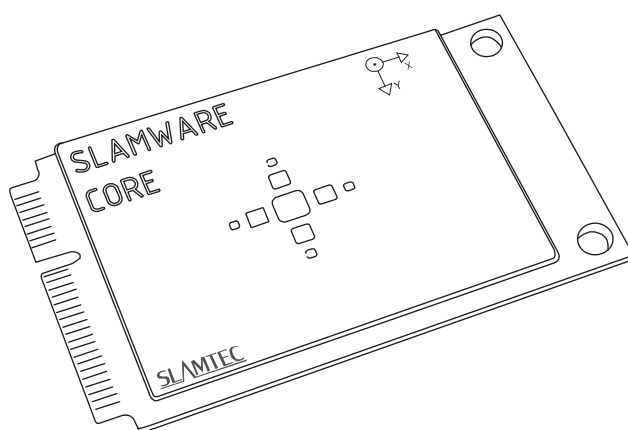


SLAMWARE

模块化自主定位导航解决方案

Slamware_console 使用指南



目录.....	2
SLAMWARE CONSOLE 用法	3
格式.....	3
可用选项.....	3
命令及用法	4
可用命令.....	4
BEACON.....	4
BUMPER.....	5
CONFIG.....	5
EVENT	7
MONITOR.....	8
MOTOR.....	9
POLL	10
RUN (仅限于两轮差动电机)	11
SENSOR	12
STATUS	13
TEST.....	13
VRUN (适用于三轮全向轮以及两轮差动电机)	14
版本历史	16

格式

```
slamware_console base [options] <command> [cmd_arguments]
```

可用选项

选项名称	简写	描述	备注
--channel	-c channel	The communication channel with the base, supported channels: serial, tcp	
--help	-h help	Show this message	
--port	-p port	Trace communication between host and base	
--trace-comm	-t trace comm	Trace communication between host and base	
--version	-v print version number	Print version number	
--host	host	The host used to communicate with the base (required for tcp channel)	

可用命令

命令名称	描述	备注
beacon	Read auto home IR beacon data	
bumper	Read bumper, cliff sensor data	
config	Read configuration from base	
event	Send Event Cmd	
monitor	Continuously read sensor data and output to the console	
motor	Read motor information, such as wheels' odometry	
poll	Poll Base Cmd	
run	Make motor run	
sensor	Read distance sensors' data, such as ultrasonic data	
status	Read base status, such as battery, charging status and etc.	
test	Test base control bus protocol	
vrun	Vector run. vrun <vx> <vy> <omega> <time>. Units: m/s m/s rad/s s	

注：如下所有示假设使用的接口为 COM3。

Beacon

读取自动回家红外数据。

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 beacon
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.7.0
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 1.83
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47DDDC6F19575BD90AB43C0
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Found 3 beacons
and 3 probes
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Probe #0: 0:
1: 2:
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Probe #1: 0:
1: 2:
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Probe #2: 0:
1: 2:
```

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Successfully
executed command
```

Bumper

读取碰撞传感器数据。

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 beacon
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to Control
Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware Version:
0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Bumper/Cliff Values:
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] [ ] #0 X:12.7
cm Y:10.5 mm Z:-5.0 mm Yaw:40.0deg
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] [ ] #2 X:16.5
cm Y:0.0 mm Z:-5.0 mm Yaw:0.0deg
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Successfully executed
command
```

Config

用于读取底盘配置参数。

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 config
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
```

```
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Parsed JSON:
{
  "base" : {
    "hardware_version" : 1,
    "high_battery_percentage_for_charging" : 0.6999999880790710,
    "low_battery_auto_homing" : true,
    "low_battery_percentage_for_charging" : 0.3000000119209290,
    "manufacture_id" : 255,
    "manufacture_name" : "Slamtec",
    "model_id" : 4096,
    "model_name" : "Slamware SDP",
    "robot_size" : 0.3300000131130219,
    "sensors" : [
      {
        "id" : 0,
        "installation_pose" : {
          "x" : 0.1270000040531158,
          "y" : 0.1049999967217445,
          "yaw" : 0.6981316804885864,
          "z" : -0.05000000074505806
        },
        "type" : "bumper"
      },
      {
        "id" : 1,
        "installation_pose" : {
          "x" : 0.1199999973177910,
          "y" : 0.1000000014901161,
          "yaw" : 0.6981316804885864,
          "z" : 0.05000000074505806
        },
        "type" : "sonar"
      }
    ]
  },
  "features" : {
    "has_ir_docking_tower" : false
  },
  "lidar" : {
    "installation_pose" : {
      "x" : 0.1099999994039536,
      "yaw" : 3.141592741012573
    }
  },
  "motion_plan" : {
    "bump_handle_strategy" : "default",
    "side_margin" : 0.1000000014901161
  }
}

[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Base Info
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO]      Manufacture:
Slamtec (00FF)
```

```
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model:
Slamware SDP (1000)
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
Version: 1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Robot
Diameter: 33.0 cm
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Lidar
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Installation
Pose: 11.0 cm, 0.0 cm, 180.0 deg
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Sensors: 6
sensors
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Sensor #0:
Bumper at (12.7 cm, 10.5 cm, 40.0 deg)
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Sensor #1:
Sonar at (12.0 cm, 10.0 cm, 40.0 deg)
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Motion Planning
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Side Margin:
10.0 cm
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Bumper
Policy: default
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Features
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Has IR Tower:
No
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Successfully
executed command
```

Event

发送 event 代码给底盘。

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 event 97
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Successfully
executed command
```

目前支持的事件代码如下：

注：event 参数需为十进制，上图中 event 97 即 0x61)

系统事件 代码	十进制格式	命令名称	描述
0x61	97	LIDAR_CONN_FAIL	LIDAR 连接失败
0x62	98	LIDAR_RAMPUP_FAIL	LIDAR 启动失败
0x63	99	SYSTEM_UP_OK	系统启动成功
0x64	100	FIRMWARE_UPDATE	系统固件升级
0x65	101	CORE_DISCONNECT	系统断开连接
0x66	102	FIRMWARE_UPDATE_OK	固件升级成功
0x80	128	START_SWEEP	通知外部系统清扫开始(仅针对扫地机版本)
0x81	129	END_SWEEP	通知外部系统清扫结束(仅针对扫地机版本)

Monitor

连续读取 sensor 数据，并在终端显示。

a) 读取 motor 数据

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 monitor motor
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Left Wheel: 0.0
mm Right Wheel: 0.0 mm
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Left Wheel: 0.0
mm Right Wheel: 0.0 mm
```

b) 读取 Bumper/cliff 数据

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 monitor bumper
```


返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Bumper/Cliff
Values:
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] [ ] #0
X:12.7 cm Y:10.5 mm Z:-5.0 mm Yaw:40.0deg
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] [ ] #1
X:12.7 cm Y:-10.5mm Z:-5.0 mm Yaw:320.0deg
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] [ ] #2
X:16.5 cm Y:0.0 mm Z:-5.0 mm Yaw:0.0deg
```

c) 读取 sonar 数据

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 monitor sensor
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Sensor Values:
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] 3 : 127.0mm
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] 4 : 0.0
mm
```

Motor

读取 motor 里程计数据

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 motor
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Left Wheel: 0.0
mm Right Wheel: 0.0 mm
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Successfully
executed command
```

Poll

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 poll
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
2.0.0_dev
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to
serial:...\COM4...
[rp.slamware.utils.ChannelFactory] [DEBUG] Channel established
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:...\COM4
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: zeus base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 1.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 2.2
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47EDDC6F19575BD90AB41E9
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Base cmd
pending: ff
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Successfully
executed command
```

外部系统命令列表：

外部系统命令代码	命令名称	描述
0x51	GET_INFO	获取 SLAMWARE CORE 系统信息，包含软硬件版本，网络配置。
0x52	RESET_WIFI	重置 SLAMWARE CORE 无线网络
0x53	FW_UPGRADING	更新 SLAMWARE CORE 固件
0x80	START_SWEEP	开始清扫(仅针对扫地机版本)
0x81	STOP_SWEEP	结束清扫(仅针对扫地机版本)
0x82	SPOT_SWEEP	定点清扫(仅针对扫地机版本)
0x90	GET_HEALTH	获取健康状况
0xA0	MOVE_FORWARD	向前
0xA1	MOVE_BACKWARD	向后
0xA2	TURN_LEFT	向左
0xA3	TURN_RIGHT	向右
0xAF	CANCEL_ACTION	取消上一步操作

Run（仅限于两轮差动电机）

控制电机运动

参数：(左轮速度 mm/s，右轮速度 mm/s，运行时间 s)

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 run 100 100 5
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] dl= 0.00000
dr=40.00000 pose:( 0.00000, 0.00000, 0.0deg)->(2
0.00000, 0.00000, 6.9deg)
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] dl= 0.00000
dr=40.00000 pose:(20.00000, 0.00000, 6.9deg)->(3
9.41518, 4.80113, 13.9deg)
```

测试电机是否正常的运行步骤：

- a) run 50 50 5 把速度设置为 50 时，电机能正常响应。
- b) run 100 100 5 把速度设置成 100 时，电机能平稳行驶
- c) 测试里程计是否准确
 - 1) run 300 300 5

返回值 pose(X 方向位移, Y 方向位移, 偏移角度), 单位是 (mm, mm, degree)

X 方向正向为机器人前进方向, Y 方向正向为机器人左侧, 角度是以 X 方向为 0, 逆时针的方向偏移角度。

比较从初始位置 pose(0, 0, 0)到终止位置之间的反馈值与实际测量值之间的误差, 如下图中: 终止位置为 pose(1302.15056, 190.48846, 6.8deg)

```
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] dl= 5.00000
dr=5.00000 pose:(1297.28958, 189.31762, 6.8deg) ->(1302.15056, 190.48846, 6.8deg)
```

2) run 300 0 5 只让左轮运动 (机器人顺时针旋转夹角), 并测试差值

3) run 0 300 5 只让右轮运动 (机器人逆时针旋转夹角), 并测试差值

注: 误差不可超过 5%, 否则会导致机器人导航误差较大且行为异常。

Sensor

读取距离传感器 (比如超声波传感器) 数据。

命令格式:

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 sensor
```

返回数据格式:

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Sensor Values:
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] 3 : 125.0mm
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] 4 : 0.0
mm
```

```
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO]      5 : 878.0mm
[rp.slamware.test.SlamwareConsoleApplication]      [INFO]      Successfully
executed command
```

Status

读取底盘状态信息。

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 status
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Battery: 67%
[rp.slamware.test.SlamwareBaseConsoleApplication] [WARN] Charging Status:
Charging (you are using legacy protocol, please specify DcConnected or
OnChargingBase bit field)
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Successfully
executed command
```

Test

测试底盘设置信息。

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 test
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
```

```
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
[rp.slamware.test] [INFO] Test Fixture: ControlBus
[rp.slamware.test] [INFO] Testing connect...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [INFO] Testing getConfig...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [INFO] Testing getStatus...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [INFO] Testing getMotorData...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [INFO] Testing getSensorData...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [INFO] Testing getBumperData...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [INFO] Testing getAutoHomeData...
[rp.slamware.test] [ERROR] fail: (int)dev_->getAutoHomeData(req,
(uint8_t*)&response, &responseSize)==(int)RESULT_OK: actual -
2147450876 != 0
[rp.slamware.test] [INFO] Testing setMotor...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [INFO] Testing sendEvent...
[rp.slamware.test] [INFO] pass
[rp.slamware.test] [ERROR] ControlBus: 9 total, 0 skipped, 8 pass, 1 failed
[rp.slamware.test.SlamwareConsoleApplication] [ERROR] Execute command
failed: 00000001
```

Vrun（适用于三轮全向轮以及两轮差动电机）

控制电机运动。

参数：vrunk 方向速度（m/s） Y 方向速度（m/s） 角速度（rad/s） 运行
时间 s

命令格式：

```
C:\Users\LW\Desktop\tools\slamware_console_tool>slamware_console.exe base
-c serial -p COM3 vrun 0.1 0.1 0 5
```

返回数据格式：

```
[rp.slamware.test.SlamwareConsoleApplication] [INFO] Slamware Console
1.9.0_rc1
[rp.slamware.utils.ChannelFactory] [INFO] Connecting to serial:COM3...
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Connected to
Control Bus Device at serial:COM3
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Model: ref base
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Firmware
Version: 0.90
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Hardware
version: 0.1
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] Serial Number:
C47BDDC1F79072BD90B041C7
```

```
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] dx= 0.00023
dy=201.64026 dtheta=201.7deg pose:( 0.00000, 0.000
00, 0.0deg)->( 0.00023, 201.64026, 201.7deg)
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] dx= 0.00023
dy=201.64026 dtheta=201.7deg pose:( 0.00023, 201.64
026, 201.7deg)->(74.40319, 14.22896, 403.3deg)
```

测试电机是否运行正常步骤：

- a) vrun 0.05 0 0 5 把机器人前进速度设置为 0.05m/s 时，电机能正常响
- b) vrun 0.1 0 0 5 把机器人速度设置成 0.1m/s 时，电机能平稳行驶
- c) 测试里程计是否准确
 - 1) vrun 0.3 0 0 5

返回值 pose(X 方向位移, Y 方向位移, 偏移角度), 单位是 (mm, mm, degree)

X 方向正向为机器人前进方向, Y 方向正向为机器人左侧, 角度是以 X 方向为 0, 逆时针的方向偏移角度。

比较从初始位置 pose(0, 0, 0)到终止位置之间的反馈值与实际测量值之间的误差, 如下图中: 终止位置为 pose(1302.15056, 190.48846, 6.8deg)

```
[rp.slamware.test.SlamwareBaseConsoleApplication] [INFO] dl= 5.00000
dr=5.00000 pose:(1297.28958, 189.31762, 6.8deg) ->(1302.15056, 190.48846,
6.8deg)
```

- 2) vrun 0 0 1 5 机器人逆时针旋转, 测试误差

注: 误差不可超过 5%, 否则会导致机器人导航误差较大且行为异常。

日期	版本	描述
2016-10-17	0.1	初始版本