

xpkg_carrier Interface

Description

Payload Carrier Interface

Public APIs

Publish

Topic	Msg Type	Description
<code>/carrier_state</code>	<code>nav_msgs/Odometry</code>	Publish current carrier state

Subscribe

Topic	Msg Type	Description
<code>/carrier_cmd_vel</code>	<code>geometry_msgs/TwistStamped</code>	Subscribe to target carrier velocity
<code>/carrier_cmd_pos</code>	<code>geometry_msgs/PoseStamped</code>	Subscribe to target carrier pose

Parameter

Name	Data Type	Description
<code>carrier_limit_vel_z</code>	<code>double</code>	The limitation of the speed, for both rising and falling. The unit is meters per second (m/s)

Detailed Description

/carrier_state

This topic publishes the current state of the payload carrier.

- **Type:** `nav_msgs/Odometry`

```
std_msgs/Header header
  uint32 seq
  time stamp
  string frame_id
string child_frame_id
geometry_msgs/PoseWithCovariance pose
  geometry_msgs/Pose pose
    geometry_msgs/Point position
      float64 x
      float64 y
      float64 z
    geometry_msgs/Quaternion orientation
      float64 x
      float64 y
      float64 z
      float64 w
    float64[36] covariance
  geometry_msgs/TwistWithCovariance twist
    geometry_msgs/Twist twist
      geometry_msgs/Vector3 linear
        float64 x
        float64 y
        float64 z
      geometry_msgs/Vector3 angular
        float64 x
        float64 y
        float64 z
    float64[36] covariance
```

- **Usage:**
 - `header`

- `stamp` is the timestamp of the message
- `frame_id` is the base link of the chassis, typically `base_link`
- `child_frame_id`
 - The name of the base link of the carrier, typically `carrier_link`
- `pose`
 - The current pose of the carrier
 - The `pose.pose.position.z` indicates the height of the carrier
 - Unit: meters (\$m\$)
- `twist`
 - The current velocity of the carrier
 - The `twist.twist.linear.z` indicates the rising speed of the carrier
 - Unit: meters per second (\$m/s\$)

• **Example:**

```
msg_time = msg.header.stamp.to_sec()
height = msg.pose.pose.position.z
rising_speed = msg.twist.twist.linear.z
print(f"The height at {msg_time} is {height}.")
print(f"The rising speed at {msg_time} is {rising_speed}.")
```

/carrier_cmd_vel

This topic receives the target velocity of the payload carrier.

• **Type:** `geometry_msgs/TwistStamped`

```
std_msgs/Header header
  uint32 seq
  time stamp
  string frame_id
geometry_msgs/Twist twist
  geometry_msgs/Vector3 linear
    float64 x
    float64 y
    float64 z
  geometry_msgs/Vector3 angular
    float64 x
    float64 y
    float64 z
```

• **Usage:**

- `header`

- `stamp` is the timestamp of the message
- `frame_id` is the base link of the chassis, typically `base_link`
- `twist`
 - The target velocity of the carrier (only for **velocity control mode**)
 - The `twist.linear.z` indicates the rising speed of the carrier (negative values indicate falling)
 - Unit: meters per second (\$m/s\$)

• **Example:**

```
msg = geometry_msgs.msg.TwistStamped()
msg.header.stamp = rospy.Time.now()
msg.header.frame_id = "base_link"
msg.twist.linear.z = 0.2
```

/carrier_cmd_pos

This topic receives the target pose of the payload carrier.

• **Type:** `geometry_msgs/PoseStamped`

```
std_msgs/Header header
  uint32 seq
  time stamp
  string frame_id
geometry_msgs/Pose pose
  geometry_msgs/Point position
    float64 x
    float64 y
    float64 z
  geometry_msgs/Quaternion orientation
    float64 x
    float64 y
    float64 z
    float64 w
```

• **Usage:**

- `header`
 - `stamp` is the timestamp of the message
 - `frame_id` is the base link of the chassis, typically `base_link`
- `pose`
 - The target pose of the carrier (only for **position control mode**)
 - The `pose.position.z` indicates the height of the carrier
 - Unit: meters (\$m\$)

- **Example:**

```
msg = geometry_msgs.msg.PoseStamped()  
msg.header.stamp = rospy.Time.now()  
msg.header.frame_id = "base_link"  
msg.pose.position.z = 0.2
```

👤 #2

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