TYCamport3

3

Generated by Doxygen 1.8.14

Contents

Chapter 1

Main Page

1.1 compare to V2:

1. New Interface Layer Add this layer to specify local network interface to open network camera, solving the problem that someone wants to connect to a network camera with ethernet rather than WIFI. Users have to call interface APIs before openning devices.
2. New Image Processing Library The new library which has header file TYImageProc.h collects all image processing functions we provided.
3. New Coordinate Mapper New TYCoordinateMapper.h handles various convertions, including depth <-> point3D, point3D <-> point3D.
4. Components: Removed Point3D component(TY_COMPONENT_POINT3D). Point3D is a virtual component in V2, and the points are calculated from depth image. We put the calculation outside tycam library to increase flexibility.
5. Features: Removed TY_BOOL_TRIGGER_MODE , covered by TY_STRUCT_TRIGGER_PARAM Added TY_STRUCT_CAM_CALIB_DATA , for easy use in image processing library TY_INT_IMAGE_MODE , covered by new added TY_ENUM_IMAGE_MODE Modified TY_ENUM_IMAGE_MODE , means resolution mode in V2, combind resolution and pixel format in V3 Added some network camera's feature, such as TY_INT_PERSISTENT_IP, TY_INT_PERSISTENT_SUBMASK, TY_INT_PACKET_DELAY, etc.

1.2 Note

Depth camera, called "device", consists of several components. Each component is a hardware module or virtual module, such as RGB sensor, depth sensor. Each component has its own features, such as image width, exposure time, etc..

NOTE: The component TY_COMPONENT_DEVICE is a virtual component that contains all features related to the whole device, such as trigger mode, device IP.

Each frame consists of several images. Normally, all the images have identical timestamp, means they are captured at the same time.

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

Chapter 4

Class Documentation

4.1 DepthEnhenceParameters Struct Reference

default parameter value definition

`#include <TYImageProc.h>`

Public Attributes

- float sigma_s
  filter param on space
- float sigma_r
  filter param on range
- int outlier_win_sz
  outlier filter windows ize
- float **outlier_rate**

4.1.1 Detailed Description

default parameter value definition

Definition at line 50 of file TYImageProc.h.

The documentation for this struct was generated from the following file:

- TYImageProc.h

4.2 DepthSpeckleFilterParameters Struct Reference

default parameter value definition

`#include <TYImageProc.h>`

Public Attributes

- int **max_speckle_size**
- int **max_speckle_diff**

4.2.1 Detailed Description

default parameter value definition

Definition at line 30 of file TYImageProc.h.

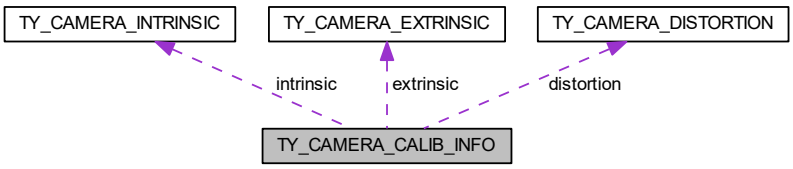
The documentation for this struct was generated from the following file:

- TYImageProc.h

4.3 TY_CAMERA_CALIB_INFO Struct Reference

`#include <TYApi.h>`

Collaboration diagram for TY_CAMERA_CALIB_INFO:



Public Attributes

- int32_t **intrinsicWidth**
- int32_t **intrinsicHeight**
- TY_CAMERA_INTRINSIC **intrinsic**
- TY_CAMERA_EXTRINSIC **extrinsic**
- TY_CAMERA_DISTORTION **distortion**

4.3.1 Detailed Description

camera 's cailbration data

See also

TYGetStruct

Definition at line 537 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.4 TY_CAMERA_DISTORTION Struct Reference

camera distortion parameters

`#include <TYApi.h>`

Public Attributes

- float data [12]

  Definition is compatible with opencv3.0+ :k1,k2,p1,p2,k3,k4,k5,k6,s1,s2,s3,s4.

4.4.1 Detailed Description

camera distortion parameters

Definition at line 529 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.5 TY_CAMERA_EXTRINSIC Struct Reference

`#include <TYApi.h>`

Public Attributes

- float **data** [4 ∗4]

4.5.1 Detailed Description

a 4x4 matrix

.	.	.	.
r11	r12	r13	t1
r21	r22	r23	t2
r31	r32	r33	t3
0	0	0	1

Definition at line 523 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.6 TY_CAMERA_INTRINSIC Struct Reference

`#include <TYApi.h>`

Public Attributes

- float **data** [3 ∗3]

4.6.1 Detailed Description

a 3x3 matrix

.	.	.
fx	0	cx
0	fy	cy
0	0	1

Definition at line 511 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.7 TY_CAMERA_STATISTICS Struct Reference

Public Attributes

- uint64_t **packetReceived**
- uint64_t **packetLost**
- uint64_t **imageOutputed**
- uint64_t **imageDropped**
- uint8_t **rsvd** [1024]

4.7.1 Detailed Description

Definition at line 556 of file TYApi.h.

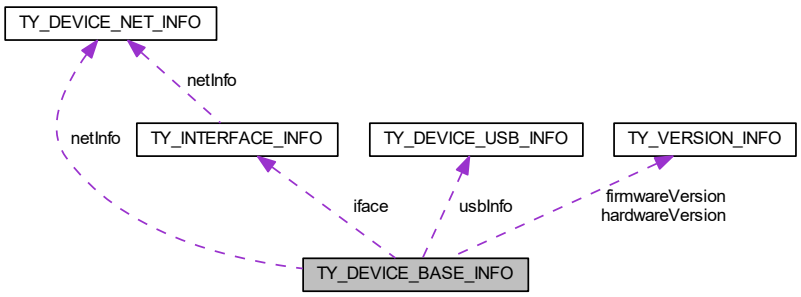
The documentation for this struct was generated from the following file:

- TYApi.h

4.8 TY_DEVICE_BASE_INFO Struct Reference

`#include <TYApi.h>`

Collaboration diagram for TY_DEVICE_BASE_INFO:



Public Attributes

- TY_INTERFACE_INFO **iface**
- char id [32]

  device serial number
- char **vendorName** [32]
- char modelName [32]

  device model name
- TY_VERSION_INFO hardwareVersion

  deprecated
- TY_VERSION_INFO firmwareVersion

  deprecated
- union {
  TY_DEVICE_NET_INFO **netInfo**
  TY_DEVICE_USB_INFO **usbInfo**
  };
- char **reserved** [256]

4.8.1 Detailed Description

See also

TYGetDeviceList

Definition at line 444 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.9 TY_DEVICE_NET_INFO Struct Reference

Public Attributes

- char **mac** [32]
- char **ip** [32]
- char **netmask** [32]
- char **gateway** [32]
- char **broadcast** [32]
- char **reserved** [96]

4.9.1 Detailed Description

Definition at line 416 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.10 TY_DEVICE_USB_INFO Struct Reference

Public Attributes

- int **bus**
- int **addr**
- char **reserved** [248]

4.10.1 Detailed Description

Definition at line 426 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.11 TY_ENUM_ENTRY Struct Reference

```
#include <TYApi.h>
```

Public Attributes

- char **description** [64]
- int32_t **value**
- int32_t **reserved** [3]

4.11.1 Detailed Description

enum feature entry information

See also

TYGetEnumEntryInfo

Definition at line 491 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.12 TY_EVENT_INFO Struct Reference

Public Attributes

- TY_EVENT **eventId**
- char **message** [124]

4.12.1 Detailed Description

Definition at line 594 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.13 TY_FEATURE_INFO Struct Reference

Public Attributes

- bool isValid
  true if feature exists, false otherwise
- TY_ACCESS_MODE accessMode
  feature access privilege
- bool writableAtRun
  feature can be written while capturing
- char **reserved0** [1]
- TY_COMPONENT_ID componentID
  owner of this feature
- TY_FEATURE_ID featureID
  feature unique id
- char name [32]
  describe string
- int32_t bindComponentID
  component ID current feature bind to
- int32_t bindFeatureID
  feature ID current feature bind to
- char **reserved** [252]

4.13.1 Detailed Description

Definition at line 459 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.14 TY_FLOAT_RANGE Struct Reference

Public Attributes

- float **min**
- float **max**
- float inc

  increaing step
- float **reserved** [1]

4.14.1 Detailed Description

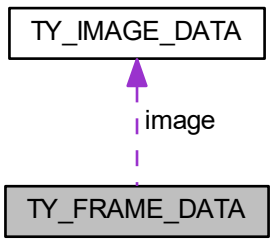
Definition at line 481 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.15 TY_FRAME_DATA Struct Reference

Collaboration diagram for TY_FRAME_DATA:



Public Attributes

- void * userBuffer

  Pointer to user enqueued buffer, user should enqueue this buffer in the end of callback.
- int32_t bufferSize

  Size of userBuffer.
- int32_t validCount

  Number of valid data.
- int32_t reserved [6]

  Reserved.
- TY_IMAGE_DATA image [10]

  Buffer data, max to 10 images per frame, each buffer data could be an image or something else.

4.15.1 Detailed Description

Definition at line 584 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.16 TY_IMAGE_DATA Struct Reference

Public Attributes

- uint64_t timestamp

  Timestamp in microseconds.
- int32_t imageIndex

  image index used in trigger mode
- int32_t status

  Status of this buffer.
- int32_t componentID

  Where current data come from.
- int32_t size

  Buffer size.
- void * buffer

  Pointer to data buffer.
- int32_t width

  Image width in pixels.
- int32_t height

  Image height in pixels.
- int32_t pixelFormat

  Pixel format, see TY_PIXEL_FORMAT_LIST.
- int32_t reserved [9]

  Reserved.

4.16.1 Detailed Description

Definition at line 569 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.17 TY_INT_RANGE Struct Reference

Public Attributes

- int32_t **min**
- int32_t **max**
- int32_t inc
  increaing step
- int32_t **reserved** [1]

4.17.1 Detailed Description

Definition at line 473 of file TYApi.h.

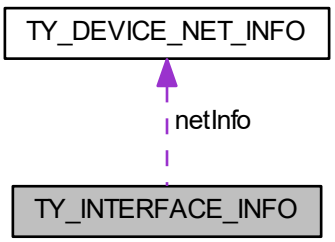
The documentation for this struct was generated from the following file:

- TYApi.h

4.18 TY_INTERFACE_INFO Struct Reference

`#include <TYApi.h>`

Collaboration diagram for TY_INTERFACE_INFO:



Public Attributes

- char **name** [32]
- char **id** [32]
- TY_INTERFACE_TYPE **type**
- char **reserved** [4]
- TY_DEVICE_NET_INFO **netInfo**

4.18.1 Detailed Description

See also

TYGetInterfaceList

Definition at line 434 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.19 TY_ISP_FEATURE_INFO Struct Reference

Public Attributes

- TY_ISP_FEATURE_ID **id**
- int32_t **size**
- const char * **name**
- TY_ACCESS_MODE **mode**

4.19.1 Detailed Description

Definition at line 46 of file TyIsp.h.

The documentation for this struct was generated from the following file:

- TyIsp.h

4.20 TY_PIXEL_DESC Struct Reference

Public Attributes

- int16_t **x**
- int16_t **y**
- uint16_t **depth**
- uint16_t **rsvd**

4.20.1 Detailed Description

Definition at line 12 of file TYCoordinateMapper.h.

The documentation for this struct was generated from the following file:

- TYCoordinateMapper.h

4.21 TY_TRIGGER_PARAM Struct Reference

Public Attributes

- TY_TRIGGER_MODE **mode**
- int8_t **fps**
- int8_t **rsvd**

4.21.1 Detailed Description

Definition at line 548 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.22 TY_VECT_3F Struct Reference

Public Attributes

- float **x**
- float **y**
- float **z**

4.22.1 Detailed Description

Definition at line 498 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

4.23 TY_VERSION_INFO Struct Reference

Public Attributes

- int32_t **major**
- int32_t **minor**
- int32_t **patch**
- int32_t **reserved**

4.23.1 Detailed Description

Definition at line 408 of file TYApi.h.

The documentation for this struct was generated from the following file:

- TYApi.h

Chapter 5

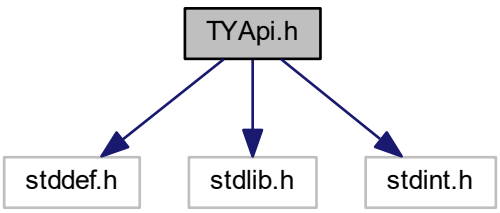
File Documentation

5.1 TYApi.h File Reference

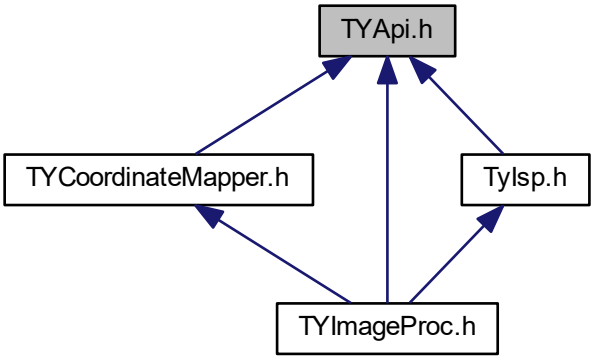
TYApi.h includes camera control and data receiving interface, which supports configuration for image resolution, frame rate, exposure
time, gain, working mode,etc.

```
#include <stddef.h>
#include <stdlib.h>
#include <stdint.h>
```

Include dependency graph for TYApi.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct TY_VERSION_INFO
- struct TY_DEVICE_NET_INFO
- struct TY_DEVICE_USB_INFO
- struct TY_INTERFACE_INFO
- struct TY_DEVICE_BASE_INFO
- struct TY_FEATURE_INFO
- struct TY_INT_RANGE
- struct TY_FLOAT_RANGE
- struct TY_ENUM_ENTRY
- struct TY_VECT_3F
- struct TY_CAMERA_INTRINSIC
- struct TY_CAMERA_EXTRINSIC
- struct TY_CAMERA_DISTORTION
  camera distortion parameters
- struct TY_CAMERA_CALIB_INFO
- struct TY_TRIGGER_PARAM
- struct TY_CAMERA_STATISTICS
- struct TY_IMAGE_DATA
- struct TY_FRAME_DATA
- struct TY_EVENT_INFO

Macros

- #define **_STDBOOL_H**
- #define **__bool_true_false_are_defined** 1
- #define **bool** _Bool
- #define **true** 1
- #define **false** 0
- #define **TY_DLLIMPORT** __attribute__((visibility("default")))
- #define **TY_DLLEXPORT** __attribute__((visibility("default")))

- #define **TY_STDC**
- #define **TY_CDEC**
- #define **TY_EXPORT** TY_DLLIMPORT
- #define **TY_EXTC**
- #define **TY_LIB_VERSION_MAJOR** 3
- #define **TY_LIB_VERSION_MINOR** 1
- #define **TY_LIB_VERSION_PATCH** 4
- #define **TY_DECLARE_IMAGE_MODE0**(pix, res) TY_IMAGE_MODE_##pix##_##res = TY_PIXEL_FOR↩ MAT_##pix | TY_RESOLUTION_MODE_##res
- #define **TY_DECLARE_IMAGE_MODE1**(pix)
- #define **TY_CAPI** TY_EXTC TY_EXPORT TY_STATUS TY_STDC

Typedefs

- typedef enum TY_STATUS_LIST TY_STATUS_LIST

  API call return status.
- typedef int32_t **TY_STATUS**
- typedef enum TY_EVENT_LIST **TY_ENENT_LIST**
- typedef int32_t **TY_EVENT**
- typedef void * TY_INTERFACE_HANDLE

  Interface handle.
- typedef void * TY_DEV_HANDLE

  Device Handle.
- typedef enum TY_DEVICE_COMPONENT_LIST TY_DEVICE_COMPONENT_LIST
- typedef int32_t TY_COMPONENT_ID

  component unique id
- typedef enum TY_FEATURE_TYPE_LIST TY_FEATURE_TYPE_LIST

  Feature Format Type definitions.
- typedef int32_t **TY_FEATURE_TYPE**
- typedef enum TY_FEATURE_ID_LIST TY_FEATURE_ID_LIST

  feature for component definitions
- typedef int32_t TY_FEATURE_ID

  feature unique id
- typedef enum TY_TRIGGER_ACTIVATION_LIST TY_TRIGGER_ACTIVATION_LIST

  set external trigger signal edge
- typedef int32_t **TY_TRIGGER_ACTIVATION**
- typedef enum TY_INTERFACE_TYPE_LIST TY_INTERFACE_TYPE_LIST

  interface type definition
- typedef int32_t **TY_INTERFACE_TYPE**
- typedef enum TY_ACCESS_MODE_LIST TY_ACCESS_MODE_LIST

  a feature is readable or writable
- typedef int8_t **TY_ACCESS_MODE**
- typedef enum TY_PIXEL_BITS_LIST TY_PIXEL_BITS_LIST

  Pixel size type definitions.
- typedef enum TY_PIXEL_FORMAT_LIST TY_PIXEL_FORMAT_LIST

  pixel format definitions
- typedef int32_t **TY_PIXEL_FORMAT**
- typedef enum TY_RESOLUTION_MODE_LIST TY_RESOLUTION_MODE_LIST

  predefined resolution list
- typedef int32_t **TY_RESOLUTION_MODE**
- typedef enum TY_IMAGE_MODE_LIST TY_IMAGE_MODE_LIST

Predefined Image Mode List image mode controls image resolution & format named like TY_IMAGE_MODE_MO↩ NO_160x120.

- typedef int32_t **TY_IMAGE_MODE**
- typedef enum TY_TRIGGER_MODE_LIST TY_TRIGGER_MODE_LIST
- typedef int16_t **TY_TRIGGER_MODE**
- typedef struct TY_VERSION_INFO **TY_VERSION_INFO**
- typedef struct TY_DEVICE_NET_INFO **TY_DEVICE_NET_INFO**
- typedef struct TY_DEVICE_USB_INFO **TY_DEVICE_USB_INFO**
- typedef struct TY_INTERFACE_INFO TY_INTERFACE_INFO
- typedef struct TY_DEVICE_BASE_INFO TY_DEVICE_BASE_INFO
- typedef struct TY_FEATURE_INFO **TY_FEATURE_INFO**
- typedef struct TY_INT_RANGE **TY_INT_RANGE**
- typedef struct TY_FLOAT_RANGE **TY_FLOAT_RANGE**
- typedef struct TY_ENUM_ENTRY TY_ENUM_ENTRY
- typedef struct TY_VECT_3F **TY_VECT_3F**
- typedef struct TY_CAMERA_INTRINSIC TY_CAMERA_INTRINSIC
- typedef struct TY_CAMERA_EXTRINSIC TY_CAMERA_EXTRINSIC
- typedef struct TY_CAMERA_DISTORTION TY_CAMERA_DISTORTION

  camera distortion parameters
- typedef struct TY_CAMERA_CALIB_INFO TY_CAMERA_CALIB_INFO
- typedef struct TY_TRIGGER_PARAM **TY_TRIGGER_PARAM**
- typedef struct TY_CAMERA_STATISTICS **TY_CAMERA_STATISTICS**
- typedef struct TY_IMAGE_DATA **TY_IMAGE_DATA**
- typedef struct TY_FRAME_DATA **TY_FRAME_DATA**
- typedef struct TY_EVENT_INFO **TY_EVENT_INFO**
- typedef void(∗ **TY_EVENT_CALLBACK**) (TY_EVENT_INFO ∗, void ∗userdata)

Enumerations

- enum TY_STATUS_LIST {
  TY_STATUS_OK = 0, **TY_STATUS_ERROR** = -1001, **TY_STATUS_NOT_INITED** = -1002, **TY_STATUS↩ _NOT_IMPLEMENTED** = -1003,
  TY_STATUS_NOT_PERMITTED = -1004, **TY_STATUS_DEVICE_ERROR** = -1005, **TY_STATUS_INVA↩ LID_PARAMETER** = -1006, **TY_STATUS_INVALID_HANDLE** = -1007,
  TY_STATUS_INVALID_COMPONENT = -1008, **TY_STATUS_INVALID_FEATURE** = -1009, **TY_STATU↩ S_WRONG_TYPE** = -1010, **TY_STATUS_WRONG_SIZE** = -1011,
  TY_STATUS_OUT_OF_MEMORY = -1012, **TY_STATUS_OUT_OF_RANGE** = -1013, **TY_STATUS_TIM↩ EOUT** = -1014, **TY_STATUS_WRONG_MODE** = -1015,
  TY_STATUS_BUSY = -1016, **TY_STATUS_IDLE** = -1017, **TY_STATUS_NO_DATA** = -1018, **TY_STATU↩ S_NO_BUFFER** = -1019,
  TY_STATUS_NULL_POINTER = -1020, **TY_STATUS_READONLY_FEATURE** = -1021, **TY_STATUS_I↩ NVALID_DESCRIPTOR** = -1022, **TY_STATUS_INVALID_INTERFACE** = -1023,
  TY_STATUS_FIRMWARE_ERROR = -1024 }

  API call return status.
- enum **TY_EVENT_LIST** { **TY_EVENT_DEVICE_OFFLINE** = -2001, **TY_EVENT_LICENSE_ERROR** = -2002, **TY_EVENT_FW_INIT_ERROR** = -2003 }
- enum TY_DEVICE_COMPONENT_LIST {
  TY_COMPONENT_DEVICE = 0x80000000, TY_COMPONENT_DEPTH_CAM = 0x00010000, TY_COMPONENT_IR_CAM_LE = 0x00040000, TY_COMPONENT_IR_CAM_RIGHT = 0x00080000,
  TY_COMPONENT_RGB_CAM_LEFT = 0x00100000, TY_COMPONENT_RGB_CAM_RIGHT = 0x00200000,
  TY_COMPONENT_LASER = 0x00400000, TY_COMPONENT_IMU = 0x00800000,
  TY_COMPONENT_BRIGHT_HISTO = 0x01000000, TY_COMPONENT_RGB_CAM = TY_COMPONENT↩ _RGB_CAM_LEFT }

- enum TY_FEATURE_TYPE_LIST {
  TY_FEATURE_INT = 0x1000, **TY_FEATURE_FLOAT** = 0X2000, **TY_FEATURE_ENUM** = 0x3000, **TY_F↩EATURE_BOOL** = 0x4000,
  TY_FEATURE_STRING = 0x5000, **TY_FEATURE_BYTEARRAY** = 0x6000, **TY_FEATURE_STRUCT** = 0x7000 }

  Feature Format Type definitions.
- enum TY_FEATURE_ID_LIST {
  TY_STRUCT_CAM_INTRINSIC = 0x0000 | TY_FEATURE_STRUCT, TY_STRUCT_EXTRINSIC_TO_LEFT_IR = 0x0001 | TY_FEATURE_STRUCT, TY_STRUCT_CAM_DISTORTION = 0x0006 | TY_FEATURE_STR↩UCT, TY_STRUCT_CAM_CALIB_DATA = 0x0007 | TY_FEATURE_STRUCT,
  TY_INT_PERSISTENT_IP = 0x0010 | TY_FEATURE_INT, **TY_INT_PERSISTENT_SUBMASK** = 0x0011 | TY_FEATURE_INT, **TY_INT_PERSISTENT_GATEWAY** = 0x0012 | TY_FEATURE_INT, **TY_BOOL_GVS↩P_RESEND** = 0x0013 | TY_FEATURE_BOOL,
  TY_INT_PACKET_DELAY = 0x0014 | TY_FEATURE_INT, **TY_INT_ACCEPTABLE_PERCENT** = 0x0015 | TY_FEATURE_INT, TY_INT_NTP_SERVER_IP = 0x0016 | TY_FEATURE_INT, TY_STRUCT_CAM_STATISTICS = 0x00ff | TY_FEATURE_STRUCT,
  TY_INT_WIDTH_MAX = 0x0100 | TY_FEATURE_INT, **TY_INT_HEIGHT_MAX** = 0x0101 | TY_FEATURE↩_INT, **TY_INT_OFFSET_X** = 0x0102 | TY_FEATURE_INT, **TY_INT_OFFSET_Y** = 0x0103 | TY_FEATUR↩E_INT,
  TY_INT_WIDTH = 0x0104 | TY_FEATURE_INT, TY_INT_HEIGHT = 0x0105 | TY_FEATURE_INT, TY_ENUM_IMAGE_MODE = 0x0109 | TY_FEATURE_ENUM, **TY_FLOAT_SCALE_UNIT** = 0x010a | TY_FEATURE_FLOAT,
  TY_ENUM_TRIGGER_ACTIVATION = 0x0201 | TY_FEATURE_ENUM, TY_INT_FRAME_PER_TRIGGER = 0x0202 | TY_FEATURE_INT, TY_STRUCT_TRIGGER_PARAM = 0x0523 | TY_FEATURE_STRUCT, TY_BOOL_KEEP_ALIVE_ONOFF = 0x0203 | TY_FEATURE_BOOL,
  TY_INT_KEEP_ALIVE_TIMEOUT = 0x0204 | TY_FEATURE_INT, TY_BOOL_CMOS_SYNC = 0x0205 | T↩Y_FEATURE_BOOL, TY_INT_TRIGGER_DELAY_US = 0x0206 | TY_FEATURE_INT, TY_BOOL_TRIGGER_OUT_IO = 0x0207 | TY_FEATURE_BOOL,
  TY_BOOL_AUTO_EXPOSURE = 0x0300 | TY_FEATURE_BOOL, TY_INT_EXPOSURE_TIME = 0x0301 | TY_FEATURE_INT, TY_BOOL_AUTO_GAIN = 0x0302 | TY_FEATURE_BOOL, TY_INT_GAIN = 0x0303 | TY_FEATURE_INT,
  TY_BOOL_AUTO_AWB = 0x0304 | TY_FEATURE_BOOL, TY_INT_LASER_POWER = 0x0500 | TY_FEA↩TURE_INT, TY_BOOL_LASER_AUTO_CTRL = 0x0501 | TY_FEATURE_BOOL, TY_BOOL_UNDISTORTION = 0x0510 | TY_FEATURE_BOOL,
  TY_BOOL_BRIGHTNESS_HISTOGRAM = 0x0511 | TY_FEATURE_BOOL, TY_BOOL_DEPTH_POSTPROC = 0x0512 | TY_FEATURE_BOOL, TY_INT_R_GAIN = 0x0520 | TY_FEATURE_INT, TY_INT_G_GAIN = 0x0521 | TY_FEATURE_INT,
  TY_INT_B_GAIN = 0x0522 | TY_FEATURE_INT, TY_INT_ANALOG_GAIN = 0x0524 | TY_FEATURE_INT }

  feature for component definitions
- enum TY_TRIGGER_ACTIVATION_LIST { **TY_TRIGGER_ACTIVATION_FALLINGEDGE** = 0, **TY_TRIG↩GER_ACTIVATION_RISINGEDGE** = 1 }

  set external trigger signal edge
- enum TY_INTERFACE_TYPE_LIST {
  TY_INTERFACE_UNKNOWN = 0, **TY_INTERFACE_RAW** = 1, **TY_INTERFACE_USB** = 2, **TY_INTERF↩ACE_ETHERNET** = 4,
  TY_INTERFACE_IEEE80211 = 8, **TY_INTERFACE_ALL** = 0xffff }

  interface type definition
- enum TY_ACCESS_MODE_LIST { **TY_ACCESS_READABLE** = 0x1, **TY_ACCESS_WRITABLE** = 0x2 }

  a feature is readable or writable
- enum TY_PIXEL_BITS_LIST { **TY_PIXEL_8BIT** = 0x1 << 28, **TY_PIXEL_16BIT** = 0x2 << 28, **TY_PIXE↩L_24BIT** = 0x3 << 28, **TY_PIXEL_32BIT** = 0x4 << 28 }

  Pixel size type definitions.
- enum TY_PIXEL_FORMAT_LIST {
  TY_PIXEL_FORMAT_UNDEFINED = 0, TY_PIXEL_FORMAT_MONO = (TY_PIXEL_8BIT | (0x0 << 24)), TY_PIXEL_FORMAT_BAYER8GB = (TY_PIXEL_8BIT | (0x1 << 24)), TY_PIXEL_FORMAT_DEPTH16 = (TY_PIXEL_16BIT | (0x0 << 24)),

TY_PIXEL_FORMAT_YVYU = (TY_PIXEL_16BIT | (0x1 << 24)), TY_PIXEL_FORMAT_YUYV = (TY_PIXEL_16BIT | (0x2 << 24)), TY_PIXEL_FORMAT_RGB = (TY_PIXEL_24BIT | (0x0 << 24)), TY_PIXEL_FORMAT_BGR = (TY_PIXEL_24BIT | (0x1 << 24)), TY_PIXEL_FORMAT_JPEG = (TY_PIXEL_24BIT | (0x2 << 24)), TY_PIXEL_FORMAT_MJPG = (TY_PIXEL_24BIT | (0x3 << 24)) }

pixel format definitions

- enum TY_RESOLUTION_MODE_LIST { TY_RESOLUTION_MODE_160x120 = (160<<12)+120, TY_RESOLUTION_MODE_240x320 = (240<<12)+320, TY_RESOLUTION_MODE_320x180 = (320<<12)+180, TY_RESOLUTION_MODE_320x200 = (320<<12)+200, TY_RESOLUTION_MODE_320x240 = (320<<12)+240, TY_RESOLUTION_MODE_480x640 = (480<<12)+640, TY_RESOLUTION_MODE_640x360 = (640<<12)+360, TY_RESOLUTION_MODE_640x400 = (640<<12)+400, TY_RESOLUTION_MODE_640x480 = (640<<12)+480, TY_RESOLUTION_MODE_960x1280 = (960<<12)+1280, TY_RESOLUTION_MODE_1280x720 = (1280<<12)+720, TY_RESOLUTION_MODE_1280x800 = (1280<<12)+800, TY_RESOLUTION_MODE_1280x960 = (1280<<12)+960, TY_RESOLUTION_MODE_2592x1944 = (2592<<12)+1944 }

  predefined resolution list

- enum TY_IMAGE_MODE_LIST { **TY_DECLARE_IMAGE_MODE1** =(MONO), **TY_DECLARE_IMAGE_MODE1** =(MONO), **TY_DECLARE_IMAGE_MODE1** =(MONO), **TY_DECLARE_IMAGE_MODE1** =(MONO), **TY_DECLARE_IMAGE_MODE1** =(MONO), **TY_DECLARE_IMAGE_MODE1** =(MONO) }

  Predefined Image Mode List image mode controls image resolution & format named like TY_IMAGE_MODE_MONO_160x120.

- enum TY_TRIGGER_MODE_LIST { TY_TRIGGER_MODE_OFF = 0, TY_TRIGGER_MODE_SLAVE = 1, TY_TRIGGER_MODE_M_SIG = 2, TY_TRIGGER_MODE_M_PER = 3 }

Functions

- TY_EXTC TY_EXPORT const char *TY_STDC TYErrorString (TY_STATUS errorID)

  Get error information.

- TY_CAPI TYDeinitLib (void)

  Deinit this library.

- TY_CAPI TYLibVersion (TY_VERSION_INFO *version)

  Get current library version.

- TY_CAPI TYUpdateInterfaceList ()

  Update current interfaces. call before TYGetInterfaceList.

- TY_CAPI TYGetInterfaceNumber (uint32_t *pNumIfaces)

  Get number of current interfaces.

- TY_CAPI TYGetInterfaceList (TY_INTERFACE_INFO *pIfaceInfos, uint32_t bufferCount, uint32_t *filledCount)

  Get interface info list.

- TY_CAPI TYHasInterface (const char *ifaceID, bool *value)

  Check if has interface.

- TY_CAPI TYOpenInterface (const char *ifaceID, TY_INTERFACE_HANDLE *outHandle)

  Open specified interface.

- TY_CAPI TYCloseInterface (TY_INTERFACE_HANDLE ifaceHandle)

  Close interface.

- TY_CAPI TYUpdateDeviceList (TY_INTERFACE_HANDLE ifaceHandle)

  Update current connected devices.

- TY_CAPI TYGetDeviceNumber (TY_INTERFACE_HANDLE ifaceHandle, uint32_t *deviceNumber)

  Get number of current connected devices.

- TY_CAPI TYGetDeviceList (TY_INTERFACE_HANDLE ifaceHandle, TY_DEVICE_BASE_INFO *deviceInfos, uint32_t bufferCount, uint32_t *filledDeviceCount)

Get device info list.

- TY_CAPI TYHasDevice (TY_INTERFACE_HANDLE ifaceHandle, const char *deviceID, bool *value)

  Check whether the interface has the specified device.
- TY_CAPI TYOpenDevice (TY_INTERFACE_HANDLE ifaceHandle, const char *deviceID, TY_DEV_HANDLE *outDeviceHandle)

  Open device by device ID.
- TY_CAPI TYOpenDeviceWithIP (TY_INTERFACE_HANDLE ifaceHandle, const char *IP, TY_DEV_HANDLE *deviceHandle)

  Open device by device IP, useful when a device is not listed.
- TY_CAPI TYGetDeviceInterface (TY_DEV_HANDLE hDevice, TY_INTERFACE_HANDLE *pIface)

  Get interface handle by device handle.
- TY_CAPI TYForceDeviceIP (TY_INTERFACE_HANDLE ifaceHandle, const char *MAC, const char *newIP, const char *newNetMask, const char *newGateway)

  Force a ethernet device to use new IP address, useful when device use persistent IP and cannot be found.
- TY_CAPI TYCloseDevice (TY_DEV_HANDLE hDevice)

  Close device by device handle.
- TY_CAPI TYGetDeviceInfo (TY_DEV_HANDLE hDevice, TY_DEVICE_BASE_INFO *info)

  Get base info of the open device.
- TY_CAPI TYGetComponentIDs (TY_DEV_HANDLE hDevice, int32_t *componentIDs)

  Get all components IDs.
- TY_CAPI TYGetEnabledComponents (TY_DEV_HANDLE hDevice, int32_t *componentIDs)

  Get all enabled components IDs.
- TY_CAPI TYEnableComponents (TY_DEV_HANDLE hDevice, int32_t componentIDs)

  Enable components.
- TY_CAPI TYDisableComponents (TY_DEV_HANDLE hDevice, int32_t componentIDs)

  Disable components.
- TY_CAPI TYGetFrameBufferSize (TY_DEV_HANDLE hDevice, uint32_t *bufferSize)

  Get total buffer size of one frame in current configuration.
- TY_CAPI TYEnqueueBuffer (TY_DEV_HANDLE hDevice, void *buffer, uint32_t bufferSize)

  Enqueue a user allocated buffer.
- TY_CAPI TYClearBufferQueue (TY_DEV_HANDLE hDevice)

  Clear the internal buffer queue, so that user can release all the buffer.
- TY_CAPI TYStartCapture (TY_DEV_HANDLE hDevice)

  Start capture.
- TY_CAPI TYStopCapture (TY_DEV_HANDLE hDevice)

  Stop capture.
- TY_CAPI TYSendSoftTrigger (TY_DEV_HANDLE hDevice)

  Send a software trigger to capture a frame when device works in trigger mode.
- TY_CAPI TYRegisterEventCallback (TY_DEV_HANDLE hDevice, TY_EVENT_CALLBACK callback, void *userdata)

  Register device status callback. Register NULL to clean callback.
- TY_CAPI TYFetchFrame (TY_DEV_HANDLE hDevice, TY_FRAME_DATA *frame, int32_t timeout)

  Fetch one frame.
- TY_CAPI TYHasFeature (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, bool *value)

  Check whether a component has a specific feature.
- TY_CAPI TYGetFeatureInfo (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, TY_FEATURE_INFO *featureInfo)

  Get feature info.
- TY_CAPI TYGetIntRange (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, TY_INT_RANGE *intRange)

  Get value range of integer feature.

- TY_CAPI TYGetInt (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, int32_t *value)

  Get value of integer feature.
- TY_CAPI TYSetInt (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, int32_t value)

  Set value of integer feature.
- TY_CAPI TYGetFloatRange (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, TY_FLOAT_RANGE *floatRange)

  Get value range of float feature.
- TY_CAPI TYGetFloat (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, float *value)

  Get value of float feature.
- TY_CAPI TYSetFloat (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, float value)

  Set value of float feature.
- TY_CAPI TYGetEnumEntryCount (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, uint32_t *entryCount)

  Get number of enum entries.
- TY_CAPI TYGetEnumEntryInfo (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, TY_ENUM_ENTRY *entries, uint32_t entryCount, uint32_t *filledEntryCount)

  Get list of enum entries.
- TY_CAPI TYGetEnum (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, int32_t *value)

  Get current value of enum feature.
- TY_CAPI TYSetEnum (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, int32_t value)

  Set value of enum feature.
- TY_CAPI TYGetBool (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, bool *value)

  Get value of bool feature.
- TY_CAPI TYSetBool (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, bool value)

  Set value of bool feature.
- TY_CAPI TYGetStringLength (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, uint32_t *size)

  Get internal buffer size of string feature.
- TY_CAPI TYGetString (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, char *buffer, uint32_t bufferSize)

  Get value of string feature.
- TY_CAPI TYSetString (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, const char *buffer)

  Set value of string feature.
- TY_CAPI TYGetStruct (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, void *pStruct, uint32_t structSize)

  Get value of struct.
- TY_CAPI TYSetStruct (TY_DEV_HANDLE hDevice, TY_COMPONENT_ID componentID, TY_FEATURE_ID featureID, void *pStruct, uint32_t structSize)

  Set value of struct.
- TY_CAPI **_TYInitLib** (void)

5.1.1 Detailed Description

TYApi.h includes camera control and data receiving interface, which supports configuration for image resolution, frame rate, exposure
time, gain, working mode,etc.

5.1.2 Macro Definition Documentation

5.1.2.1 TY_DECLARE_IMAGE_MODE1

```
#define TY_DECLARE_IMAGE_MODE1(
              pix )
```

Value:

```
TY_DECLARE_IMAGE_MODE0(pix, 160x120), \
            TY_DECLARE_IMAGE_MODE0(pix, 320x180), \
            TY_DECLARE_IMAGE_MODE0(pix, 320x200), \
            TY_DECLARE_IMAGE_MODE0(pix, 320x240), \
            TY_DECLARE_IMAGE_MODE0(pix, 480x640), \
            TY_DECLARE_IMAGE_MODE0(pix, 640x360), \
            TY_DECLARE_IMAGE_MODE0(pix, 640x400), \
            TY_DECLARE_IMAGE_MODE0(pix, 640x480), \
            TY_DECLARE_IMAGE_MODE0(pix, 960x1280), \
            TY_DECLARE_IMAGE_MODE0(pix, 1280x720), \
            TY_DECLARE_IMAGE_MODE0(pix, 1280x960), \
            TY_DECLARE_IMAGE_MODE0(pix, 1280x800), \
            TY_DECLARE_IMAGE_MODE0(pix, 2592x1944)
```

Definition at line 362 of file TYApi.h.

5.1.3 Typedef Documentation

5.1.3.1 TY_CAMERA_CALIB_INFO

```
typedef struct TY_CAMERA_CALIB_INFO TY_CAMERA_CALIB_INFO
```

camera 's cailbration data

See also

TYGetStruct

5.1.3.2 TY_CAMERA_EXTRINSIC

```
typedef struct TY_CAMERA_EXTRINSIC TY_CAMERA_EXTRINSIC
```

a 4x4 matrix

.	.	.	.
r11	r12	r13	t1
r21	r22	r23	t2
r31	r32	r33	t3
0	0	0	1

5.1.3.3 TY_CAMERA_INTRINSIC

```
typedef struct TY_CAMERA_INTRINSIC TY_CAMERA_INTRINSIC
```

a 3x3 matrix

.	.	.
fx	0	cx
0	fy	cy
0	0	1

5.1.3.4 TY_COMPONENT_ID

```
typedef int32_t TY_COMPONENT_ID
```

component unique id

See also

TY_DEVICE_COMPONENT_LIST

Definition at line 203 of file TYApi.h.

5.1.3.5 TY_DEVICE_BASE_INFO

```
typedef struct TY_DEVICE_BASE_INFO TY_DEVICE_BASE_INFO
```

See also

TYGetDeviceList

5.1.3.6 TY_DEVICE_COMPONENT_LIST

```
typedef enum TY_DEVICE_COMPONENT_LIST TY_DEVICE_COMPONENT_LIST
```

Device Component list A device contains several component. Each component can be controlled by its own features, such as image width, exposure time, etc..

See also

To Know how to get feature information please refer to sample code DumpAllFeatures

5.1.3.7 TY_ENUM_ENTRY

```
typedef struct TY_ENUM_ENTRY TY_ENUM_ENTRY
```

enum feature entry information

See also

TYGetEnumEntryInfo

5.1.3.8 TY_FEATURE_ID

```
typedef int32_t TY_FEATURE_ID
```

feature unique id

See also

TY_FEATURE_ID_LIST

Definition at line 279 of file TYApi.h.

5.1.3.9 TY_INTERFACE_INFO

```
typedef struct TY_INTERFACE_INFO TY_INTERFACE_INFO
```

See also

TYGetInterfaceList

5.1.3.10 TY_TRIGGER_ACTIVATION_LIST

```
typedef enum TY_TRIGGER_ACTIVATION_LIST TY_TRIGGER_ACTIVATION_LIST
```

set external trigger signal edge

See also

refer to sample SimpleView_TriggerMode for detail usage

5.1.3.11 TY_TRIGGER_MODE_LIST

```
typedef enum TY_TRIGGER_MODE_LIST TY_TRIGGER_MODE_LIST
```

See also

refer to sample SimpleView_TriggerMode for detail usage

5.1.4 Enumeration Type Documentation

5.1.4.1 TY_DEVICE_COMPONENT_LIST

```
enum TY_DEVICE_COMPONENT_LIST
```

Device Component list A device contains several component. Each component can be controlled by its own features, such as image width, exposure time, etc..

See also

To Know how to get feature information please refer to sample code DumpAllFeatures

Enumerator

TY_COMPONENT_DEVICE	Abstract component stands for whole device, always enabled.
TY_COMPONENT_DEPTH_CAM	Depth camera.
TY_COMPONENT_IR_CAM_LEFT	Left IR camera.
TY_COMPONENT_IR_CAM_RIGHT	Right IR camera.
TY_COMPONENT_RGB_CAM_LEFT	Left RGB camera.
TY_COMPONENT_RGB_CAM_RIGHT	Right RGB camera.
TY_COMPONENT_LASER	Laser.
TY_COMPONENT_IMU	Inertial Measurement Unit.
TY_COMPONENT_BRIGHT_HISTO	virtual component for brightness histogram of ir
TY_COMPONENT_RGB_CAM	Some device has only one RGB camera, map it to left.

Definition at line 189 of file TYApi.h.

5.1.4.2 TY_FEATURE_ID_LIST

`enum TY_FEATURE_ID_LIST`

feature for component definitions

Enumerator

TY_STRUCT_CAM_INTRINSIC	see TY_CAMERA_INTRINSIC
TY_STRUCT_EXTRINSIC_TO_LEFT_IR	extrinsic from current component to left IR, see TY_CAMERA_EXTRINSIC
TY_STRUCT_CAM_DISTORTION	see TY_CAMERA_DISTORTION
TY_STRUCT_CAM_CALIB_DATA	see TY_CAMERA_CALIB_INFO
TY_INT_PACKET_DELAY	microseconds
TY_INT_NTP_SERVER_IP	Ntp server IP.
TY_STRUCT_CAM_STATISTICS	statistical information, see TY_CAMERA_STATISTICS
TY_INT_WIDTH	Image width.
TY_INT_HEIGHT	Image height.
TY_ENUM_IMAGE_MODE	Resolution-PixelFromat mode, see TY_IMAGE_MODE_LIST.
TY_ENUM_TRIGGER_ACTIVATION	Trigger activation, see TY_TRIGGER_ACTIVATION_LIST.
TY_INT_FRAME_PER_TRIGGER	Number of frames captured per trigger.
TY_STRUCT_TRIGGER_PARAM	param of trigger, see TY_TRIGGER_PARAM
TY_BOOL_KEEP_ALIVE_ONOFF	Keep Alive switch.
TY_INT_KEEP_ALIVE_TIMEOUT	Keep Alive timeout.
TY_BOOL_CMOS_SYNC	Cmos sync switch.
TY_INT_TRIGGER_DELAY_US	Trigger delay time, in microseconds.
TY_BOOL_TRIGGER_OUT_IO	Trigger out IO.
TY_BOOL_AUTO_EXPOSURE	Auto exposure switch.
TY_INT_EXPOSURE_TIME	Exposure time in percentage.
TY_BOOL_AUTO_GAIN	Auto gain switch.
TY_INT_GAIN	Sensor Gain.
TY_BOOL_AUTO_AWB	Auto white balance.
TY_INT_LASER_POWER	Laser power level.
TY_BOOL_LASER_AUTO_CTRL	Laser auto ctrl.
TY_BOOL_UNDISTORTION	Output undistorted image.
TY_BOOL_BRIGHTNESS_HISTOGRAM	Output bright histogram.
TY_BOOL_DEPTH_POSTPROC	Do depth image postproc.
TY_INT_R_GAIN	Gain of R channel.
TY_INT_G_GAIN	Gain of G channel.
TY_INT_B_GAIN	Gain of B channel.
TY_INT_ANALOG_GAIN	Analog gain.

Definition at line 222 of file TYApi.h.

5.1.4.3 TY_PIXEL_FORMAT_LIST

enum TY_PIXEL_FORMAT_LIST

pixel format definitions

Enumerator

TY_PIXEL_FORMAT_MONO	0x10000000
TY_PIXEL_FORMAT_BAYER8GB	0x11000000
TY_PIXEL_FORMAT_DEPTH16	0x20000000
TY_PIXEL_FORMAT_YVYU	0x21000000, yvyu422
TY_PIXEL_FORMAT_YUYV	0x22000000, yuyv422
TY_PIXEL_FORMAT_RGB	0x30000000
TY_PIXEL_FORMAT_BGR	0x31000000
TY_PIXEL_FORMAT_JPEG	0x32000000
TY_PIXEL_FORMAT_MJPG	0x33000000

Definition at line 324 of file TYApi.h.

5.1.4.4 TY_RESOLUTION_MODE_LIST

enum TY_RESOLUTION_MODE_LIST

predefined resolution list

Enumerator

TY_RESOLUTION_MODE_160x120	0x000a0078
TY_RESOLUTION_MODE_240x320	0x000f0140
TY_RESOLUTION_MODE_320x180	0x001400b4
TY_RESOLUTION_MODE_320x200	0x001400c8
TY_RESOLUTION_MODE_320x240	0x001400f0
TY_RESOLUTION_MODE_480x640	0x001e0280
TY_RESOLUTION_MODE_640x360	0x00280168
TY_RESOLUTION_MODE_640x400	0x00280190
TY_RESOLUTION_MODE_640x480	0x002801e0
TY_RESOLUTION_MODE_960x1280	0x003c0500
TY_RESOLUTION_MODE_1280x720	0x005002d0
TY_RESOLUTION_MODE_1280x800	0x00500320
TY_RESOLUTION_MODE_1280x960	0x005003c0
TY_RESOLUTION_MODE_2592x1944	0x00a20798

Definition at line 340 of file TYApi.h.

5.1.4.5 TY_TRIGGER_ACTIVATION_LIST

```
enum TY_TRIGGER_ACTIVATION_LIST
```

set external trigger signal edge

See also

refer to sample SimpleView_TriggerMode for detail usage

Definition at line 284 of file TYApi.h.

5.1.4.6 TY_TRIGGER_MODE_LIST

```
enum TY_TRIGGER_MODE_LIST
```

See also

refer to sample SimpleView_TriggerMode for detail usage

Enumerator

TY_TRIGGER_MODE_OFF	not trigger mode, continuous mode
TY_TRIGGER_MODE_SLAVE	slave mode, receive soft/hardware triggers
TY_TRIGGER_MODE_M_SIG	master mode 1, sending one trigger signal once received a soft/hardware trigger
TY_TRIGGER_MODE_M_PER	master mode 2, periodic sending one trigger signals, 'fps' param should be set

Definition at line 396 of file TYApi.h.

5.1.5 Function Documentation

5.1.5.1 TYClearBufferQueue()

```
TY_CAPI TYClearBufferQueue (
            TY_DEV_HANDLE hDevice )
```

Clear the internal buffer queue, so that user can release all the buffer.

Parameters

in	*hDevice*	Device handle.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_BUSY	Device is capturing.

5.1.5.2 TYCloseDevice()

```
TY_CAPI TYCloseDevice (
            TY_DEV_HANDLE hDevice )
```

Close device by device handle.

Parameters

in	*hDevice*	Device handle.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_IDLE	Device has been closed.

5.1.5.3 TYCloseInterface()

```
TY_CAPI TYCloseInterface (
            TY_INTERFACE_HANDLE ifaceHandle )
```

Close interface.

Parameters

in	*ifaceHandle*	Interface to be closed.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Interface not found.

5.1.5.4 TYDeinitLib()

```
TY_CAPI TYDeinitLib (
            void  )
```

Deinit this library.

Return values

TY_STATUS_OK	Succeed.

5.1.5.5 TYDisableComponents()

```
TY_CAPI TYDisableComponents (
            TY_DEV_HANDLE hDevice,
            int32_t componentIDs )
```

Disable components.

Parameters

in	*hDevice*	Device handle.
in	*componentIDs*	Components to be disabled.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Some components specified by componentIDs are invalid.
TY_STATUS_BUSY	Device is capturing.

See also

TY_DEVICE_COMPONENT_LIST

5.1.5.6 TYEnableComponents()

```
TY_CAPI TYEnableComponents (
            TY_DEV_HANDLE hDevice,
            int32_t componentIDs )
```

Enable components.

Parameters

in	*hDevice*	Device handle.
in	*componentIDs*	Components to be enabled.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Some components specified by componentIDs are invalid.
TY_STATUS_BUSY	Device is capturing.

5.1.5.7 TYEnqueueBuffer()

```
TY_CAPI TYEnqueueBuffer (
            TY_DEV_HANDLE hDevice,
            void * buffer,
            uint32_t bufferSize )
```

Enqueue a user allocated buffer.

Parameters

in	*hDevice*	Device handle.
in	*buffer*	Buffer to be enqueued.
in	*bufferSize*	Size of the input buffer.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_NULL_POINTER	buffer is NULL.
TY_STATUS_WRONG_SIZE	The input buffer is not large enough.

5.1.5.8 TYErrorString()

```
TY_EXTC TY_EXPORT const char *TY_STDC TYErrorString (
            TY_STATUS errorID )
```

Get error information.

Parameters

in	*errorID*	Error id.

Returns

Error string.

5.1.5.9 TYFetchFrame()

```
TY_CAPI TYFetchFrame (
            TY_DEV_HANDLE hDevice,
            TY_FRAME_DATA * frame,
            int32_t timeout )
```

Fetch one frame.

Parameters

in	*hDevice*	Device handle.
out	*frame*	Frame data to be filled.
in	*timeout*	Timeout in milliseconds. <0 for infinite.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_NULL_POINTER	frame is NULL.
TY_STATUS_IDLE	Device capturing is not started.
TY_STATUS_WRONG_MODE	Callback has been registered, this function is disabled.
TY_STATUS_TIMEOUT	Timeout.

5.1.5.10 TYForceDeviceIP()

```
TY_CAPI TYForceDeviceIP (
            TY_INTERFACE_HANDLE ifaceHandle,
            const char * MAC,
            const char * newIP,
            const char * newNetMask,
            const char * newGateway )
```

Force a ethernet device to use new IP address, useful when device use persistent IP and cannot be found.

Parameters

in	*ifaceHandle*	Interface handle.
in	*MAC*	Device MAC, should be "xx:xx:xx:xx:xx:xx".
in	*newIP*	New IP.
in	*newNetMask*	New subnet mask.
in	*newGateway*	New gateway.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Invalid interface handle.
TY_STATUS_WRONG_TYPE	Wrong interface type, should be network.
TY_STATUS_NULL_POINTER	MAC or newIP/newNetMask/newGateway is NULL.
TY_STATUS_INVALID_PARAMETER	MAC is not valid.
TY_STATUS_TIMEOUT	No device found.
TY_STATUS_DEVICE_ERROR	Set new IP failed.

5.1.5.11 TYGetBool()

```
TY_CAPI TYGetBool (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            bool * value )
```

Get value of bool feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*value*	Bool value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_BOOL.
TY_STATUS_NULL_POINTER	value is NULL.

5.1.5.12 TYGetComponentIDs()

```
TY_CAPI TYGetComponentIDs (
            TY_DEV_HANDLE hDevice,
            int32_t * componentIDs )
```

Get all components IDs.

Parameters

in	*hDevice*	Device handle.
out	*componentIDs*	All component IDs this device has. (bit flag).

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_NULL_POINTER	componentIDs is NULL.

See also

TY_DEVICE_COMPONENT_LIST

5.1.5.13 TYGetDeviceInfo()

```
TY_CAPI TYGetDeviceInfo (
            TY_DEV_HANDLE hDevice,
            TY_DEVICE_BASE_INFO * info )
```

Get base info of the open device.

Parameters

in	*hDevice*	Device handle.
out	*info*	Base info out.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_NULL_POINTER	componentIDs is NULL.

5.1.5.14 TYGetDeviceInterface()

```
TY_CAPI TYGetDeviceInterface (
            TY_DEV_HANDLE hDevice,
            TY_INTERFACE_HANDLE * pIface )
```

Get interface handle by device handle.

Parameters

in	*hDevice*	Device handle.
out	*pIface*	Interface handle.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_NULL_POINTER	pIface is NULL.

5.1.5.15 TYGetDeviceList()

```
TY_CAPI TYGetDeviceList (
            TY_INTERFACE_HANDLE ifaceHandle,
            TY_DEVICE_BASE_INFO * deviceInfos,
            uint32_t bufferCount,
            uint32_t * filledDeviceCount )
```

Get device info list.

Parameters

in	*ifaceHandle*	Interface handle.
out	*deviceInfos*	Device info array to be filled.
in	*bufferCount*	Array size of deviceInfos.
out	*filledDeviceCount*	Number of filled TY_DEVICE_BASE_INFO.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Invalid interface handle.
TY_STATUS_NULL_POINTER	deviceInfos or filledDeviceCount is NULL.

5.1.5.16 TYGetDeviceNumber()

```
TY_CAPI TYGetDeviceNumber (
            TY_INTERFACE_HANDLE ifaceHandle,
            uint32_t * deviceNumber )
```

Get number of current connected devices.

Parameters

in	*ifaceHandle*	Interface handle.
out	*deviceNumber*	Number of connected devices.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Invalid interface handle.
TY_STATUS_NULL_POINTER	deviceNumber is NULL.

5.1.5.17 TYGetEnabledComponents()

```
TY_CAPI TYGetEnabledComponents (
            TY_DEV_HANDLE hDevice,
            int32_t * componentIDs )
```

Get all enabled components IDs.

Parameters

in	*hDevice*	Device handle.
out	*componentIDs*	Enabled component IDs.(bit flag)

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_NULL_POINTER	componentIDs is NULL.

See also

TY_DEVICE_COMPONENT_LIST

5.1.5.18 TYGetEnum()

```
TY_CAPI TYGetEnum (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            int32_t * value )
```

Get current value of enum feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*value*	Enum value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_ENUM.
TY_STATUS_NULL_POINTER	value is NULL.

5.1.5.19 TYGetEnumEntryCount()

```
TY_CAPI TYGetEnumEntryCount (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            uint32_t * entryCount )
```

Get number of enum entries.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*entryCount*	Entry count.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_ENUM.
TY_STATUS_NULL_POINTER	entryCount is NULL.

5.1.5.20 TYGetEnumEntryInfo()

```
TY_CAPI TYGetEnumEntryInfo (
```

```
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            TY_ENUM_ENTRY * entries,
            uint32_t entryCount,
            uint32_t * filledEntryCount )
```

Get list of enum entries.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*entries*	Output entries.
in	*entryCount*	Array size of input parameter "entries".
out	*filledEntryCount*	Number of filled entries.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_ENUM.
TY_STATUS_NULL_POINTER	entries or filledEntryCount is NULL.

5.1.5.21 TYGetFeatureInfo()

```
TY_CAPI TYGetFeatureInfo (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            TY_FEATURE_INFO * featureInfo )
```

Get feature info.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*featureInfo*	Feature info.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.

Return values

TY_STATUS_NULL_POINTER	featureInfo is NULL.

5.1.5.22 TYGetFloat()

```
TY_CAPI TYGetFloat (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            float * value )
```

Get value of float feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*value*	Float value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_FLOAT.
TY_STATUS_NULL_POINTER	value is NULL.

5.1.5.23 TYGetFloatRange()

```
TY_CAPI TYGetFloatRange (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            TY_FLOAT_RANGE * floatRange )
```

Get value range of float feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*floatRange*	Float range to be filled.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_FLOAT.
TY_STATUS_NULL_POINTER	floatRange is NULL.

5.1.5.24 TYGetFrameBufferSize()

```
TY_CAPI TYGetFrameBufferSize (
            TY_DEV_HANDLE hDevice,
            uint32_t * bufferSize )
```

Get total buffer size of one frame in current configuration.

Parameters

in	*hDevice*	Device handle.
out	*bufferSize*	Buffer size per frame.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_NULL_POINTER	bufferSize is NULL.

5.1.5.25 TYGetInt()

```
TY_CAPI TYGetInt (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            int32_t * value )
```

Get value of integer feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*value*	Integer value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_INT.
TY_STATUS_NULL_POINTER	value is NULL.

5.1.5.26 TYGetInterfaceList()

```
TY_CAPI TYGetInterfaceList (
            TY_INTERFACE_INFO * pIfaceInfos,
            uint32_t bufferCount,
            uint32_t * filledCount )
```

Get interface info list.

Parameters

out	*pIfaceInfos*	Array of interface infos to be filled.
in	*bufferCount*	Array size of interface infos.
out	*filledCount*	Number of filled TY_INTERFACE_INFO.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_NULL_POINTER	pIfaceInfos or filledCount is NULL.

5.1.5.27 TYGetInterfaceNumber()

```
TY_CAPI TYGetInterfaceNumber (
            uint32_t * pNumIfaces )
```

Get number of current interfaces.

Parameters

out	*pNumIfaces*	Number of interfaces.

Return values

TY_STATUS_OK	Succeed.

Return values

TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_NULL_POINTER	deviceNumber is NULL.

5.1.5.28 TYGetIntRange()

```
TY_CAPI TYGetIntRange (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            TY_INT_RANGE * intRange )
```

Get value range of integer feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*intRange*	Integer range to be filled.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_INT.
TY_STATUS_NULL_POINTER	intRange is NULL.

5.1.5.29 TYGetString()

```
TY_CAPI TYGetString (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            char * buffer,
            uint32_t bufferSize )
```

Get value of string feature.

Parameters

in	*hDevice*	Device handle.

Parameters

in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*buffer*	String buffer.
in	*bufferSize*	Size of buffer.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_STRING.
TY_STATUS_NULL_POINTER	buffer is NULL.

See also

TYGetStringLength

5.1.5.30 TYGetStringLength()

```
TY_CAPI TYGetStringLength (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            uint32_t * size )
```

Get internal buffer size of string feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*size*	String length including '\0'.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_STRING.
TY_STATUS_NULL_POINTER	size is NULL.

See also

TYGetString

5.1.5.31 TYGetStruct()

```
TY_CAPI TYGetStruct (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            void * pStruct,
            uint32_t structSize )
```

Get value of struct.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*pStruct*	Pointer of struct.
in	*structSize*	Size of input buffer pStruct..

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_STRUCT.
TY_STATUS_NULL_POINTER	pStruct is NULL.
TY_STATUS_WRONG_SIZE	structSize incorrect.

5.1.5.32 TYHasDevice()

```
TY_CAPI TYHasDevice (
            TY_INTERFACE_HANDLE ifaceHandle,
            const char * deviceID,
            bool * value )
```

Check whether the interface has the specified device.

Parameters

in	*ifaceHandle*	Interface handle.
in	*deviceID*	Device ID string, can be get from TY_DEVICE_BASE_INFO.
out	*value*	True if the device exists.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Invalid interface handle.
TY_STATUS_NULL_POINTER	deviceID or value is NULL.

5.1.5.33 TYHasFeature()

```
TY_CAPI TYHasFeature (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            bool * value )
```

Check whether a component has a specific feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
out	*value*	Whether has feature.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_NULL_POINTER	value is NULL.

5.1.5.34 TYHasInterface()

```
TY_CAPI TYHasInterface (
            const char * ifaceID,
            bool * value )
```

Check if has interface.

Parameters

in	*ifaceID*	Interface ID string, can be get from TY_INTERFACE_INFO.
out	*value*	True if the interface exists.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_NULL_POINTER	ifaceID or outHandle is NULL.

See also

TYGetInterfaceList

5.1.5.35 TYLibVersion()

```
TY_CAPI TYLibVersion (
            TY_VERSION_INFO * version )
```

Get current library version.

Parameters

out	*version*	Version infomation to be filled.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NULL_POINTER	buffer is NULL.

5.1.5.36 TYOpenDevice()

```
TY_CAPI TYOpenDevice (
            TY_INTERFACE_HANDLE ifaceHandle,
            const char * deviceID,
            TY_DEV_HANDLE * outDeviceHandle )
```

Open device by device ID.

Parameters

in	*ifaceHandle*	Interface handle.
in	*deviceID*	Device ID string, can be get from TY_DEVICE_BASE_INFO.
out	*deviceHandle*	Handle of opened device.

Return values

TY_STATUS_OK	Succeed.

Return values

TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Invalid interface handle.
TY_STATUS_NULL_POINTER	deviceID or deviceHandle is NULL.
TY_STATUS_INVALID_PARAMETER	Device not found.
TY_STATUS_BUSY	Device has been opened.
TY_STATUS_DEVICE_ERROR	Open device failed.

5.1.5.37 TYOpenDeviceWithIP()

```
TY_CAPI TYOpenDeviceWithIP (
            TY_INTERFACE_HANDLE ifaceHandle,
            const char * IP,
            TY_DEV_HANDLE * deviceHandle )
```

Open device by device IP, useful when a device is not listed.

Parameters

in	*ifaceHandle*	Interface handle.
in	*IP*	Device IP.
out	*deviceHandle*	Handle of opened device.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Invalid interface handle.
TY_STATUS_NULL_POINTER	IP or deviceHandle is NULL.
TY_STATUS_INVALID_PARAMETER	Device not found.
TY_STATUS_BUSY	Device has been opened, may occupied somewhere else.
TY_STATUS_DEVICE_ERROR	Open device failed.

5.1.5.38 TYOpenInterface()

```
TY_CAPI TYOpenInterface (
            const char * ifaceID,
            TY_INTERFACE_HANDLE * outHandle )
```

Open specified interface.

Parameters

in	*ifaceID*	Interface ID string, can be get from TY_INTERFACE_INFO.
out	*outHandle*	Handle of opened interface.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_NULL_POINTER	ifaceID or outHandle is NULL.
TY_STATUS_INVALID_INTERFACE	Interface not found.

See also

TYGetInterfaceList

5.1.5.39 TYRegisterEventCallback()

```
TY_CAPI TYRegisterEventCallback (
            TY_DEV_HANDLE hDevice,
            TY_EVENT_CALLBACK callback,
            void * userdata )
```

Register device status callback. Register NULL to clean callback.

Parameters

in	*hDevice*	Device handle.
in	*callback*	Callback function.
in	*userdata*	User private data.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_BUSY	Device is capturing.

5.1.5.40 TYSendSoftTrigger()

```
TY_CAPI TYSendSoftTrigger (
            TY_DEV_HANDLE hDevice )
```

Send a software trigger to capture a frame when device works in trigger mode.

Parameters

in	*hDevice*	Device handle.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_FEATURE	Not support soft trigger.
TY_STATUS_IDLE	Device has not started capture.
TY_STATUS_WRONG_MODE	Not in trigger mode.

5.1.5.41 TYSetBool()

```
TY_CAPI TYSetBool (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            bool value )
```

Set value of bool feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
in	*value*	Bool value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_NOT_PERMITTED	The feature is not writable.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_BOOL.
TY_STATUS_BUSY	Device is capturing, the feature is locked.

5.1.5.42 TYSetEnum()

```
TY_CAPI TYSetEnum (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            int32_t value )
```

Set value of enum feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
in	*value*	Enum value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_NOT_PERMITTED	The feature is not writable.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_ENUM.
TY_STATUS_INVALID_PARAMETER	value is invalid.
TY_STATUS_BUSY	Device is capturing, the feature is locked.

5.1.5.43 TYSetFloat()

```
TY_CAPI TYSetFloat (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            float value )
```

Set value of float feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
in	*value*	Float value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_NOT_PERMITTED	The feature is not writable.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_FLOAT.
TY_STATUS_OUT_OF_RANGE	value is out of range.
TY_STATUS_BUSY	Device is capturing, the feature is locked.

5.1.5.44 TYSetInt()

```
TY_CAPI TYSetInt (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            int32_t value )
```

Set value of integer feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
in	*value*	Integer value.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_NOT_PERMITTED	The feature is not writable.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_INT.
TY_STATUS_OUT_OF_RANGE	value is out of range.
TY_STATUS_BUSY	Device is capturing, the feature is locked.

5.1.5.45 TYSetString()

```
TY_CAPI TYSetString (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            const char * buffer )
```

Set value of string feature.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
in	*buffer*	String buffer.

Return values

TY_STATUS_OK	Succeed.

Return values

TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_NOT_PERMITTED	The feature is not writable.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_STRING.
TY_STATUS_NULL_POINTER	buffer is NULL.
TY_STATUS_OUT_OF_RANGE	Input string is too long.
TY_STATUS_BUSY	Device is capturing, the feature is locked.

5.1.5.46 TYSetStruct()

```
TY_CAPI TYSetStruct (
            TY_DEV_HANDLE hDevice,
            TY_COMPONENT_ID componentID,
            TY_FEATURE_ID featureID,
            void * pStruct,
            uint32_t structSize )
```

Set value of struct.

Parameters

in	*hDevice*	Device handle.
in	*componentID*	Component ID.
in	*featureID*	Feature ID.
in	*pStruct*	Pointer of struct.
in	*structSize*	Size of struct.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	Invalid component ID.
TY_STATUS_INVALID_FEATURE	Invalid feature ID.
TY_STATUS_NOT_PERMITTED	The feature is not writable.
TY_STATUS_WRONG_TYPE	The feature's type is not TY_FEATURE_STRUCT.
TY_STATUS_NULL_POINTER	pStruct is NULL.
TY_STATUS_WRONG_SIZE	structSize incorrect.
TY_STATUS_BUSY	Device is capturing, the feature is locked.

5.1.5.47 TYStartCapture()

```
TY_CAPI TYStartCapture (
```

```
            TY_DEV_HANDLE hDevice )
```

Start capture.

Parameters

in	*hDevice*	Device handle.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_INVALID_COMPONENT	No components enabled.
TY_STATUS_BUSY	Device has been started.
TY_STATUS_DEVICE_ERROR	Start capture failed.

5.1.5.48 TYStopCapture()

```
TY_CAPI TYStopCapture (
            TY_DEV_HANDLE hDevice )
```

Stop capture.

Parameters

in	*hDevice*	Device handle.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_INVALID_HANDLE	Invalid device handle.
TY_STATUS_IDLE	Device is not capturing.
TY_STATUS_DEVICE_ERROR	Stop capture failed.

5.1.5.49 TYUpdateDeviceList()

```
TY_CAPI TYUpdateDeviceList (
            TY_INTERFACE_HANDLE ifaceHandle )
```

Update current connected devices.

Parameters

in	*ifaceHandle*	Interface handle.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.
TY_STATUS_INVALID_INTERFACE	Invalid interface handle.

5.1.5.50 TYUpdateInterfaceList()

```
TY_CAPI TYUpdateInterfaceList ( )
```

Update current interfaces. call before TYGetInterfaceList.

Return values

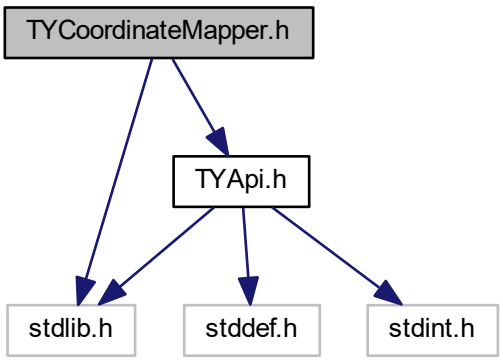
TY_STATUS_OK	Succeed.
TY_STATUS_NOT_INITED	TYInitLib not called.

5.2 TYCoordinateMapper.h File Reference

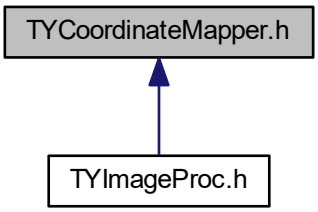
Coordinate Conversion API.

```
#include <stdlib.h>
#include "TYApi.h"
```

Include dependency graph for TYCoordinateMapper.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct TY_PIXEL_DESC

Macros

- #define **TYMAP_CHECKRET**(f, bufToFree)

Typedefs

- typedef struct TY_PIXEL_DESC **TY_PIXEL_DESC**

Functions

- TY_CAPI TYInvertExtrinsic (const TY_CAMERA_EXTRINSIC *orgExtrinsic, TY_CAMERA_EXTRINSIC *invExtrinsic)

  Calculate 4x4 extrinsic matrix's inverse matrix.
- TY_CAPI TYMapDepthToPoint3d (const TY_CAMERA_CALIB_INFO *src_calib, uint32_t depthW, uint32_t depthH, const TY_PIXEL_DESC *depthPixels, uint32_t count, TY_VECT_3F *point3d)

  Map pixels on depth image to 3D points.
- TY_CAPI TYMapPoint3dToDepth (const TY_CAMERA_CALIB_INFO *dst_calib, const TY_VECT_3F *point3d, uint32_t count, uint32_t depthW, uint32_t depthH, TY_PIXEL_DESC *depth)

  Map 3D points to pixels on depth image. Reverse operation of TYMapDepthToPoint3d.
- TY_CAPI TYMapDepthImageToPoint3d (const TY_CAMERA_CALIB_INFO *src_calib, uint32_t imageW, uint32_t imageH, const uint16_t *depth, TY_VECT_3F *point3d)

  Map depth image to 3D points. 0 depth pixels maps to (NAN, NAN, NAN).
- TY_CAPI TYMapPoint3dToDepthImage (const TY_CAMERA_CALIB_INFO *dst_calib, const TY_VECT_3F *point3d, uint32_t count, uint32_t depthW, uint32_t depthH, uint16_t *depth)

  Map 3D points to depth image. (NAN, NAN, NAN) will be skipped.
- TY_CAPI TYMapPoint3dToPoint3d (const TY_CAMERA_EXTRINSIC *extrinsic, const TY_VECT_3F *point3dFrom, uint32_t count, TY_VECT_3F *point3dTo)

  Map 3D points to another coordinate.

5.2.1 Detailed Description

Coordinate Conversion API.

Note

Considering performance, we leave the responsibility of parameters check to users.

Copyright

5.2.2 Macro Definition Documentation

5.2.2.1 TYMAP_CHECKRET

```
#define TYMAP_CHECKRET(
              f,
              bufToFree )
```

Value:

```
do{ \
    TY_STATUS err = (f); \
    if(err){ \
      if(bufToFree) \
        free(bufToFree); \
      return err; \
    } \
  } while(0)
```

Definition at line 186 of file TYCoordinateMapper.h.

5.2.3 Function Documentation

5.2.3.1 TYInvertExtrinsic()

```
TY_CAPI TYInvertExtrinsic (
             const TY_CAMERA_EXTRINSIC * orgExtrinsic,
             TY_CAMERA_EXTRINSIC * invExtrinsic )
```

Calculate 4x4 extrinsic matrix's inverse matrix.

Parameters

in	*orgExtrinsic*	Input extrinsic matrix.
out	*invExtrinsic*	Inverse matrix.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_ERROR	Calculation failed.

5.2.3.2 TYMapDepthImageToPoint3d()

```
TY_CAPI TYMapDepthImageToPoint3d (
             const TY_CAMERA_CALIB_INFO * src_calib,
             uint32_t imageW,
             uint32_t imageH,
             const uint16_t * depth,
             TY_VECT_3F * point3d )
```

Map depth image to 3D points. 0 depth pixels maps to (NAN, NAN, NAN).

Parameters

in	*src_calib*	Depth image's calibration data.
in	*depthW*	Width of depth image.
in	*depthH*	Height of depth image.
in	*depth*	Depth image.
out	*point3d*	Output point3D image.

Return values

TY_STATUS_OK	Succeed.

5.2.3.3 TYMapDepthToPoint3d()

```
TY_CAPI TYMapDepthToPoint3d (
             const TY_CAMERA_CALIB_INFO * src_calib,
             uint32_t depthW,
             uint32_t depthH,
             const TY_PIXEL_DESC * depthPixels,
             uint32_t count,
             TY_VECT_3F * point3d )
```

Map pixels on depth image to 3D points.

Parameters

in	*src_calib*	Depth image's calibration data.
in	*depthW*	Width of depth image.
in	*depthH*	Height of depth image.
in	*depthPixels*	Pixels on depth image.
in	*count*	Number of depth pixels.
out	*point3d*	Output point3D.

Return values

TY_STATUS_OK	Succeed.

5.2.3.4 TYMapPoint3dToDepth()

```
TY_CAPI TYMapPoint3dToDepth (
            const TY_CAMERA_CALIB_INFO * dst_calib,
            const TY_VECT_3F * point3d,
            uint32_t count,
            uint32_t depthW,
            uint32_t depthH,
            TY_PIXEL_DESC * depth )
```

Map 3D points to pixels on depth image. Reverse operation of TYMapDepthToPoint3d.

Parameters

in	*dst_calib*	Target depth image's calibration data.
in	*point3d*	Input 3D points.
in	*count*	Number of points.
in	*depthW*	Width of target depth image.
in	*depthH*	Height of target depth image.
out	*depth*	Output depth pixels.

Return values

TY_STATUS_OK	Succeed.

5.2.3.5 TYMapPoint3dToDepthImage()

```
TY_CAPI TYMapPoint3dToDepthImage (
            const TY_CAMERA_CALIB_INFO * dst_calib,
            const TY_VECT_3F * point3d,
            uint32_t count,
            uint32_t depthW,
            uint32_t depthH,
            uint16_t * depth )
```

Map 3D points to depth image. (NAN, NAN, NAN) will be skipped.

Parameters

in	*dst_calib*	Target depth image's calibration data.
in	*point3d*	Input 3D points.

Parameters

in	*count*	Number of points.
in	*depthW*	Width of target depth image.
in	*depthH*	Height of target depth image.
in,out	*depth*	Depth image buffer.

Return values

TY_STATUS_OK	Succeed.

5.2.3.6 TYMapPoint3dToPoint3d()

```
TY_CAPI TYMapPoint3dToPoint3d (
             const TY_CAMERA_EXTRINSIC * extrinsic,
             const TY_VECT_3F * point3dFrom,
             uint32_t count,
             TY_VECT_3F * point3dTo )
```

Map 3D points to another coordinate.

Parameters

in	*extrinsic*	Extrinsic matrix.
in	*point3dFrom*	Source 3D points.
in	*count*	Number of source 3D points.
out	*point3dTo*	Target 3D points.

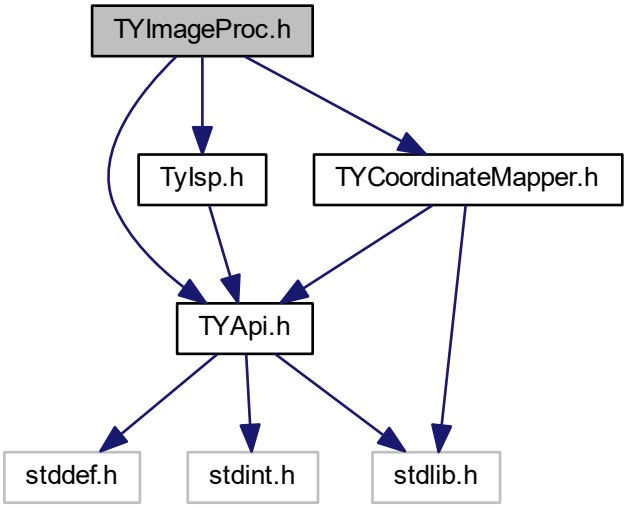
Return values

TY_STATUS_OK	Succeed.

5.3 TYImageProc.h File Reference

```
#include "TYApi.h"
#include "TYCoordinateMapper.h"
#include "TyIsp.h"
```

Include dependency graph for TYImageProc.h:



Classes

- struct DepthSpeckleFilterParameters

  default parameter value definition
- struct DepthEnhenceParameters

  default parameter value definition

Macros

- #define **DepthSpeckleFilterParameters_Initializer** {150, 64}
- #define **DepthEnhenceParameters_Initializer** {10, 20, 10, 0.1f}

Functions

- TY_CAPI TYUndistortImage (const TY_CAMERA_CALIB_INFO *srcCalibInfo, const TY_IMAGE_DATA *srcImage, const TY_CAMERA_INTRINSIC *cameraNewIntrinsic, TY_IMAGE_DATA *dstImage)

  Do image undistortion, only support TY_PIXEL_FORMAT_MONO ,TY_PIXEL_FORMAT_RGB,TY_PIXEL_FORM↩ AT_BGR.
- TY_CAPI TYDepthSpeckleFilter (TY_IMAGE_DATA *depthImage, const DepthSpeckleFilterParameters *param)

  Remove speckles on depth image.
- TY_CAPI TYDepthEnhenceFilter (const TY_IMAGE_DATA *depthImages, int imageNum, TY_IMAGE_DATA *guide, TY_IMAGE_DATA *output, const DepthEnhenceParameters *param)

  Remove speckles on depth image.

5.3.1 Detailed Description

Image post-process API

Copyright

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5.3.2 Function Documentation

5.3.2.1 TYDepthEnhenceFilter()

```
TY_CAPI TYDepthEnhenceFilter (
            const TY_IMAGE_DATA * depthImages,
            int imageNum,
            TY_IMAGE_DATA * guide,
            TY_IMAGE_DATA * output,
            const DepthEnhenceParameters * param )
```

Remove speckles on depth image.

Parameters

in	*depthImage*	Pointer to depth image array.
in	*imageNum*	Depth image array size.
in,out	*guide*	Guide image.
out	*output*	Output depth image.
in	*param*	Algorithm parameters.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NULL_POINTER	Any depthImage, param, output or output->buffer is NULL.
TY_STATUS_INVALID_PARAMETER	imageNum >= 5 or imageNum <= 0, or any image invalid
TY_STATUS_OUT_OF_MEMORY	Output image not suitable.

5.3.2.2 TYDepthSpeckleFilter()

```
TY_CAPI TYDepthSpeckleFilter (
            TY_IMAGE_DATA * depthImage,
            const DepthSpeckleFilterParameters * param )
```

Remove speckles on depth image.

Parameters

in,out	*depthImage*	Depth image to be processed.
in	*param*	Algorithm parameters.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NULL_POINTER	Any depth, param or depth->buffer is NULL.
TY_STATUS_INVALID_PARAMETER	param->max_speckle_size <= 0 or param->max_speckle_diff <= 0

5.3.2.3 TYUndistortImage()

```
TY_CAPI TYUndistortImage (
            const TY_CAMERA_CALIB_INFO * srcCalibInfo,
            const TY_IMAGE_DATA * srcImage,
            const TY_CAMERA_INTRINSIC * cameraNewIntrinsic,
            TY_IMAGE_DATA * dstImage )
```

Do image undistortion, only support TY_PIXEL_FORMAT_MONO ,TY_PIXEL_FORMAT_RGB,TY_PIXEL_FOR↩ MAT_BGR.

Parameters

in	*srcCalibInfo*	Image calibration data.
in	*srcImage*	Source image.
in	*cameraNewIntrinsic*	Expected new image intrinsic, will use srcCalibInfo for new image intrinsic if set to NULL.
out	*dstImage*	Output image.

Return values

TY_STATUS_OK	Succeed.
TY_STATUS_NULL_POINTER	Any srcCalibInfo, srcImage, dstImage, srcImage->buffer, dstImage->buffer is NULL.
TY_STATUS_INVALID_PARAMETER	Invalid srcImage->width, srcImage->height, dstImage->width, dstImage->height or unsupported pixel format.

Index