



BIOMETRIC SERVICE

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INTRODUCTION

This documentation details the specific set of commands for biometric devices. These, along with *common commands* conform the complete set of commands available for biometric devices. Sometimes, certain *common commands* can be overwritten within a specific service, because they change their behavior. In the case of **Biometric Service**, following commands are overwritten:

- [XPEAK_COMMAND_GET_STATUS](#)
- [XPEAK_COMMAND_GET_CAPABILITIES](#)

All commands described here meet the *Xpeak* specification [General Message Format](#)

COMMANDS

 **XPEAK_COMMAND_CREATE_TEMPLATE** (0x15020001)**Version:** 1502**Description:**

This command retrieves the template of the biometric input, usually in order to enroll an user in a system. It must be called after [XPEAK_COMMAND_ENABLE_INSERT](#) operation.

 **Result:**

- **int Result**

Apart from the common values, this command can return the following results:

Result	Description
XPEAK_RESULT_INVALID_DATA (0x7060098)	A biometric input is present or has been inserted, but the data could not be read or it could be read incompletely. The <i>Template</i> field will be empty.
XPEAK_RESULT_DATA_NOT_READ (0x15020011)	The reader has not detected the biometric input. The <i>Template</i> field will be empty.

- **Base64 Template**

Template of the received biometric input. This Template should be stored to enroll a user. After that, it can be used to verify users identity through [XPEAK_COMMAND_MATCH_TEMPLATE](#) command, or to identify an user through [XPEAK_COMMAND_COMPARE_TEMPLATE](#) command.

 **XPEAK_COMMAND_DISABLE_INSERT** (0x7060019)

Version: 1502

Description:

Disables the introduction of biometric input and cancel the current [XPEAK_COMMAND_ENABLE_INSERT](#) operation.

 **Result:**

- `int Result`

Apart from the common values, this command could return as result:

Result	Description
XPEAK_RESULT_DATA_READ (0x7060142)	The biometric input was already received.

XPEAK_COMMAND_ENABLE_INSERT (0x7060018)

Version: 1502

Description:

Sets up the device to receive the biometric input. This command should be always executed before a [XPEAK_COMMAND_CREATE_TEMPLATE](#), [XPEAK_COMMAND_MATCH_TEMPLATE](#) or [XPEAK_COMMAND_COMPARE_TEMPLATE](#).

An enrollment transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = [XPEAK_COMMAND_CREATE_TEMPLATE](#) (0x15020001). Parameter Template will be ignored, so it could be null)
- [XPEAK_COMMAND_CREATE_TEMPLATE](#)

The same way, a verification transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = [XPEAK_COMMAND_MATCH_TEMPLATE](#) (0x15020002) and parameter Template set)
- [XPEAK_COMMAND_MATCH_TEMPLATE](#)

On the other hand, an identification transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (0x15020003). Parameter Template will be ignored, so it could be null)
- [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (Parameter Template = Template 1)
- [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (Parameter Template = Template 2)
- ...
- [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (Parameter Template = Template N)

Parameters:

- **int Timeout**
The reading of the biometric data will be enabled during this time (in milliseconds) or until the biometric input is received. If this value is less than zero, the device will be enabled until the command [XPEAK_COMMAND_DISABLE_INSERT](#) is executed or until the biometric input is received.
- **int Operation**
Indicates the operation that is going to be executed. Can be one of the following values:

Operation	Description
XPEAK_COMMAND_CREATE_TEMPLATE (0x15020001)	A creation template operation (XPEAK_COMMAND_CREATE_TEMPLATE) will be performed
XPEAK_COMMAND_MATCH_TEMPLATE (0x15020002)	A matching templates operation (XPEAK_COMMAND_MATCH_TEMPLATE) will be performed

Operation	Description
XPEAK_COMMAND_COMPARE_TEMPLATE (0x15020003)	One or more comparing templates operations (XPEAK_COMMAND_COMPARE_TEMPLATE) will be performed

- **Base64 Template**

When the Operation is [XPEAK_COMMAND_MATCH_TEMPLATE](#), this Template will be used to try to match it to the biometric input, with other Operation this field will be ignored, so it could be null.

Result:

- **int Result**

Apart from the common values, this command could return as result:

Result	Description
XPEAK_RESULT_INVALID_TEMPLATE (0x15020012)	The template has an incorrect format. The reader will not be enabled.
XPEAK_RESULT_MEDIA_INSERTED (0x7060060)	There was a biometric input already in the reader. No events will be sent.

Events:

XPEAK_RESULT_DATA_READ (0x7060142) Since 1502

This event is thrown when the biometric input is received by the device. The device must disable the introduction of more biometric input. If the biometric media had been already inserted (XPEAK_RESULT_MEDIA_INSERTED) this event will not be sent.

XPEAK_COMMAND_ENABLE_INSERT (0x7060018)

Version: 1604

Description:

Sets up the device to receive the biometric input. This command should be always executed before a [XPEAK_COMMAND_CREATE_TEMPLATE](#), [XPEAK_COMMAND_MATCH_TEMPLATE](#), [XPEAK_COMMAND_COMPARE_TEMPLATE](#) or [XPEAK_COMMAND_GET_BIOMETRIC_IMAGE](#).

An enrollment transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = [XPEAK_COMMAND_CREATE_TEMPLATE](#) (0x15020001). Parameter Template will be ignored, so it could be null)
- [XPEAK_COMMAND_CREATE_TEMPLATE](#)

The same way, a verification transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = [XPEAK_COMMAND_MATCH_TEMPLATE](#) (0x15020002) and parameter Template set)
- [XPEAK_COMMAND_MATCH_TEMPLATE](#)

Besides, an identification transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (0x15020003). Parameter Template will be ignored, so it could be null)
- [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (Parameter Template = Template 1)
- [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (Parameter Template = Template 2)
- ...
- [XPEAK_COMMAND_COMPARE_TEMPLATE](#) (Parameter Template = Template N)

On the other hand, an image capture transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = [XPEAK_COMMAND_GET_BIOMETRIC_IMAGE](#) (0x16040002). Parameter Template will be ignored, so it could be null)
- [XPEAK_COMMAND_GET_BIOMETRIC_IMAGE](#)

Parameters:

- **int Timeout**
The reading of the biometric data will be enabled during this time (in milliseconds) or until the biometric input is received. If this value is less than zero, the device will be enabled until the command [XPEAK_COMMAND_DISABLE_INSERT](#) is executed or until the biometric input is received.
- **int Operation**
Indicates the operation that is going to be executed. Can be one of the following values:

Operation	Description
XPEAK_COMMAND_CREATE_TEMPLATE (0x15020001)	A creation template operation (XPEAK_COMMAND_CREATE_TEMPLATE) will be performed
XPEAK_COMMAND_MATCH_TEMPLATE (0x15020002)	A matching templates operation (XPEAK_COMMAND_MATCH_TEMPLATE) will be performed
XPEAK_COMMAND_COMPARE_TEMPLATE (0x15020003)	One or more comparing templates operations (XPEAK_COMMAND_COMPARE_TEMPLATE) will be performed
XPEAK_COMMAND_GET_BIOMETRIC_IMAGE (0x16040002)	The biometric image will be obtained (XPEAK_COMMAND_GET_BIOMETRIC_IMAGE) will be performed

- **Base64 Template**

When the Operation is [XPEAK_COMMAND_MATCH_TEMPLATE](#), this Template will be used to try to match it to the biometric input, with other Operation this field will be ignored, so it could be null.

Result:

- **int Result**

Apart from the common values, this command could return as result:

Result	Description
XPEAK_RESULT_INVALID_TEMPLATE (0x15020012)	The template has an incorrect format. The reader will not be enabled.
XPEAK_RESULT_MEDIA_INSERTED (0x7060060)	There was a biometric input already in the reader. No events will be sent.

Events:

- **XPEAK_RESULT_DATA_READ (0x7060142) Since 1502**

This event is thrown when the biometric input is received by the device. The device must disable the introduction of more biometric input. If the biometric media had been already inserted (XPEAK_RESULT_MEDIA_INSERTED) this event will not be sent.

XPEAK_COMMAND_ENABLE_INSERT (0x7060018)

Version: 1605

Description:

Sets up the device to receive the biometric input. This command should be always executed before a [XPEAK_COMMAND_CREATE_TEMPLATE](#), [XPEAK_COMMAND_MATCH_TEMPLATE](#) or [XPEAK_COMMAND_GET_BIOMETRIC_IMAGE](#).

An enrollment transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = XPEAK_COMMAND_CREATE_TEMPLATE (0x15020001))
- [XPEAK_COMMAND_CREATE_TEMPLATE](#)

The same way, a verification transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = XPEAK_COMMAND_MATCH_TEMPLATE (0x15020002))
- [XPEAK_COMMAND_MATCH_TEMPLATE](#) (Parameter Template set)

Besides, an identification transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = XPEAK_COMMAND_MATCH_TEMPLATE (0x15020002))
- [XPEAK_COMMAND_MATCH_TEMPLATE](#) (Parameter Template = Template 1)
- [XPEAK_COMMAND_MATCH_TEMPLATE](#) (Parameter Template = Template 2)
- ...
- [XPEAK_COMMAND_MATCH_TEMPLATE](#) (Parameter Template = Template N)

On the other hand, an image capture transaction would be:

- [XPEAK_COMMAND_ENABLE_INSERT](#) (Operation = XPEAK_COMMAND_GET_BIOMETRIC_IMAGE (0x16040002))
- [XPEAK_COMMAND_GET_BIOMETRIC_IMAGE](#)

Parameters:

- **int Timeout**
The reading of the biometric data will be enabled during this time (in milliseconds) or until the biometric input is received. If this value is less than zero, the device will be enabled until the command [XPEAK_COMMAND_DISABLE_INSERT](#) is executed or until the biometric input is received.
- **int Operation**
Indicates the operation that is going to be executed. Can be one of the following values:

Operation	Description
XPEAK_COMMAND_CREATE_TEMPLATE (0x15020001)	A creation template operation (XPEAK_COMMAND_CREATE_TEMPLATE) will be performed
XPEAK_COMMAND_MATCH_TEMPLATE (0x15020002)	A matching templates operation (XPEAK_COMMAND_MATCH_TEMPLATE) will be performed
XPEAK_COMMAND_GET_BIOMETRIC_IMAGE (0x16040002)	The biometric image will be obtained (XPEAK_COMMAND_GET_BIOMETRIC_IMAGE) will be performed

Result:

- **int Result**

Apart from the common values, this command could return as result:

Result	Description
XPEAK_RESULT_MEDIA_INSERTED (0x7060060)	There was a biometric input already in the reader. No events will be sent.

Events:

XPEAK_RESULT_DATA_READ (0x7060142) Since 1502

This event is thrown when the biometric input is received by the device. The device must disable the introduction of more biometric input. If the biometric media had been already inserted (XPEAK_RESULT_MEDIA_INSERTED) this event will not be sent.

XPEAK_COMMAND_GET_BIOMETRIC_IMAGE (0x16040002)

Version: 1604

Description:

This command retrieves the image of the biometric input, usually in order to enroll an user in a system. It must be called after [XPEAK_COMMAND_ENABLE_INSERT](#) operation.

Parameters:

- **Base64 ImageFormat**

This parameter defines the format of the scanned biometric image data. This format should be one of the list indicated in the *ImageFormats* capability, see command [XPEAK_COMMAND_GET_CAPABILITIES](#). The possible values are:

- XPEAK_GRAPHIC_FORMAT_GIF (0x706008C)
- XPEAK_GRAPHIC_FORMAT_BMP (0x706008D)
- XPEAK_GRAPHIC_FORMAT_JPG (0x706008E)
- XPEAK_GRAPHIC_FORMAT_TIF (0x706008F)
- XPEAK_GRAPHIC_FORMAT_PCX (0x7060090)
- XPEAK_GRAPHIC_FORMAT_PNG (0x7060091)
- XPEAK_GRAPHIC_FORMAT_RAW (0x7060176)
- XPEAK_GRAPHIC_FORMAT_WSQ (0x12020002)

Result:

- **int Result**

Apart from the common values, this command can return the following results:

Result	Description
XPEAK_RESULT_INVALID_DATA (0x7060098)	A biometric input is present or has been inserted, but the data could not be read or it could be read incompletely. The <i>BiometricImage</i> field will be empty.
XPEAK_RESULT_DATA_NOT_READ (0x15020011)	The reader has not detected the biometric input. The <i>BiometricImage</i> field will be empty.

- **Base64 BiometricImage**

Image of the received biometric input.

- **Unicode ExtraImageInformation**

Field used to give extra information of the biometric image.

 **XPEAK_COMMAND_GET_CAPABILITIES** (0x7060017)

Version: 1502

Description:

Returns the device capabilities. Depending on them, the application behavior should be different and should be adapted to the peripheral characteristics.

 **Result:**

- **int Type**

This capability indicates the type of biometric device. Possible values are:

- XPEAK_BIOMETRIC_TYPE_SIGNATURE (0x15020004)
- XPEAK_BIOMETRIC_TYPE_PASSWORD (0x15020005)
- XPEAK_BIOMETRIC_TYPE_FINGERPRINT (0x15020006)
- XPEAK_BIOMETRIC_TYPE_HAND (0x15020007)
- XPEAK_BIOMETRIC_TYPE_THERMAL_HAND (0x15020008)
- XPEAK_BIOMETRIC_TYPE_FACE (0x15020009)
- XPEAK_BIOMETRIC_TYPE_THERMAL_FACE (0x1502000A)
- XPEAK_BIOMETRIC_TYPE_IRIS (0x1502000B)
- XPEAK_BIOMETRIC_TYPE_RETINA (0x1502000C)
- XPEAK_BIOMETRIC_TYPE_LIP_MOVEMENT (0x1502000D)
- XPEAK_BIOMETRIC_TYPE_GAIT (0x1502000E)
- XPEAK_BIOMETRIC_TYPE_VOICE (0x1502000F)
- XPEAK_BIOMETRIC_TYPE_KEYSTROKE (0x15020010)

- **boolean CanCreateTemplate**

Indicates whether the device can create a biometric template, usually in order to enroll users in a system.

- **boolean CanMatchTemplate**

Indicates whether the device can do an on-device biometric comparison against a template, usually in order to verify the user identity.

- **boolean CanCompareTemplate**

Indicates whether the device can do several on-device biometric comparisons against a set of templates, usually in order to identify a user.

 **XPEAK_COMMAND_GET_CAPABILITIES** (0x7060017)

Version: 1604

Description:

Returns the device capabilities. Depending on them, the application behavior should be different and should be adapted to the peripheral characteristics.

 **Result:**

- **int Type**

This capability indicates the type of biometric device. Possible values are:

- XPEAK_BIOMETRIC_TYPE_SIGNATURE (0x15020004)
- XPEAK_BIOMETRIC_TYPE_PASSWORD (0x15020005)
- XPEAK_BIOMETRIC_TYPE_FINGERPRINT (0x15020006)
- XPEAK_BIOMETRIC_TYPE_HAND (0x15020007)
- XPEAK_BIOMETRIC_TYPE_THERMAL_HAND (0x15020008)
- XPEAK_BIOMETRIC_TYPE_FACE (0x15020009)
- XPEAK_BIOMETRIC_TYPE_THERMAL_FACE (0x1502000A)
- XPEAK_BIOMETRIC_TYPE_IRIS (0x1502000B)
- XPEAK_BIOMETRIC_TYPE_RETINA (0x1502000C)
- XPEAK_BIOMETRIC_TYPE_LIP_MOVEMENT (0x1502000D)
- XPEAK_BIOMETRIC_TYPE_GAIT (0x1502000E)
- XPEAK_BIOMETRIC_TYPE_VOICE (0x1502000F)
- XPEAK_BIOMETRIC_TYPE_KEYSTROKE (0x15020010)

- **boolean CanCreateTemplate**

Indicates whether the device can create a biometric template, usually in order to enroll users in a system.

- **boolean CanMatchTemplate**

Indicates whether the device can do an on-device biometric comparison against a template, usually in order to verify the user identity.

- **boolean CanCompareTemplate**

Indicates whether the device can do several on-device biometric comparisons against a set of templates, usually in order to identify a user.

- **boolean CanGetBiometricImage**

Indicates whether the device can retrieve the biometric image.

- **int[] ImageFormats**

Image formats supported by the biometric reader. Possible values are:

- XPEAK_GRAPHIC_FORMAT_NONE (0x706017B)

- XPEAK_GRAPHIC_FORMAT_GIF (0x706008C)
- XPEAK_GRAPHIC_FORMAT_BMP (0x706008D)
- XPEAK_GRAPHIC_FORMAT_JPG (0x706008E)
- XPEAK_GRAPHIC_FORMAT_TIF (0x706008F)
- XPEAK_GRAPHIC_FORMAT_PCX (0x7060090)
- XPEAK_GRAPHIC_FORMAT_PNG (0x7060091)
- XPEAK_GRAPHIC_FORMAT_RAW (0x7060176)
- XPEAK_GRAPHIC_FORMAT_WSQ (0x12020002)

 **XPEAK_COMMAND_GET_CAPABILITIES** (0x7060017)

Version: 1605

Description:

Returns the device capabilities. Depending on them, the application behavior should be different and should be adapted to the peripheral characteristics.

 **Result:**

- **int Type**

This capability indicates the type of biometric device. Possible values are:

- XPEAK_BIOMETRIC_TYPE_SIGNATURE (0x15020004)
- XPEAK_BIOMETRIC_TYPE_PASSWORD (0x15020005)
- XPEAK_BIOMETRIC_TYPE_FINGERPRINT (0x15020006)
- XPEAK_BIOMETRIC_TYPE_HAND (0x15020007)
- XPEAK_BIOMETRIC_TYPE_THERMAL_HAND (0x15020008)
- XPEAK_BIOMETRIC_TYPE_FACE (0x15020009)
- XPEAK_BIOMETRIC_TYPE_THERMAL_FACE (0x1502000A)
- XPEAK_BIOMETRIC_TYPE_IRIS (0x1502000B)
- XPEAK_BIOMETRIC_TYPE_RETINA (0x1502000C)
- XPEAK_BIOMETRIC_TYPE_LIP_MOVEMENT (0x1502000D)
- XPEAK_BIOMETRIC_TYPE_GAIT (0x1502000E)
- XPEAK_BIOMETRIC_TYPE_VOICE (0x1502000F)
- XPEAK_BIOMETRIC_TYPE_KEYSTROKE (0x15020010)

- **boolean CanCreateTemplate**

Indicates whether the device can create a biometric template, usually in order to enroll users in a system.

- **boolean CanMatchTemplate**

Indicates whether the device can do an on-device biometric comparison against a template, usually in order to verify the user identity or identify him.

- **boolean CanGetBiometricImage**

Indicates whether the device can retrieve the biometric image.

- **int[] ImageFormats**

Image formats supported by the biometric reader. Possible values are:

- XPEAK_GRAPHIC_FORMAT_NONE (0x706017B)
- XPEAK_GRAPHIC_FORMAT_GIF (0x706008C)
- XPEAK_GRAPHIC_FORMAT_BMP (0x706008D)
- XPEAK_GRAPHIC_FORMAT_JPG (0x706008E)
- XPEAK_GRAPHIC_FORMAT_TIF (0x706008F)

- XPEAK_GRAPHIC_FORMAT_PCX (0x7060090)
- XPEAK_GRAPHIC_FORMAT_PNG (0x7060091)
- XPEAK_GRAPHIC_FORMAT_RAW (0x7060176)
- XPEAK_GRAPHIC_FORMAT_WSQ (0x12020002)

 **XPEAK_COMMAND_GET_STATUS** (0x7060051)

Version: 1502

Description:

This command allows to get different status of the device.

 **Result:**

- **int[] Statuses**

Apart from the general statuses, possible values are:

Status	Description
XPEAK_STATUS_MEDIA_PRESENT (0x706005E)	There is a biometric media present in the device.
XPEAK_STATUS_MEDIA_NOT_PRESENT (0x706005F)	There is not a biometric media present in the device.

Besides this statuses, the command can return any of the ones specified in the generic command [XPEAK_COMMAND_GET_STATUS](#)

 **XPEAK_COMMAND_MATCH_TEMPLATE** (0x15020002)

Version: 1502

Description:

This command matches the biometric input with the template loaded with the previous [XPEAK_COMMAND_ENABLE_INSERT](#) operation, usually in order to verify the user identity.

 **Result:**

- **int Result**

Apart from the common values, this command can return the following results:

Result	Description
XPEAK_RESULT_INVALID_DATA (0x7060098)	A biometric input is present or has been inserted, but the data could not be read or it could be read incompletely.
XPEAK_RESULT_DATA_NOT_READ (0x15020011)	The reader has not detected the biometric input.

- **double MatchingPercentage**

It indicates the percentage of matching. It determines the probability of the user identity. Devices that can not retrieve a percentage will return 0.0 for inputs that does not match and 100.0 for inputs that match.

XPEAK_COMMAND_MATCH_TEMPLATE (0x15020002)

Version: 1605

Description:

This command matches the biometric input with the template set. It can be called once to verify the user identity or more than once with the same input to identify an user between a set of templates. It must be called after [XPEAK_COMMAND_ENABLE_INSERT](#) operation.

Parameters:

- **Base64 Template**

This Template will be used to try to match it to the biometric input.

Result:

- **int Result**

Apart from the common values, this command can return the following results:

Result	Description
XPEAK_RESULT_INVALID_TEMPLATE (0x15020012)	The template has an incorrect format. The comparison will not take place.
XPEAK_RESULT_INVALID_DATA (0x7060098)	A biometric input is present or has been inserted, but the data could not be read or it could be read incompletely.
XPEAK_RESULT_DATA_NOT_READ (0x15020011)	The reader has not detected the biometric input.

- **double MatchingPercentage**

It indicates the percentage of matching. It determines the probability of the user identity. Devices that can not retrieve a percentage will return 0.0 for inputs that does not match and 100.0 for inputs that match.