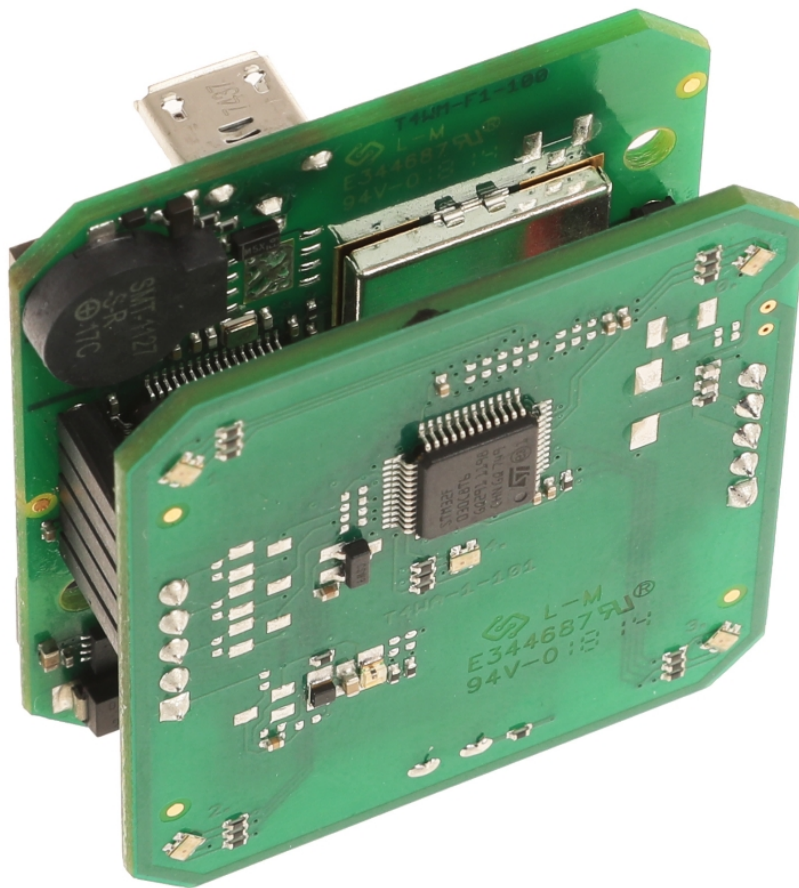


# TWN4

## IPE API Reference

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# 1 Introduction

The IPE (Intelligent Peripherie Extender) is an additional control unit, which is available in several devices of the Palon reader family. It provides several functions

- Flexible control of LEDs
- Query of inputs
- Control of outputs
- Control hardware extensions like touch pinpad and displays via I2C

## 2 IPE Functions

The IPE (Intelligent Peripherie Extender) controls LEDs, Inputs (e.g. tamper) and sends / receive I2C commands (for e.g. external LEDs and Pinpad). The communication port is serial with setting 115200 baud, 8 data bits, no parity and 1 stop bit.

### 2.1 Version Command

This command return for the firmware version of the IPE.

Byte	Name	Meaning	Value
0	HEADER_START	Start Byte	0xAA
1	BLOCK_LENGTH	Sum of all sent bytes	0x03
2	COMMAND	Version Command	0x02

Table 2.1: VERSION Command

Answer:

Byte	Name	Meaning	Value
0	HEADER_START	Start Byte	0xAA
1	BLOCK_LENGTH	Sum of all sent bytes	0x05
2	COMMAND	Version Command	0x02
3	VERSION_HIGH	Version number (High Byte)	Any
4	VERSION_LOW	Version number (Low Byte)	Any

Table 2.2: VERSION Answer

### 2.2 LED Control Command

The LED control command controls the operation of the LEDs associated with an IPE. Color and Flash-Parameters can be specified. Once the timer of the temporary command has expired, the LEDs are reset to the last permanent state. A timer value of zero indicates the duration of optional zero. The permanent command is volatile (not across performance cycles).

Byte	Name	Meaning	Value
0	HEADER_START	Start Byte	0xAA
1	BLOCK_LENGTH	Sum of all sent bytes	0x13

2	COMMAND	LED Control Command	0x03
3	READER_NR	Number of the reader	0x00
4	LED Number	0 = first LED, 1 = second LED, etc.	Any
		<b>Temporary Settings</b>	
5	Control Code	The mode to enter temporarily	See Below
6	ON time	The ON duration of the flash, in units of 100 ms	Any
7	OFF time	The OFF duration of the flash, in units of 100 ms	Any
8	ON color	The color to set during the ON time	See Below
9	OFF color	The color to set during the OFF time	See Below
10	Timer LSB	least significant byte, in units of 100 ms	Any
11	Timer MSB	most significant byte, in units of 100 ms	Any
		<b>Permanent Settings</b>	
12	Control Code	The mode to return to after the timer expires	See Below
13	ON time	The ON duration of the flash, in units of 100 ms	Any
14	OFF time	The OFF duration of the flash, in units of 100 ms	Any
15	ON color	The color to set during the ON time	See Below
16	OFF color	The color to set during the OFF time	See Below
		<b>Delay Settings</b>	
17	DELAY_TMP	Temporary delay time in units of 100ms	Any
18	DELAY_PERM	Permanent delay time in units of 100ms	Any

Table 2.3: LED Command

Answer:

Byte	Name	Meaning	Value
0	HEADER_START	Start Byte	0xAA
1	BLOCK_LENGTH	Sum of all sent bytes	0x03
2	COMMAND	LED Command	0x03

Table 2.4: LED Answer

Temporary Control Code	Meaning
0x00	NOP - do not alter this LED's temporary settings. The remaining values of the temporary settings record are ignored.
0x01	Cancel any temporary operation and display this LED's permanent state immediately
0x02	Set the temporary state as given and start timer immediately.

Table 2.5: Temporary Control Code

Temporary Control Code	Meaning
0x00	NOP - do not alter this LED's permanent settings
0x01	Set the permanent state as given.

Table 2.6: Permanent Control Code

Color Value	Meaning
0	Black (off/unlit)
1	Red
2	Green
3	Amber
4	Blue
7	White

Table 2.7: Color Value

**Notes:**

The LED will flash, alternating between the color specified for ON and the color specified for OFF at the rate specified by the corresponding timers. Setting both color codes to the same value will produce a steady (non-flashing) output.

**Examples:**

To cause the first LED on the first Reader to flash red (100 ms) / black (200 ms) for 3 seconds, then resume its current display mode:

0xAA, 0x13, 0x03, 0, 0, 2, 1, 2, 1, 0, 30, 0, 0, 0, 0, 0, 0

To set the reader's second LED to display a steady green output

0xAA, 0x13, 0x03, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 2, 2

## 2.3 INPUT Control Command

This command returns the value of analog input (IR tamper value).

Byte	Name	Meaning	Value
0	HEADER_START	Start Byte	0xAA
1	BLOCK_LENGTH	Sum of all sent bytes	0x03
2	COMMAND	INPUT Control Command	0x04

Table 2.8: INPUT Command

Answer:

Byte	Name	Meaning	Value
0	HEADER_START	Start Byte	0xAA
1	BLOCK_LENGTH	Sum of all sent bytes	0x05
2	COMMAND	INPUT Control Command	0x04
3	VALUE_HIGH	Analog input value (High Byte)	Any
4	VALUE_LOW	Analog input value (Low Byte)	Any

Table 2.9: INPUT Return

## 3 Disclaimer

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