I/O Interface Manual for the PTCarPhone 5 Series

Application Note 1500

Revision: 1.2

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0 History

Date	Revision	Author	Comments
Sept. 2015	1.0	CS	First Release
May 2016	1.1	CS	Adaptation to Software Version 5.02.08
Sept. 2016	1.2	CS	4.3.1 modified Added specifications

Table 1: History

0.1 Related Documents

No.	Name	Remarks
1	PTCarPhone 5 Series User Guide	For download from http://www.ptcarphone.de/en/downloads
2	AN1501 PTCarPhone 5 Command Description	For download from http://www.ptcarphone.de/en/downloads

Table 2: Related Documents

1 Introduction

This documentation describes the functionality, installation and examples of use of the digital input and outputs (I/O for Input/Output) of the PTCarPhone 5 Series.
The digital inputs for example can be controlled by an external button, which triggers pre-programmed phone calls, an SMS to be sent or sets the volume of the external speakers.
Digital outputs toggle a signal at either incoming SMS, incoming call, switching on of the phone or phone ringing.

2 Application Scenarios

Possible application scenarios proven by the predecessor models of the PTCarPhone:

- Door release control of valuables-in-transit vans by SMS command
- Panic button
- Lightening up of a rotating beacon at incoming call
- Volume control

3 I/O Interface Description

CAUTION: The respective operating voltage of the vehicle electrical system is applied to the I/O connection. Please keep this in mind when selecting your I/O components.

The six programmable inputs and outputs of the PTCarPhone offer the possibility of the phone being used as a control unit for vehicle accessories. The accessory set contains 12 strands and a plug housing. The crimped contacts of the strands are pushed into the plug housing as needed.

Specifications:

- Model: Open-Drain output (wired ground) with recovery diode / input with 15 kOhm pull-up resistor against the device operating voltage
- Only ohmic and inductive loads are allowed (no capacitive loads!)
- Maximum current carrying capacity: 150 mA per connection
- Dielectric strength smaller than/equal to the connected device operating voltage (however, max. 32 V)
- Recovery diode for relay (inductive loads) included; use of device-specific power supply (pins 4, 5, 6) is required for this

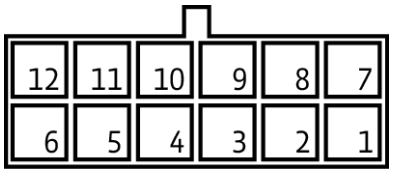

Figure 1: I/O Connections (top view)

Pin	Signal
1, 2, 3	GND
4, 5, 6	U_B+
7 to 12	I/O 1 to 6

Table 3: Pin Assignment

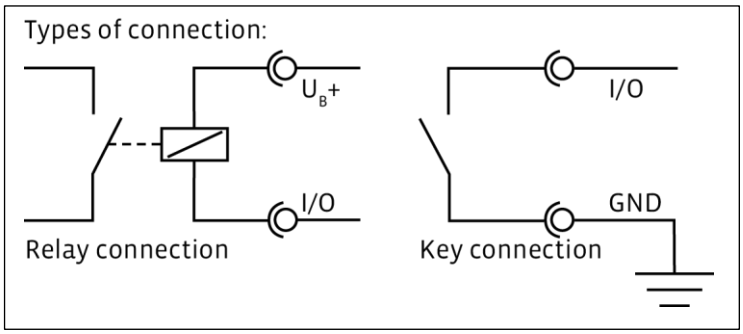

Figure 2: Types of Connection

4 Configuration of the I/Os in the PTCarPhone Menu

The PTCarPhone offers six digital inputs and outputs. Each connection can be used either as an input as well as an output. Inputs are marked with a green sign ●, outputs are marked with a red sign ●.

Configuration of the I/O connections using the handset:

System > Configuration > *device code input* **> Digital I/O**

The device code at delivery is: 0000

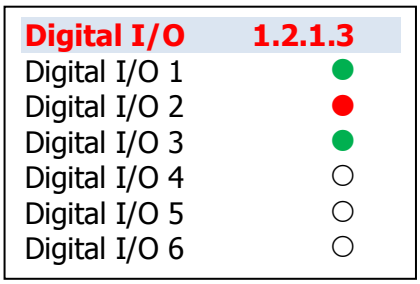

Figure 3: PTCarPhone Menu Digital Inputs and Outputs

4.1 Structure of the PTCarPhone Menu

Digital input:

- Panic key (*I/O 2 and 6 only*)
    - Sending SMS
        - Write
        - Add number
    - Phone call
        - Add number
- Sending SMS
    - Write
    - Add number
- Hangup/Answer call
- Volume +
- Volume –

Digital output:

- Ring indic.
- Phone ON
- Active call
- Switch

Reset

4.2 Description of each Feature

Inputs:

- **Panic key** (*I/O 2 and 6 only*): An external button wakes up the phone and reports an emergency (by SMS or call)
- **Sending SMS**: Provided the phone is switched on, an external button sends a status SMS
- **Hangup/Answer call**: An external button answers and hangs up the phone; only for calls using the hands-free system
- **Volume +**: An external button increases the volume of the external speaker
- **Volume -**: An external button decreases the volume of the external speaker

Outputs:

- **Ring indic.**: Indicates the ringing of the phone
- **Phone ON**: Indicates the switch-on of the phone
- **Active call**: This output is pulled during an active call
- **Switch**: When this option is enabled, the output can be enabled or disabled by SMS

4.3 Additional Information

4.3.1 Structure of the SMS for the Output Port Switch

Command for setting the switching output:

Syntax:	AT*PSOUT=o,x

Parameter:	o: Output	//	1-6
	x: New switch mode	//	0: Output OFF
		//	1: Output ON
		//	2: Output ON for 5 seconds

Reply:	OK

Example:	AT*PSOUT=1,2 OK

Structure of the SMS:

AT*PSOUT="online password",o,x

Note: The default online password is composed of the last six digits of the IMEI number.

Sample SMS:

AT*PSOUT="peitel",1,2

This SMS generates an **answer SMS** from the PTCarPhone:

*PSOUT:1,2

4.3.2 Inserting Positioning Information into a Panic SMS

It is possible, to include the information of the position in a panic SMS (Only available on the PTCarPhone 530 and only if "**Hidden Emergency Call**" is disabled).

Just add the placeholder **!position!** into the SMS. In place of the placeholder the phone is adding a complete tracking set including date, time, latitude, longitude, GPS-fix, quality, speed and direction.

For devices without GPS text **NO GPS DEVICE** is inserted. If a GPS device does not have a valid position the text **NO GPS POSITION** is inserted.

Example:
The original text
Alarm position: !position! license plate XYZ
generates the SMS
Alarm position: 16.03.31 17:21:15 52.3081, ... license plate XYZ
If only the position shall be transmitted, only the placeholder is entered.

4.3.3 The Purchase Feature "Hidden Emergency Call"

Two existing I/O connections (ports) can be programmed as a panic function. By activating the extra "**Hidden Emergency Call**", the current functionality is extended.

Conditions

1. At least one of the I/O ports (2 or 6) needs to be programed to the panic function
2. The panic input is assigned to a phone number
3. Optional: If done a signalling of active panic call (for example by using an LED), the associated I/O* port (1 or 5) is put on "**Active Call**".

***The following assignments are provided**

Panic button on I/O port 2 - signal output I/O port 1

Panic button on I/O port 6 - signal output I/O port 5

In this case the signalling takes place only at a panic call. For the signalling of a normal call other I/O ports need to be used.

Handling

The panic call is triggered by pressing the corresponding external button for more than 1s. As a result, the PTCarPhone 5 establishes a call to the programmed number. If the call is accepted, it is signalled via the associated I/O port.

During the call, the telephone audio is turned off. Input from the handset will not be processed. The microphone is activated and the other party can hear. Further incoming calls are rejected with a busy signal. A signalling of an incoming call does not take place.

The panic call can be terminated by the other party or pressing the button for more than 3 s. The phone returns to the standard mode and can be operated again normally.

END OF DOCUMENT