

**DPS-Promatic srl**

**TCS-PRINTER II**

**SMS Printer**



Instructions manual V 1.81

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## What has changed since previous versions?

### Rev. 2.3

- 1- Added Buzzer
- 2- added the possibility of sending SMS back to the originating telephone
- 3- added the possibility of auto-numbering messages (AUTO ID)
- 4- added variable timeout for accept and refuse buttons
- 5- reduced to 1 sec time required to keep buttons down to accept/refuse
- 6- new command to query status of all variables

### Rev 3.0

- 1- modified / added command V (Variables) to simplify parameters change it replaces other commands (W,V,I,Q)
- 2- Added 1 template (49 instead of 48)
- 3- added possibility of splitting templates with V5

#V0: 0=OFF 1=ON WAKEUP PRINT MESSAGE	[1]
#V1: 0=SMS 1=VOICE CALL.	[0]
#V2: Accept/refuse Timeout value in seconds	[15]
#V3: auto ID 0/1	[1]
#V4: enable Acknowledgement SMS to sender (0/1)	[1]
#V5: Template length 20/40 (0/1)	[1]
#V6: Use or not (1/0) T46,T47 to confirm and T48/T49 to refuse	[0]
#V7: Disable/Enable (0/1) message header	[1]

### Rev. 4.0

- 1-Handling of Concatenated SMS (up to 4)
- 2- added command #V8
- #v8: Timeout in seconds for parts of CSMS [10]
- 3- Added handling of up 25 SMS (instead of 10 as in the original version)

### Rev. 4.13

- 1-added command #V9 to allow for a programmable erase timeout. If this value is above 0, any message arriving later than this delay (comparison between SMS time stamp and real time clock in the printer) will be erased and not printed
- 2- added feed lines to improve printing quality
- 3- corrected bug of inverse Y/Z usage for accept/refuse
- 4- added switch off function keeping ACCEPT button pressed for 1 second

### Rev. 4.22

- 1- added printing of long messages using many templates.  
The previous versions had a buffer limit of 768 bytes, that could be exceeded if many templates were used. This new version will print the message when the buffer limit is reached and then resume interpretation and reprint again
- 2- Added possibility of using template 46/47 as ACCEPT message and 48/49 as REFUSE message.

**Rev. 4.31 (2010-02-05)**

- 1- Increased Beeper volume
- 2- added beeps while accept/refuse blinking
- 3- improved switch off function, with 5 seconds time and warning beeps
- 4- Added possibility of using templates 44/45 as ACKNOWLEDGEMENT message (in place of PRINT-OK)
- 5- added V4=3 option, to avoid sending Print-OK messages to the incoming phone
- 6- added Volume control with command #VV

**Important notes:**

This device contains a 4 bands ( 850-900-1800-1900 Mhz) GSM module and has inside a GSM Antenna.

The unit must be located at least 20 cm from any person.

Notes for use in the USA:

**Contains FCC ID QIPMC55I**

“This device contains GSM 900 MHZ and GSM 1800 MHZ functions that are not operational in the U.S. Territories.

This device is to be used only for mobile and fixed applications. The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter...This device is approved as a module to be installed in other devices”.

## **TCS-Printer II basic information**

### **Product description**

TCS-Printer II is a thermal printer, to print on paper 80 mm wide, that will print the SMS it receives with the possibility of storing and printing up to 48 templates, 40 characters long. This makes it possible to print a long ticket using only 1 SMS, as it will be composed by the various templates recalled by it.

It can work with concatenated SMS (up to 4)

### **Advantages of TCS-Printer**

- 1- Simple. It can be used even with a phone, no need of special software to interface it
- 2- Robust. The thermal printer is a reliable device that needs no ink and can provide years of trouble free operation
- 3- International: the 4 band GSM modem enables operation worldwide
- 4- Convenient: it can be used in any messaging system to send information to truck drivers, orders to restaurants, pizzerias etc etc

### **Theory of operation**

The TCS-Printer has few simple and basic function.

- It can be controlled via SMS
- it can store up to 48 templates of 40 characters each (Or 96 of 20 characters each)
- these templates can be recalled and printed using a simple command and the template number
- every message can have an ID number or the unit itself can generate an AutoID number.
- It is possible to react to a message, pressing the ACCEPT or the REFUSE button, that will send an ACCEPT or REFUSE SMS, or place an ACCEPT or REFUSE call, to 2 numbers that can be programmed.
- It is possible to send the Accept/Refuse SMS or the Print confirmation message to the originating telephone
- Both Accept, refuse and Print confirmation messages can be programmed (up to 80 characters each)

As a basic function, the TCS-Printer will anyway print any SMS it receives, so even without using its various features, still can be used as an effective SMS printer.

It can be used as a terminal for a centralized service or it can be used as a stand alone unit that will receive orders and send a confirmation to the originating phone.

## Commands List

### Commands that can be used anytime with no need of a Command ID

- **#E:** End of message  
Use this command to end any message you send to the printer
- 
- **#N:** send 3 digits ID at the beginning of the message (i.e #N001)  
A command string must always start with #N999 (unless this number has been changed with another – see #P command).

Only #E,#N,#T and the print commands will work even without a command ID.

Other messages can start with #Nxxx where xxx is a 3 number ID, in the range 001,899. Only messages that have an ID will activate the ACCEPT/REFUSE sequence. If you don't want to use messages with ID, you can activate the Auto-ID function (see variable V3)

- **#T:** Print template (i.e. #T01, #T02 etc)  
This command retrieves a template that was programmed in the unit using command #S. It is very useful to preprogram menus for Restaurants or any other similar need, where similar sentences need to be printed multiple times.

### Commands used to format the message printing style

The following commands can be anywhere in the body of the message and are used to activate different printing styles.

- **#B:** start double width
- 
- **#b:** stop double width
- 
- **#D:** start double height (only 1 full line)
- 
- **#U:** start Underline
- 
- **#u:** stop Underline

The following commands must have a **COMMAND ID** (default #999)

**Most used commands:**

- **#S:** Store template (i.e. #S01, #S02 etc)  
This command is useful to store templates in the printer that can be recalled and printer later using the #T command.  
These templates can be verified with a return SMS using the #R command.  
A template must end with the section character § (GSM HEX 5F).  
Templates can be 48 of 40 charactes (including line feed and section character) or 96 of 20 characters each.  
This can be chosen using the variable V5.

For example, to store template 01, send the command  
#N999#T01This is template 1§#E  
To print this template, you simply send the command #T01.

- **#V:** various Variables as detailed below [default value]  
To configure various parameters we have provided the variables listed below that can change /switch many functions.  
For example, to enable the Auto-ID function, send the command  
#N999#V31#E.

Please see the list and the comments for each of them.

- **#V0: 0=OFF 1=ON WAKEUP PRINT MESSAGE** [1]  
This variable allows to print or not the wake up message.
- **#V1: 0=SMS 1=VOICE CALL** [0]  
This variable choses wether the Printer will confirm with an SMS or placing a call.
- **#V2: Accept/refuse Timeout value in seconds** [F]  
This variable lets you set how long the led will blink, indicating that the buttons have to be pressed to accept or refuse the order.  
Default is Hexadecimal F, that corresponds to 15 seconds.
- **#V3: auto ID 0/1** [1]  
This variable enables or disables the Auto ID function.  
This function is useful if customers are to send in order messages using a phone and not through a web system.  
Auto-ID will start at 100 up to 899 and then reset to 100.

- **#V4: enable Acknowledgement SMS to sender (0/1/2/3)** [1]  
Setting V4 to 1 will enable the delivery of an SMS to the phone who has sent an order or a command (incoming phone). It is a useful function if customers have to send their orders directly.  
V40 = no message is ever sent to the incoming phone  
V41 = Only replies to command messages are sent  
V42 = All messages are sent also to the incoming phone  
V43 = All messages except Print-Ok are sent
  
- **#V5: Template length 20/40 (0/1)** [1]  
TCP-II can store 48 templates of 40 characters or 96 templates of 20 characters. This can be chosen using this variable.
  
- **#V6: Use or not (1/0) T46,T47 to ACCEPT and T48/T49 to REFUSE and T44,T45 in place of PRINT OK** [0]  
Normally the unit sends standard messages, as follows:  
After printing a message, sends Print-OK to number X  
After a order has been ACCEPTed pressing the accept button it send the message: ACCEPTED to number Y  
After a order has been REFUSEd pressing the accept button it send the message: REFUSE to number Z  
These 3 messages can be programmed by the user.  
In order to do so, you need to set to 1 variable V6, sending command #N999#V61#E, and then program the 3 messages in Templates 44 to 49. You need to split each message in 2 parts, as they must go in 2 templates each.
  
- **#V7: Disable/Enable (0/1/2) message header** [2]
  - Print message header : 0=no, 1=yes, 2=only date and time.  
Normally the printer will start the message with some information about the sender, the Service Center who sent it etc.  
You can remove this , programming variable V7 to 0.  
You can choose to leave only the time-stamp of the message as assigned by the sending center. (SC-TS = Service Center- Time Stamp) programming this variable to 2.
  
- **#V8: Timeout in seconds for parts of CSMS** [A]  
TCP-II can print concatenated messages, up to 4 parts.  
You can program a maximum delay for the reception of these parts.  
In case they do not arrive within this period, the unit will delete the message. Default is 10 seconds (Hexadecimal A)

- **#V9: Timeout for message reception in units of 10 seconds if V9=0 (default) this function is off** [0]  
It is possible to program the maximum delay for a message to arrive at the printer. In order to activate this, you must have synchronized the clock using the #CX command. This variable is in units of 10 seconds. If you program it to 6, the unit will erase the received SMSs whenever there is a difference above 60 seconds between the SC-TS and the time kept by the TCP-II clock.  
WARNING: this function is not necessary and can create problems so we recommend that you don't activate it.  
Anyway commands requiring the #N999 ID will pass this filter, allowing for clock setup, in case of SUMMER/WINTER time change
- **#VA: Filter for the sending number off/on (0/1)** [0]  
If the unit works as part of a web ordering system, it may be useful to restrict the access to it only from a number, that is the server who sends the orders automatically. This can be done activating the filter. Remember to program the number who can access the unit with #WHL01 command BEFORE activating the filter.
- **#VV: Beeper Volume level** [3]  
It is possible to change the Volume of the buzzer (#VV1, #VV2, #VV3 equivalent to low, medium, high) using this variable

**Note that Variables V2,V8 and V9 are hexadecimal (00-FF)**

- **#? : ask status of various variables (Vxx,X,Y,Z)**

- **#X** : Programs ACKnowledgement number to which the printer will send an ACKnowledgement SMS to confirm that it has received and printed a message. This works only if the message starts with a valid ID (#N) or if the AutoID function (#I1) is enabled. Default is NO NUMBER.
- **#Y**: Programs ACCEPT number to which ACCEPT SMS will be sent when the ACCEPT button is pressed. This works only if the message starts with a valid ID (#N) or Auto ID function (#I1) is enabled. Default is NO NUMBER.

Note1: if the CALL option is enabled, the unit will place a call instead, that will last 10 seconds or until the call is rejected or answered.

Note2: if the Call option is enabled, no confirmation message will be sent to the originating phone.

- **#Z**: Programs REFUSE number  
Same as #Y. Works for the REFUSE button
- **#X?** (or **#Y?,#Z?**): ask number of Telephone X,Y,Z

The above commands X Y Z use the format #X+395389998854#E where #X can be #Y or #Z and the number has a maximum of 15 digits and ends with another command or with #E)

NOTE: To **ERASE** a number after it has been programmed, program a new number or send the command #XZ to write a Z in place of the number.

**Extra commands for more specific functions**

- **#P:** Store new 3 digits COMMAND ID (default 999)  
The standard unit will recognize as Commands the messages that start with #N999. This number can be changed to another 3 digits number, in the range 900 to 999.  
Note: once the COMMAND ID has been changed it will not be possible to send special commands using 999! If you decide to change it make sure you write the new code in a safe place.
- **#CX:** Sync clock with incoming SMS  
This is useful if you mean to use the function of erasing the incoming SMSs if they arrive late (Variable V9). In order to sue that funtion properly you need your clock to be set well.  
Warning: Not all models have a backup battery and may lose the clock setting when switched off!
- **#H:** Program header  
Use this function to program the header of the SMS that the unit will send. This is useful to recognize more units.
- **#J:** Print templates from 01 to 24
- **#L:** Print templates from 25 to 48

These 2 commands are provided only as a easy way to check the templates that have been programmed.

- **#l** (lower caps L): Print a line of 36 hyphens (-----)  
This command is provided to make it simple to print a line.
- **#R:** Read template (i.e. #R01, #R02 etc) into a return SMS  
Use this command to check what is the text of a specific template
- **#WHL01:** program number for incoming phone filter  
If you enable the Filter for the incoming number (Variable VA) you will need this command to set the phone enabled to send messages.  
Warning: Once you enable this filter, the unit will accept messages only from that phone. First program the number, and then activate the filter!

## How to use the TCS-Printer

### SIM

In order to use the TCS-Printer you need to insert an active GSM SIM into the slot provided. You can eject the SIM holder pressing the yellow button. Remove the holder, insert the SIM facing up and reinsert the drawer gently, making sure it enters the guides.

Make sure that the PIN request has been removed from the SIM. To check if this is the case, insert the SIM into a phone and switch on the phone. If it asks for a PIN, it means that the request has not been removed. You will need to remove the PIN request using the security menu of your phone.



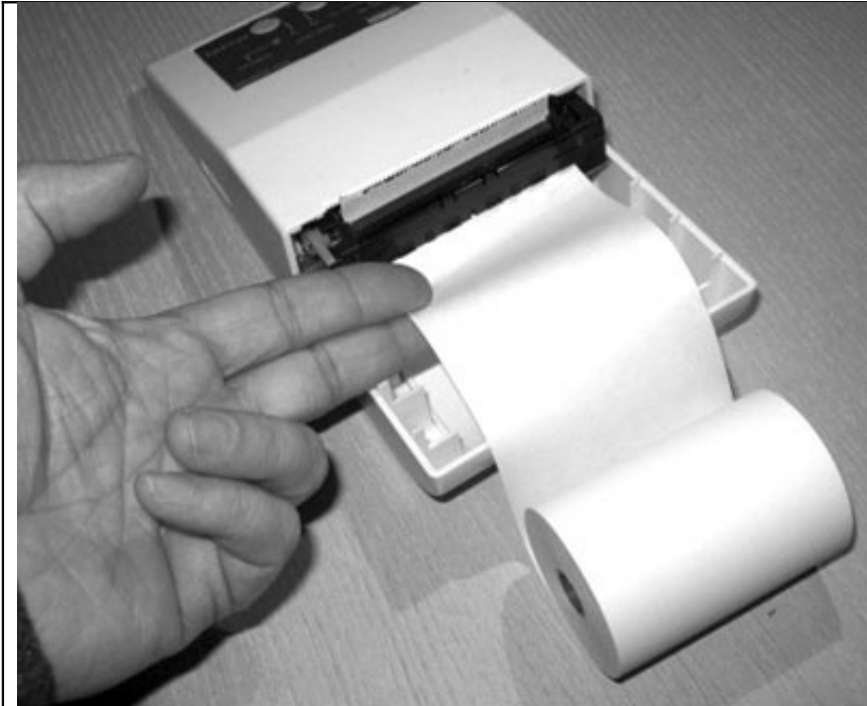
## PAPER

The TCS-Printer uses 80 mm wide thermal paper. We can provide this paper (2 rolls come with the printer) or anyway it is available through different suppliers.

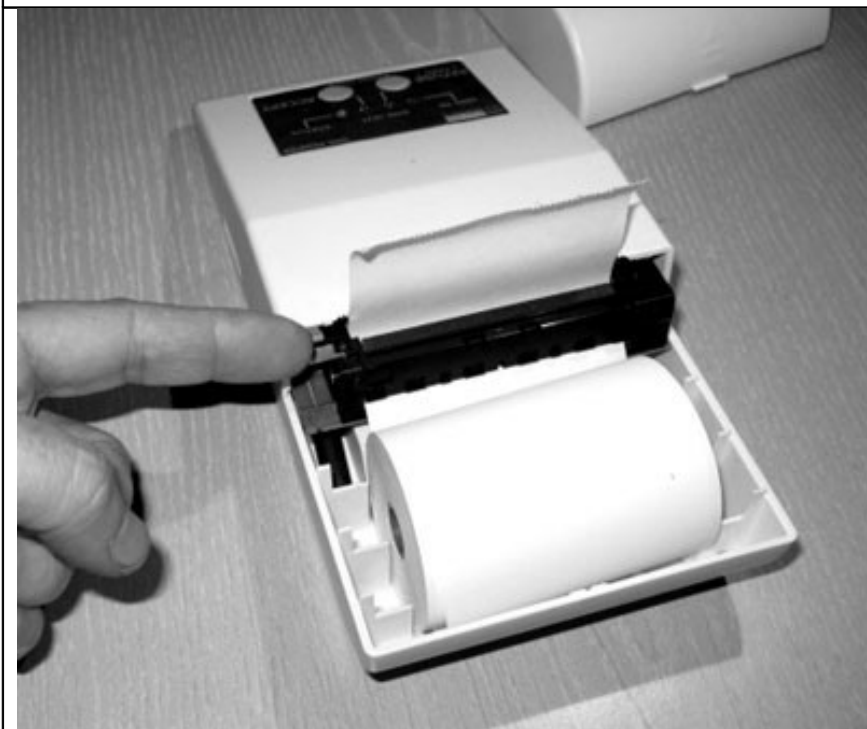
First of all open the back of the printer pushing-in the back of the box. To load the paper you need to remove any piece that may be in the printer, pulling it after you have raised the lever that is on the side of the printer.

Then insert the paper, with printing side (the side which becomes black when exposed to heat) facing down. Pull it out, lower the lever, close the printer box and cut the paper pulling it on the saw-toothed edge.





Pull up the lever and insert paper into the printer with printing side facing downwards



Push down the lever to close the printer head



### Powering the unit

To power the unit connect the AC adapter plug (12VDC with positive inside) into the plug that is on the side of the unit.



### **Power up sequence**

When you connect power to the TCS-Printer, the unit will print a welcome message, will beep, and then the green STATUS LED will start blinking.

It will parse any message that may be in the SIM, and doing so it will blink momentarily the SMS-IN LED.

Once the power up sequence is ready, the Status LED will be steady for 3 seconds and then blink very fast.

The printer will now be ready to receive messages.

### **Sending an SMS to the printer**

Let's try to send a generic SMS to the printer. Prepare on your phone a message, such as 'Hello World' and send it to the printer SIM number.

The SMS-IN led will flash and the printer will print the following:

*SMS FROM: +XXXXXXXXXX (your number)  
D=09-02-04 T=19:22:45 (date and time in format YY-MM-DD HH-MM-SS)*

*Hello World*

*OK*

Note: If the message doesn't start with an ID (#Nxxx) it will not be possible to accept or refuse anything. The printer will print, and that is the end of the process. If the AutoID function is enabled (default) the printer will work as it has an ID, so it will be possible to accept or refuse.

Note: if you send a Special Command, you must use the COMMAND ID (default 999). See command list for details.

Note: if the message ends with a #E (End), the printout will be shorter and many blank lines and the 'OK' will be omitted. So, to save paper, always end messages with #E.

## Printing Formatted messages

### Printing with different text formats

It is possible to print characters in:  
Double Height: #D (valid only for the full line)  
Double Width: #B starts, #b ends  
Underlined: #U starts, #u ends

Example: To print 'This is an underlined text'  
you have to send 'This is an #Uunderlined#u text

### Templates

A template is a sentence, up to 40 ( or 20, according to the setting of V5) characters long (including control characters), that may be recalled with #T and its number.

This allows to store headers, footers, menu items, to be recalled later simply by their numbers.

Examples:

Imagine that you are sending orders to a Pizzeria, that is called PIZZA WEB and that is in via Edison 21, 47100 Forli, and that you have on the menu 3 types of Pizza, that is: Margherita, Capricciosa, Napoli.

You will store the following templates with only 1 message

```
#N999#S01#D#BPIZZA WEB§  
#S02Via Edison 21 47100 Forli§  
#S03Order for the following products:§  
#S10Pizza Margherita§  
#S11Pizza Capricciosa§  
#S12Pizza Napoli§
```

Note: Templates end with the § (section) sign

Note: the previous message needs to start with a COMMAND ID that is 999 in the default setup.

Then, to print an order, you will send the following SMS

**#T01**

**#T02**

**#T03**

**#T10 + mozzarella**

that will result in the following printout

***PIZZA WEB***

*Via Edison 21 47100 Forli*

*Order for the following products:*

*Pizza Margherita + mozzarella*

To change templates, you simply overwrite them , that is write another one with the same number.

In the example above, we have put a variation, limited to this SMS, that is '+ mozzarella'.

As you have seen, with this system it is possible to print up to 1920 characters with a single SMS.

## Acknowledgement and Push Buttons

**NOTE:** The TCS-Printer will send SMS or place calls only if the messages are properly formatted and have a valid ID, issued with the command #N. It will also perform this function if the AutoID function is enabled (I=1)

### Acknowledgement of printed messages

The TCS-Printer can acknowledge a message once it has printed it, sending an SMS with the text 'PRINT OK' and the ID of the SMS.

If the accept / refuse process is enabled (#Q higher than 00), to Accept or Refuse you must push the proper button when the LED above it flashes slowly, and keep it pressed (when pressed, led will blink fast) until the LED stays on. After a programmable time (#Q, default 15 seconds) the led will stop blinking and the unit will send only the 'PRINT OK' message.

If the W option is 1 (default) the SMSs will be sent also to the originating phone.

### ACCEPT or REFUSE messages

The TCS-Printer will send an ACCEPT SMS to the number programmed with the command #Y and a REFUSE SMS to the number programmed with the command #Z. It will only send 1 SMS, either ACCEPT or REFUSE, whatever is pushed first.

If the W option is 1 (default) the SMS will be sent also to the originating phone

If the #V option has been activated with command #V1 (default V=0) the unit will not send an SMS for the ACCEPT and REFUSE buttons, but will place a call to the number programmed with #Y (ACCEPT) and #Z (REFUSE).

It will ring for 10 seconds maximum. If no answer, it will anyway terminate after 10 seconds. It will hang up immediately if the call is answered or rejected.

It will only place a call, either for ACCEPT or REFUSE, whatever is pushed first.

If the V option is 1 (place call instead of SMS), no SMS will be sent to the originating phone, even if W=1.

**Note again:** All of the above will work ONLY if the message had a valid ID (#Nxxx) or if autoID is enabled. The printer will accept the first button pressed only, per each message received.

Remember: Texts for Print-OK, Refuse and Accept can be customized using templates T44 to T49. See V6 for details

## **Other Functions**

### **Parameters Reset**

To Reset the TCS-Printer to its factory values, keep both button pressed and power-up the unit. The 4 Leds will start flashing. Keep button pressed until only the STATUS LED is ON and doesn't blink.

### **Printout of GSM 03.38 Character Generator**

This printer uses GSM 03.38 alphabet, that is a little different from ASCII for some special characters. To print the character generator table with indication of the hexadecimal code of each character, keep the ACCEPT button pressed and power-up the printer.

### **Feed Button**

It is always possible to feed the paper when the unit is in the normal working condition (waiting for incoming SMS). To do so, simply press the REFUSE BUTTON (keep it pressed for a few seconds until the printer starts feeding paper)

### **Switching OFF the printer**

It is possible to switch off the printer keeping the ACCEPT button pressed for 5 seconds while the printer is ready and waiting for a message. The STATUS LED will start blinking fast, the beeper will beep 3 times and the the unit will sleep, if the button keeps being pressed.

Please note that the printer enters sleep mode, and the status LED will blink temporarily. You can wake it up anytime simply pressing any of the buttons.

## LED indications description

The printer has 4 LEDs:

### **SMS IN**

This red LED will blink when a message has been received, will be steady after the message has been printed and will switch off after either the ACCEPT or REFUSE button has been pressed.

If the message has no ID, it will switch off after printing.

If the acknowledgment SMS cannot be sent to Tel X for any reason (i.e. no X number programmed) this LED will blink fast for 5 seconds.

During the power up sequence, this LED will blink a few times while the content of the SIM is parsed.

### **REFUSE**

This red LED will blink while the unit sends the SMS or places the call because the REFUSE button has been pressed. This LED will light up while the STATUS led blinks fast in case of Paper out or Printer head lever up.

### **ACCEPT**

This red LED will blink while the unit sends the SMS or places the call because the ACCEPT button has been pressed

### **STATUS**

This green LED will blink when the unit is powering up and when a ACKnowledgement SMS is sent out. During normal operation the LED will be ON for 3 seconds and blink fast for 1 second.



Important note: electronic devices may pollute the environment.  
Act according to your local laws when disposing this unit.



The TCS-Printer electronic board complies with EMC regulation.  
The Siemens MC55i GSM engine complies with EMC regulation  
Contains FCC ID QIPMC55I

released on 15/02/2010

by

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For any update or information  
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on <http://www.dpspro.com>