

---

# GSM ProTherm – PT1000

## User Guide



© 2007 - 2011



Web: [www.intelec-systems.com](http://www.intelec-systems.com)

---

## Copyright

Copyright © Intelec Systems cc, South Africa

November 2007, February 2008, June 2008

Revision 1.3

All rights reserved. Neither part nor the whole of this publication may be adapted, reproduced, or stored in any material or electronic form without the prior written consent of the copyright holder.

## Disclaimer

Information furnished in this manual is believed to be accurate and reliable; however no responsibility is assumed for its use, or any infringements of patents or other rights of third parties, which may result from its use.

This product or any variant of it is **not** intended for use in any **medical** / life-critical appliance, device or system in which the failure of the product might reasonably be expected to result in personal injury.

Intelec Systems cc will not accept any claim for damages howsoever arising as a result of use or failure of its products.

## Product Warranty

Intelec Systems cc warrants its products from defect in material and workmanship from the confirmed date of purchase for a period of one year, provided that the said products have been operated within their specifications and that they have not been tampered with by unauthorized persons. Shipment costs will be borne by customers.

Intelec Systems holds the right and final decision to repair or replace any defective product. Proof of purchase must be supplied when requesting a repair.

## Contents

1. Features and Specifications .....	1
2. Introduction .....	2
3. Wiring Instructions .....	3
4. Getting Started .....	4
5. Command list description .....	7
6. Contact Details .....	11
Appendix A    Command list .....	12
Appendix B    Fault Indicators .....	13

# 1. Features and Specifications

- GSM monitoring and set up of temperature system from anywhere in the world using SMSs.
- Two PT1000 input channels.
- Temperature range: -80°C to + 125°C.
- Measurement accuracy: <0.1°C (-30 to +125°C); <0.3°C (-50°C to -30°C)
- Resolution: 0.1°C
- Over-temperature alarm SMSs for both input channels.
- Tamper and power failure alarm SMSs.
- Alarm SMSs can be SMSed to 5 different mobiles.
- On-board logging memory for up to a month of logs (depending on logging rate).
- Programmable logging rate.
- Optional web logging module for logging and graphing profiles.
- Trip-start SMS or optional pushbutton for web-logging graph start point.
- All SMS commands in plain English.
- Airtime commands to see how much airtime available.
- Airtime recharge command for voucher recharge from control mobile phone.
- Real-time clock which keeps the time in the event of a power failure.
- Battery backup for 24 hours in the event of power failures.
- Simple installation (only power connections required.)
- Dimensions: 190mm X 140mm X 70mm.
- Temperature monitoring (on demand from mobile phone) and over-temperature alarms.

## **2. Introduction**

The **IS-PT1000 GSM ProTherm controller** is a GSM wireless controller device for monitoring and logging system temperatures. The unit continuously monitors the two input temperature channels and if the temperatures exceed a preset level, an SMS alert is sent to the desired mobile. The unit also alerts the user of power failures. It takes two PT1000 sensors and accurately measures the temperatures to 0.1°C.

An optional feature is the temperature logging feature, where the temperature can be logged to a server via GPRS and displayed graphically at a later date. The system can log up to more than 30 days on-board without access to the internet.

The **IS-PT1000** controller is extremely simple and quick to use. It can be programmed from a mobile phone anywhere in the world. The controller command set is in plain English making it very simple to remember the commands. Once the unit has been set up, no further adjustment is necessary. The unit maintains all its parameters, even in the event of a power failure. It has a built-in real-time clock which keeps its time even during a power failure.

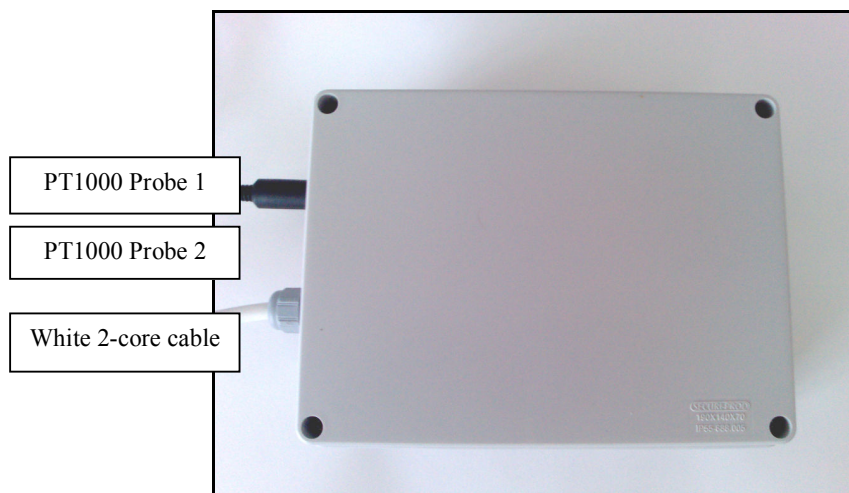
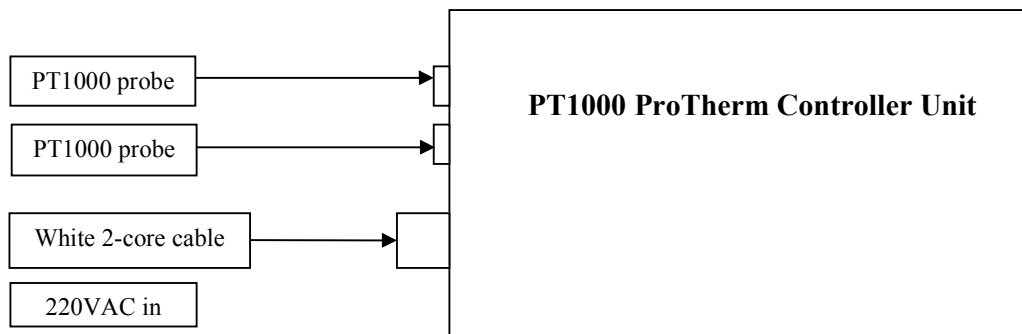
Further, the **IS\_PT1000** has battery back-up which can keep the system operating for up to 24 hours in the event of a power failure.

### 3. Wiring Instructions

After the **PT1000 ProTherm** controller unit has been mounted, there are only two sets of connections to make:

- a) Power for the unit (the **white** 2-core cable) which is connected to live and neutral,
- b) The two PT1000s must be plugged into the unit via its mini-DIN sockets.
- c) The key-switch on the unit's side must be turned on to enable the internal battery. When on, the LED next to the key-switch lights up.

The unit is now ready to operate.



## 4. Getting Started

The initial setup and maintenance of your **PT1000 ProTherm** controller is managed entirely by SMS. Each **ProTherm** unit has a SIM card with a unique telephone number. In order to setup and maintain your **ProTherm**, you will need to use the telephone number in conjunction with a number of commands. Please read the user guide in full before attempting to configure your **ProTherm**.

If you start with a brand new pre-paid SIM card, you will have to pre-load the airtime from a phone for the first time or via internet banking. Note that once the pre-paid amount is paid, it takes a few minutes before the system is activated. The SIM card may now be inserted into the **ProTherm** system. Once this has been performed, any later airtime “recharging” may be done from a mobile phone or internet banking.

On power-up of the **PT1000 ProTherm** controller, the unit will beep 3 times. After the unit has been registered on the network, it generates a single long beep if everything is ok. If a number of short beeps occur after the long beep, then there is a fault.

Please see Appendix B for the fault indicators.

**NOTE:** It is important to note that during a power failure, **ProTherm** can only operate off battery power for 24 hours. **After this however, the battery may be damaged!!!** Please respond to the power failure SMSes the system sends and rectify the problem.

Here is a “quickstart” series of commands to get going:

**Send an SMS with the following information:**

a) **Password;SetTimeDate;DD/MM/YY:W HH:MM:SS;** W = [1..7] (1=Sun; 7=Sat)

**eg:** 000000;SetTimeDate;01/03/2008:7 16:04:10;

*to set time to Sat 1/3/2008 16:04:10.*

b) **Password;SetAlertSMS;location;number;user ID;**

**eg:** 000000;SetAlertSMS;0;0825556666;131313;

*to set alert SMS number 0 to 0825556666 with extra password 131313.*

**c) Password;SetSMSEvents;EventType;CellProfile;**

**eg:** 000000;SetSMSEvents;Chan1OverTemp;0;

*to set Chan1OverTemp event to send SMS to mobile at location 0 ie. 0825556666.*

000000;SetSMSEvents;Chan2OverTemp;0;

*to set Chan2OverTemp event to send SMS to mobile at location 0 ie. 0825556666.*

000000;SetSMSEvents;PowerFail;0;

*to set PowerFail event to send SMS to mobile at location 0 ie. 0825556666.*

**Hint:** *Can use the ALL parameter to switch ALL the EventTypes at once to a particular state:*

00000; SetSMSEvents;All;0;

*To set All the events to send SMSes to mobile at location 0 ie. 0825556666.*

**d) Password;GetSMSEvents;**

*to get all the event settings.*

**e) Password;SetAlarmTemp;Chan;Temp;**

**eg:** 000000;SetAlarmTemp;1;-20;

*to set the SMS alert for chan1 when the temperature exceeds -20°C*

000000;SetAlarmTemp;2;-30;

*to set the SMS alert for chan2 when the temperature exceeds -30°C*

**f) Password;SetAlertMessage;Chan;Message;**

**eg:** 000000;SetAlertMessage;1;Fridge A;

*to set the SMS alert message for channel 1 to "Fridge A."*

000000;SetAlertMessage;2;Fridge B;

*to set the SMS alert message for channel 2 to "Fridge B."*

*Note that the default internal message setting is "Chan 1" and "Chan 2"*



## Logging Options

**g) Password;SetDeviceID;DeviceID;**

**eg:** 000000;SetDeviceID;0797778888 Fridge1-Wynberg;

*to set the ProTherm device ID to "0797778888 Fridge1-Wynberg". This is used to identify the unit. \**

**\*NB: IT MUST BE DEFINED UNIQUELY FOR LOGGING**

**h) Password;SetLogRate;Rate;**

**eg:** 000000;SetLogRate;10;

*to set the logging rate to once every 10 min.;*

**i) Password;SetDownloadMode;Type;Time;**

**eg:** 000000;SetDownLoadMode;Timed;01;

*to set the log download mode to download at 1AM every day.*

**j) Password;TripStart;**

**eg:** 000000;TripStart;

*to set a trip start for a particular day. Note that the last TripStart for a day is used as the start tag.*

**k) Password;GetSignalStrength;**

*to get the signal strength.*

**l) Password;RechargeAirtime;Network;VoucherNum;**

Network = [Vodacom]; [MTN]; [CellC]; [Virgin]

**eg:** 000000;RechargeAirtime;Vodacom;9867340954;

*to recharge the airtime on the Vodacom network.*

**m) Password;GetAirtime;Network;**

Network = [Vodacom]; [MTN]; [CellC]; [Virgin]

**eg:** 000000;GetAirtime;Vodacom;

*to get the remaining airtime on the Vodacom network.*

**n) Password;EditPassword;NewPassword;**

NewPassword = [6-digit 'Password']      **(initially set to '000000')**

**eg:** 000000;EditPassword;123456;      *to set new password to '123456'*

## 5. Command list description

**Command format:** Password;Command;[Parameters];[Parameters];

Please note that there should be no spaces around the semicolons. Also all the parameters are case-insensitive. The password is a 6 digit number. The very last parameter or command **MUST BE terminated with a semicolon!**

### Commands:

- i) **Switch;State;**  
State = [ON]; [OFF]; [AUTO]

This command causes the system to switch the geyser ON, OFF or into AUTO (timer mode.) **Note that after an OFF or ON command, the user should remember to switch the system back to AUTO if timer operation is desired!**

- ii) **Status;**  
This command returns the current system status ie ON, OFF or AUTO.

- iii) **SetDateTime;DD/MM/YY:W HH:MM:SS;**  
DD = [1..31];  
MM = [1..12];  
YY = [00..99];      (for 2000 to 2099)  
W = [1..7]      (1 = Sun; 2= Mon; .....7 = Sat)  
HH = [00..23];      (24 hour format)  
MM = [00..59];  
SS = [00..59];

This command sets the unit's internal real-time clock. The format is as above.

- iv) **GetDateTime;**  
This command gets the unit's internal time.
- v) **SetAlertSMS;location;number;user ID;**  
Location = [0..4]  
number = [up to 20 digit mobile number]  
user ID = [additional 6 digit password]

This command sets the SMS number for alert condition monitoring.

- vi) **GetAlertSMS;location;**  
Location = [0..4]

This command gets the parameters for a particular SMS alert number.

- vii) **DeleteAlertSMS;location;**  
This command deletes a particular SMS alert number.

- viii) **SetSMSEvents;EventType;CellProfile;**  
**EventType:**  
a. PowerFail  
b. Tamper  
c. Chan1OverTemp  
d. Chan2OverTemp  
e. All

**CellProfile** = [0..4; All; OFF]

This command sets the activity type of SMS alert events and to which mobile number they should be sent if at all.

- ix) **GetSMSEvents;**  
This command shows the status of all the SMS alert events set up.

- x) **SetAutoProfile;profile number;starttime;stoptime;weekdays;**  
Profile number = [0..9]  
StartTime = HH:MM (24 hour format)  
StopTime = HH:MM (24 hour format)  
Weekdays = SMTWTFS (X to switch off)

This command sets the timer profile. There are up to 10 profiles which switch the geyser on and off. Each timer has an StartTime (ON) parameter and a StopTime (OFF) parameter, including a weekdays parameter. The weekdays parameter describes which day of the week the particular profile should be active. An X in the relevant day position indicates the profile should be off for that day.

- xi) **GetAutoProfile;profile number;**  
This command gets the relevant timer profile.

- xii) **SetActiveProfile;ProfileNumber;State;**  
Profile number: [0..9]  
State = [ON]; [OFF]

This command sets the active status of a particular timer profile.

- xiii) **GetActiveProfile;**  
This command gets the active status of all timer profiles.

- xiv) **DeleteAutoProfile;profile number;**  
This command deletes a particular timer profile.
- xv) **EditPassword;NewPass;** [Initially set to: '000000']  
This command changes the password to a new 6 digit value.
- xvi) **SetDownloadMode;type;delay;**  
 Type = Timed @ Time [Time = 2 digits in 24 hours] [Automatic via GPRS]  
 Type = Event (Tamper) [ON]; [OFF] [Automatic via GPRS]  
 Type = Manual (forces immediate download)

This command sets the log download mode to the server. It may be done automatically at a particular time every day ("Timed") or immediately ("Manual") or on a "Tamper" event.

- xvii) **GetDownloadMode;**  
This command gets the all the download mode parameter status'.
- xviii) **VersionNums;**  
This command gets the hardware, software version numbers and unit serial number.
- xix) **SetDeviceID;DeviceID**  
DeviceID up to 30 alpha-numeric chars]

This command sets the unit's ID name for the server logging.

- xx) **GetDeviceID;**  
This command gets the unit's ID name for server logging.
- xxi) **GetSignalStrength;**  
This command gets the unit's GSM signal strength.

Result => (0 to 31)  
 0 = weak signal;  
 31 = strong signal  
 99 = no signal

- xxii) **RechargeAirtime;Network;VoucherNum;**  
Network = [Vodacom]; [MTN]; [CellC]; [Virgin]

This command recharges the airtime from a voucher. The particular network is also entered as a parameter. **Note that this command should only be used once the number has been activated on the network. See "Getting started" section above for details.**

- xxiii) **GetAirtime;Network;**  
Network = [Vodacom]; [MTN]; [CellC]; [Virgin]

This command gets the remaining airtime.

- xxiv) Password;GetTemp;**  
This command gets the two input temperatures (for channel 1 and channel 2)
- xxv) Password;SetAlarmTemp;Chan;Temp;**  
Channel = [1] or [2]; Temp = [-80...+127]  
  
This command sets the two input alarm temperature setpoints.
- xxvi) Password;GetAlarmTemp;**  
This command gets the two input alarm temperature setpoints.
- xxvii) Password;SetAlertMessage;Chan;Message**  
Chan = [1] or [2]; Message = [up to 30 chars]  
  
This command set the alert SMS message for the channel.
- xxviii) Password;GetAlertMessage;Chan;**  
Chan = [1] or [2]  
  
This command gets the alert SMS message for the channel.
- xxix) Password;SetLogRate;Rate;**  
Rate = [1..120] ; [OFF] mins  
  
This command sets the logging rate.
- xxx) Password;GetLogRate;**  
  
This command gets the logging rate.
- xxxi) Password;LogDelete;**  
  
This command deletes the entire on-board memory log.
- xxxii) Password;TripStart;**  
  
This command defines trip start for the day. It controls the graphing start time. Note that the last TripStart for a day is used as the start tag.
- xxxiii) Password;SetFilterTime;Time;**  
Time = [0..60] minutes.  
  
This command sets the alarm over-temperature threshold reaction filter time.
- xxxiv) Password;GetFilterTime;**  
This command sets the alarm over-temperature threshold reaction filter time.

**Note that the full system instruction set can be seen in appendix A**

## 6. Contact Details

### South Africa:

**Intelec Systems cc**

**Cape Town, South Africa**

**Contact:** Alon Bas  
**Phone:** +27-21-686 8484  
**Fax:** +27-86-642 4907  
**Mobile:** +27-82-804 8484  
**Email:** [alon@intelec-systems.com](mailto:alon@intelec-systems.com)  
**Web:** [www.intelec-systems.com](http://www.intelec-systems.com)

## Appendix A Command list

**Firmware** (\* Olive is for additional features.)

SMS Function Command List:

- i) Password;Switch;State; [State = ON; OFF; AUTO]
- ii) Password;Status; [State = ON; OFF; AUTO]
- iii) Password;SetDateTime;DD/MM/YY:W HH:MM:SS; W: 1=sun; 7=sat; \*
- iv) Password;GetDateTime;
- v) Password;SetAlertSMS;location;number;user ID; **location=(0..4) Num=20digits**
- vi) Password;GetAlertSMS;location;
- vii) Password;DeleteAlertSMS;location;
- viii) Password;SetSMSEvents;EventType;CellProfile;
  - a. PowerFail
  - b. Tamper CellProfile -> Cell# [0..4]; [All]; [OFF]
  - c. Chan1OverTemp
  - d. Chan2OverTemp
  - e. All
- ix) Password;GetSMSEvents;
- x) Password;SetAutoProfile;profile number;starttime;stoptime;weekdays;
  - Profile number = 0..9
  - StartTime = HH:MM
  - StopTime = HH:MM
  - Weekdays = SMTWTFS (X to switch off)
- xi) Password;GetAutoProfile;profile number;
- xii) Password;SetActiveProfile;profile number;State; [ON] [OFF]
- xiii) Password;GetActiveProfile;
- xiv) Password;DeleteAutoProfile;profile number;
- xv) Password;EditPassword;NewPass; [Initially set to: '000000']
- xvi) Password;SetDownloadMode;Type;Time;
  - Type = Timed @ Time [Time = 2 digits in 24 hours] [Automatic via GPRS]
  - Type = Event (Tamper) [ON]; [OFF] [Automatic via GPRS]
  - Type = Manual (forces immediate download)
- xvii) Password;GetDownloadMode;
- xviii) Password;VersionNums;
- xix) Password;SetDeviceID;DeviceID [up to 30 chars]
- xx) Password;GetDeviceID;
- xxi) Password;GetSignalStrength; [0...31 = low .. high; 99 = No signal]
- xxii) Password;RechargeAirtime;Network;VoucherNum; Network=[Vodacom]; [MTN]; [CellC]; [Virgin]
- xxiii) Password;GetAirtime;Network; Network=[Vodacom]; [MTN]; [CellC]; [Virgin]
- xxiv) Password;GetTemp;
- xxv) Password;SetAlarmTemp;Chan;Temp; Chan = [1] or [2]; Temp = [-80...+127]
- xxvi) Password;GetAlarmTemp;
- xxvii) Password;SetAlertMessage;Chan;Message; Chan = [1] or [2]; Message = [up to 30 chars]
- xxviii) Password;GetAlertMessage;Chan; Chan = [1] or [2]
- xxix) Password;SetLogRate;Rate; Rate = [1 .. 120]; [OFF] mins
- xxx) Password;GetLogRate;
- xxxi) Password;LogDelete;
- xxxii) Password;TripStart;
- xxxiii) Password;SetFilterTime;Time; Time = [0..60] minutes.
- xxxiv) Password;GetFilterTime;

## Appendix B            Fault Indicators

1 long beep followed by a number of short beeps:

**Number of beeps:**

- 1: GSM module power up failure.
- 2: SIM failure.
- 3: No signal.
- 4: GSM module not ready.
- 5: GSM module cannot be switched to full functionality.