Panasonic

Operating Instructions

PMS Interface Software

Model No. KX-A291/KX-A292/KX-A293



Please read this manual carefully before using this software.
Thank you for purchasing this Panasonic product.

Accessories

When unpacking, check the following items.

CD-ROM ..... one
Dongle ..... one
Getting Started Manual ..... one

This Operating Instructions does not show complete model numbers that indicate the country where your models should be used. The model number of your product is found on the CD-ROM.

KX-A291/292/293---



In this manual, the suffix of each model number is omitted.

Important Information

SAVE THESE INSTRUCTIONS

SECURITY PRECAUTIONS

In order to use PMS Interface software safely and correctly, you should observe the following Security Requirements. Failure to do so may result in the loss, leakage, falsification or theft of user information.

What is User Information?

User Information is defined as:

1. Information stored on the access log file.
   User name, telephone number, call charge data, minibar charge data
2. Information sent from the PBX/FOS to the PMS Interface.
   User name, telephone number, call charge data, minibar charge data
3. Information sent from the PMS Interface to the PBX/FOS.
   User name, telephone number, call charge data, minibar charge data

Security Requirements

1. Be sure the network in which PMS Interface is used is protected from access by other external networks.
2. To prevent illegal access from the Internet, activate a Firewall.
   However, note that the following ports must be set to allow the data to pass through:
   TCP 51002 (for the FOS)
   TCP 33333 (for the PBX)
3. Perform the following when sending the PC for repair or handing it over to a third party.
   a. Make a backup of the access log file of the PMS Interface for restoring the data.
   b. Delete the access log file of the PMS Interface so that information cannot be retrieved from it.
4. To prevent data leakage when disposing of the PC the software was installed on, erase its hard disk drive and physically render the disk unusable.
5. Install this product in a place where it is possible to control who uses it.

NOTE WHEN USING THIS SOFTWARE

- Be sure to regularly backup the access log file of PMS Interface.
- Do not use this application while using other applications that require automatic restarts of the PC. Also, Windows Update should be configured so that system restarts can only be performed manually.
- Do not open the settings screen of the Panasonic KX-TDA TSP while the PMS Interface is running. If settings are to be changed on the Panasonic KX-TDA TSP, do so during a maintenance period when the PMS Interface is not running.

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Note:

- Do not use the functions with “Available in the future” written in this manual.
- The contents and design of the software are subject to change without notice.

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1. About this Manual

This manual describes the installation, setup and use of the Panasonic PMS Interface (PMS I/F) system.

The manual is intended for personnel responsible for system installation and configuration. Most of the information in this manual may also be accessed via the software online Help. This manual provides a more structured overall view of the system.

The manual is divided into five chapters:

Chapter 1: About this Manual: provides a concise description of the contents of the manual.

Chapter 2: Overview: describes the scope and components of the system and defines the special terms used in this manual.

Chapter 3: Getting Started: provides installation and configuration instructions for the PMS Interface software.

Chapter 4: Device Setup guides the reader through the process of connecting and configuring devices.

Chapter 5: Diagnostic Tools describes the diagnostic tools available for troubleshooting purposes.

Chapter 6-13: provide specific connecting instructions for each connection type.

Chapter 14: The ASCII code table (Code from 0 to 127)

Chapter 15: The VBA format directive used in command field format

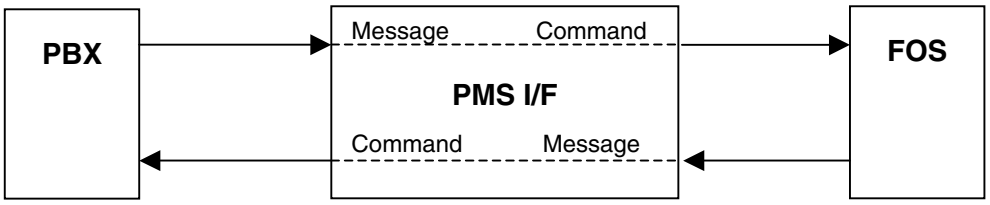
Chapter 16: The Allowable Range of Settings

Chapter 17: Appendix

2. Overview

2.1. About PMS Interface

PMS Interface interconnects multiple devices by translating, or mapping a **message** received from a source device into a corresponding **command sequence** sent to the destination device.
PMS Interface enables the user to monitor the devices' status and messages online.



2.2. Supported Device Connection Types

PMS Interface supports any device, which may be connected to a PC by one of the following connection types (PMS Interface can support maximum 10 devices):

- KME: Panasonic PBX interface
- COMM: RS-232C
- IP: TCP/IP or UDP/IP (either client or server)
- TEXT: Text file (For TABS Call Accounting for Windows® for example)
- PRNT: Printer
- DISP: Screen/Keyboard of PC
- ADO: ADO Data Base (Available in the future) (Silverbyte FOS for example)
- Db: Database (through ODBC, DAO or OLEDB) (Available in the future)

2.3. PMS Interface communication Parameters

Independent of a devices connection type, PMSi provides the following basic functionality for all connection types:

- Record selection / filtering
- Message field parsing
- Command formatting
- Data logging of messages and commands
- Link Suspend and Re-activate
- Inactivity Alarms

Depending on the device connection type, the communications parameters will vary. The following table summarizes the parameters for each connection type. For more details, see the setup description for each of the connection types:

Device Type	Parameters	Used By
KME		• Panasonic KX-TDA/KX-TDE Series PBX
COMM	• Com port (1-16) • Baud rate (300 bps-38,400 bps) • ACK/NAK/ENQ/BCC	• Fidelio
Ip	• IP address • Port address • ACK/NAK/ENQ/BCC	• Fidelio
Text	• File name	• TABS Call Accounting
Printer	• Destination printer name (local or network)	• Hotel logging printers
DISP		• Testing • Diagnostics
ADO (Available in the future)	• Database name • DNS • Connection string	• ADO Database • Silverbyte FOS
Db (Available in the future)	• Database name • DNS • Connection string	

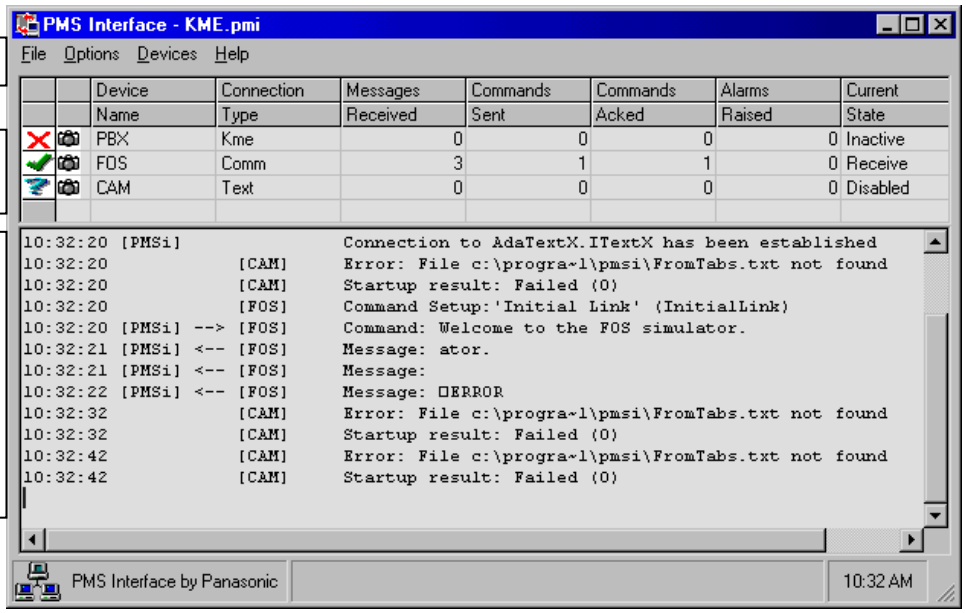
2.4. The Main Window

The purpose of the main window is to monitor the currently defined devices' status and activities:

Menu

Device List

View all the activities between PMS I/F and the devices



The information provided in the Device List is the following:

1. General status:

   indicates that the device functions properly.

   indicates that the device is disabled due to some problems. See the **Troubleshooting** in chapter 6, and 7 for instructions.

   indicates that the device has been disabled through software.

   indicates that a connection attempt is in progress.

   (See *4.4.1*: "**Editing General Device Properties**").

2. (Data Scope): Click to activate/deactivate the Data-Scope feature for this device. The use of Data-Scope is explained in Chapter 5: "**Diagnostic Tools**".

3. ***Device Name:*** The logical name of the device. The name is set when the device is created or in the device PMD file. In order to change the device name via the ***Devices/Setup*** menu, the device has to be deleted and redefined.

4. ***Connection Type:*** The type of communication between PMS Interface and the device.

5. ***Messages Received:*** The total number of messages that PMS Interface received from the device since last PMS Interface startup.

6. ***Commands Sent:*** The total number of command-sequences (See ***PMS Interface Terms*** below) that PMS Interface sent to the device since last PMS Interface startup.

7. ***Commands Acked:*** The total number of acknowledgments that PMS Interface received from the device in response to command-sequences. Normally, this value should be equal to the number of ***Commands Sent***.
8. ***Alarms Raised:*** The total number of alarms (indicating the device's inactivity) received since last PMS Interface startup.
9. ***Current State:*** The state that PMS Interface currently performs for the device. The following operations are defined:
   a) **Startup**: establishing the connection to the device.
   b) **Initial Link**: perform login and initialization for the device.
   c) **Heartbeat:** sending a periodic command to the device checking if it is working or not.
   d) **Receive:** checking for messages from the device.
   e) **Message Trigger:** identifying the incoming message.
   f) **Read Queue:** checking for commands to be sent to the device.
   g) **Command Setup:** preparing the command-sequence to be sent.
   h) **Send Command:** sending the command-sequence to the device.
   i) **Inactive:** indicating that the device has been disabled by PMS Interface. (See *4.4.1*: "**Editing General Device Properties**").
   j) **Disabled:** indicating that the device has been disabled due to some problem. Refer to the **Troubleshooting** chapter 6, and 7 for instructions.
   k) **Error:** indicating an unrecoverable error. Call your dealer.
   l) **Alarm Check:** checking for alarms and/or performing the corresponding action according to the device's alarm definitions (See *4.5.3:* **Defining Alarms**).
   m) **Housekeeping:** performing maintenance operations for the PMS I/F device module.

2.5. PMS Interface Menu Options

2.5.1. The File Menu

The configuration of PMS Interface is stored in a *.PMI file. A PMI file contains the device list and the system's priority. The PMI file may also contain a remap table and an E-mail address.

Note: You cannot use the reserved words of Microsoft®, such as COM1.pmi, LPT2.pmd, for file names used in PMS interface software.

The ***File*** menu enables you to handle PMI files (configuration settings), as follows:

1. ***New:*** Start a new PMS Interface configuration.
2. ***Open:*** Open a saved PMS Interface configuration.
3. ***Save As:*** Save the changes in the configuration of the PMS Interface.
4. ***Exit:*** Terminate the PMS Interface session.

2.5.2. The Options Menu

The ***Options*** menu consists of a single option: ***Define***, which allows you to configure the current PMS Interface session's properties:

1. **General:** defines the system's priority over other applications running on the computer.
2. **E-mail** (optional): the E-mail address for sending alarm messages
3. **Maps** (optional): a table used for converting one type of data into another, for example, converting extension numbers to corresponding room numbers.
4. **Log:** setting in the PMS Interface log which logged the messages and commands via the PMS Interface.
5. **Security:** setting the warning message and the password (Available in the future).

2.5.3. The Devices Menu

The ***Devices*** menu handles the connected devices. The options in this menu are the following:

1. ***Setup:*** configure the properties of a device. (See chapter 4: **Device Setup**)
2. ***Reset:*** restart all devices and the PMS Interface session.

2.6. PMS Interface Terms

ACK: A character sent by a device to indicate that a message was received properly.

BCC: A character added to the end of a message to enable the receiver to verify that the message was received in its entirety.

Action: An operation issued automatically by PMS Interface as a reaction to an alarm (or a series of alarms), in order to re-establish communication with an inactive device or to notify communication failure.

Alarm: An indication that the system has been inactive for the last X minutes (the value of X is set separately for every hour of the day, according to the expected activity level).

ASCII code: The **A**merican **S**tandard **C**ode for **I**nformation **I**nterchange represent the character (include character, number, signal and unprintable character) in number from 0 to 255. For example, a capital ‘A’ can be represented by an ASCII code 065. All numbers mentioned are decimal numbers. Please refer to Chapter 14 for the ASCII code from 0 to 127.

Command: PMS Interface's output (the device's input) data. Each device has a set of commands it can execute. PMS Interface translates messages addressed to the device to set of commands.

Data-scope: A diagnostics tool, which enables the user/installer to view raw data exchange. The Data-Scope is described in Chapter 5**: Diagnostic Tools.**

Device: A hardware or software entity, which communicates by sending messages and responding to commands.

FOS: Front Office System is the software package which the hotel front desk use for guest check-in, check-out and reservations, etc.

Log File: A file named PMSI.LOG (the default name), which contains a log of PMS Interface's activity for all devices.

Message: PMS Interface's input (the device's output) data.

PMD file: A device's definitions file (*.PMD) which contained all the connection information, commands, messages, alarms setting, macros and default date setting of the device.

PMI file: A PMS Interface configuration file which includes the remap table(s), email setting and the devices (the PMD files) connected to the PMS Interface.

PMS Interface or PMS I/F: Property Management System Interface.

Priorities: The percentage of CPU resources allocated to each device and to the PMS Interface application. PMS Interface automatically issues a higher priority to busier devices.

Remap Table: A table that converts one type of data into another.

State: The current state of a device. Also indicates what operation PMS I/F is performing for the device.

3. Getting Started

3.1. System Requirements

3.1.1 PC Hardware requirements

- Microsoft Windows 2000 (English), Windows Server ® 2003 (English), and Windows XP (English)

  Recommended Requirements (for installing PMS Interface software only)

	128 Rooms	256 Rooms	960 Rooms
CPU	Pentium 4 1.4 GHz	Pentium 4 1.4 GHz	Pentium 4 1.4 GHz
RAM	512 MB	512 MB	512 MB
HDD	20 GB	40 GB	60 GB

- Microsoft Windows Vista® (English)

  Recommended Requirements (for installing PMS Interface software only)

	128 Rooms	256 Rooms	960 Rooms
CPU	Intel® 2 GHz (32 bit) processor	Intel 2 GHz (32 bit) processor	Intel 2 GHz (32 bit) processor
RAM	1 GB	1 GB	1 GB
HDD	40 GB	40 GB	60 GB

CD-ROM drive should be included for installation purpose.

PMS Interface software needs standard COMPORT for connection, the number of COMPORT (max. 16) needed depends on the devices intended to connect via PMS Interface.

If antivirus software is installed on your PC, system resources exceeding the recommended requirements will be necessary.

3.1.2 Panasonic KX-TDA/KX-TDE Series

- Before use, make sure that the TSP program of KX-TDA Series you have is version 3.0.0.4 or later.
- The following PBXs support the PMSi.
  - KX-TDA100
  - KX-TDA200
  - KX-TDA600
  - KX-TDE100
  - KX-TDE200
- The software file version of the PBX must be as follows:
  - KX-TDA100/KX-TDA200: PMPR Software File Version 3.0000 or later
  - KX-TDA600: PLMPR Software File Version 5.0000 or later
  - KX-TDE100/KX-TDE200: PMMPR Software File Version 2.0000 or later
- You can connect your personal computer to the PBX with a LAN connection (KX-TDA/KX-TDE Series) or a USB connection (KX-TDA Series only).
- To use a LAN connection, KX-TDA series PBXs must be configured by using CTI-LINK card.

3.2. Hardware Configuration

Connections

(a) Connect the Panasonic KX-TDA/KX-TDE Series to USB/LAN port with prepared USB/LAN cable.
(b) Connect the power to the Panasonic KX-TDA/KX-TDE Series and turn it on. (Try to make an internal call to confirm the PBX is working.)

The Dongle

(a) Insert the dongle into the USB port of the PC. The PMS Interface software will not function without it.
(b) Turn on your PC.

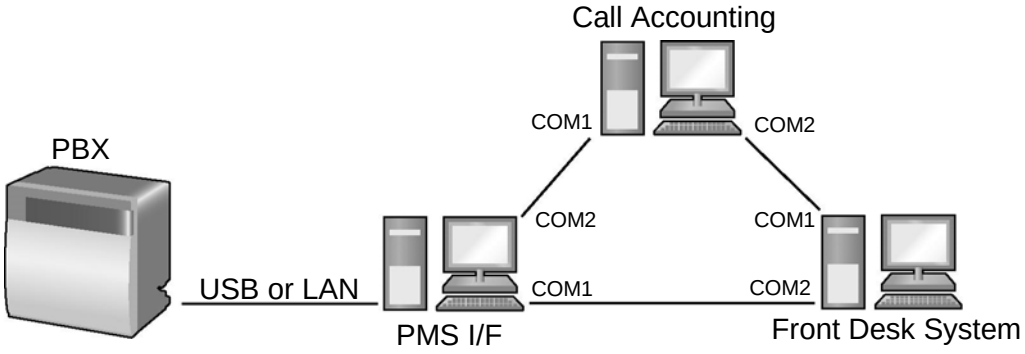
Note: Do not unplug the dongle from the PC while operating PMS Interface Software.

3.2.1. Possible System Configuration (RS232)

- Configuration I – PMS I/F, Call Accounting and Front Desk System use different PC.

  It is ideal to use different PC for different programs (PMS Interface, Call Accounting and FOS) to maximize each program's performance.

  In case of 3 PCs configuration, the PMS Interface PC needs at least 2 COM PORTs. One for connecting Call Accounting software, and one for connecting FOS.

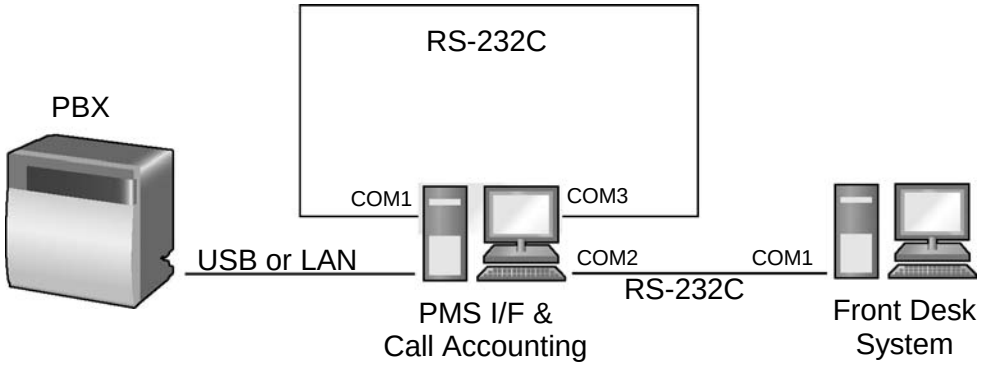


  Note: Depending on FOS, Front Desk System may need one or more PC.

- Configuration II – PMS I/F and Call Accounting use same PC and Front Desk System use another PC.

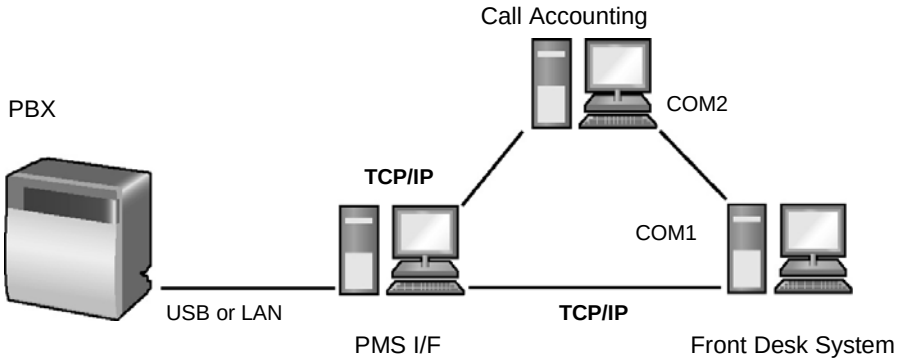
  Whether PMS I/F and Call Accounting use software can work on one PC depends on the capability of the Call Accounting software. If any problem, it should not work on one PC.

  Depending on the capability of the Call Accounting software, the PMS I/F PC may need one more extra COM PORT (ie. Total 3) for the Call Accounting software. For TABS Call Accounting for Windows, it doesn't need extra COM PORT. In case the FOS contains the call accounting capability, or the FOS is combined with the Call Accounting software in one PC, then the PMS Interface PC need only 2 COM PORTs depend on different combination.

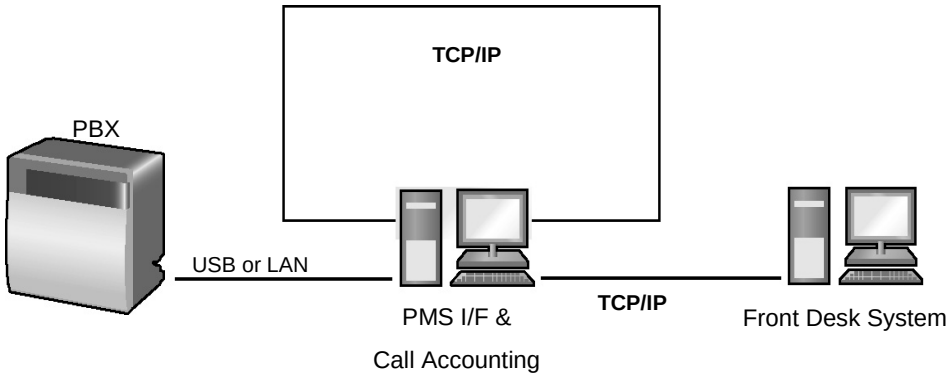


3.2.2. Possible System Configuration (TCP/IP)

- With the advent of TCP/IP many vendors are switching over from RS232 to TCP/IP. PMSi can be configured to connect via TCP/IP instead of RS232
- Similar to the RS232 Configuration, the following diagram depicts the configuration with TCP/IP connections instead of the RS232.



- Configuration II – PMS I/F and Call Accounting use same PC and Front Desk System use another PC.



3.3. Installing Panasonic PMS Interface Software on Vista

With the advent of the Windows Vista operating system the UAC security functionality that was introduced. This new security system prevents unauthorized users from modifying programs and data. The UAC may prevent PMSi from being installed. Once installed the UAC may hinder normal operations that write to data files (logs, configuration files, etc.)

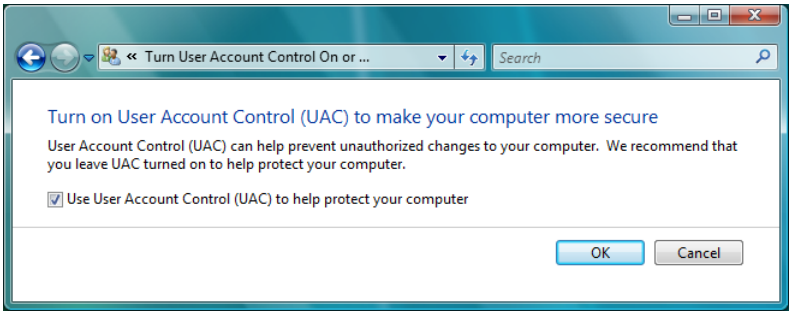
To avoid these problems the following options are available:

- Installing PMSi as an Administrator
- Running PMSi as an Administrator

3.4. Enabling UAC

This may be accomplished as follows:

Control Panel → User Account → Turn User Account Control on or off



Check the checkbox to enable UAC, then click OK.

Changing this setting may require a re-start of Vista.

3.5. Installing PMSi as an Administrator

To install PMSi as an administrator, simply logon to Vista as an administrator and proceed to the Start Installation section

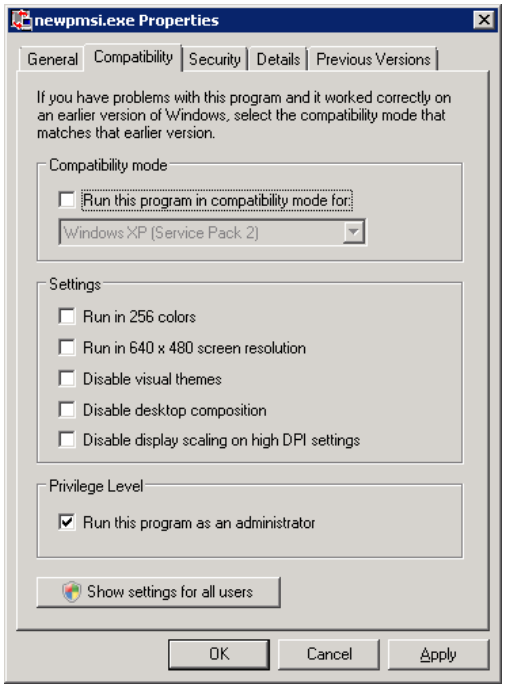
3.6. Running PMSi as an Administrator

To run PMSi as an administrator, follow the procedure below:

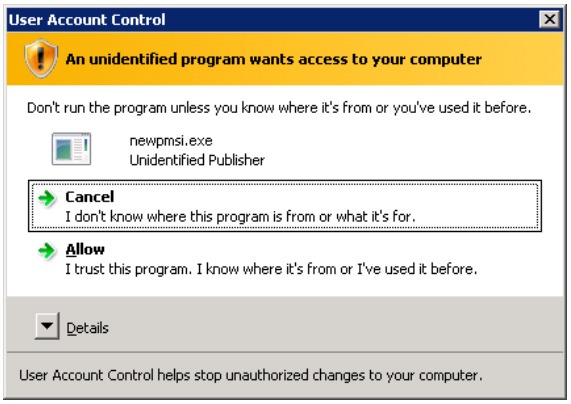
1. Logon to Vista as user with administrator rights.
2. Open Compatibility properties screen of NewPMSi.exe.
3. Click the “Run this program as an administrator” check box.

This may be accomplished by right clicking on NewPMSi.exe and checking the Run program as Administrator.

By default, the directory path of NewPMSi.exe is C:\Program Files\PMSi.

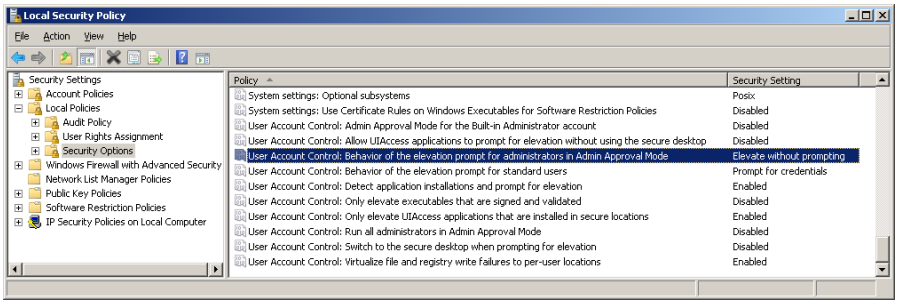


If when starting PMSi you get the following prompt:

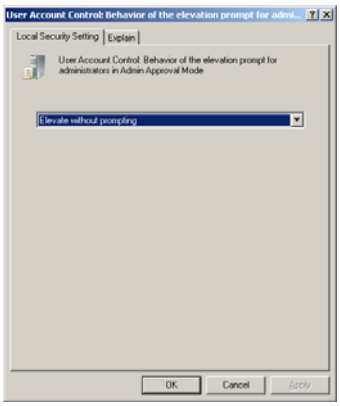


Then you may perform the following in order to prevent this prompt from appearing:

Control Panel → Administrative Tools → Local Security Policy → Local Policies → Security Options



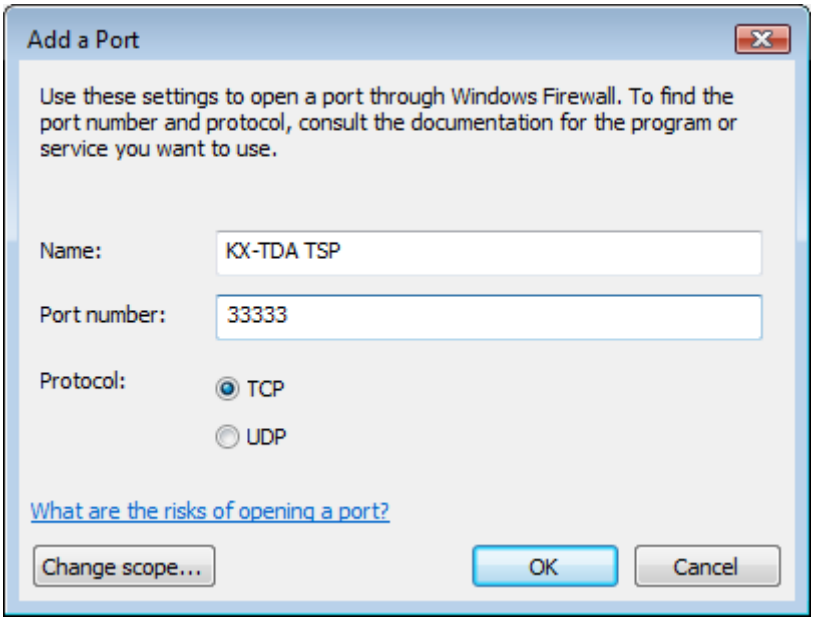
Double click on: User Account Control: *Behavior of elevation prompt for administrators in Admin Approval Mode*. Select *Elevate without prompting* and press OK



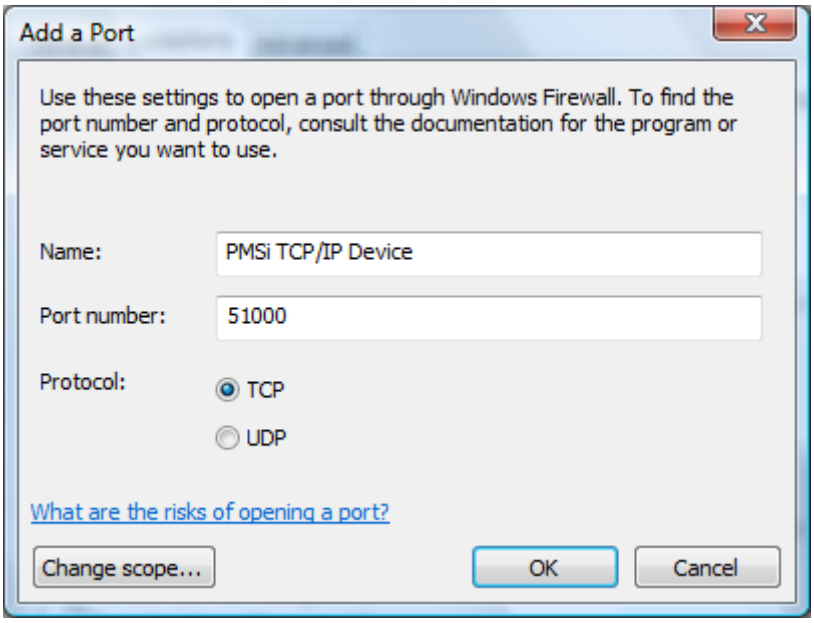
3.7. Vista Firewall

Completely disabling the Firewall in Vista is not an option. Vista seems to detect that it is unprotected, and, at an even lower level blocks incoming TCP connection attempts.

To enable TSP communications (when using TCP/IP connection) add the following firewall exception:



For each PMS TCP/IP device that is configured as a server, add the selected port to the Firewall exceptions:



In this example, the selected port that PMSi is waiting/listening for a connection, is 51000.

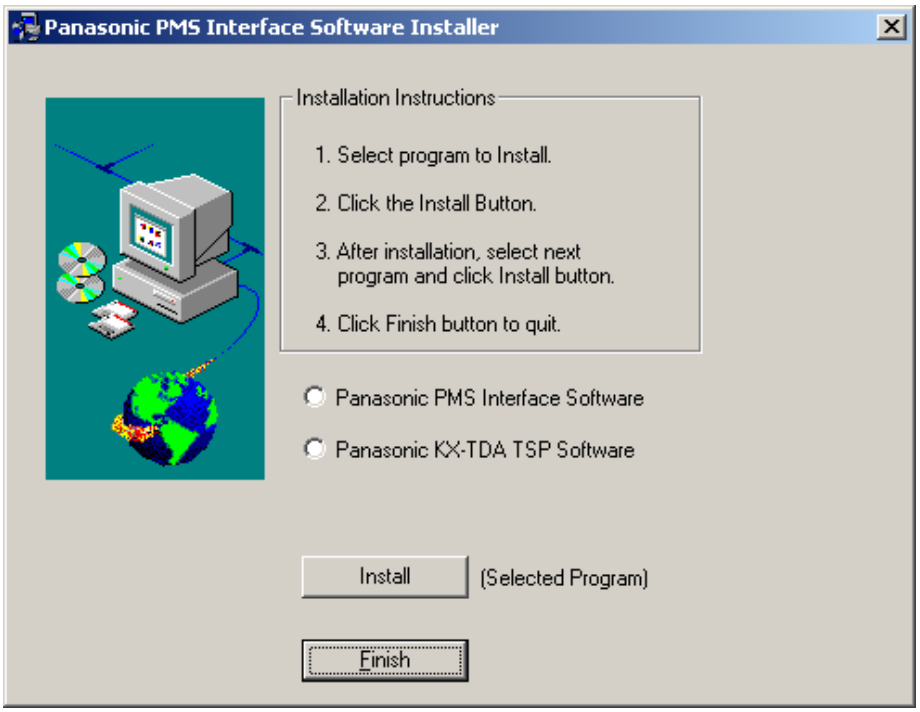
3.7.1. Installing Panasonic PMS Interface Software

On most Windows 2000 (English), Windows Server 2003 (English), Windows XP (English), or Windows Vista (English), setup will automatically start when the PMS Interface CD is loaded. If AutoPlay is not enabled on your system, follow the instructions below:

Note:

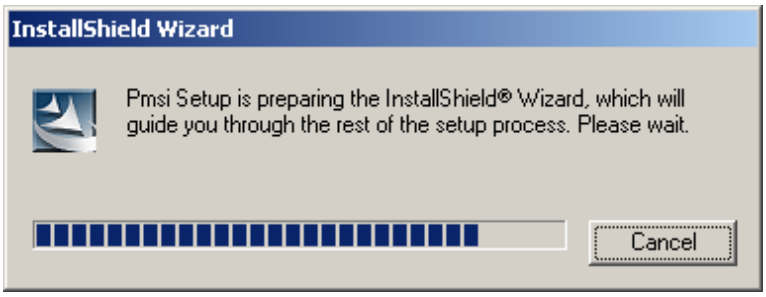
- **If the old version of PMS Interface Software is already installed on your personal computer, make sure to un-install it after saving the setting files as a reference and then install the new PMS Interface software. After the installation, apply the changes to the new setting file manually.**
- When installing the new PMS Interface Software, you must belong to administrator group, that is, you must be authorized as an administrator.

(a) Insert the Panasonic PMS Interface Software CD into the CD-ROM drive.
(b) Double-Click “index.html” in the root directory.
(c) Go to ***Software*** on the menu titles and choose ***Software Installer***.
(d) Click ***OK*** on the alert window.
(e) Then Click “install.exe” and follow the instructions on the screen.

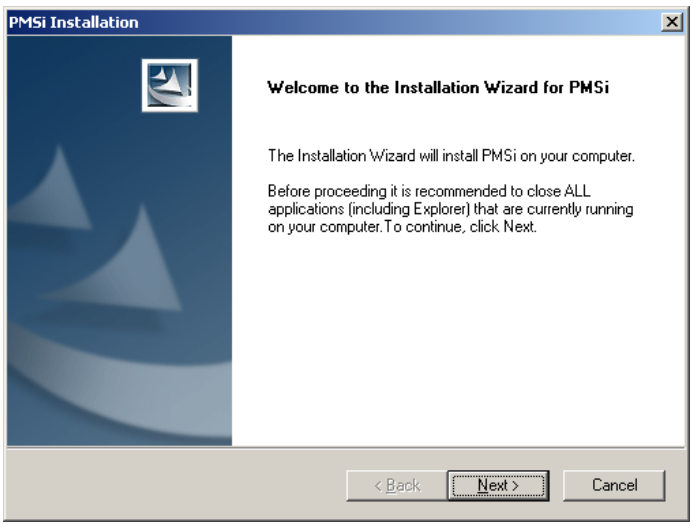


(f) Check on “Panasonic PMS Interface Software” and then click on the ***Install*** button. Follow the instructions below to complete the installation.

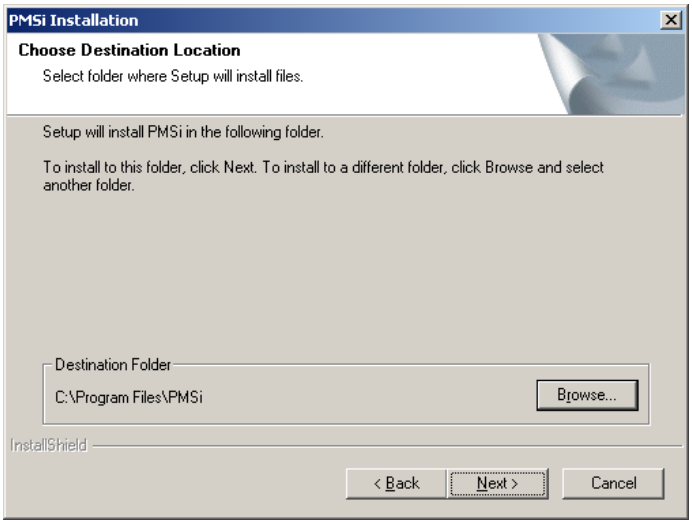
1. The Install Shield will initialize.



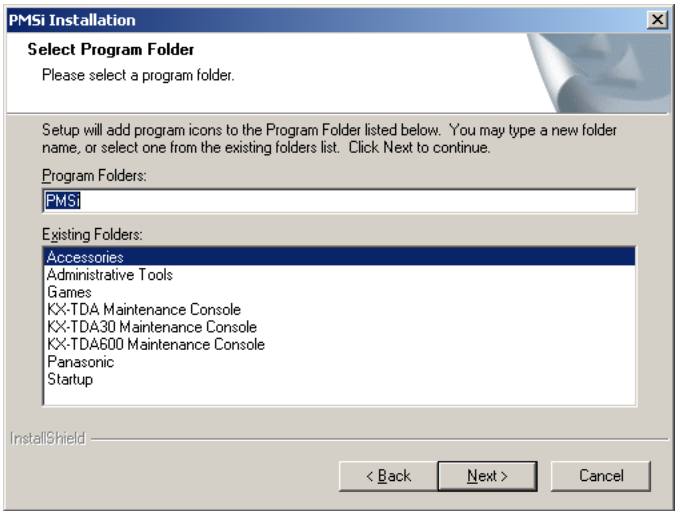
2. In the **[Welcome]** window, click ***Next*** to continue the installation. Or click ***Cancel*** to terminate the installation.



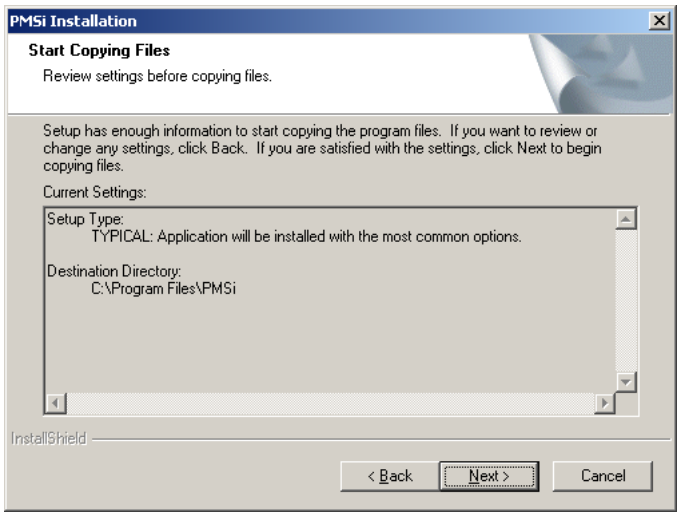
3. Click ***Next*** to start the installation with the default directory path or ***browse*** the desired directory.



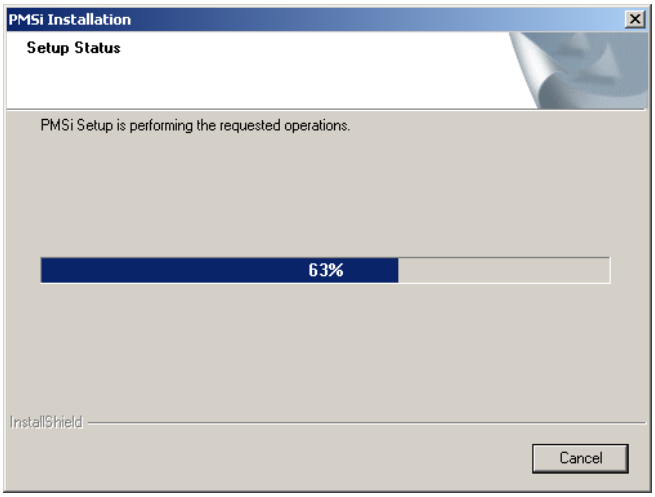
4. Click ***Next*** to continue the installation with the default program folder name.



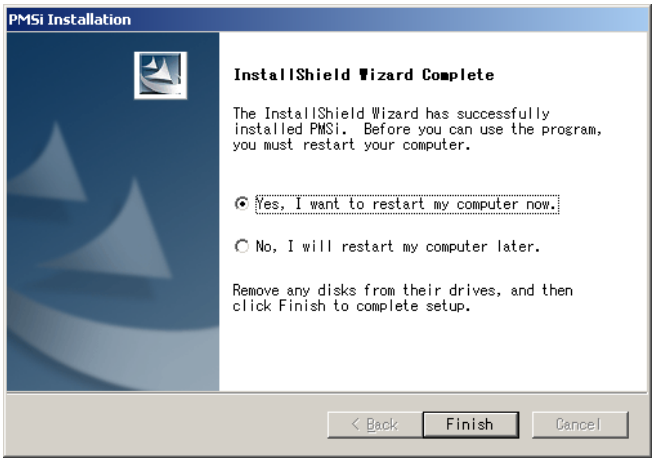
5. Click ***Next*** to continue the installation with the settings.



6. Wait until the files install completely.



7. After correctly registered in your Windows system, the installation completes. After restart the PC, follow 3.7.1 (a)-(d) and install the “Panasonic KX-TDA TSP” if necessary.

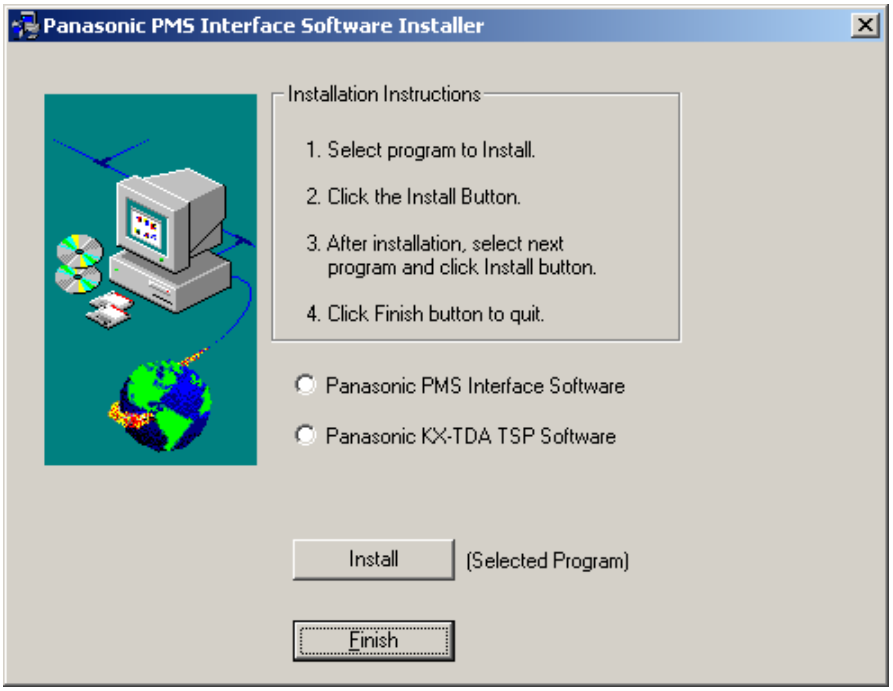


Note:

- Another dialog may show if the PMS Interface software had been previously installed and no need to restart.

- If the previous PMS I/F installation was cancelled in the middle and restarted afterwards, another dialog may show in this step and no need to restart. But when running the PMS I/F software, PMS I/F may request to install a missing driver itself and will continue normally after Windows restarts.

(g) If the Panasonic KX-TDA TSP was not installed on your computer, click on “Panasonic KX-TDA TSP Software” and then click the ***Install*** button. In order to install Panasonic KX-TDA TSP, please refer to “KX-TDA TSP Installation Manual”.



3.7.2. Uninstalling Panasonic PMS Interface Software

To uninstall PMS Interface, follow the procedure below:

- Uninstall PMS Interface software

  1. Close the PMS Interface application.

     Note: If you want to keep the PMS Interface configuration files for future use, save the PMS Interface configuration files (under PMSi directory with the suffix PMI or PMD) and any text or database files that may be required in future in a different directory and proceed to the steps below.
  2. Choose Settings/Control Panel from the Start menu.
  3. In the *Control Panel* open *Add/Remove programs*.
  4. From the program list select *PMSi* and click the *Add/Remove…* button.
  5. PMS Interface and its components will be removed.
  6. To finish the PMS Interface un-install, delete the PMSi directory.

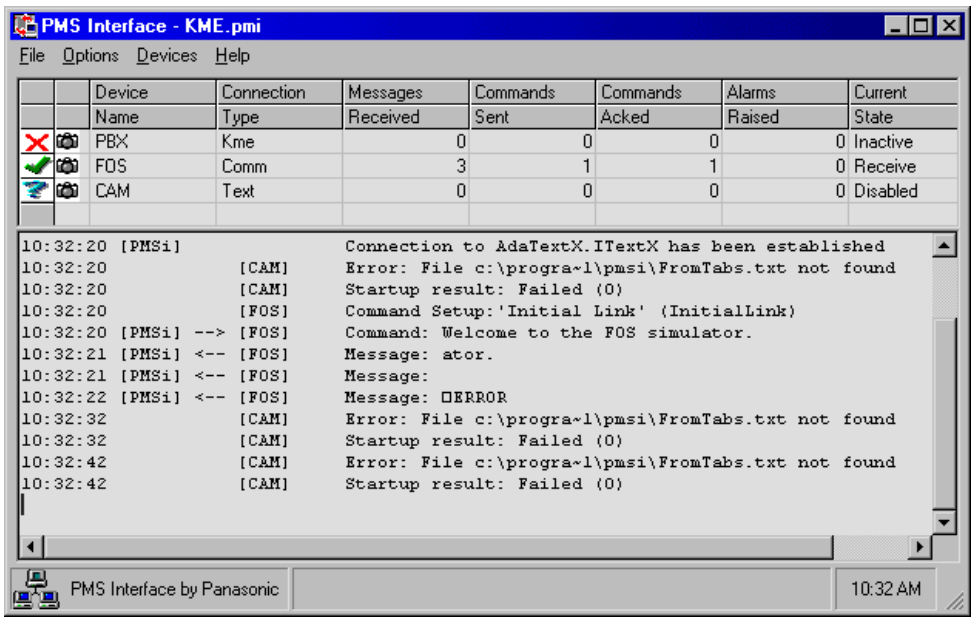
- Remove Panasonic KX-TDA TSP

  Note: Please make sure no other device/program is using the Panasonic PBX driver before the removal.

  1. Choose *Settings/Control Panel* from the Start menu.
  2. Open the *Add/Remove programs*.
  3. Select **Panasonic KX-TDA TSP**.
  4. Click Remove.

3.8. Starting PMS Interface

1. Choose ***Programs*** from the ***Start*** menu.
2. Choose ***PMSi***. The system's main window opens:



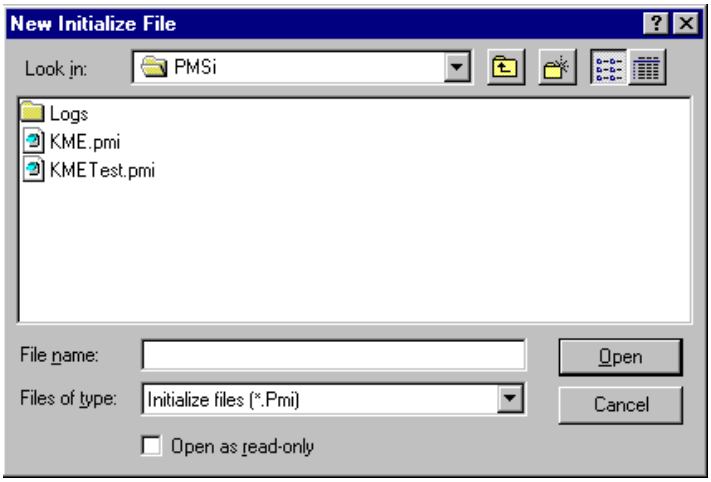
The devices you see on the device list are a part of the system's default configuration. See PMS Interface Specification for KX-TDA/KX-TDE Series (Panasonic Default). Or you may:

3. Edit the current PMS Interface configuration; OR
4. Start a new PMS Interface configuration (See *3.9*); OR
5. Open an existing PMS Interface configuration file (See *3.10*).

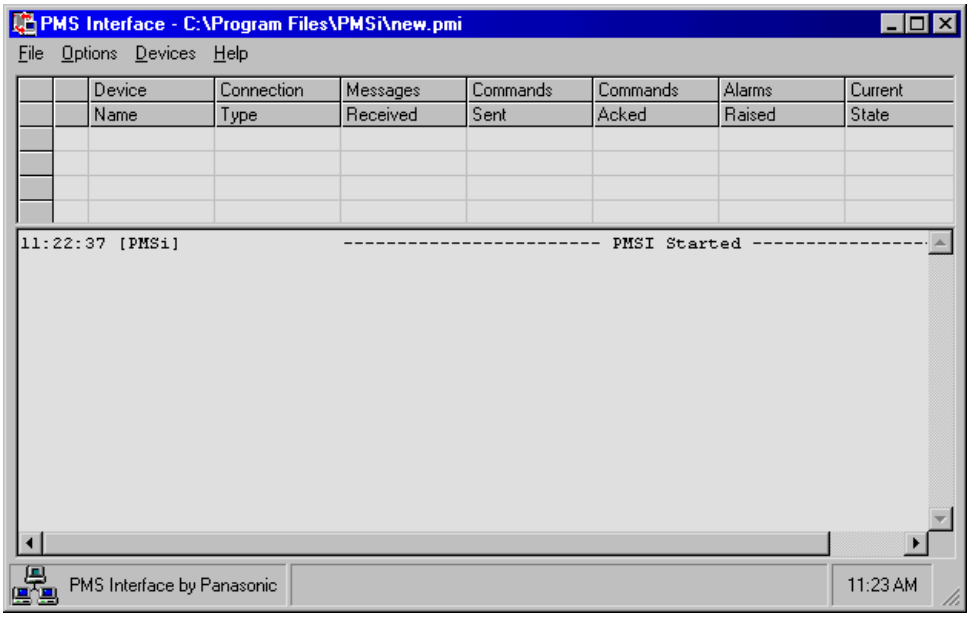
- indicates that the device functions properly.
- indicates that the device is disabled due to some problems.
- indicates that the device has been disabled through software.
- indicates that a connection attempt is in progress.

3.9. Starting a New PMS Interface Configuration File

1. Select ***File/New*** from the PMS Interface menu. The following window opens:



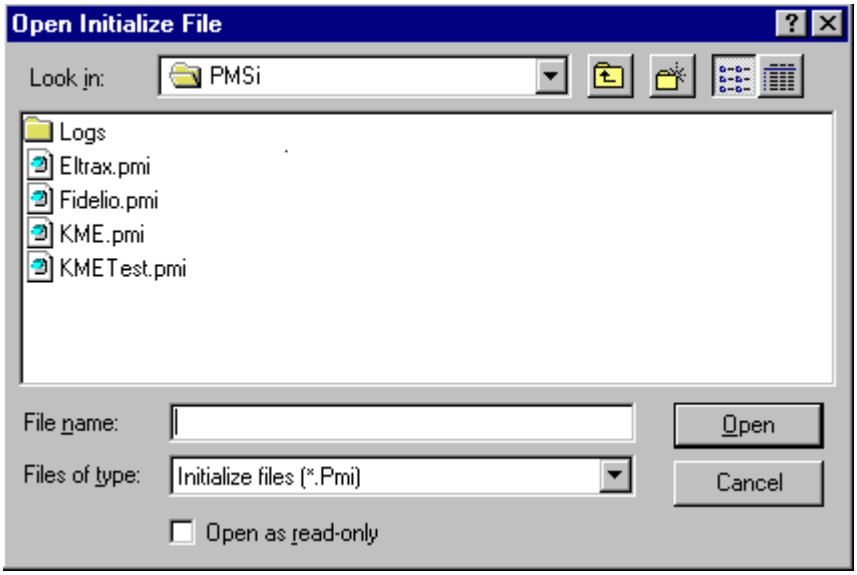
2. Key-in the new configuration-file's name and click ***Open***. The PMS Interface software will restart and open with a new configuration file:



3. Configure the PMS Interface, as you like. See *3.12* for details.

3.10. Opening an Existing PMS Interface Configuration File

Select ***File/Open*** from the PMS Interface menu. The following window opens:

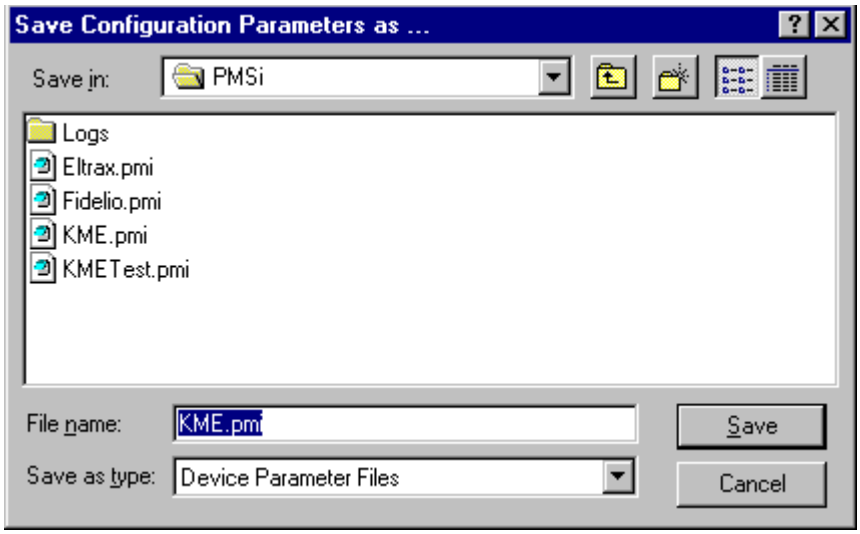


Select the desired configuration-file from the list and click ***Open***. The PMS Interface software will restart and open with the selected configuration file.

Configure PMS Interface, as you like. See *3.12* for details.

3.11. Save PMS Interface Configuration As another file

Select ***File/Save As*** from the PMS Interface menu. The following window opens:



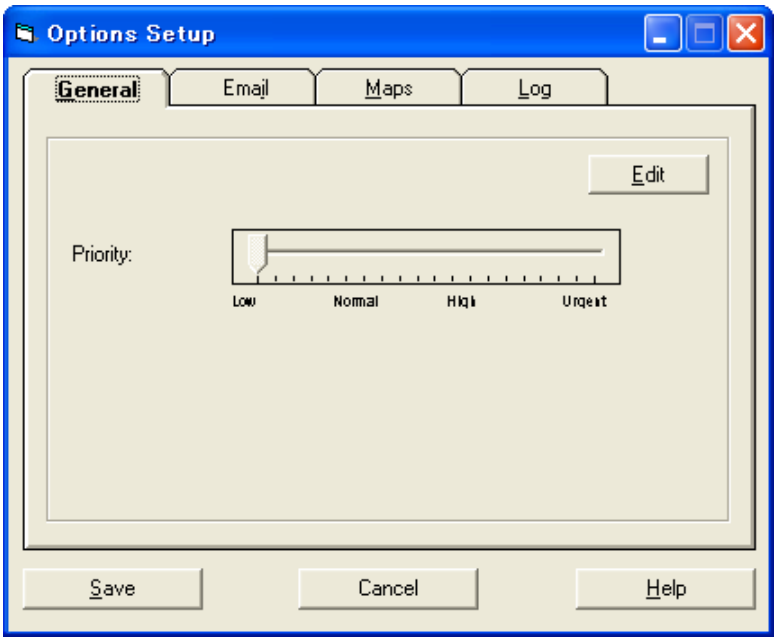
Enter the filename for the configuration file and click ***Save***. The PMS Interface software will save the current configuration into the new file and restart with the new created configuration file.

Configure PMS Interface, as you like. See *3.12* for details.

3.12. Configuring PMS Interface

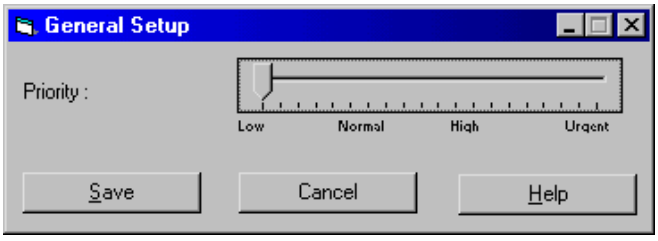
3.12.1. Configuring General PMS Interface Properties

1. Select ***Options/Define*** from the PMS Interface menu. The Options Setup window opens:



It is possible to set PMS Interface's overall priority (i.e., the percentage of PC resources allocated for PMS Interface). The default priority is 'Low'.

If PMSi is to deal with high volumes of data (1000 transactions a minute) then it may prove beneficial to increase the priority. Each click in the Priority scale increases PMSi CPU usage by a factor of 10. After, increasing the priority of PMSi, check the PMSi CPU usage in the Windows Task Manager. If it is at 100%, then you have raised the priority too high.

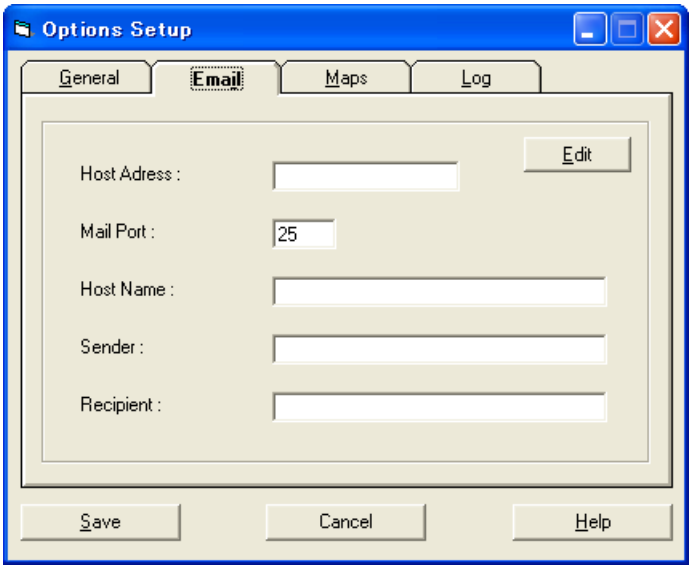


2. Click ***Edit***. The following dialog box opens:
3. Use the ***Priority*** slider to set the priority level.

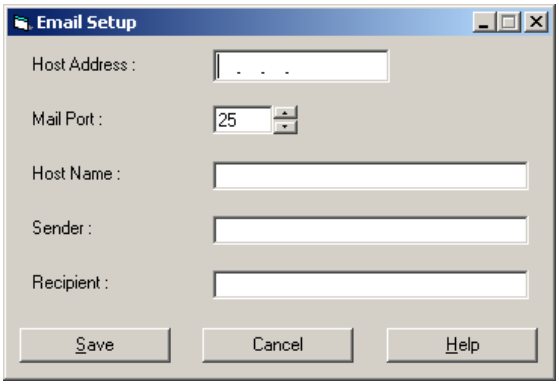
4. Click ***Save*** to accept the new priority, or ***Cancel*** to return to the previous setting.

   Note: To selectively raise the priority of a specific device (high volume device), see the General tab in the Device Setup. Choose the **General** tab.

   PMS Interface can send the notification to the email address according to the following setting in case of some alarms (optional): (See *4.5.3* for defining alarms)



5. Choose the ***E-Mail*** tab:
   Click ***Edit***. The following dialog box opens:



6. Setup the E-mail properties as desired.

   - **Host Address**: Put the IP address of the system the software is installed on (e.g. 212.123.111.222).
   - **Mail Port**: Do not change!
   - **Host Name**: Put the Mail Server name (e.g. mail.panasonic.co.jp), if this name is specified, then the Host Address will be ignored.
   - **Sender**: Put your Email address (e.g. pmsi@panasonic.co.jp) or anyone's address who would like to receive the reply.

- **Recipient**: Put the Email address to which an alarm message will be sent (e.g. PMSi_Service@panasonic.co.jp).

Note: PMS Interface supports only SMTP mail servers.

7. Click ***Save*** to accept the changes, or ***Cancel*** to return to the previous setting.To define remap tables, follow the instructions in chapter 4.5.7: "**Defining Remap (Translation) Tables**".

   Note: Remap tables convert data received from the source device into the corresponding data expected by the destination device. Normally the need for remap tables arises during device configuration, and not at this early stage.

8. To define remap tables, follow the instructions in chapter 4.5.7: "**Defining Remap (Translation) Tables**".

   Note: Remap tables convert data received from the source device into the corresponding data expected by the destination device. Normally the need for remap tables arises during device configuration, and not at this early stage.

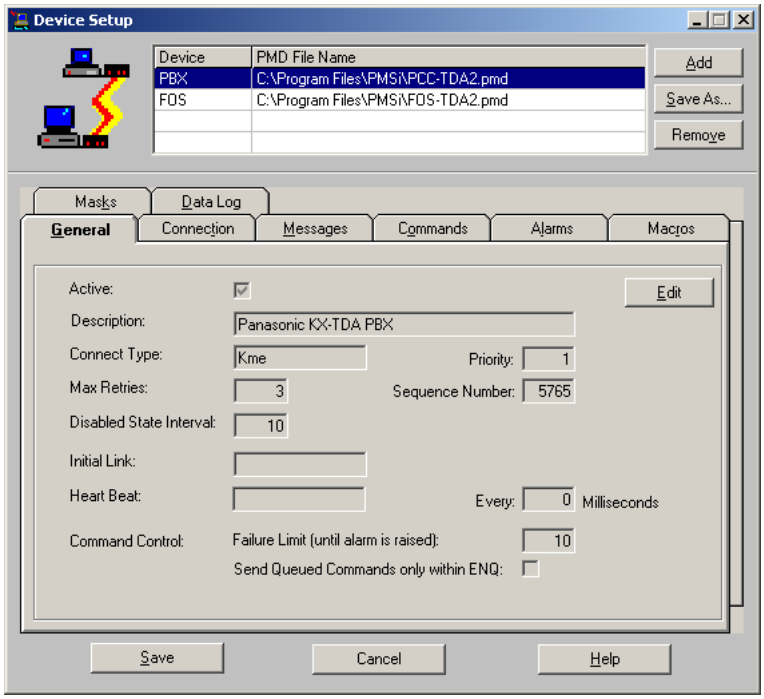
9. To define the Log file options, please refer to *5.2* "**The Log File**".

3.13. Configuring the Connected Devices

Now it is time to add devices to PMS Interface and configure them. Turn to chapter 4 for instructions.

4. Device Setup

This chapter explains how to add, delete or edit devices to the PMS Interface configuration, by using the ***Devices/Setup*** option.
Selecting ***Setup*** from the ***Devices*** menu opens the following window:



The devices are listed in the upper box. You may add new devices to the list (See *4.1)* or remove existing devices that are no longer needed (See *4.3*).

The attributes of the currently selected (highlighted) device are presented below in eight tabs, as follows:

1. ***General*** (See *4.4.1*): enables you to activate/deactivate the device, and to set such general information as device description, initial link, etc. This tab also presents the device's connection type.
2. ***Connection*** (See *4.4.2*): depending on the device's connection type, this tab presents the corresponding connection parameters and enables you to adjust them as necessary.
3. ***Messages*** (See *4.5.1*): enables you to register and characterize the incoming messages received from the device.
4. ***Commands*** (See *4.5.2*): enables you to compose command-sequences to be sent to the device.
5. ***Alarms*** (See *4.5.3*): enables you to set the inactivity period that will cause an alarm during each hour of the day, and to specify the number of successive alarms that will activate various corrective actions.
6. ***Macros*** (See *4.5.4*): enables you to define shortcuts to be used in commands.
7. ***Masks*** (See *4.5.5*): enables you to define date formats.
8. ***Data Log*** (See *4.5.6*): enables you to define a data log for a device (Available in the future).

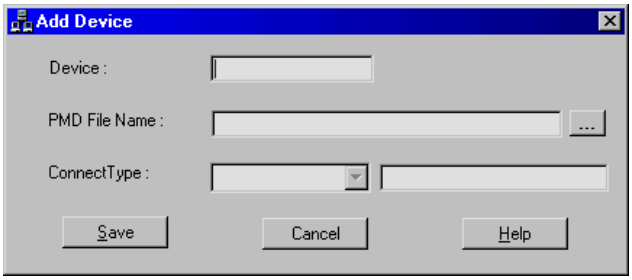
4.1. Adding a New Device

Introducing a new device to PMS Interface is done by loading the device's definitions file (*.PMD). PMD files for most device-types can be obtained from your dealer.

Note: The number of devices that can be used is limited to 10. Do not add more than 10 devices to the PMS Interface configuration.

To add a new device to the list:

1. Click ***Add***. The following dialog box opens:



2. Use the ***Device*** field to enter the device name (up to 7 characters) that reflects it purpose.
3. Use the ***PMD File Name*** to enter the device's PMD file name. You may either:
   - key-in the name of a **new** file (file name must include the suffix **".pmd"**);

     OR
   - **upload an existing file** by clicking on the adjacent browsing button, navigating to the desired file and selecting it (via a standard *Open* window).
4. If you chose to start a new PMD file (instead of uploading an existing file), you must select the proper connection type from the ***Connect Type*** drop-down list. See the *2.2* for supported devices and the corresponding chapter for details.
5. Click ***Save***. The device's attributes are loaded from its PMD file and the new device is added to the list.
6. You may edit most of the device's attributes whenever you like. For details, see 4.4*:* **Editing a Device***.*

4.2. Save Device definition in another file

To save the device definition in the list to another file (*.PMD).

1. Select the device from the list and click ***Save As***.
2. Enter the new PMD filename and click ***Save***.
3. The device will start again with the new PMD file.
4. Click ***Save*** to save the change and PMS Interface will restart and using the new PMD, or click ***Cancel*** to cancel the changes.

4.3. Removing a Device

To remove a device from the list:

1. Select the device to be deleted and click ***Remove***.
2. A confirmation box opens.
3. Click ***OK*** to remove the device from the list, or ***Cancel*** to keep it.

   Note: Even though the device was removed from the list, the corresponding PMD file is still exist under the PMSi directory.

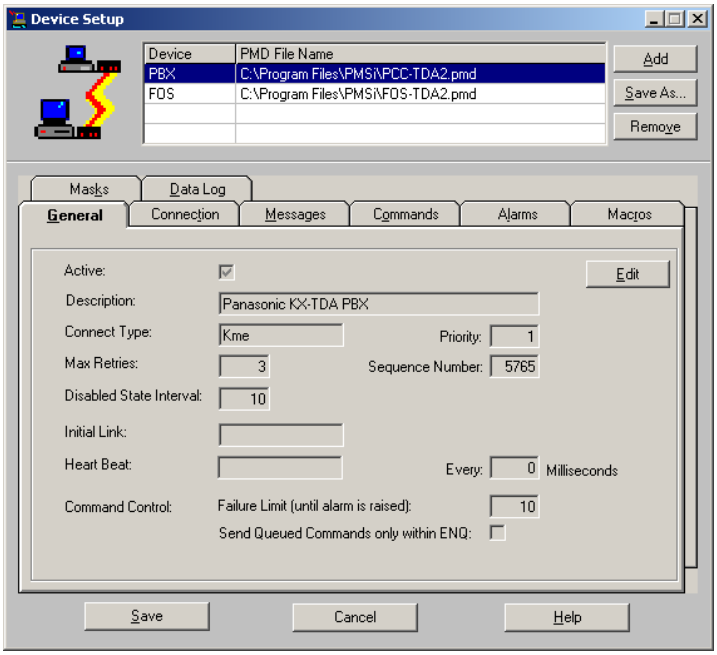
4.4. Editing a Device

To edit a device's definitions: (It is recommended to save the current device definition in another file before editing.)

1. Select the device from the device list.
2. Select the tab that contains the definitions you wish to modify (e.g., to add a message, select the ***Messages*** tab).
3. Edit the data as explained next.

4.4.1. Editing General Device Properties

The device's general properties are presented in the ***General*** tab:



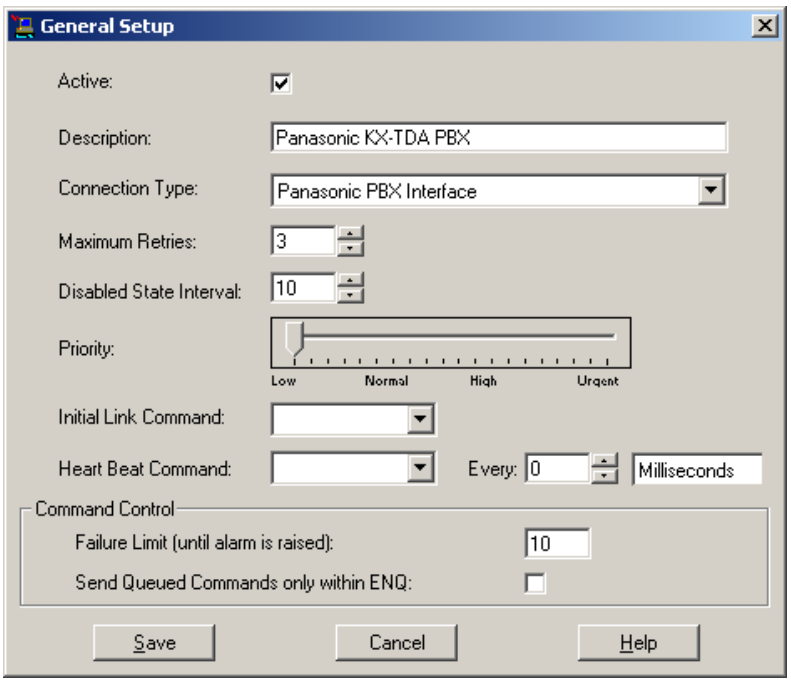
The information in this tab is the following:

1. ***Active:*** A checked box indicates that the device is enabled.
   In the main window, a disabled device is marked with an ✕.
2. ***Description:*** The device description (free text)

3. ***Connect Type:*** The type of connection between the device and the PC, as specified upon adding the device to the system (see *4.1* or *2.2*).
4. ***Maximum Retries:*** The number of attempts to establish connection with the device before restarting it.
5. ***Disable State Interval:*** Amount of time that a device will remain in the disabled state until a re-connect is attempted (Available in the future).
6. ***Sequence Number:*** Some devices accept commands that include sequence number. This field enables you to know the current sequence.
7. ***Priority:*** The priority of the device's messages over messages received from other devices. You may set the priority to any value between 1 (low) and 20 (urgent). The default is 1 (low).
8. ***Initial Link:*** The command (if any) that perform login and initialization for the device. This command can be selected from the device command list. (To make device commands, see *4.5.2* - Handling Outgoing Command Sequences.)
9. ***Heart Beat:*** The command that PMS Interface should send periodically in order to either notify the device that PMS I/F is alive and well or to check that the device is alive and well. This command can be selected from the device command list. (To make device commands, see *4.5.2* - Handling Outgoing Command Sequences.)
10. ***Every:*** The interval between "***Heart Beats***". In the edit screen (see below) Milliseconds, Seconds, Minutes and Hours may be selected for the heartbeat interval (Available in the future).
11. ***Failure Limit (until alarm is raised):*** When sending commands to a device, the number of failures (NAKs or inactivity timeout) until an inactivity alarm is raised for this device (Available in the future).
12. ***Send Queued Commands only within ENQ:*** This directive is only applicable for RS232 and TCP/IP devices. If checked, then PMSi will delay sending commands until an ENQ is received from the device (Available in the future).

To modify any attribute of the above:

1. Click ***Edit***. The following dialog box opens:

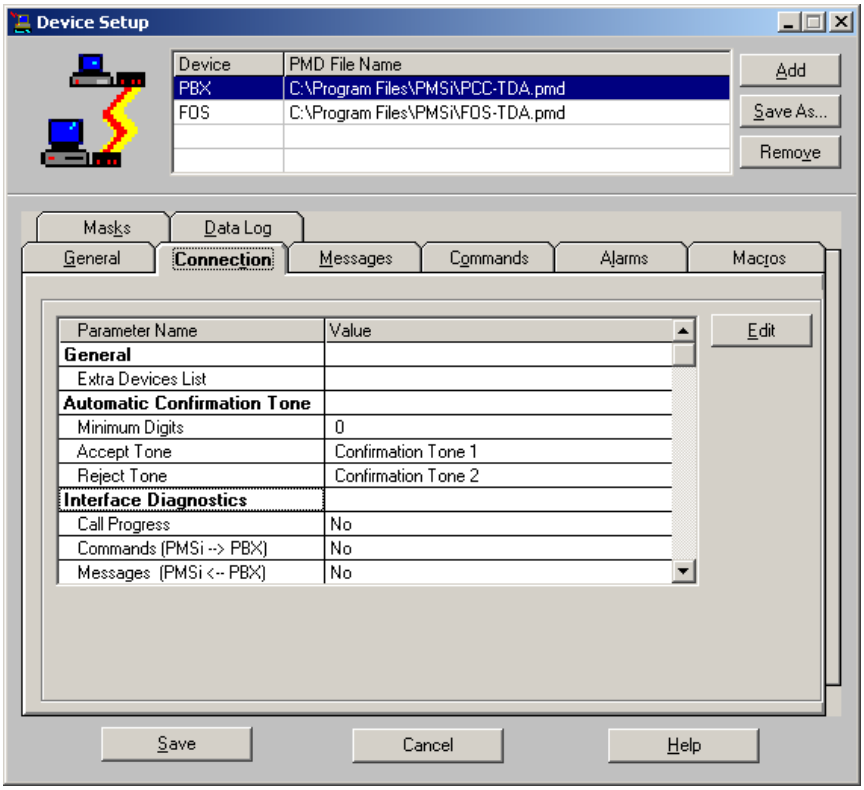


2. Modify the device's general attributes as required.
3. Click ***Save*** to update the device's PMD file, or ***Cancel*** to revert to the previous settings.

4.4.2. Setting Up the Device Connection

Once you added a device and set its connection type, you can define the device connection and set it **parameters.** (There is a different set of parameters for each connection type.)

The connection parameters are listed in the ***Connection*** tab, along with their current settings. The following example presents the parameters for Panasonic PBX Interface type:



The following chapters provide connection instructions (both for physical connection and for parameter setup) for each connection type:

- Chapter 6 describes KME: Panasonic PBX Interface.
- Chapter 7 describes COMM: RS-232C Port Connection.
- Chapter 8 describes TEXT: PMS Interface Specification for KX-TDA/KX-TDE Series. (TABS Call Accounting for Windows)
- Chapter 9 describes DB: DAO DB Interface.
- Chapter 10 describes PRNT: Printer.
- Chapter 11 describes DISP: Screen/keyboard of PC.
- Chapter 12 describes IP: TCP/IP Connection.
- Chapter 13 describes ADO: ADO Database Interface (Available in the future).
- Chapter 14 shows ASCII cord table.
- Chapter 15 shows VBA format directive.
- Chapter 16 describes the allowable range of settings.
- Chapter 17 contains Appendix:

  PMS Interface specification for KX-TDA/KX-TDE Series (Panasonic Default).

PMS interface specification for KX-TDA/KX-TDE Series (Fidelio).

PMS interface specification for KX-TDA/KX-TDE Series (Eltrax LANmark).

PMS interface specification for KX-TDA/KX-TDE Series (HIS).

4.5. Recommended setting procedures for message and command

PMS Interface interconnects multiple devices by translating a **message** received from a source device into a **command-sequence** sent to the destination device.

The command-sequence that is triggered by the message must be defined for each message.

To define the system the following sequence is suggested:

1. Define all the devices that have to communicate via PMS Interface
2. For each device define a list of the possible command-sequence that send to the device (see *4.5.2* for defining command-sections). The message from other device includes some fields from the message that trigger it. If you know the format of the message, fill the ***Send*** and ***Reply*** field, if not leave them empty and only fill in the ***Description*** and ***Command Name***.

   Tip: Give a short but meaningful Command Name to each command-sequence.
3. For each device define its messages that it will send to other devices (see *4.5.1* for handling the messages).
4. Return to the Command tab and define the ***Send*** and ***Reply*** fields for each command.

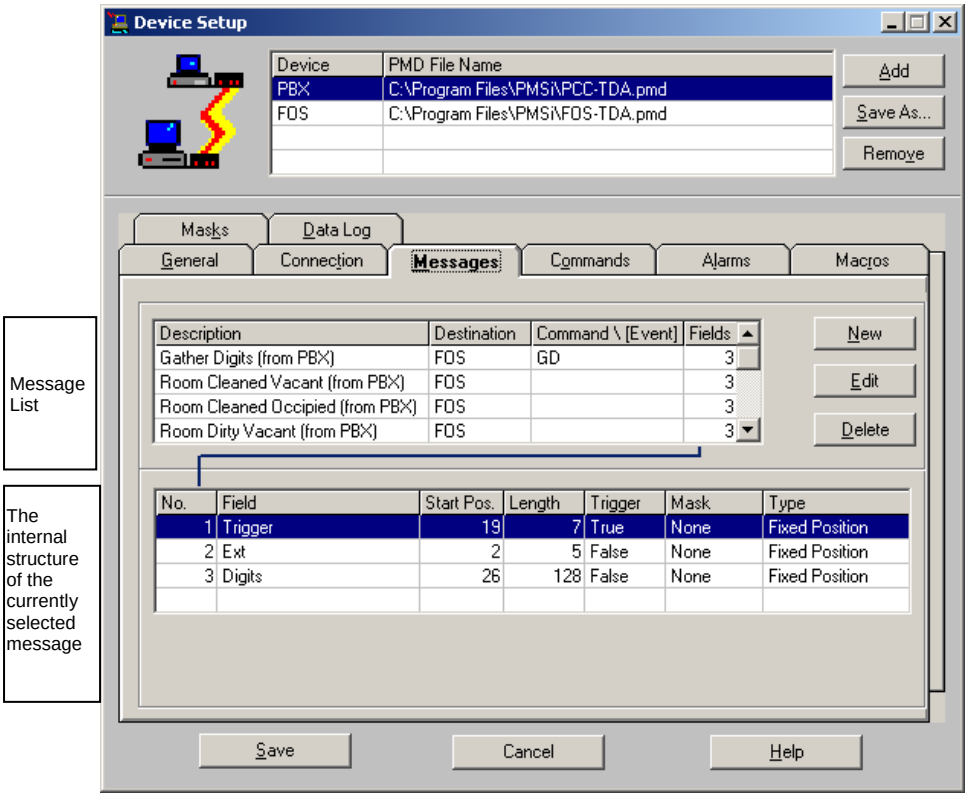
Note:

1. You must have a message to trigger a command. When there is one message that has to trigger several commands to different devices, the message has to be defined several times for each destination device.
2. Usually the messages from one device should trigger the commands in the other device (it needs to select the other device from the list and click its ***Command*** tab).

4.5.1. Handling Incoming Messages

The ***Messages*** tab serves as a translation table, specifying the destination device and the corresponding command-sequence for each message.

The ***Messages*** tab enables you to add, delete or edit messages according to the device documentation.



4.5.1.1. Add a New Message

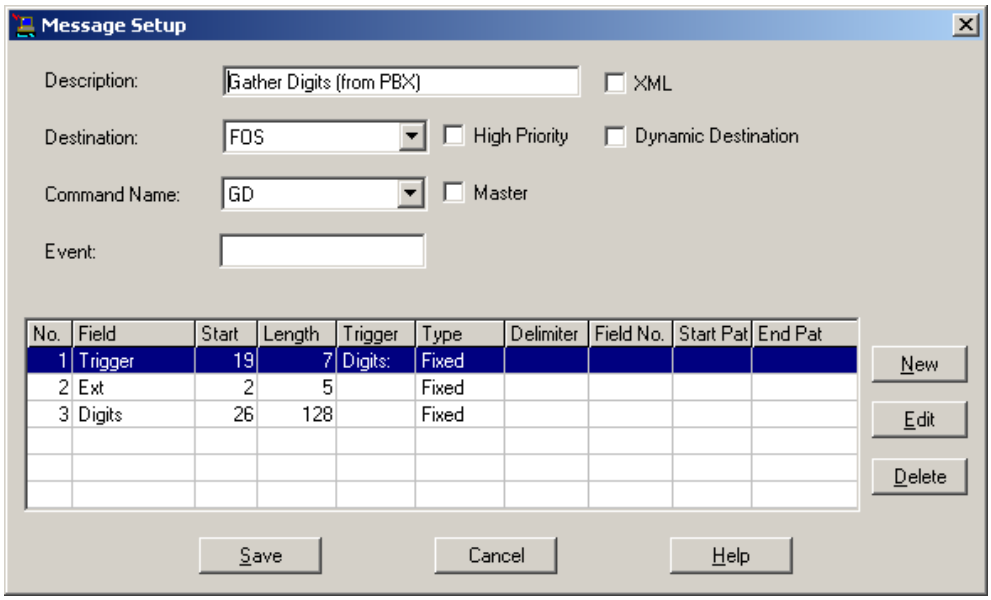
To add a new message:

1. Click ***New***. The **[Message Setup]** window opens (see below).
2. Configure the new message as explained in *4.5.1.2*: **Edit a Message**.
3. Click ***Save*** to add the new message to the device's message set.

4.5.1.2. Edit a Message

To edit a message:

1. Select the message to be edited from the message list and click ***Edit***. The **[Message Setup]** window opens:



2. Use the ***Description*** field to edit the message description, as you like.

3. The ***XML*** checkbox indicates that this message will be a valid XML document. When defining fields (see below) the XML options will be enabled (Available in the future).

4. From the ***Destination*** drop-down list, select the device that should receive this message. (Actually, the destination device only receives the fields of the message.) Note that if this message is an *event* (you specified an event name in the **Event** field) then the destination is assumed to be itself. But for clarity, you should select the Device name and set it to the device for which this message is being defined.

5. The ***Command Name*** drop-down list displays a list of the commands of the **destination device**. Select the appropriate command. (Skip this field in case the message is an event.)

   Note: To handle the destination device's commands list, select the device and open its ***Command Name*** tab. For details see *4.5.2*.

6. If the message is an event, use the ***Event*** field to specify its name (usually an abbreviation of the message name).

7. The ***High Priority*** checkbox is used to instruct PMSi to place this command in the high priority queue (of the destination device). All commands in the high priority queue will be sent to the device before any of the commands in the regular queue (Available in the future).

8. The ***Master*** checkbox is used to indicate that this message is to invoke a command on any device whose name is similar to the ***Destination*** device name specified above. This enables a single message to invoke the same command on several devices. A similar device is any device whose name contains the destination device name. For example: If the ***Destination*** device name is PBX, then in addition to sending the command to the PBX device, the command will be sent to device PBX2 and PBX3 as well as MYPBX4.

9. The ***Dynamic Destination*** checkbox indicates that the actual destination device to which the selected command should be set to will be taken from

a field in the message. The expected field is *_DestDevice_*. If within the message a field named *_DestDevice_* is defined, then the destination will be taken from that field. If the value of the destination field contains a list of devices (Device Names separated by a semicolon. For example, PBX; PBX2), then the specified command will be sent to each of the devices in the list.

10. The message layout is presented at the window's lower part. You can add, edit or delete data fields, as explained in *4.5.1.4* below.

4.5.1.3. Delete a Message

To delete a message from the message set:

1. Select the message to be deleted and click ***Delete***. A confirmation dialog box opens.
2. Click ***Yes*** to confirm deletion, or ***No*** to cancel.
3. The deleted message is removed from the message list. You can still cancel the deletion by clicking ***Cancel***, or click ***Save*** to save the change you have just made.

4.5.1.4. Add a Data Field

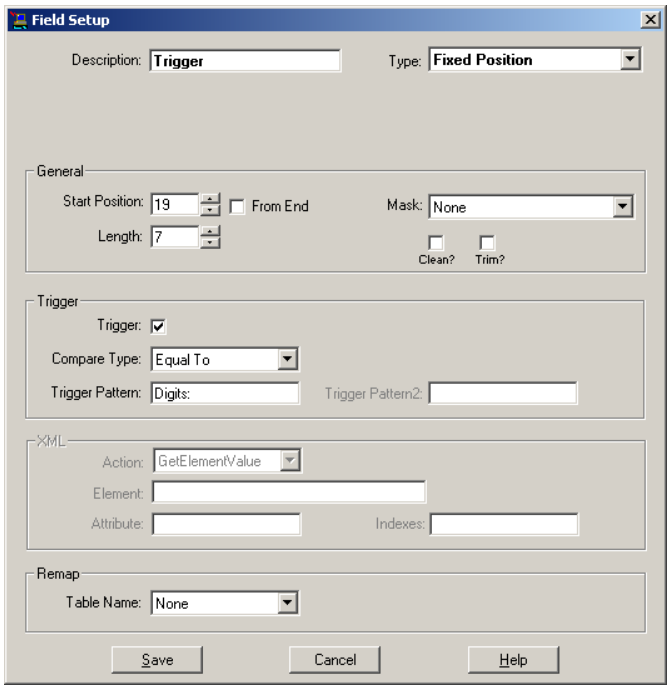
To add a new data field to the end of the message:

1. Click ***New***. The **[Field Setup]** window opens. See *4.5.1.5*.
2. Define the field characteristics as described in "Edit a Data Field" below.

4.5.1.5. Edit a Data Field

To edit one of the message's data fields:

1. Select the field to be edited from the field list and click ***Edit***. The **[Field Setup]** window opens:



2. Use the ***Description*** field to edit the field description.
3. Select the field's type from the ***Type*** drop-down list. A field type may be either:
   - ***Fixed Position:*** The start position and length of this field are fixed as specified in the '**Start Position**' and '**Length**' settings found below.
   - ***Delimited:*** where the field is separated from its neighbouring fields by a certain character called "delimiter". Used when a special character (or even a space) separates fields. Using this method, fields that are not in fixed positions may be isolated.

     Example 1:
     111;222;333;444444
     A " ; " delimiter would be specified. '111' is field no.1 and 333 is field no.3.

     Example 2:
     ;111;222;333;444444
     A " ; " delimiter would be specified. '111' is field no.2 and 333 is field no.4.

     Example 3:

     Case 1: **A B**
     Case 2: **A,,,,B**

     Although <space> can be used as delimiter but the handling of <space> is little different than the others.

     In case1, <space> is the delimiter and there is 4 spaces between A and B, but B is still field number 2, because multiple spaces together will treat as one delimiter. Unlike case2, comma is the delimiter and there is 4 commas between A and B, then B is field number 5.

     The leading and trailing spaces of the data will be skipped if using the delimiter type.

     The ***start position*** and ***length*** parameters further specify which portion of the data found within the boundaries are to be used.



The ***Delimited Group*** is enabled only for fields of the "delimited" type. ***Offset*** specifies a column (position) from PMS I/F should start to parse delimited fields (Available in the future). Sometimes used when beginning of data is in fixed positions and end of data string is variable. Specify the ***Delimiter*** character and the ***Field No***. within the message.

The delimiter should be one character only. Entering more than one character in the box will result in a **OR** combination. Example if **#$** were entered in the delimiter box, then PMS I/F will treat both **#** or **$** be a valid delimiter.

- ***Search:*** where the field is located within specified boundaries. The boundaries are defined by a ***start pattern*** and ***end pattern***. The **start position** and **length** parameters further specify which portion of the data found within the boundaries are to be used. If no End pattern is specified then the Length field is used.

  Example:

  EXT=111 TRUNK=333 DIALED=5551212

  To isolate the trunk number:

  - 'Start Pattern' should be set to 'TRUNK="
  - 'End Pattern' should be left blank
  - Start Position should be set to 1
  - Length should be set to 3

  Then the data 333 will be captured.



  The ***Search Group*** is enabled only for the fields of the "Search" type. Specify the ***Start Pattern*** and ***End Pattern*** for the search.

- **Constant**: Used in cases where a data field is not found in the record, but the invoked command requires a value in some field. The field defined of type **constant** will always be passed to the command with the value specified.



  The ***Constant Group*** is enabled only for the fields of the "Constant" type. Specify the ***Value*** for the constant.

4. In the ***General Group,*** the meaning of the ***Start Position*** field changes according to the field type:

   - For fields of type "Fixed Position", enter the field's position in relation to the beginning of the message.

     Example: The message

     ```
     Position:     12345678
     Message:      ABCDEFGH
     ```

     If set the Start position to 2 and length is 4, then the data captured will be "**BCDE**"

   - For fields of type "Delimited", enter the field's position in relation to the delimiter.

     Example: The message

     ```
     Field no.:    1  2    3
     Position:     12 1234 12
     Message:      AB;CDEF;GH
     ```

     If the Field no. is set to 2 and Start position to 2 and length is 3, then the data captured will be "**DEF**"

   - For the fields of type "Search", enter the field's position after the Start Pattern.

     Example: The message

     ```
     Position:        1234567890
     Message:      ASSBCDEFXXIJK
     ```

     If the Start Pattern is set to "**SS**" and Start position to 3 and length is 2, then the data captured will be "**DE**".

FromEnd: You could specify a variable field 1 (delimited by a comma [44]) Offset 0 with the FROMEND checked (Available in the future).

Mask: The mask field instructs PMS Interface to validate and standardize the field. This is most useful (and necessary) when processing a date field from a device's message and validating the numeric data. Possible Masks are as follows:

Type		Mask Description
Date	Delimited	Any month, day year combination with delimiter (12/17/99 or 12/9/2000). Combination included M/D/Y, D/M/Y, Y/M/D, Y/D/M, M/D and D/M, etc.
Date	Non-delimited	Combination included YYMMDD, YYYYMMDD, YYDDMM, MMDDYY, DDMMYYYY, … etc.
Date	PCDATE	Get the current date from PC.
Time	Delimited	Time format with delimiter (10:34:22 or 23:34:55) H:M:S, H:M.
Time	Non-delimited	Time format without delimiter. HHMMSS, HHMM.
Time	PCTIME	Get the current time from PC.
Date	Device Default	Use the mask specified in the Device's Mask Setup screen
Numeric	Number	Validates the field. If a non-numeric number is detected, a –1 is returned to the command. If the numeric number is needed in the trigger, this mask must be set.
None	Character	Use for all characters and numerics
Duration	Delimited	Duration format with delimited (10:34:22). H:M:S, H:M.
Duration	Non-delimited	Duration without delimited (103422). HHMMSS, HHMM.
Time AM/PM	Delimited	Time format with delimited (11:22 AM). H:M:S AM/PM, H:M AM/PM.
Time AM/PM	Non-delimited	Time format without delimited (1122 AM). HHMMSS AM/PM, HHMM AM/PM.

Note: All of the Date masks standardize the date into YYYY-MM-DD format. If an invalid date is detected a date of 1899-12-29 is returned. 99:99:99 will be returned if Time format received was invalid.

5. The ***Clean? Checkbox*** when checked instructs PMSi to remove all non printable characters from the field (such as CR and LF) according to the field type (Available in the future).

6. The ***Trim? Checkbox*** when checked instructs PMSi to remove all leading and trailing spaces from a field (Available in the future).

7. In case the field serves as the command identifier, check the ***Trigger*** box, then key-in the identification string in the ***Trigger Pattern*** boxes.
Compare Type: Use this field to set the criteria for checking this field against the Trigger Pattern(s) specified below. Possible settings for this field are as follows:

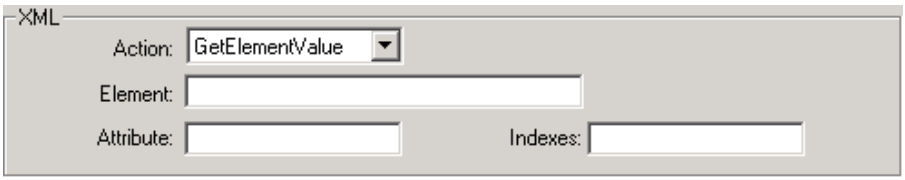
Compare Type	Description
Equal To	The content of the field exactly matches the value specified in the Trigger Pattern.
NOT Equal To	The content of the field not equal to the value specified in the Trigger Pattern.

In Range	The contents of the field fall with the range specified in the Trigger Patterns. For example: '5' is in the range of '1' – '9' ('1' and '9' are also in the range)
NOT in Range	For example: '8' is NOT in the range '1' – '5'
Found Within	The contents of the field are found within the value specified in the Trigger Pattern. For example: 'A', 'B', 'C', 'AB', 'BC' and 'ABC' is found within 'ABC'.
NOT Found Within	For example: 'AC' is NOT found within 'ABC'.
Contains	The contents of the field are checked to see if it contains the specified value in the Trigger Pattern. For Example: Field value 'ABC' contains either a 'B' or a 'BC'.
Does NOT Contain	Field value 'ABC' does not contain neither a 'D' nor an 'AC'.
Is Empty	Checked if the specified field is empty (no characters). This trigger condition will work for delimited and search field type. For fixed fields, this trigger condition will work only if the Trim directive is checked.
Is NOT Empty	Checked if the specified field is not empty (one or more characters).
RegEX	Checked if the specified field successfully matches the regular expression specified in the Trigger Pattern.
NOT RegEX	Checked if the specified field does **not** match the regular expression specified in the Trigger Pattern.

Note: For Equal To, NOT Equal To, In Range and NOT in Range, the length of the trigger pattern should be same as the length defined in the ***General Group – Length***.

All comparisons are case sensitive. If more then one trigger fields are defined, they are in **AND** relation. The command will be triggered only if **ALL** defined triggers fields matched.

8. **XML:** Used in cases where a data field is to be extracted from an XML document (Available in the future). The XML Group is enabled only when the Message is flagged as XML (see Message Setup above).



Actions:

- GetElementValue – to retrieve the value of a specified element.
- GetChildName – to get the name of the first child in the specified element.
- GetNodeXML – to retrieve the entire node specified by element.

Element:

- Element will return the 'value' of the specified element. If the Attribute field is specified, then the value of the attribute of the specified

element will be returned instead. The index is used in the case where there is more than one occurrence of the specified element.

Attribute:
- The optional name of an attribute. If specified, then the value of the attribute will be returned instead of the element value.

Indexes:
- In the case where there are more than one occurrence of an element in a document or node, the index value indicates which occurrence to use.

9. The value of the field selected here no. n will be remapped according to the Remap (with the remap table name same as tablename) definition. Select **None** if no translation is needed. (See *4.5.7* Defining Remap (Translation) Tables)
10. Click ***Save*** to save the field changes, or ***Cancel*** to revert to the previous settings.
11. To add more data fields, see 4.5.1.4 for details.
12. Click ***Save*** to save the message, or ***Cancel*** to revert to the previous settings.
13. To add more messages, see 4.5.1.1 for details.
14. Click ***Save*** to save the changes, or ***Cancel*** to revert to the previous settings. PMS Interface software will restart with the new settings if you save the changes.

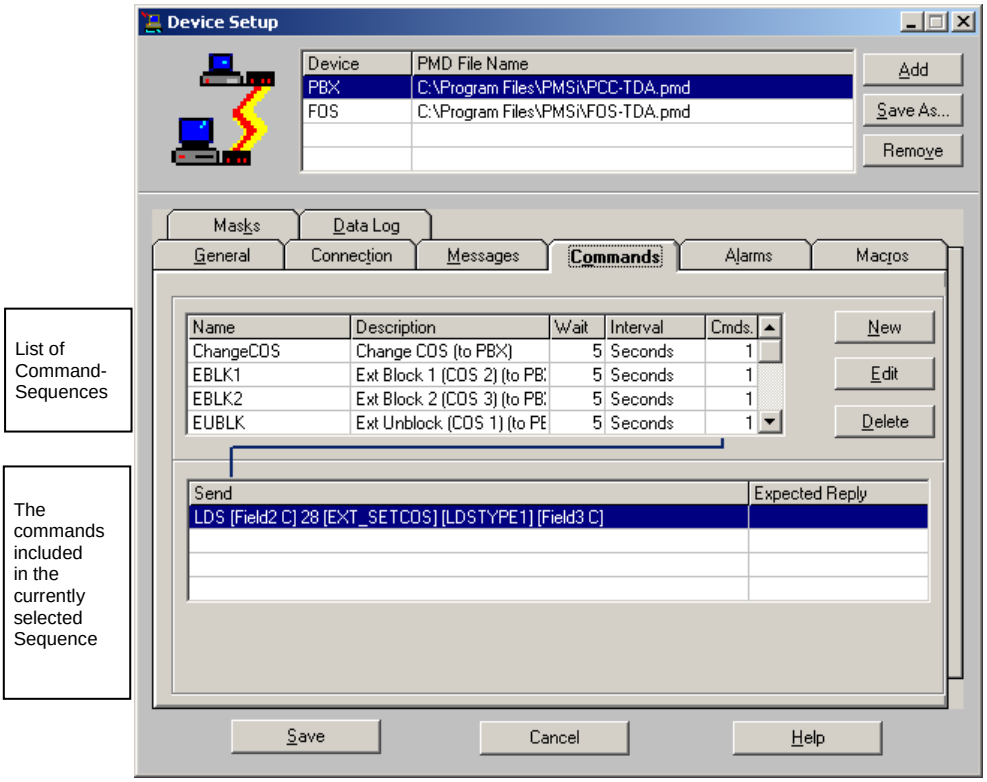
4.5.1.6. Delete a Data Field

To delete one of the message's data fields:

1. Select the field to be deleted from the field list and click ***Delete***. A confirmation dialog box opens.
2. Click ***Yes*** to confirm deletion, or ***No*** to cancel.
3. The deleted field is removed from the field list. You can still cancel the deletion by clicking ***Cancel***, or click ***Save*** to save the change you have just made. PMS Interface software will restart with the new settings if you save the changes.

4.5.2. Handling Outgoing Command Sequences

PMS Interface translates a **message** received from a source device into a sequence of up to 99 **commands** sent to any one of the destination devices. (The list of device-commands is supplied with the device).
The ***Command*** tab enables you to compose or edit these command sequences:



For each command-sequence, the following information is presented:

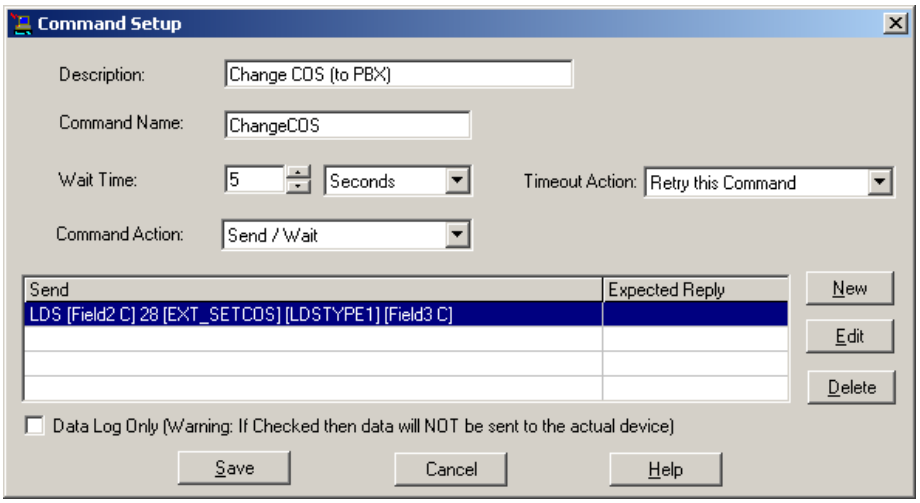
1. ***Name (Command Name)****:* the sequence name (for PMS Interface usage).
2. ***Description****:* the sequence description.
3. ***Wait***, ***Interval****:* The amount of time that PMS Interface will wait for a response. The wait interval is only used if an '*expected reply'* is specified in a command sequence.
4. ***Cmds.****:* the number of commands in this sequence. The commands are listed in the box below.

4.5.2.1. Compose a New Command Sequence

1. Click ***New***. The **[Command Setup]** window opens (see *4.5.2.2*).
2. Set the ***Description***, ***Name*** and ***Wait Time*** fields and compose the command-sequence by **adding** device-commands one by one. Adding, deleting and editing device-commands are described in *4.5.2.2*.
3. Click ***Save*** to add the new sequence to the device's command-sequences set, or ***Cancel*** to purge the new sequence.

4.5.2.2. Edit a Command-Sequence

1. Select the command-sequence to be edited from the command list and click ***Edit***. The **[Command Setup]** window opens:



2. In the ***Description*** field, key-in the sequence description.
3. In the ***Command Name*** field, key-in the command-sequence's name to be used by PMS Interface (you may use all characters except for commas ","). The name must be unique within this device. When defining messages, it is this name that will be listed in the ***Command Name*** drop-down list.
4. Use the ***Wait Time*** fields to set the amount of time that PMS Interface will wait for a response. The wait interval is only used if an '*expected reply'* is specified in the command sequence. If a reply is not received within the time specified, PMS Interface will re-send the command sequence from the beginning of the sequence.
5. Based on the Max Retries defined in the General tab, PMSi will attempt to send a command several times until a timeout condition is raised. The ***Timeout Action*** field specifies what action PMSi should take in the event that it fails to send a command (e.g. received a NAK while waiting for an ACK, or no response was received). Possible timeout actions are as follows:

   - Retry this Command – Instructs PMSi to retry sending this command.
   - Skip Only on Active Device – Instructs PMSi to skip this command only if there was some activity on the device (an ENQ or some response other than the expected response was received). If the device was not active then this command will not be removed from the queue.
   - Skip Even on Inactive Device – In all cases this command will be removed from the queue.
   - Re-Queue on Active Device – If the device is active, re-queue this command at the end of the queue. If the device is in-active then this command will be retried.

Note: The “skip this command” will be performed only when there are some responses from the target device (although not the expected one). If there is no response from the device, it is considered that the device is down. In such case, PMS Interface will not skip the command and keep sending it to the device until the device responds.

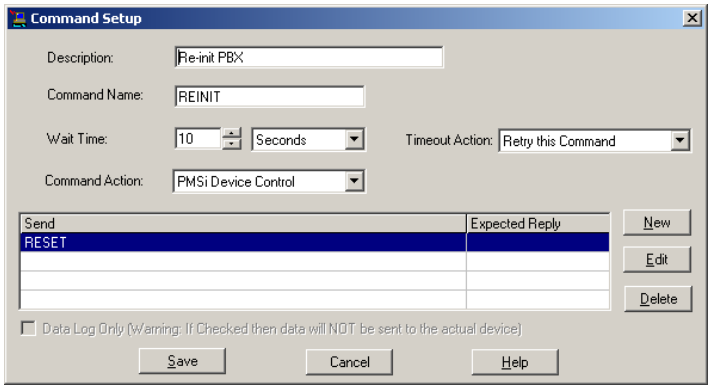
6. Use the ***Command Action*** to instruct PMS Interface what to do with the command specified below. The two possible actions are as follows:

   - Send / Wait: This action instructs PMS Interface to send the strings specified below and if indicated wait for responses.

     Data Log Only: If checked, then this command is not actually sent to the device. But the command is logged in the DataLog (if commands have been selected to be written to the DataLog) (Available in the future).

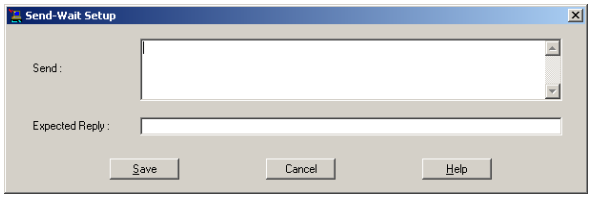
   - PMSi Device Control: This action instructs PMS Interface to use the command specified below as a command to control PMS Interface. Valid PMS Interface control commands are as follows:

     o RESET – Instructs PMS Interface to re-initialize the device.



7. To add device-commands to the end of the sequence:

   ♦ Click ***New***. The following dialog box opens:



   ♦ In the ***Send*** box, enter the name of a device-command or a PMS Interface command. A list of available PMS Interface commands is given in *4.5.2.4* – PMS Interface Commands below. In the case of serial devices (COMM, Printer, or Display) this is the actual text to be sent. For example:

   PBXCOS [Field2] [Field3][13][10]

   Assuming that Field2 is 202, Field3 is 2 (because that was the data received from the PBX “COS Change” message) then PMS Interface will send ‘PBXCOS 202 2’ followed by a carriage return and a line feed.

- In the ***Expected Reply*** box, key-in the expected reply to the command (refer to the device documentation, in case of a device command, or to *4.5.2.4* – PMS Interface Commands below, in case of a PMS Interface command). For example if the device responds with an ACK character, then you would set this field to [6]. Or you can set "OK", if the device give a text reply.
  The command can also set to wait for an *Event* from the target device. Set [EVENT ***EventName***] in the Expected Reply field where the ***EventName*** is the name set in the *Event* field of message. (See *4.5.1.2* – Edit a Message.)

  There are differences between waiting for a **string** and waiting for an **event**.

  1. If the system waiting for a **string** (by putting the **string** in the ***Expected Reply*** field). All messages and commands processing for that device will not be processed until the expected string is received from the device or until the timeout.

  2. If the system is waiting for an **event** (by putting [EVENT ***EventName***] in the ***Expected Reply*** field) then only that command processing for the device is suspended. New commands to this device will be queued. Messages received for this device will be processed.

  The use of "*wait for string*" or "*wait for event*" should according to the FOS specification.
  For example, the "call charge posting" to the FOS may need 2 phases to complete.
  First the PMS Interface post the call charge record to FOS, although FOS replied an ACK immediate after received the call charge record, but the call charge posting process not yet complete without an Post Confirm message from the FOS.
  The Post Confirm message may be issued from the FOS a few minutes later when FOS finish validate the call charge record. Then in this case, we need to set the Post Confirm message as an Event so that the intermediate messages from FOS (like check in/out) will be processed and the further commands to FOS will be queued.
- Click ***Save*** to save the new command, or ***Cancel*** to cancel the addition.
- Click ***Save*** to save the new command sequence, or ***Cancel*** to cancel the change.
- Click ***Save*** to save the changes, or ***Cancel*** to cancel.

8. **To edit a command:**
   - Select the command to be edited.
   - Click ***Edit***. The **[Command Setup]** dialog box opens (see above).
   - Edit the ***Send*** and ***Expected Reply*** fields as explained in step 7 above.
   - Click ***Save*** to save the changes, or ***Cancel*** to revert to the pervious setting.

9. **To delete a command from the sequence**:
   - Select the command to be deleted and click ***Delete***.
   - Click ***Yes*** to confirm deletion, or ***No*** to cancel.
   - Click ***Save*** to save the changes, or ***Cancel*** to revert to the pervious setting.

4.5.2.3. Delete a Command-Sequence

To delete a command-sequence from the command set:

1. Select the command to be deleted and click ***Delete***. A confirmation dialog box opens.
2. Click ***Yes*** to confirm deletion, or ***No*** to cancel.
3. The deleted command is removed from the command list. You can still cancel the deletion by clicking ***Cancel***, or click ***Save*** to save the changes you have just made.

4.5.2.4. PMS Interface Commands

Command Directives

FreeText	**Any free text.**
[Field***n*** format] or [F.***fieldname*** format]	The value in the field number ***n*** (or ***fieldname***) defined in the message body. The actual value will replace the [F…] directive in the command. Before the value is placed in the command, it will be altered by the optional format (is specified) See examples below.
[BCC **t s e**]	Calculate a Binary Check Character where **t** is the checksum type (eg. 1=XOR 2=ADD). See table below for a complete list of supported BCC types. **s** and **e** are optional. **s** overwrites the default value (which is 1) of the Start Position for calculating the checksum. If there is an STX at the beginning of the command then **s** can set to 2 (to ignore the STX); otherwise it is set to 1. **e** overwrites the default value (which is 0) of the the End Position for calculating the checksum. If not to include the last character (eg. ETX), **e** should be set to 1. Otherwise **e** should be 0. See example 8 below.
[DATE !date format!]	Current PC date (!date format! - is optional, for example !D! for device mask of !mm/dd/yy! for month/day/year format, and mm-dd-yyyy, yy/mm/dd, …etc are also supported)
[TIME !time format!]	Current PC time. (!time format! - is optional for example !hh:mm! for hours and minutes only)
[STX]	Start of text (ASCII code 02)
[ETX]	End of text (ASCII code 03)

[SEQNO **n** format]	A **n**-digit sequence number that will be added to the command where it takes from the sequence no. recorded in the device's ***General*** tab. See example5 below.
[Field**n** Remap**v** format]	The value of field no. **n** will be remapped according to the Remap**v** table definition. (See *4.5.7* -Defining Remap (Translation) Tables for details).
[Field**n** Remap.***tablename*** format]	The value of field no. **n** will be remapped according to the Remap (with the remap table name same as ***tablename***) definition.
[STRIP **c**]	Take out all the characters **c** from all the command string before this mask. See example 6 below.
[CUT **n m**]	Remove characters in position **n** to **m** from the command string before this mask. See example 7 below.
[DELAY *seconds*]	Instructs PMSi to delay the specified number of seconds before proceeding.
[TL.*templateFilename*]	Loads a text contained in the specified file as the text of this command. When used, this is typically the first directive of the command.
[TR.*tagname value*]	Replaces the specified tagname with the specified value. The value may be any valid directive except for another TL or TR. [TR.^ACCT^ F.Account] will replace any occurence of ^ACCT^ (in the command) with the value of the Account field.
[Macro]	Where Macro is any macro name in the devices macro table. The value of the macro will be inserted. See *4.5.4* for defining the Macro.
[***ddd***]	The ASCII value indicated by the decimal value ***ddd*** will be inserted. [13]=carriage return, [10]=line feed, [32]=space, [44]=comma, [5]=ENQ, [6]=ACK and [21]=NAK. For new line insert [13][10]

Note:

- "format", whenever indicated in a command directive, is optional.
- Although all of the above may be used in the Expected Reply field, more likely you will be using only the FreeText, [Macro] and [ddd] directives in the Expected Reply definition.

Bcc Types

Type	Description	Width (bytes)
1	XOR	1
2	ADD	1
3	CRC16	2
4	CRC32	4
5	CCITT	2
6	CRC16SUM	2
7	CRC32SUM	4
8	Adler	4
9	CRC16REV	2
10	MODBUS	2

- If type is negative (e.g. -1) then the BCC value will be the hex value in ASCII.
- If the type is 101-110 then the returned BCC returned will have the left most bit (most significant) masked off.
- If the type is 1001-1010 then the returned BCC will be the remainder when subtracted from either 0x100 or 0x10000, depending of the BCC width.
- If ToAdj is negative the the ToAdj is treated as 0 and the ABS of the ToAdj value is ADDed or XORed to the final BCC calculation. This was implemented to handle the situation [Data][BCC][CR][LF] where the CRLF are to be included in the BCC cal. In this case a -23 (13+10) is specified in the ToAdj BCC directive. For example: [BCC 1 0 -23]

Table of valid formats

!format mask!	Any valid VBA format mask or a 'D' to denote the Default Device Date Format. Refer to chapter 15 for some of the VBA format mask.
R**n**	Take the **n** rightmost characters of the field value. If there are less then **n** characters in the field, add spaces to complete the desired length. See example 2 below.
L**n**	Take the **n** leftmost characters of the field value. If there are less then **n** characters in the field, add spaces to complete the desired length. See example 2 below.
Z**n**	Turn the field value into a **n**–digit string by adding leading zeroes, if necessary. See examples below.
S**c**	Strip all occurrences of the character **c** from the field. See example 3 below.
C	Clean - Get rid of all unprintable characters from this field. Unprintable characters include control characters like carriage returns and line feeds. See example 4 below.
T	Trim all spaces from the beginning and end of a field. Spaces between chars (included unprintable chars such as carriage return/line feed) will not be removed. See example 4 below.
D!date format!	Indicates that this field is in PMS Interface standard date format (YYYY-MM-DD). The date format can be dd/mm/yyyy, mm/dd/yyyy or yyyy/mm/dd…etc. See example 5 below.
K**n**	Take only the single character at position **n**.
E	Converts a standard duration (hh:mm:ss) to seconds.
M**mask**	Special MT (MMMMT) or M.T (MMMM.T) Duration Mask. Converts a standard duration (in the form of hh:mm:ss) to MMMMT format. Where MMMM is a total number of minutes and T is tenths of a minute (6 seconds). If mask a **mask** of **.** (dot) is specified then a **.** (dot) will be inserted between the MMMM and the T
8	Performas an ASCII to UTF-8 conversion

Note:

- More than one format directive and their order may be specified. For example 'CTL10' will first clean, then trim and then left justify a field. D!D!L10 will format a date field using the Default Device Date format and then left justify the value. (See *4.5.5* – Defining Mask for setting the Device Default Date format)

- R**n**, L**n**, Z**n**, S**c**, K**n**, M**mask**, D**!dtateformat!** must be the last directive in a format in order to keep the fix position of the command.

Example 1:

[Field1] – 202 (The extension number)

[Field2] – 2 (The new class of service)

Send: PBXCOS [Field1] [Field2]

```
                1234567890123456789O
Result:         PBXCOS 202 2
```

Example 2:

[Field1] – 202 (The extension number)

[Field2] – 2 (The new class of service)

Send: PBXCOS [Field1 L5] [Field2 R3]

```
                1234567890123456789O
Result:         PBXCOS 202     2
```

Example 3:

[Field1] – 202 (The extension number)

[Field2] – Mr. Andy ///Ho (The guest name)

Send: PBXGN SET [Field1 Z5] [Field2 S/]

```
                123456789012345678901234567
Result:         PBXGN SET 00202 Mr.Andy Ho
```

Example 4:

[Field1] – 202 (The extension number)

[Field2] – ^^^^Wel^come^^^ (free text) ***where ^ is the space.**

[Field3] – Mr. Andy @#$Ho (The guest name) ***where @#$ are the unprintable chars.**

Send: PBXGN SET [Field1 L5] [Field2 T] [Field3 C]

```
                12345678901234567890123456789012345678
Result:         PBXGN SET 202   Wel^come Mr.Andy Ho
```

Example 5:

[Field1] – 1999/12/31 (Date)

[Field2] – 23:59:59 (Time)

[SEQNO] – 45 (Sequence number)

Send: [SEQNO 5 Z5] [Field1 D!dd/mm/yyyy!] [Field2 !hh:mm!]

```
                123456789012345678901234
Result:         00045 31/12/1999 23:59
```

Note: The next command to this device will have the sequence number 46.

Example 6:

[Field1] – /A/B (free text)

[Field2] – /C/D (free text)

[Field3] – /E/F (free text)

Send: [Field1][Field2][STRIP /][Field3]

```
                123456789012345678901234
Result:         ABCD/E/F
```

Example 7:

[Field1] – ABCDEFGHIJ (free text)

[Field2] – 1234 (free text)

[Field3] – XYZ (free text)

Send: [Field1][Field2][CUT 3 9][Field3]

```
                123456789012345678901234 5
Result:         ABJ1234XYZ
```

Example 8:

[STX] – [02] (Start of Text)

[Field1] – 1234 (free text)

[Field2] – XYZ (free text)

[ETX] – [03] (End of Text)

[BCC 1 2 0] – BCC with XOR excluding STX and including ETX.

Send: [STX][Field1][Field2][ETX][BCC 1 2 0]

```
                123456789012345678901234 5
Result:         @1234XYZ&\
```

*where @ is the STX, & is the ETX and \ is the BCC code.

Example 9:

[65] – ASCII Code represent 'A' (free text)

[COMMA] – MACRO defined in the device (MACRO)

[Field1] – XYZ (free text)

Send: [65][COMMA] [Field1]

```
                123456789012345678901234 5
Result:         A,XYZ
```

Example 10:

Suppose there exist the remap table no.2 contain the remap information of converting extension number to room number.

[Field1] – 202 (Extension number), should be remap to Room 1234

[Field2] – XYZ (free text)

Send: [Field1 Remap2] [Field2]

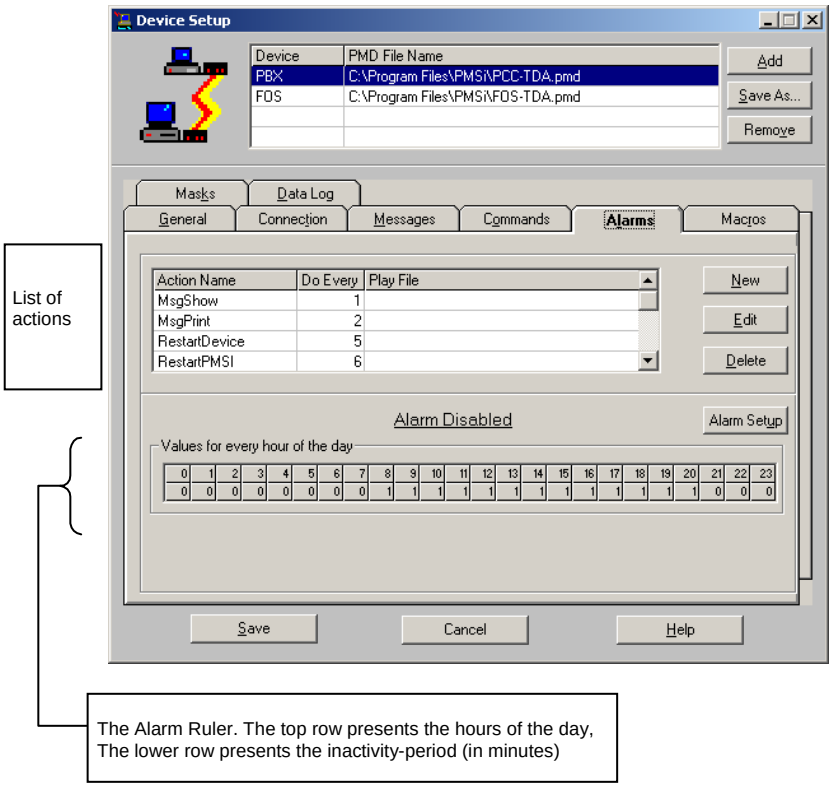
```
                123456789012345678901234 5
Result:         1234 XYZ
```

4.5.3. Defining Alarms

When PMS Interface identifies a device, which has been no response/message for some time, it issues an **alarm**. One or more successive alarms can automatically start an "**action**", which is either a recovery operation or an inactivity notification.

The ***Alarms*** tab enables you to:

1. Define the "inactivity period" (time, in minutes, the device was set inactive during the hour) that would start an alarm at every hour of the day, according to the expected activity level.
2. Define "actions" and set the number of alarms that activate each.



The information in the ***Alarms*** tab is the following:

3. ***Action Name***: the action to be performed.
   The available actions are:
   a. ***MsgShow:*** display a message on the screen
   b. ***MsgPrint:*** print a message
   c. ***Email:*** send E-mail to the address specified in the ***Options/Define*** window
   d. ***RestartDevice:*** restart the device
   e. ***RestartPMSI:*** restart PMS Interface
   f. ***Reboot:*** reboot the PC
   g. ***Shell:*** The bat, com, or exe specified in the Play File field is executed.

Warning: Please take care when using the options above. When PMS Interface is restart all the communication will stop. When PC is rebooted you must make sure that all the applications start automatically. Please pay special attention when using the Reboot Action. PMS I/F must have the Administrator Right in order to perform reboot properly, this reboot action also depends on the PC's BIOS how to interpret, some PC will do a hard-reboot, some will only restart the Windows system.

4. ***Do Every:*** the number of successive alarms needed to activate the action.
5. ***Play File:*** the audio/video file to be played (as an alert) upon activation.
6. ***Alarm Ruler:*** The value below each hour is the period of inactivity (in minutes) that would issue an alarm. For example if put 1 in the value then PMS I/F will recognize an inactivity when no message was received from the device in any 1 minute in the hour.

Note: Set Inactive time longer than the time period required to initialize device. If not do so, in particular Restart PMS I/F Reboot may not perform properly.

4.5.3.1. Add a New Action

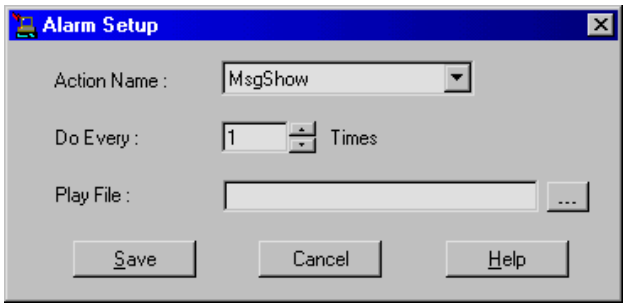
To add a new action:

1. Click ***New***. The ***Alarm Setup*** window opens (See below).
2. Configure the new action as explained in *4.5.3.2* below.

4.5.3.2. Edit an Action

To edit an action:

1. Select the action to be edited from the action list and click ***Edit***. The ***Alarm Setup*** window opens:



2. Select the action to be performed from the ***Action Name*** drop-down list. See 4.5.3 for the available actions.
3. Use the ***Do Every*** field to set the number of successive alarms that need to activate this action.
4. It is possible to play some audible or visual alert upon activating the action. Use the ***Play File*** field to key-in the name of the audio (*.wav) / video (*.avi or *.mp*) file, or use the adjacent browsing button to navigate to the desired file and select it.

5. Click ***Save*** to accept the changes you have just made, or ***Cancel*** to return to the action's previous setting.

4.5.3.3. Delete an Action

To delete an action from the action list:

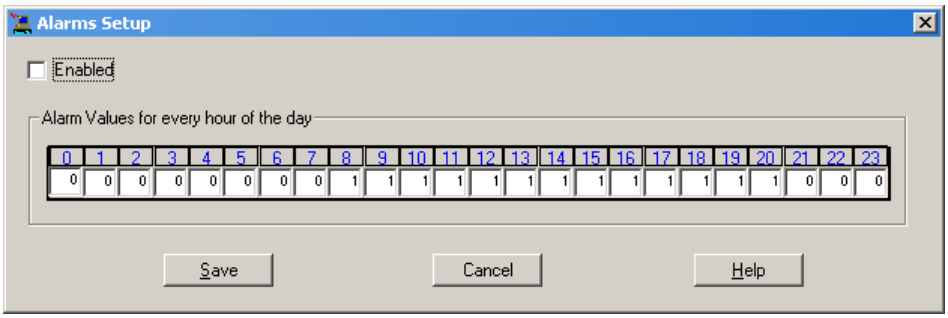
1. Select the action to be deleted and click ***Delete***. A confirmation dialog box opens.
2. Click ***Yes*** to confirm deletion, or ***No*** to cancel.
3. The deleted action is removed from the action list. You can still cancel the deletion by clicking ***Cancel***, or click ***Save*** to save the change you just made.

4.5.3.4. Change Alarm Definition

The definitions in the ***Alarm Ruler*** apply to all the actions in the ***List of Actions*** tab.

To change these definitions:

1. Click ***Alarm Setup***. The ***Hours Values*** window opens:

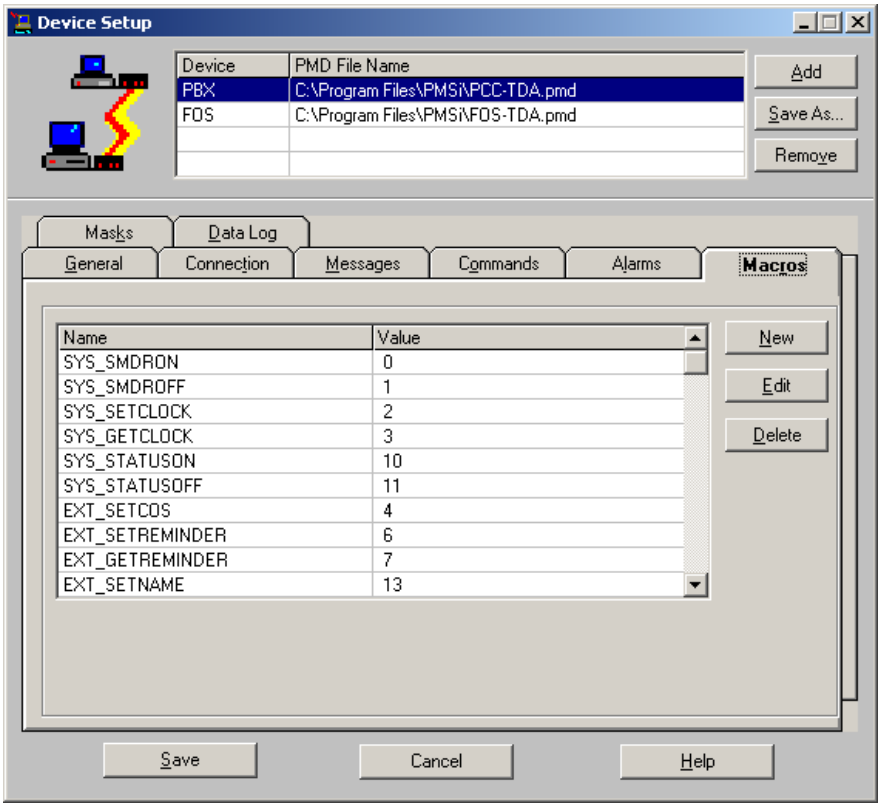


2. Check this box to enable alarms and alarm-activated actions.
   To disable alarms function (i.e., issue no alarms for this device), clear the ***Enabled*** box.
3. Place the cursor on the value to be changed and edit it. The allowed values are between 0 and 999.

Note: Setting the period of inactivity to zero disable alarms during that hour.

4.5.4. Defining Macros (optional)

This tab enables you to define alternative names (short cuts) for commands or command sequences.



4.5.4.1. Add a New Macro

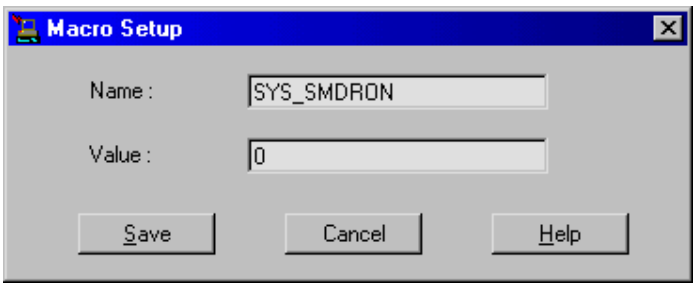
To add a new macro:

1. Click ***New***. The **[Macro Setup]** window opens (see below).
2. Define the new macro as explained in ***4.5.4.2*** below.

4.5.4.2. Edit a Macro

To edit a macro:

1. Select the macro to be edited from the macro list and click ***Edit***. The **[Macro Setup]** window opens:



2. Use the ***Name*** field to edit the macro's name. The name must be unique within the device. Do not use the following code.
   - " **,** " comma
   - " **[** " open square bracket
   - " **]** " close square bracket
3. In the ***Value*** field, enter the command sequence. This may be text, number or unprintable characters such as [10]-LF and [13]- CR.
4. Click ***Save*** to accept the changes you made, or ***Cancel*** to cancel changes.

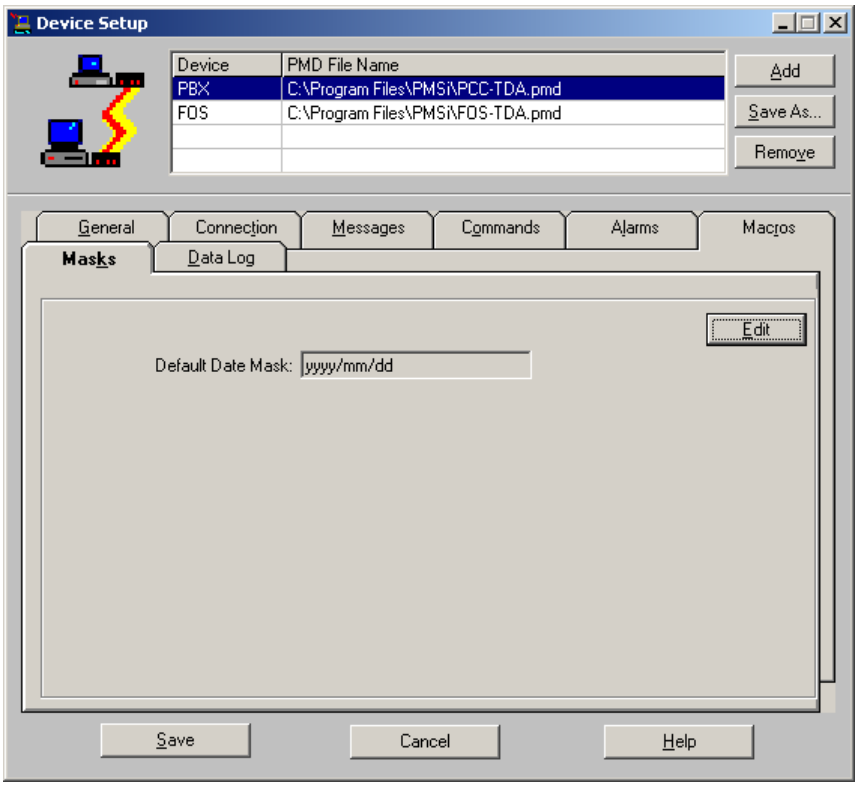
4.5.4.3. Delete a Macro

To delete a macro from the macro set:

1. Select the macro to be deleted and click ***Delete***. A confirmation dialog box opens.
2. Click ***Yes*** to confirm deletion, or ***No*** to cancel.
3. The deleted macro is removed from the macro list. You can still cancel the deletion by clicking ***Cancel***, or click ***Save*** to save the change you have just made.

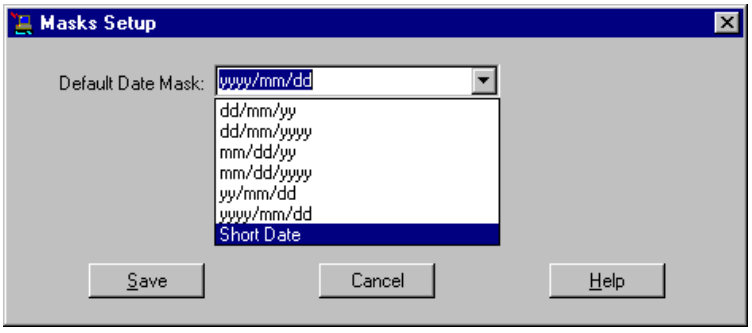
4.5.5. Defining Masks

This tab enables you to define the default Dates Mask that will be used by messages and commands for this device. In Message processing, this Mask is used for validating and standardizing a date field. To use this, you can select the "*Device Default*" in the ***General Group - Mask*** setting when defining the message. In Commands, this Date Mask may be used to format a standardized date field. (Example, [Field1 D!D!] is to use the Device Default date for this field)



To modify the device date mask:

1. Click the ***Edit*** button to open the **[Masks Setup]** window. Select from a list of available Date masks in the **[Masks Setup]** window.

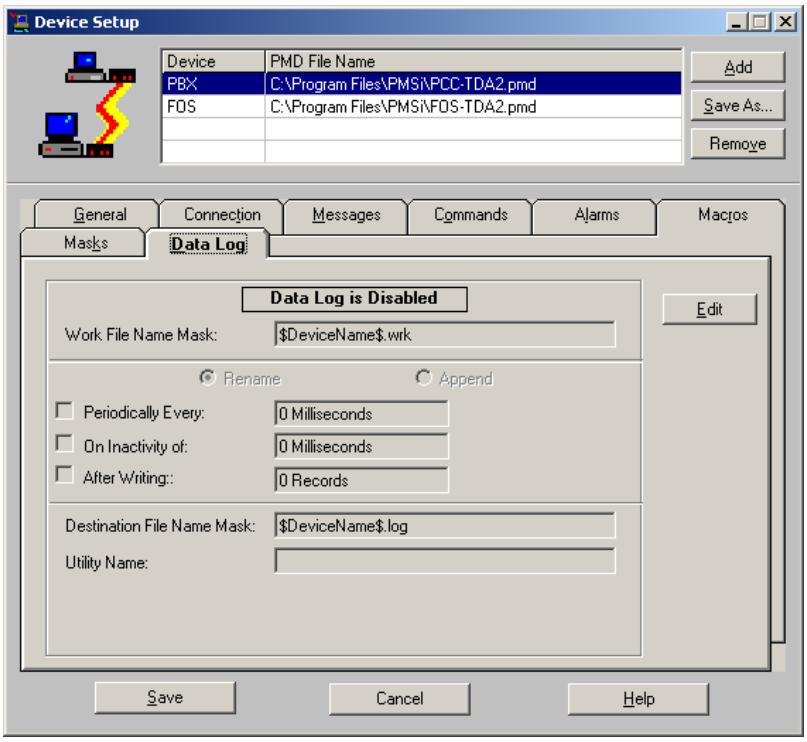


   Note: The "Short Date" takes the Short Date format from Windows OS.

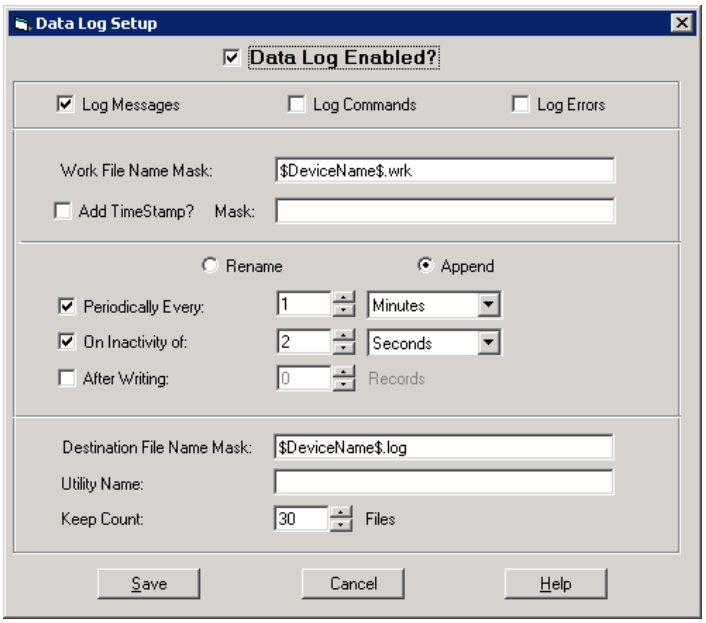
2. Either select a date mask from the drop down combo box or enter any valid date mask.
3. Click ***Save*** to save the selection.

4.5.6. Defining Data Log (Available in the future)

This tab enables you to define a data log for a device. A Data Log may be defined to contain all messages (data from a device) or commands (data to a device).



1. Click the ***Edit*** button to open the [***Data Log Setup***] window.



2. Apply the desired changes if necessary.
3. Click ***Save*** to save the changes.

- **Data Log Enabled?** checkbox: To enable or disable this feature for this device.
- Next you must select which data you want to log. The choices are as follows:
  - **Log Messages** – used to log all data received from the device
  - **Log Commands** – used to log all data transmitted to the device (via PMSi)
  - **Log Errors** – Very rarely used to log any error messages generated by this device.
- **Work File Name Mask:** To specify the runtime file, into which PMSi will write the selected data (messages, commands, and errors). If this data will be used by yet another system, it may be necessary to periodically force the data offline. This can be accomplished with the following parameter settings.
- **Add TimeStamp?:** If checked then a timestamp is appended to the beginning of each record written to the data log.
- **Mask:** Provides the ability to format the data log timestamp. Any of the valid VB Date/Time format masks are allowed. If no mask is specified then yyyy/mm/dd hh:mm:ss is assumed.
- **Rename or Append:** You may choose to rename the on-line work file or to append the data (in the online work file) to anther file. In both cases, the on-line work file will be cleared.
- The **frequency** as to when the data is rolled over to the off-line file may be defined as follows:
  - **Periodically** every so often
  - After a specified **inactivity** (of data being written to the data log)
  - After a **specified number of writes** to the data log.
- **Destination File Name Mask:** This parameter specifies the name of the off-line data log file. If the rollover mode is set to rename, and the file already exists, then PMSi will re-attempt the re-name every 2 seconds. If the rollover mode is set to append, and PMSi does not succeed in opening the offline file with write privileges, then PMSi will re-attempt the append every 2 seconds. In either case, until the rename or append is successfully performed, PMSi will continue to add new data to the on-line data log.

Note: Both the work and destination file names may include special masks. Supported masks include:

- $DeviceName$ - will be replaced with the name of the Device
- !Ddatemask! – will be replaced with the date/time depending on the date mask specified. Some examples of valid date masks and the are:
  - yyyy-mm-dd – year month day
  - yyyy-mm-dd_Hh – year month day and hour of the day

See chapter 15 for more on date and time formats.

When specifying either of the date masks in the file name, a new file will be created either every day or every hour, depending on the mask specified.

- !Sssss! – will be replaced with a 4 digit sequence number. Varying the number of s's after the '!S' will determine the number of digits of the sequence number. When the highest sequence number is reached, the next sequence number will be rolled over to 0.

- **Utility Name:** Not yet Implemented.
- **Keep Count:** When using either the !S ot the !D masks, this parameter will limit the number of files created by PMSi. When the specified limit is reached, old files will be deleted.

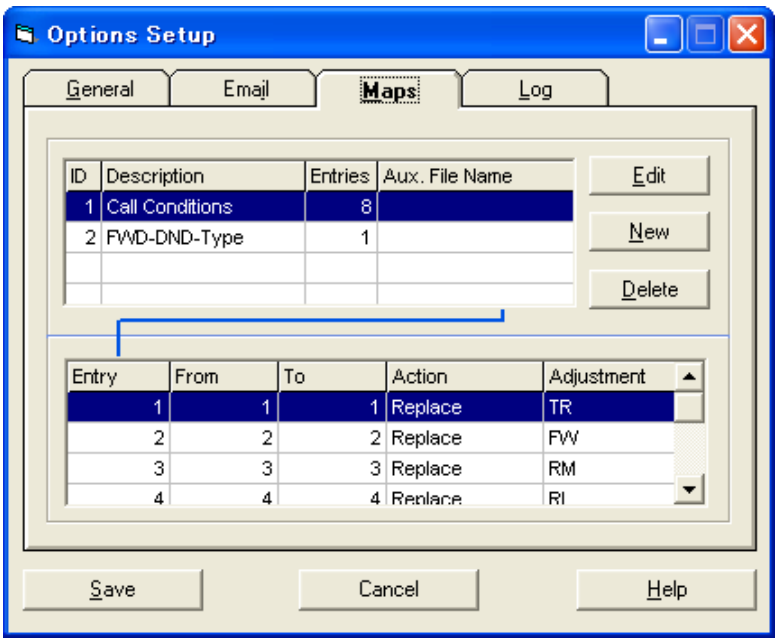
  When using this feature, make sure to specify a folder in the Destination File Name Mask. This folder should be designated to contain only data log files. This will prevent the deletion of non-data log files when the keep count is reached.

4.5.7. Defining Remap (Translation) Tables

Sometimes values of data fields, sent by the source device, have to be changed before the command is send to the destination device. For example, several rooms (with several extensions) have to be billed to one of the extensions. All the rooms have to be associated with that extension. To solve this problem, PMS Interface uses conversion tables.

To construct a conversion table:

1. Select ***Options/Define*** from the menu.
2. Select the ***Maps*** tab:



3. Edit, add (New) or delete conversion tables as necessary.

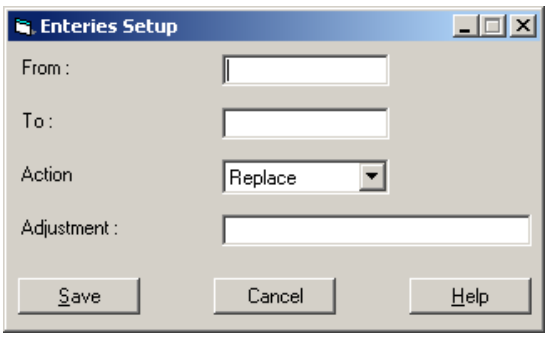
4.5.7.1. Add a New Remap Table

To add a new remap table:

1. Click ***New***. The **[Map Setup]** window opens (See 4.5.7.2 below).
2. Use the ***Description*** field to edit the remap table's description (free text).
3. In the ***Remap ID*** field, enter the table's ID number.

   Note: Two Maps cannot have the same Remap ID. Define the new remap table as below.
4. Select the ***Lookup Method*** and enter the ***Auxiliary File Name***. (Please refer to the description in 4.5.7.2 below)
5. **To add an entry to the table**:

   - Click ***New***. The following dialog box opens:



   - Select the conversion action from the ***Action*** drop-down list. The available conversions are:
     Replace - Replaces any string within the range (***From***-***To***) with ***Adjustment***.

     Note: The values of the ***From*** and ***To*** fields are evaluated like below.

     Example: If the field being checked is alphabetic, say from "AA" to "AC" and replace by "Z". Then "AA", "AAB", "AB", "ABB", "AC" will be all replaced by a "Z" but "A", "ACA", "AD" will not be replaced. If the field being checked is numeric, say from "11" to "22" and replace by a "Z". Then "11", "18", "22" will be replaced by a "Z" where "9", "111", "23" will not be replaced.

     Add- Add ***Adjustment*** to any numeric value within the range (***From***-***To***)
     Subtract- Subtract ***Adjustment*** from any numeric value within the range (***From***-***To***)
   - In the ***From*** box, enter the lower limit of the values to be converted. Lower values will not be converted.
   - In the ***To*** box, enter the upper limit of the values to be converted. Higher values will not be converted.

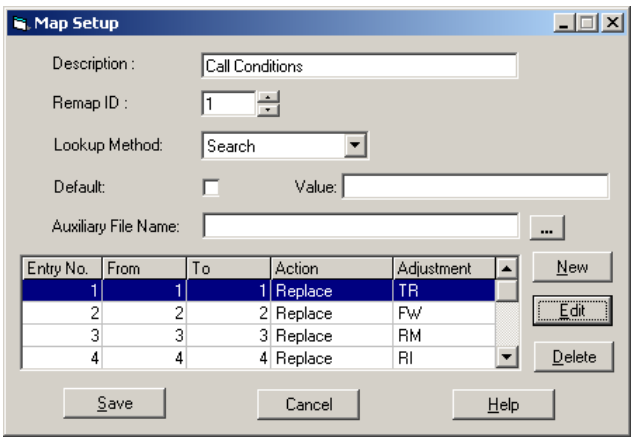
     Note: To indicate a single value and not a range, put the same value in both fields.
   - In the ***Adjustment*** field, enter the value to be added-to/ subtracted-from /placed instead of the original value.
   - Click ***Save*** to save the new entry, or ***Cancel*** to cancel the addition.

6. Click ***Save*** to save the changes, or ***Cancel*** to revert to the pervious setting.
7. Click ***Save*** to add the new table to PMS Interface's configuration.

4.5.7.2. Edit a Remap Table

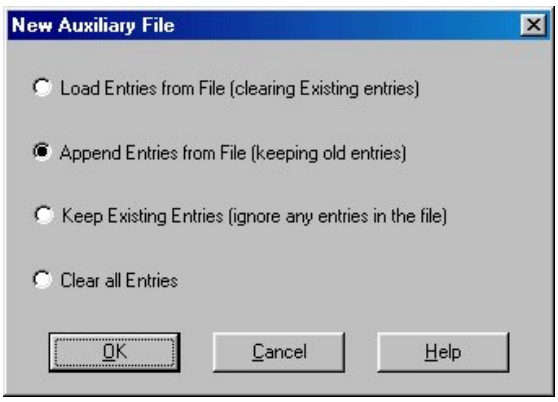
To edit an existing remap table:

1. Select the remap-table to be edited from the table list and click ***Edit***. The **[Map Setup]** window opens:



2. Use the ***Description*** field to edit the remap table's description (free text).
3. In the ***Remap ID*** field, enter the table's ID number.
   Note: Two Maps cannot have the same Remap ID
4. The Remap Table ***Lookup Method*** can be **Indexed** or **Search**.
   If the entries in a table have a ***From-To*** range greater than 1000, **Search** method is recommended. Otherwise use the **Indexed** method.
5. If the ***Default*** is enabled, then if there is no match (on a Remap attempt) the specified default ***Value*** will be used (Available in the future).
6. The Remap Table can be imported/exported to an auxiliary file. Type the filename in the ***Auxiliary File Name***. If leave this field blank, the remap table will be saved in the PMS I/F PMI file.

   The following screen will appear after entered the filename.



   If the entered file exists, there are 4 options available in the screen.

- **Load Entries from File:** This will delete all the existing remap table entries defined in PMS I/F and load entries from the auxiliary file.
- **Append Entries from File:** This will keep all the old entries defined in PMS I/F and append the entries from this auxiliary file.
- **Keep Existing Entries:** This will delete all entries defined in the auxiliary file.
- **Clear all Entries:** This will delete all entries defined in PMS I/F.

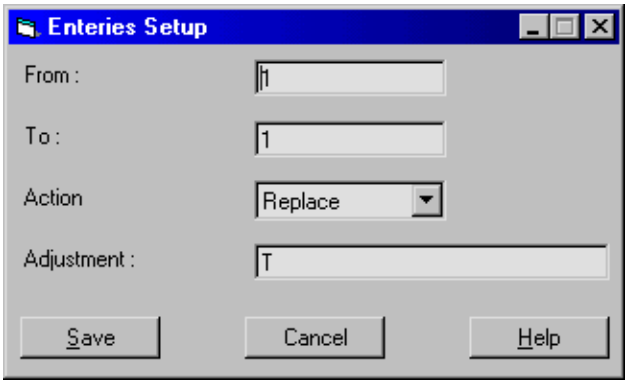
If the entered file does not exist, PMS I/F will create that file and only **Keep Existing Entries** and **Clear all Entries** available.

The resulting text file may have the following entries.

```
'From,To,Action,Value
1,1,0,T
2,2,0,F
```

It is a comma delimited text file. The first value is the **From** value, then the **To** value, then the **Action** (0 for *Replace*, 1 for *Add* and 2 for *Subtract*), and last the **Adjustment**.

7. **To add an entry to the table**: (See *4.5.7.1* for details)
8. **To edit an existing entry:**
   - Select the entry to be edited.
   - Click ***Edit***. The **[Enteries Setup]** window opens.



   - Edit the ***Action***, ***From***, ***To*** and ***Adjustment*** fields as explained in *4.5.7.1* above.
   - Click ***Save*** to save the entry, or ***Cancel*** to cancel the change.
   - Click ***Save*** to save the map changes, or ***Cancel*** to revert to the pervious setting.
   - Click ***Save*** to change the table to PMS Interface's configuration.
9. **To delete an entry from the table**:
   - Select the entry to be deleted and click ***Delete***.
   - Click ***Yes*** to confirm deletion or ***No*** to cancel.
   - Click ***Save*** to save the map changes, or ***Cancel*** to revert to the pervious setting.

- Click ***Save*** to save the table, or ***Cancel*** to revert to the pervious setting

4.5.7.3. Delete a Remap Table

To delete a remap table:

1. Select the remap-table to be deleted and click ***Delete***. Delete Map box opens.
2. Click ***Yes*** to confirm deletion, or ***No*** to cancel.

   The deleted table is removed from the table list. You can still cancel the deletion by clicking ***Cancel***, or click ***Save*** to save the change you have just made.

Note: To make use of this Remap function, please refer to *4.5.2.4* – PMS Interface commands.

5. Diagnostic Tools

5.1. The Data-Scope

5.1.1. What is the Data-Scope

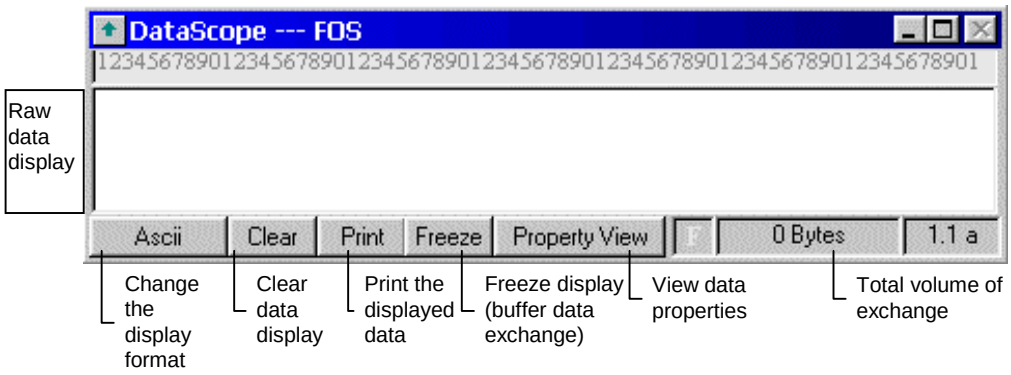
Data-Scope is a diagnostics tool, which enables the user/installer to view raw data exchange between PMS Interface and a specified device.

5.1.2. Activating/Deactivating the Data-Scope

You may apply Data-Scope monitoring to any device on the PMS Interface main window, by double-clicking the DS icon next to the device's name. Double-clicking the icon again closes the **[DataScope]** window of that device. It is possible to scope several devices at the same time via separate **[DataScope]** windows.

5.1.3. Using the Data-Scope

The **[DataScope]** window is shown below:



5.1.3.1 Changing the Display Format

Click the leftmost button to toggle the display format between ***ASCII***, ***ASCII2***, ***Binary decimals*** or ***Binary hexadecimals***.

5.1.3.2 Clearing the Data Display

Click the ***Clear*** button to clear the display.

5.1.3.3 Printing Data Display

Click the ***Print*** button to send the displayed data to the default printer.

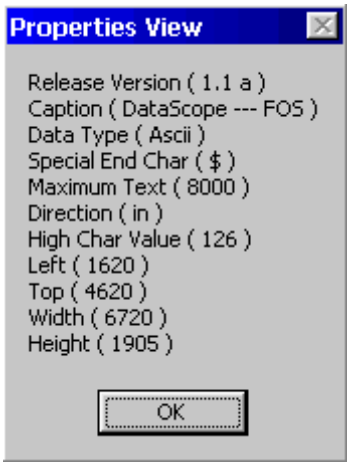
5.1.3.4 Freezing / Thawing the Data Display

Click the ***Freeze*** button to capture the currently on screen (and buffer any data exchange from that moment on). Click ***Thaw*** to display the buffered data and resume online display.

5.1.3.5 View the Data Exchange Properties

Click the ***Properties View*** button. The following box opens:

The data exchange properties are the following:



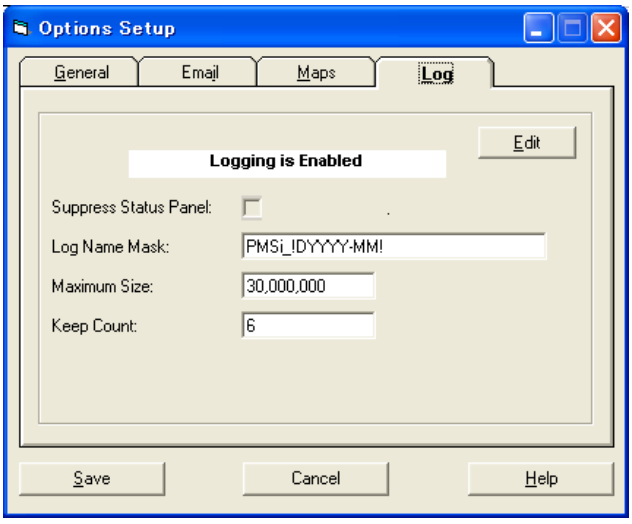
Release Version:	Data Scope's release version
Caption:	The caption of the Data Scope window
Data Type:	Format display of the raw data
Special End Char:	A special character indicating the end of the block (record)
Maximum Text:	The maximal length of text to be displayed in the Data Scope window
Direction:	Stating the final data flow direction: in or out of the device
High Char Value:	The highest ASCII code value can be displayed
Left:	Data Scope window's position on screen
Top:	Data Scope window's position on screen
Width:	Data Scope window's width
Height:	Data Scope window's height

5.2. The Log File

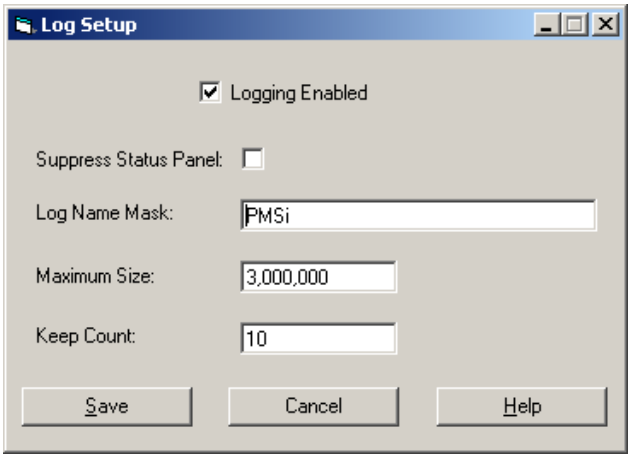
All PMS Interface activities are logged into a set of Log files under the \PMSi\Logs directory. PMS Interface writes the logs in a cyclic way. When a file in the set is full PMS Interface opens a new file. When all the files in the set are full, PMS Interface deletes the oldest log file and creates a new one.

The name, maximum size of file and the number of files in the set may be defined in the Options/Log tab.

1. From the *Options/Define* menu select ***Log*** tab.



2. To edit the settings click on *Edit.* The following screen opens:



Logging Enabled – Enable/disable the log files. The log files will be created by default.

Suppress Status Panel

– Checking this options, instructs PMS I/F to not display any log entries in the PMS I/F Status Panel. This is used to hide the Status info from the user. Also, in high data volume situations, suppressing the status display, may significantly reduce CPU usage of PMS I/F.

Note:
For security reasons, be sure to check the check box for this parameter.

Log Name Mask – The name of the log file. PMS I/F software can also makes log every minutes, hour, day, month and year. e.g. putting “filename!Dddmmyyyyhhmm!” will generate the logs for every minutes.

- filename!Dddmmyyyyhh! for every hour
- filename!Dddmmyyyy! for every day
- filename!Dmmyyyy! for every month
- filename!Dyyyy! for every year

Maximum Size – the maximum size of a single log file.

Keep Count – PMS I/F software keeps this number of log files when PMS I/F software is restarted. This works only when the log file mask is applied.

Following is a segment from a typical log file:

```
06/10/1999 10:31:29 [PMSi]              ----------------------- PMSI Started
-----------------------

06/10/1999 10:31:30 [PMSi]              Connection to AdaIpX.IIpX has been
established

06/10/1999 10:31:32 [PMSi]              Connection to AdaDispX.IDispX has been
established

06/10/1999 10:31:32           [FOS]     Startup result: Succeeded

06/10/1999 10:31:33 [PMSi]              Connection to AdaTextX.ITextX has been
established

06/10/1999 10:31:33           [TABS]    Startup result: Succeeded

06/10/1999 10:31:37           [TABS2]   Startup result: Succeeded

06/10/1999 10:31:38 [PMSi]              Connection to AdaCommX.ICommX has been
established

06/10/1999 10:31:53 [PMSi] <-- [FOS]    Message: RESET


06/10/1999 10:31:53           [FOS]     Trigger: 'Remap Tester' received.
Command 'RemapTest' queued to 'FOS'

06/10/1999 10:31:53           [FOS]     Trigger: 'Device Reset' received.
Command 'Reset' queued to 'FOS'

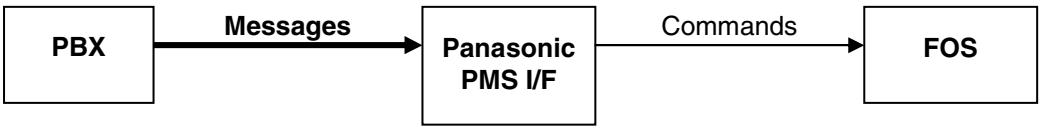
06/10/1999 10:31:53           [FOS]     Command Setup:'RemapTest' (RemapTest)
```

6. Connecting a KME-Type Device

6.1 General Description

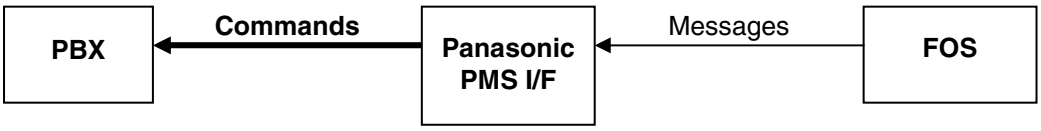
The KME-type device enables the connection to the Panasonic PBX interface for the Panasonic KX-TDA/KX-TDE Series. Via this connection, information (such as SMDR/CDR call detail records) will be received from the Panasonic KX-TDA/KX-TDE Series and control commands (such as Extension Block/Unblock or set Extension Name) will be sent to the Panasonic KX-TDA/KX-TDE Series.

The following list of messages (from the Panasonic KX-TDA/KX-TDE Series) that are supported by the KME-type device:



PBX	**Panasonic PMS I/F**
Room/MiniBar Status (Gather Digits)	---------->
Extension Block / Unblock (Change Class of Service)	---------->
Wakeup Time Set	---------->
Wakeup Time Clear	---------->
Wakeup Time Confirm	---------->
Do Not Disturb / Call Forward Set	---------->
Do Not Disturb / Call Forward Clear	---------->
Message Waiting Lamp On	---------->
Message Waiting Lamp Off	---------->
Guest Name Set / Clear	---------->
System Date and Time Report	---------->
Station Message Detail Recording	---------->
Error Message	---------->

The following list of commands (to the Panasonic KX-TDA/KX-TDE Series) that are supported by the KME-type device:



PBX		**Panasonic PMS I/F**
<----------		Extension Block / Unblock (Change Class of Service)
<----------		Wakeup Time Set
<----------		Wakeup Time Clear
<----------		Do Not Disturb / Call Forward Set
<----------		Do Not Disturb / Call Forward Clear
<----------		Message Waiting Lamp On
<----------		Message Waiting Lamp Off
<----------		Guest Name Set / Clear
<----------		Credit Limit Exceeded
<----------		Set System Date and Time
<----------		Get System Date and Time
<----------		Check In
<----------		Check Out
<----------		Confirmation Tone

6.2 Special Considerations

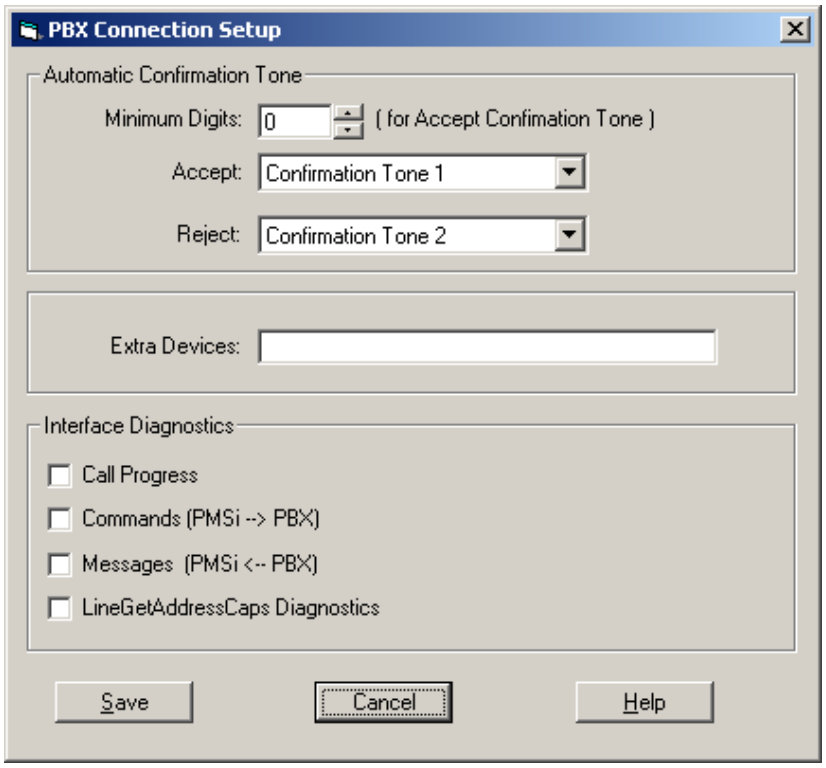
Panasonic TAPI* Service Provider for TDA Series (Panasonic KX-TDA TSP) needs to be installed. In order to begin the installation, please refer to KX-TDA TSP Installation Manual.

*TAPI (Telephony Application Programming Interface introduced by joint development of Microsoft and Intel) is a standard Interface that enables a computer application to control the PBX.

6.3 Setup Parameters

To access the connection parameters:

1. Select ***Devices/Setup*** from the PMS Interface menu.
2. Select the affected device.
3. Choose the ***Connection*** tab and click ***Edit***. The following window opens:



4. Set the parameters as follows:

- ***Automatic Confirmation Tone (for the Gather Digit function of PBX)***

  Gather Digit function is to show the room status and minibar status to FOS. For example, if the housekeeper finds room 202's TV cannot turn on, he/she picks up the room phone and press 717555#. He/she will hear a *confirmation tone* from handset then hang up. Provided the 717 is the Gather Digit access code, 555 is the code for "TV damaged" then PBX will send 555 (ASCII TEXT) to FOS.

  For this reason, the *confirmation tone* need to be set here in order to notify the housekeeper his/her message was confirmed.

Minimum Digits setting check the minimum digit required in the status code. If the number of digits of the entered status code (555 in the above example) is less than the minimum digits setting, then a *reject tone* will be issued provided that the *reject tone* was set(other than none.)

The ***Accept*** (successful reception of digits) or ***Reject*** (not successful reception of digits) *Conformation Tone* can be set to either Tone 1 to Tone 4 or none from the list.

In the case that FOS do not have the capability to analysis the correctness of the incoming Gather Digits message, then the ***Automatic Confirmation Tone*** must be set in PMS Interface in order to confirm the correct reception of Gather Digits from the housekeeper. Then ***Accept*** / ***Reject*** should be set to either *Confirmation Tone* 1, 2, 3 or 4 and set the ***Minimum Digits*** according to the FOS requirement.

For a FOS which have the capability to analysis the correctness of the incoming Gather Digits message, then the above setting of Accept / Reject Confirmation Tone is optional.

- If the Accept/Reject Tone were set, then the housekeeper will receive the confirmation tone (which is set in the PMS Interface) once the PMS Interface received the Gather Digit message correctly.
- If the Accept/Reject Tone were set to None, the housekeeper will receive the confirmation tone (selected by FOS) only after PMS Interface pass the Gather Digits message to FOS and FOS responded it.

Note: Set Gather Digits Access No

When you use gather digits function with this new ROM software, you need to set system programming.

In case of KX-TDA/KX-TDE Series
Gather Digit Access setting by PC programming

(1) Select “2.System/6.Numbering Plan/1.Main” in the menu and then “2.6.1.Main” window appears.

(2) Choose the *Feature* tab.

(3) Move Scroll Bar toward a lower position in the window to make “65 Dial Information (CTI)” appear.

(4) Enter Special Number (Eg. *717) not used for PBX, into the Dial cell in “65 DialInformation (CTI)”.

(5) Press Apply button to save it (update PBX data).

- ***Extra Devices:*** Reserved for internal use. DO NOT EDIT.
- ***Interface Diagnostics:***

  The following types of detail communication data may be monitored in the main PMS Interface window.

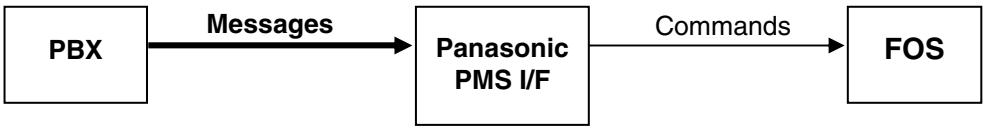
  1. Call Progress
  2. Commands to PBX
  3. Messages to PMS Interface
  4. LineGetAddressCaps Diagnostics (Available in the future)

  Reserved for internal use. DO NOT CHECK ANY BOX.

6.4 Panasonic PBX Interface Specification for KX-TDA/KX-TDE Series

6.4.1 Messages from PBX to Panasonic PMS I/F (PBX→Panasonic PMS I/F)

The message formats shown below are stored in file PCC-TDA2.PMD.
They are sent from PBX to Panasonic PMS I/F in the formats below.



PBX	**Panasonic PMS I/F**
Room/MiniBar Status (Gather Digits)	---------->
Extension Block / Unblock (Change Class of Service)	---------->
Wakeup Time Set	---------->
Wakeup Time Clear	---------->
Wakeup Time Confirm	---------->
Do Not Disturb / Call Forward Set	---------->
Do Not Disturb / Call Forward Clear	---------->
Message Waiting Lamp On	---------->
Message Waiting Lamp Off	---------->
Guest Name Set / Clear	---------->
System Date and Time Report	---------->
Station Message Detail Recording	---------->
Error Message	---------->

6.4.1.1. Room / MiniBar Status (Gather Digits)

Description

This message informs FOS the status of the room or the minibar.

Format -
Message Name (description): Gather Digits (from PBX)
Corresponding Device, Command: FOS, GD

(Sample message)

```
0         1         2         3         4
12345678901234567890123456789012345678901
|20001| LIGADI2  |Digits:1234567890 |
```

Part	Position	Length	Description
20001	2	5	Extension number of the room.
LIGADI2	9	7	PBX Driver internal parameter.
Digits:	19	7	Message identifier.
1234567890	26	128	1 to 128-digit value, each digit ranging from 0 to 9 and *. (Length of Digits is limited by TSP)

6.4.1.2. Extension Block / Unblock (Change Class of Service)

Description

This message informs FOS the changes of COS number of an extension.

Format -
Message Name (description): COS Change (from PBX)
Corresponding Device, Command: FOS, COSChange

(Sample message)

```
0         1         2         3         4
12345678901234567890123456789012345678901
|20002| DVSP 004 | 1   |
```

Part	Position	Length	Description
20002	2	5	Extension number of the room.
DVSP 004	9	8	Message identifier.
1	20	3	A 1 to 3 digits numeric value, length of field depends on PBX model. Note: Different PBXs may have different settings of COS, even for the same number. Please check the settings before using this format.

6.4.1.3. Wakeup Time Set

Description

This message informs FOS the wakeup time set by PBX.

Format -
Message Name (description): WakeUp Time Set (from PBX)
Corresponding Device, Command: FOS, WTSet

(Sample message)

```
0         1         2         3         4         5
12345678901234567890123456789012345678901234567890123456789
|20001| DVSP 006 | 00/00/0000 12:03:00 | 0 |
```

Part	Position	Length	Description
20001	2	5	Extension number of the room.
DVSP 006	9	8	Message Identifier.
12:03:00	31	8	Time in hh:mm:ss format, where Hour: hh from 00 to 23 Minute: mm from 00 to 59 Second: ss from 00 to 59
0	42	1	1-digit numeric value. 0 for one time mode. 1 for everyday mode.

6.4.1.4. Wakeup Time Clear

Description

This message informs FOS the wakeup time cleared by PBX.

Format -
Message Name (description): WakeUp Time Clear (from PBX)
Corresponding Device, Command: FOS, WTClear

(Sample message)

```
0         1         2         3         4
1234567890123456789012345678901234567890
|20001| DVSP 016 |
```

Part	Position	Length	Description
20001	2	5	Extension number of the room.
DVSP 016	9	8	Message Identifier.

6.4.1.5. Wakeup Time Confirm

Description

This message informs FOS the response by hotel guests to wakeup time call (the phone has been picked up or not).

Format -
Message Name (description): WakeUp Time Confirm (from PBX)
Corresponding Device, Command: FOS, WTConfirm

(Sample message)

```
0         1         2         3         4         5
12345678901234567890123456789012345678901234567890123456789
|20001| DVSP 017 | 11/11/2006 12:16:00 | 0     |
```

Part	Position	Length	Description
20001	2	5	Extension number of the room.
DVSP 017	9	8	Message Identifier.
11/11/1999	20	10	Date. Format depends on Device default date format.
12:16:00	31	8	Time in hh:mm:ss format, where Hour: hh from 00 to 23 Minute: mm from 00 to 59 Second: ss from 00 to 59
0	42	5	5 digits numeric value. Left-justified. 0 for Complete (answered). 1 to 99 for retry counts (no answer and keep retrying). 99999 for No Execute. -1 for Fail (no answer and no more retry). Note: Not all PBX models support the retry function.

6.4.1.6. Do Not Disturb Set

Description

This message informs FOS PBX enables the Do Not Disturb of an extension.

Format -
Message Name (description): DND & CF Set I (DND) (from PBX)
Corresponding Device, Command: FOS, DNDCFSetI

(Sample message)

```
0         1         2         3         4
12345678901234567890123456789012345678901
|20002| LADST064 |DND Set|
```

Part	Position	Length	Description
20002	2	5	Extension number of the room.
LADST064	9	8	PBX Driver internal parameter.
DND Set	19	7	Message Identifier.

6.4.1.7. Call Forward Set

Description

This message informs FOS PBX enables the Call Forward of an extension.

Format -
Message Name (description): DND & CF Set II (CF) (from PBX)
Corresponding Device, Command: FOS, DNDCFSetII

(Sample message)

```
0         1         2         3         4         5
123456789012345678901234567890123456789012345678901
|10002| LADST064 |CFWD: 2     | 0924771381

                 | CFWD: 4     | 0924771390

          |
```

<table>
<tr><th>Part</th><th>Position</th><th>Length</th><th>Description</th></tr>
<tr><td>10002</td><td>2</td><td>5</td><td>Extension number of the room.</td></tr>
<tr><td>LADST064</td><td>9</td><td>8</td><td>PBX Driver internal parameter.</td></tr>
<tr><td>CFWD</td><td>19</td><td>4</td><td>Message Identifier.</td></tr>
<tr><td>2</td><td>25</td><td>5</td><td>The forward type. Following codes are implemented in different models:
<table>
<tr><td></td><td>Internal</td><td>External</td></tr>
<tr><td>Do Not Disturb</td><td>32768</td><td>13107</td></tr>
<tr><td>Forward All/CO Line</td><td>2</td><td>4</td></tr>
<tr><td>Forward Busy/No Answer</td><td>32</td><td>64</td></tr>
<tr><td>Forward Busy/No Answer</td><td>8192</td><td>16384</td></tr>
<tr><td>Forward No Answer</td><td>512</td><td>1024</td></tr>
</table>
Note: If FWDType is input with the above values and FWDDirection is not defined, then only Do Not Disturb is set.</td></tr>
<tr><td>0924771381</td><td>33</td><td>128</td><td>Destination (extension number or CO number).
1 to 128-digit value, each digit ranging from 0 to 9, * and #. (Length of FWD Direction is limited by PBX)</td></tr>
<tr><td>CFWD</td><td>164</td><td>4</td><td>Message Identifier.</td></tr>
<tr><td>4</td><td>170</td><td>5</td><td>The forward type. Following codes are implemented in different models:
<table>
<tr><td></td><td>Internal</td><td>External</td></tr>
<tr><td>Do Not Disturb</td><td>32768</td><td>13107</td></tr>
<tr><td>Forward All/CO Line</td><td>2</td><td>4</td></tr>
<tr><td>Forward Busy</td><td>32</td><td>64</td></tr>
<tr><td>Forward Busy/No Answer</td><td>8192</td><td>16384</td></tr>
<tr><td>Forward No Answer</td><td>512</td><td>1024</td></tr>
</table>
Note: If FWDType is input with the above values and FWDDirection is not defined, then only Do Not Disturb is set.</td></tr>
<tr><td>0924771390</td><td>178</td><td>128</td><td>Destination (extension number or CO number).
1 to 128-digit value, each digit ranging from 0 to 9, * and #. (Length of FWD Direction is limited by PBX)</td></tr>
</table>

6.4.1.8. Do Not Disturb / Call Forward Clear

Description

This message informs FOS PBX clears the Do Not Disturb/Call Forward.

Format -
Message Name (description): DND & CF Clear (from PBX)
Corresponding Device, Command: FOS, DNDCFClear

(Sample message)

```
0         1         2         3         4
12345678901234567890123456789012345678901
|20002| LADST064 |CF/DND Cleared|
```

Part	Position	Length	Description
20002	2	5	Extension number of the room.
LADST064	9	8	PBX Driver internal parameter.
CF/DND Cleared	19	12	Message Identifier.

6.4.1.9. Message Waiting Lamp On

Description

This message informs FOS that PBX has enabled the Message Waiting Lamp of an extension.

Format -
Message Name (description): Message Lamp On (from PBX)
Corresponding Device, Command: FOS, MWLOn

(Sample message)

```
0         1         2         3         4
12345678901234567890123456789012345678901
|20003| DVSP 014 | 20002 |
```

Part	Position	Length	Description
20003	2	5	Extension number that is set Message Waiting Lamp On
DVSP 014	9	8	Message Identifier
20002	20	5	Call Back Extension that initiates Message Waiting

6.4.1.10. Message Waiting Lamp Off

Description

This message informs FOS that PBX has disabled the Message Waiting Lamp of an extension.

Format -
Message Name (description): Message Lamp Off (from PBX)
Corresponding Device, Command: FOS, MWLOff

(Sample message)

```
0         1         2         3         4
12345678901234567890123456789012345678901
|20003| DVSP 015 | 20002 |
```

Part	Position	Length	Description
20003	2	5	Extension number that is set Message Waiting Lamp Off
DVSP 015	9	8	Message Identifier
20002	20	5	Call Back Extension which had been set to initiate Message Waiting in the state of Message Waiting Lamp On

6.4.1.11. Guest Name Set / Clear

Description

This message informs FOS that PBX (the operator) has set or cleared the Guest Name of an extension.

Format -
Message Name (description): Guest Name Set (from PBX)
Corresponding Device, Command: FOS, GNSet

(Sample message)

```
0         1         2         3         4         5
12345678901234567890123456789012345678901234567890
|20002| DVSP 013 |Andy Ho
```

|

Part	Position	Length	Description
20002	2	5	Extension number to which the guest name is set
DVSP 013	9	8	Message Identifier.
Andy Ho	19	128	Guest Name. Length ranging from 1 to 128 characters. Note: To clear a guest name, this field will be filled with spaces. (Length of Guest name is limited by PBX)

6.4.1.12. Station Message Detail Recording

Description

This message informs SMDR data to FOS or Call Accounting System, e.g. TABS Call Accounting for

Windows by MTS, when a guest has made a call.

Format -
Message Name (description): SMDR-GOC (German Out Charge) (from PBX), SMDR-GIC (German In CLID#) (from PBX)
Corresponding Device, Command: FOS, SMDR-GOC, SMDR-GIC

(Sample message)

```
0         1         2         3         4         5
12345678901234567890123456789012345678901234567890123456789
|20002| DVSP 000 | SMDR | 20002 | 1     | 1 |     |     | 11/
11/1999 12:29:00 | 00:00:00 | 00:00:13 | 0     | 295
                           |                          |
          |                                |            | DM | 0.
00        |     |       |        |
```

Note: The position and length of fields (after position 25) are variable depending on the PBX setting.

The fields are delimited by the character " | " and the fields order are same. The below parts description are based on the above sample message.

Part	Position	Length	Description
20002	2	5	Extension number that made the call.
DVSP 000	9	8	PBX Driver internal parameter.
SMDR	20	4	1st Message Identifier.
20002	27	5	Extension number that made the call.
1	-	5	CO number used.
1	-	1	2nd Message Identifier. 1=Outgoing Call 2=Incoming Call Note: Depends on this setting, one of the messages will be triggered and its corresponding Command will be issue to FOS.
	-	2	Call condition code. From 1 to 6. (blank)=No condition information 1=Transfer 2=Forward to CO 3=Modem 4=Receive incoming call 5=Answer incoming call 6=No answer incoming call

	-	2	DISA Port.
11/11/1999	-	10	Date of call. Format depends on the Device Default date format.
12:29:00	-	8	Start-Time of the call in format hh:mm:ss
00:00:00	-	8	Ring-Time in format hh:mm:ss
00:00:13	-	8	Duration of call in format hh:mm:ss
0	-	5	Pulses of call.
295	-	32	Dialed Number.
	-	24	Caller ID Number.
	-	16	Caller ID Name.
	-	24	Not Available
	-	10	Account Code.
DM	-	2	Currency Code.
0.00	-	10	Charge of call.
	-	2	Tenant Number (CO).
	-	4	Not Available
	-	5	Department Code.

6.4.1.13. System Date and Time Report

Description

This message informs current PBX date and time to FOS when FOS requests.

Format -
Message Name (description): PBX Date and Time Report (from PBX)
Corresponding Device, Command: FOS, SDTR

(Sample message)

```
0         1         2         3         4
12345678901234567890123456789012345678901
|SYS  | DVSP 007 | 11/11/2006 12:27:56 |
```

Part	Position	Length	Description
SYS	2	3	PBX Driver internal parameter.
DVSP 007	9	8	Message Identifier.
11/11/1999	20	10	PBX date. Format depends on the Device Default date format.
12:27:56	31	8	PBX time in format hh:mm:ss

6.4.1.14. Error Message

Description

These are the PBX error messages.

Format 1-
Message Name (description): Error Message (from PBX) (Return Value <> OK)
Corresponding Device, Command: FOS, ErrorMsg

(Sample message)

```
0         1         2         3         4         5
12345678901234567890123456789012345678901234567890123456789
|20002| LIREP    | Transaction #: 00017 | 80000048 | Operat
ion Failed

      |
```

Part	Position	Length	Description
20002	2	5	Extension number that initiate the invalid operation.
LIREP	9	5	PBX Driver internal parameter.
Transaction	20	11	1st Message Identifier.
00017	35	5	Internal track number.
80000048	43	8	Internal track number.
Operation Failed	54	128	2nd Message Identifier. Note: If this field is any text other than “OK”, it indicates an error message. The error description will be put here instead of “OK” for an error message.

Format 2-
Message Name (description): Error Message#2 (from PBX) (ERR-)
Corresponding Device, Command: FOS, ErrorMsg

(Sample message)

```
0         1         2         3         4         5         6
123456789012345678901234567890123456789012345678901234567890123
|10001| ERR-LDS  |51515100   Invalid Extension              |
```

Part	Position	Length	Description
10001	2	5	PBX Driver internal parameter.
ERR-	9	4	Message Identifier.
LDS	13	3	PBX Driver internal parameter.
51515100	19	8	PBX Driver internal parameter.
Invalid Extension	30	30	Error description.

6.4.2 Commands from Panasonic PMS I/F to PBX (Panasonic PMS I/F→PBX)

The command formats shown below are stored in file PCC-TDA2.PMD. They are sent from Panasonic PMS I/F to PBX in the formats below. (The following information is for reference only in making the FOS messages, DO NOT EDIT without the authorization)



PBX	Panasonic PMS I/F
<----------	Extension Block / Unblock (Change Class of Service)
<----------	Wakeup Time Set
<----------	Wakeup Time Clear
<----------	Do Not Disturb / Call Forward Set
<----------	Do Not Disturb / Call Forward Clear
<----------	Message Waiting Lamp On
<----------	Message Waiting Lamp Off
<----------	Guest Name Set / Clear
<----------	Credit Limit Exceeded
<----------	Set System Date and Time
<----------	Get System Date and Time
<----------	Check In
<----------	Check Out
<----------	Confirmation Tone (for Gather Digits)

6.4.2.1. Extension Block / Unblock (Change Class of Service)

Description

The following commands instruct the PBX to block/unblock an extension or change its COS.

Command format (Default) – Extension Block/Unblock
Command Name: ChangeCOS
Possible Trigger Device, Message(s): FOS, Change COS (from FOS)

LDS [Field2 C] 28 [EXT_SETCOS] [LDSTYPE1] [Field3 C]

Part	Description
[Field2 C]	The extension number which its COS will be change.
[EXT_SETCOS]	PMS I/F internal parameter. Value is 4.
[LDSTYPE1]	PMS I/F internal parameter. Value is 1.
[Field3 C]	The new COS number for the extension.

Command format (Optional) – Extension Block 1
Command Name: EBLK1
Possible Trigger Device, Message(s): FOS, Ext Block 1 (COS 2) (from FOS)

LDS [Field2 C] 28 [EXT_SETCOS] [LDSTYPE1] 2

Part	Description
[Field2 C]	The extension number that will be assigned a COS 2.
[EXT_SETCOS]	PMS I/F internal parameter. Value is 4.
[LDSTYPE1]	PMS I/F internal parameter. Value is 1.

Command format (Optional) – Extension Block 2
Command Name: EBLK2
Possible Trigger Device, Message(s): FOS, Ext Block 2 (COS 3) (from FOS)

LDS [Field2 C] 28 [EXT_SETCOS] [LDSTYPE1] 3

Part	Description
[Field2 C]	The extension number that will be assigned a COS 3.
[EXT_SETCOS]	PMS I/F internal parameter. Value is 4.
[LDSTYPE1]	PMS I/F internal parameter. Value is 1.

Command format (Optional) – Extension UnBlock
Command Name: EUBLK
Possible Trigger Device, Message(s): FOS, Ext Unblock (COS 1) (from FOS)

LDS [Field2 C] 28 [EXT_SETCOS] [LDSTYPE1] 1

Part	Description
[Field2 C]	The extension number that will be assigned a COS 1.
[EXT_SETCOS]	PMS I/F internal parameter. Value is 4.
[LDSTYPE1]	PMS I/F internal parameter. Value is 1.

6.4.2.2. Wakeup Time Set

Description

The following command instructs the PBX to set the Wake Up Time for an extension.

Command format (Default) –
Command Name: WTSet
Possible Trigger Device, Message(s): FOS, Wakeup Time Set (from FOS)

LDS [Field2 C] 28 [EXT_SETREMINDER] [LDSTYPE2]
[DATE !YYYY/MM/DD] [Field3 C] [Field4 C]

Part	Description
[Field2 C]	The extension number that its Wake Up Time will be set.
[EXT_SETREMINDER]	PMS I/F internal parameter. Value is 6.
[LDSTYPE2]	PMS I/F internal parameter. Value is 2.
[DATE !YYYY/MM/DD]	The current system date in YYYY/MM/DD format.
[Field3 C]	Wake up time.
[Field4 C]	Mode – 0 for one time, 1 for everyday.

6.4.2.3. Wakeup Time Clear

Description

The following command instructs the PBX to clear the Wake Up Time set in an extension.

Command format (Default) –
Command Name: WTClear
Possible Trigger Device, Message(s): FOS, WakeUp Time Clear (from FOS)

LDS [Field2 C] 28 [EXT_CLEARREMINDER] [LDSTYPE9]

Part	Description
[Field2 C]	The extension number that its Wake Up Time will be clear.
[EXT_CLEARREMINDER]	PMS I/F internal parameter. Value is 16.
[LDSTYPE9]	PMS I/F internal parameter. Value is 9.

6.4.2.4. Do Not Disturb / Call Forward Set

Description

The following command instructs the PBX to set the DND / CF for an extension.

Command format (Default) –
Command Name: DNDCFSet
Possible Trigger Device, Message(s): FOS, DND & CF Set (from FOS)

LIFO [Field2 C] [Field3 C] [Field4 C]

Part	Description
[Field2 C]	The extension number that its DND/CF will be set
[Field3 C]	Mode of the DND/CF Note: If FWDType is input with the above values and FWDDirection is not defined, then only Do Not Disturb is set.
[Field4 C]	The forward destination

6.4.2.5. Do Not Disturb / Call Forward Clear

Description

The following command instructs the PBX to clear the DND / CF for an extension.

Command format (Default) –
Command Name: DNDCFClear
Possible Trigger Device, Message(s): FOS, DND & CF CLEAR (from FOS)

LIFO [Field2 C]

Part	Description
[Field2 C]	The extension number that its DND/CF will be cleared

6.4.2.6. Message Waiting Lamp On

Description

The following command instructs the PBX to set the Message Waiting Lamp on for an extension.

Command format (Default) –
Command Name: MWLOn
Possible Trigger Device, Message(s): FOS, Message Lamp On (from FOS)

LDS [Field3 C] 36 [EXT_SETMW] 4 [Field2 C]

Part	Description
[Field3 C]	Call back extension that initiates Message Waiting Lamp On
[EXT_SETMW]	PMS I/F internal parameter, Value is 14.
[Field2 C]	Extension number that its Message Waiting Lamp will be set to On

6.4.2.7. Message Waiting Lamp Off

Description

The following command instructs the PBX to set the Message Waiting Lamp off for an extension.

Command format (Default) –
Command Name: MWLOff
Possible Trigger Device, Message(s): FOS, Message Lamp Off (from FOS)

LDS [Field2 C] 36 [EXT_CLEARMW] 4 [Field3 C]

Part	Description
[Field2 C]	Extension number that its Message Waiting Lamp will be set to Off
[EXT_CLEARMW]	PMS I/F internal parameter. Value is 15.
[Field3 C]	Call back extension number that initiates Message Waiting Lamp Off If not specified, ie blank field, all Message Waiting Lamps are cleared.

6.4.2.8. Guest Name Set / Clear

Description

The following command instructs the PBX to set the Guest Name for an extension.

Command format (Default) –
Command Name: GNSet
Possible Trigger Device, Message(s): FOS, Guest Name Set (from FOS)

LDS [FIELD2 C] 28 [EXT_SETNAME] 4 [FIELD3 TC]

Part	Description
[Field2 C]	Extension number that its Name will be set.
[EXT_ SETNAME]	PMS I/F internal parameter. Value is 13.
[Field3 TC]	Guest Name: To clear the Guest name, this field will be filled with spaces. (Length of Guest name is limited by PBX)

6.4.2.9. Credit Limit Exceeded

Description

The following command instructs the PBX to block the extension.

Command format (Default) –

Same as Extension Block/Unblock (Change Class of Service)

Possible Trigger Device, Message(s): FOS, Credit Limit Exceeded (from FOS)

6.4.2.10. Set System Date and Time

Description

The following command instructs the PBX to set the System Date and Time.

Command format (Default) –
Command Name: SetSysClock
Possible Trigger Device, Message(s): FOS, Set System Date & Time (from FOS)

LDS SYSTEM 28 [SYS_SETCLOCK] [LDSTYPE2] [Field3 C] [Field2 C] 0

Part	Description
[SYS_SETCLOCK]	PMS I/F internal parameter. Value is 2.
[LDSTYPE2]	PMS I/F internal parameter. Value is 2.
[Field3 C]	Date. Year field should be up to 2079.
[Field2 C]	Time.

6.4.2.11. Get System Date and Time

Description

The following command gets the PBX System Date and Time.

Command format (Default) –
Command Name: GetSysClock
Possible Trigger Device, Message(s): FOS, Get System Date & Time (from FOS)

LDS SYSTEM 28 [SYS_GETCLOCK] [LDSTYPE9]

Part	Description
[SYS_GETCLOCK]	PMS I/F internal parameter. Value is 3.
[LDSTYPE9]	PMS I/F internal parameter. Value is 9.

6.4.2.12. Check In

Description

The command(s) used for Check In depend on the FOS requirement; dealer should pick up suitable command(s) from above to make this Command. Panasonic PBX Interface default Check In command included “Extension Unblock” and “Guest Name Set”

6.4.2.13. Check Out

Description

The command(s) used for Check Out depend on the FOS requirement; dealer should pick up suitable command(s) from above to make this Command. Panasonic PBX Interface default Check Out command included “Extension Block”, “Guest Name Clear”, “Wake Up Time Clear” and “Message Waiting Lamp Off”.

6.4.2.14. Confirmation Tone (for Gather Digits)

Description

The following command instructs the PBX play a confirmation tone.

Command format (Default) –
Command Name: ConfirmTone
Possible Trigger Device, Message(s): FOS, Confirm Tone (from FOS)

LSCT [Field2 C] [Field3 C]

Part	Description
[Field2 C]	Extension number.
[Field3 C]	Tone number (from 1 to 4 which represent different tone).

Command format (Optional) –
Command Name: AcceptTone / RejectTone
Possible Trigger Device, Message(s): FOS, Accept Tone (from FOS) / Reject Tone (from FOS)

LSCT [Field2 C] [CONFIRM_TONE_1]

Part	Description
[Field2 C]	Extension number.
[CONFIRM_TONE_1]	*Confirmation Tone number 1. It can be set in Macros, see chapter 4 – defining Macros. In default, there is [CONFIRMATION_TONE_1] (Value is 1.), [CONFIRMATION_TONE_2] (Value is 2.), [CONFIRMATION_TONE_3] (Value is 3.), [CONFIRMATION_TONE_4] (Value is 4.).*

6.5 Testing Communication

To test the connection, you may perform the following:

Start PMS Interface. Upon successful completion of the communication with Panasonic KX-TDA/KX-TDE Series (usually take a while), you should see in the PMS Interface Status box the following messages.

[PBX] Extension Devices opened: 40

[PBX] Startup result: Succeeded

The ‘40’ in the first message is the number of devices detected on the Panasonic KX-TDA/KX-TDE Series. This is not the number of extensions in your system. This number may vary from installation to installation**. However, if this number is 0 (zero), means the attempt to establish the KME-type device connection has failed.**

6.6 Troubleshooting

[PBX] Extension Devices opened: **0**

- Close PMS Interface
- Check the cable pin assignment between PBX and PC.
- Check if the correct COMM PORT connected.
- Check that the Panasonic PBX driver “Panasonic KX-TDA TSP” Telephony drivers have been installed. See 6.2 – Special Considerations.
- Restart PMS Interface

7. Connecting a Comm (RS232)-Type Device

7.1. General Description

A COMM type device is connected to the PC via the RS-232C communications port (serial port) to communicate to FOS software provided by other companies
For Panasonic PMS I/F software, the following interfaces are available.

- PMS Interface Specification for Panasonic Default
  This is Default Specification Panasonic recommends.
  For details, refer to PMS Interface Specification for KX-TDA/KX-TDE Series (Panasonic Default) in the Appendix.

- PMS Interface Specification for Fidelio
  This is the interface provided by Marcos Fidelio for Fidelio software.
  Fidelio License name: TMS I/F-T.A.B.S. PMS and Call Accounting.
  For details, refer to PMS Interface Specification for KX-TDA/KX-TDE Series (Fidelio) in the Appendix.

- PMS Interface Specification for Eltrax
  This is the interface provided by Eltrax for LAN mark software.
  Eltrax Reference Number: MTS210
  For details, refer to PMS Interface Specification for KX-TDA/KX-TDE Series (Eltrax LANmark) in the Appendix.

- PMS Interface Specification for HIS
  This is the interface provided by HIS.
  HIS IPU version: 2.12.0
  MTS Interface code: TMS KMEPBX
  For details, refer to PMS Interface Specification for KX-TDA/KX-TDE Series (HIS) in the Appendix.

- PMS Interface Specification for TABS
  This is the interface provided by MTS.
  TABS call accounting for Windows version: 3.980 build 364
  For details, refer to 8.5, PMS Interface Specification for KX-TDA/KX-TDE Series. (TABS Call Accounting for Windows).

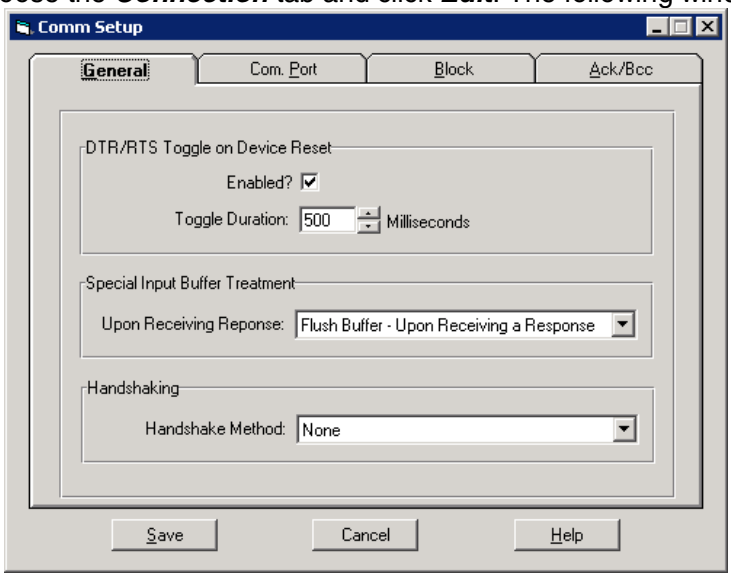
7.2. Special Considerations

Very often one of the COMM ports of the PMS Interface computer will be used for the mouse. In other cases, a COMM port may be used for an external modem while in yet other instances, a COMM port will be taken by an internal modem. When ordering the computer hardware for a PMS Interface installation, be sure to order a machine with enough available COMM ports.

7.3. Setup Parameters

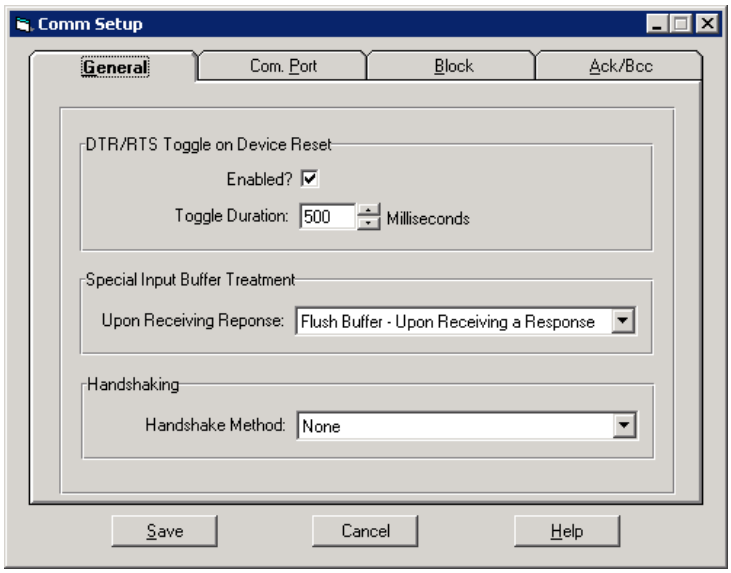
To access the connection parameters:

1. Select ***Devices/Setup*** from the PMS Interface menu.
2. Select the affected device.
3. Choose the ***Connection*** tab and click ***Edit***. The following window opens:



The parameters in each tab are described below

7.3.1. The General Tab



The parameters in this tab are:

- ***DTR / RTS Toggle on Device Reset:***
  a) ***Enabled***: Check this box to toggle (On and Off) the DTR and RTS control lines of the RS-232C port. Upon reset, PMS Interface will toggle the RTS and DTR signals of the COM port, some devices (like modem) will then be instructed to perform an internal re-initialization.

  b) ***Toggle Duration***: The time period (in milliseconds) between turning Off the control lines and turning them On again. A period of 500 milliseconds (1/2 second) is usually sufficient.

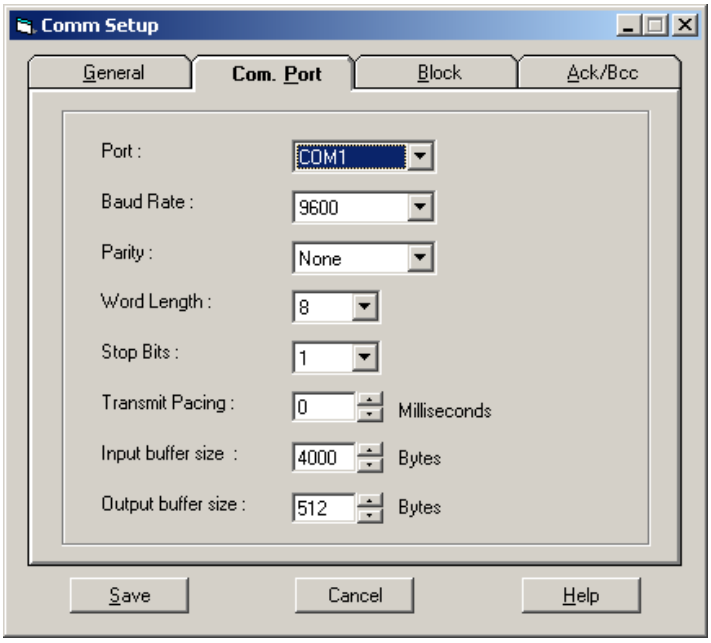
  c) ***Special* Input Buffer Treatment Upon Receiving Response**: When a command is sent to the device and a wait for string is specified, PMSi may be instructed to perform the following operation on any unprocessed data in the RS232 input buffer:

    - Flush Buffer: Completely clears the input buffer
    - Keep Buffer removing the response that was being 'waited for'
    - Keep the entire buffer (including the response just 'waited for'

  d) d) Handshake Method: RS232 employs several standard hand shake methods to control the flow of data between devices. This parameter allows you to choose an appropriate handshake method. Possible methods are as follows:

    - XON / OFF
    - RTS
    - RTS & XON / XOFF
    - None

7.3.2. The Com.Port Tab



The parameters in the ***Com.Port*** tab configure the communication port:

- ***Port:***

  The RS-232C COMM port. Usually COM1 is used for FOS.

- ***Baud Rate, Parity, Word Length, Stop Bits:***

  The communication port's settings. These values are set according to the connected device. Refer to the device's technical manual for the correct values.

- ***Transmit Pacing:***

  The pause (in milliseconds) between transmitting two following characters. Normally this parameter is set to 0 (no pausing). In case the device requires PMS Interface to slow down the rate at which it sends **characters** (not bits) to the device, set this parameter to the required pause length (e.g., 250 for a pause of 0.25 second).

Note: Both the ***Transmit Pacing*** and the Baud Rate parameters affect the transmitting rate, yet the ***Baud Rate*** is the rate at which the **bits** are transmitted, while the ***Transmit Pacing*** effects the rate at which **characters** are transmitted.

- ***Input buffer size:***

  The size (in bytes) of the PMS Interface application's input buffer.
  The PMS Interface application is running in a multitasking environment, where it may sometimes be pre-empted by some other application running on the same computer. During that time (normally milliseconds) the characters received by PMS Interface COMM drivers will be stored in the input buffer.
  The ***Input buffer size*** should be increased when:

  a) The device is sending many messages.

  b) There are many other applications running on the system.

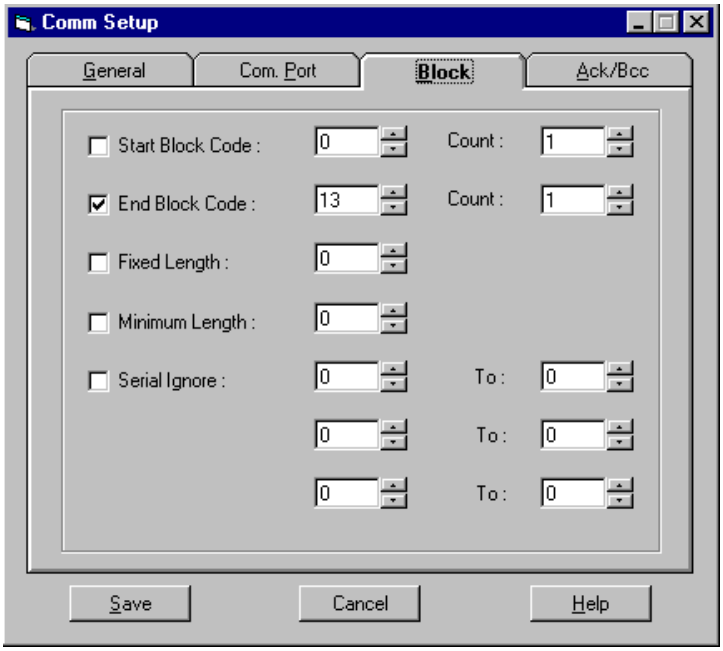
  This field accepts values between 1024-64000 bytes

- ***Output buffer size:***

  The size (in bytes) of the PMS Interface output buffer, which temporarily stores the outgoing commands. The ***Output buffer size*** should be increased in case PMS Interface is sending the device very large commands.

  This field accepts values between 512-64000 bytes

7.3.3. The Block Tab



The parameters in this tab configure the incoming data block:

- ***Start Block Code*** and ***Count:***

  The ASCII code of the character, which is transmitted before all valid messages (PMS Interface **does not** store this character as a part of the message). A common example of a ***Start Block Code*** is an ASCII code 02 (STX) with a ***Count*** of 1. In case the ***Count*** is set to 2, PMS Interface will only receive the message after the second ***Start Block Code***. Those messages between the first and second ***Start Block Code*** will be ignored. There are, however, many devices that do not transmit a *Start* code before a message. In those cases, the ***Count*** field must be set to 0 to make ***Start Block Code*** disabled.

- ***End Block Code*** and ***Count:***

  The character that terminates all messages. The 'end' character **is** included in the message. Common examples for an end code are ASCII code 03 (ETX), 10 (Line Feed) or 13 (Carriage Return). Usually, a ***Count*** of **1** is used**.** In case the ***Count*** is set to 2, PMS Interface receives all messages up to the second ***End Block Code***. In the rare case that a device does not transmit an *End* Character, then the ***Count*** field should be set 0 to make ***End Block Code*** disabled and the ***Fixed Length*** setting should be used.

  Note: Count of up to 255 may be defined for **start** or **end** characters.

- ***Fixed Length:***

  In the rare case where a device is transmitting messages with no ***End Block Code*** and the messages are all fixed length, then the length of the message should be specified in this parameter. For example 5 is set in the Fixed Length field, then PMS Interface will recognize a new message after received every 5 characters from the device.

  Note: The ***End Block Code*** must be disabled in this case. If the ***End Block Code*** is set, then the ***Fixed Length*** setting will be ignored.

- ***Minimum Length:***

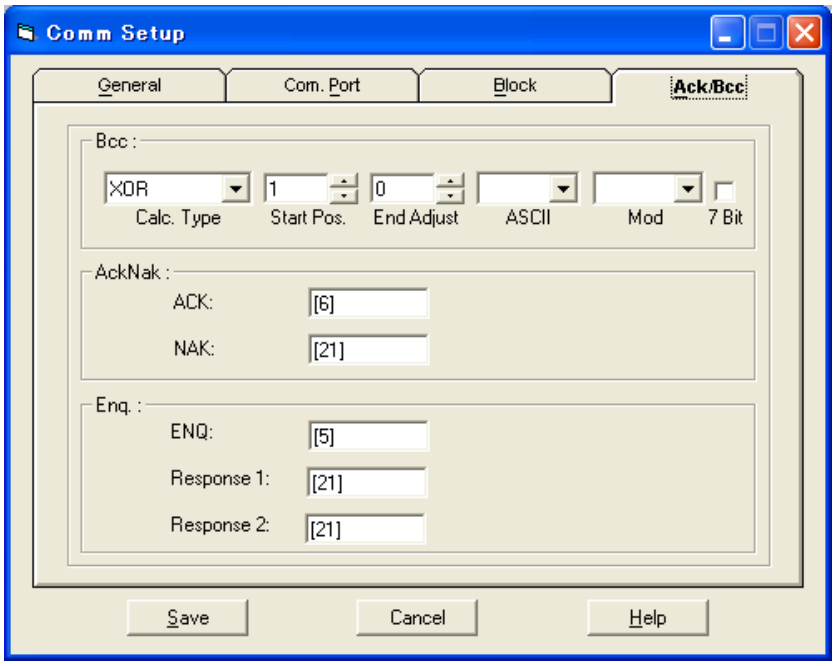
  The minimum length of a valid message. PMS Interface will ignore (discard) shorter messages.

  Maximum 255 may be defined.

- ***Serial Ignore:***

  Sometimes it is helpful and even necessary to consider some of the received characters as **not** being a part of the message. For example, some devices may send **control characters** within the message. For ease of parsing fields, you may choose to ignore these control characters. To ignore control characters within a certain range of ASCII code, check the ***Serial Ignore*** box and specify the ASCII codes range (e.g., 0-9) that you want to ignore.

7.3.4. The Ack/Bcc Tab



The parameters in this tab configure the communication's handshake method:

- ***Bcc:***

  Messages received by PMS Interface may be followed by a BCC (Binary Check Character), which enables PMS Interface to verify that the message has been received correctly (no lost or corrupted data). The following parameters control the BCC calculation:

  a) ***Calc. Type:***

  This parameter specifies the BCC algorithm to be used in order to calculate the BCC character for each message. The BCC algorithms are XOR and ADD (see table below for more BCC types). Setting this parameter to ***None*** disables the BCC check.

Bcc Types

Type	Description	Width (bytes)
1	XOR	1
2	ADD	1
3	CRC16	2
4	CRC32	4
5	CCITT	2
6	CRC16SUM	2
7	CRC32SUM	4
8	Adler	4
9	CRC16REV	2
10	MODBUS	2

b) ***Start Pos.:***

This parameter specifies the first character of the message to be included in the BCC computation (the characters before this position are ignored). The values 1 indicate that BCC calculation begins with the first character of the received message.

In case of STX, if STX is defined as the ***Start Block Code***, then the STX was automatically removed from the message when it received by PMS I/F. So setting ***Start Pos*** to 1 will already exclude the STX in the BCC calculation. BUT if the STX is not set as ***Start Block Code***, then the STX is included in the message received by PMS I/F, then if the STX need to be excluded, the ***Start Pos*** should set to 2.

c) ***End Adjust:***

This parameter specifies the last character of the message for BCC calculation purposes. Any characters beyond this position are ignored when calculating BCC.
The values 0 indicate that BCC calculation ends with the last character (for example the ETX.) In order to exclude the ETX, set the value to 1.

d) ***ASCII:***

This parameter when checked, instructs PMSi to convert the hex value of the calculated BCC to ASCII (Available in the future).

e) ***7 Bit:***

This parameter when checked, instructs PMSi to mask off the most significant bit (leftmost bit) of the calculated checksum. For example, the calculated checksum value of 0xF9 will result in 0x79 (Available in the future).

f) ***Mod:***

This parameter when checked, instructs PMSi to subtract the calculated checksum from 0x100 or 0x10000 (depending on the length). The calculated checksum of 0x77 will return 0x89 (Available in the future).

- ***Ack / Nak:***

  When PMS Interface receives a message and the BCC check is enabled (see above), then the following parameters are used to define the proper response to the device depending on whether the BCC check passed or failed.

  a) ***ACK:***

  The signal sent to the device whenever a valid message is received. This parameter is typically set to **[6]** (ASCII code 06). However, when required this parameter may be set to any character or set of characters (e.g. **OK[13]** - the word 'OK' followed by a carriage return).

  b) ***NAK:***

  The signal sent to the device whenever an invalid message is received. This parameter is typically set to **[21]** (ASCII code 21). However, when required this parameter may be set to any character or set of characters (e.g. **NOT OK [13]** - the words 'NOT OK' followed by a carriage return).

- ***Enq.:***

  Some devices send an 'enquiry' character (ENQ) in an attempt to verify that PMS Interface is ready to receive a message. Upon PMS Interface's reception of the ENQ, either 'Response 1' or 'Response 2' is immediately sent to the device that issued the ENQ:

  a) ***ENQ:***

  This parameter defines the value of the ENQ character or string. Typically, this field is set to [5] (ASCII code 05).

  b) ***Response 1:***

  Defines PMS Interface's response to the ENQ, in case PMS Interface is **not** waiting for some reply to a command previously sent (by PMS Interface) to the device. Typically set to the same value as the **ACK**.

  c) ***Response 2:***

  Defines PMS Interface's response to the ENQ, in case PMS Interface **is** waiting for some reply to a command previously sent (by PMS Interface) to the device. Depending on the system, either set to the same value as the **NAK** or the **ACK**.

7.4. Testing Communication

1. In PMS Interface's main window, double-click on the **Data-Scope** icon  next to the device's name.
2. The **[DataScope]** window opens, enabling you to view the raw data exchange between PMS Interface and the device.
3. After verifying that the communications is working properly, double-click the **Data-Scope** icon again to close the **[DataScope]** window.

   Note: For more information about the Data-Scope tool, refer to Par. 5.1.

7.5. Troubleshooting

No.	Problem	Probable Cause	Remedy
1	**When PMS I/F attempts to open the COMM port, error message 8005 is presented**	Most probably, the selected COMM port is in use by another device.	Try another COMM port. If there are no available COMM ports, see problem 2 below.
		There may be a system problem	Use the HyperTerm accessory to check the operation of the desired COMM port. If HyperTerm gives you the same error, then the problem is a system (and not PMS Interface) problem
2	**The PMS I/F machine does not have enough free COMM ports**.	The port may be taken by a mouse.	Replace the serial mouse with a bus mouse.
		Additional ports are needed.	Add COMM ports by adding a Digi board or the like
3	**PMS I/F is receiving or transmitting garbage or no data**.	Some connection parameters do not conform to the device's specifications.	Refer to the device's technical documentation for the proper values of the ***Baud Rate***, ***Parity***, ***Word Length*** and ***Stop Bits*** parameters. Correct the device's connection parameters accordingly (see Par.7.3).
		The RS-232C cable may be defected.	Check that the TX and RX (transmit and receive) pins are wired correctly. Also, if the device requires hardware signal control, check that the DTR, DTE, CTS and RTS pins are wired correctly.
		The RS-232C cable may be connected to the wrong COMM port.	Check that you have connected the cable to the correct COMM port.

8. Connecting a Text-Type Device

(For TABS Call Accounting for Windows Only)

8.1. General Description

- To work TABS Call Accounting for Windows with PMS Interface, use the Dongle attached to PMS Interface, not the Dongle attached to TABS Call Accounting for Windows. In this case, the user license depends on the Dongle of PMS Interface.
- This device type enables connection to TABS Call Accounting for Windows via text files.

Following is the communication process:

1. PMS Interface reads messages from the ***In*** file (which TABS Call Accounting for Windows writes its data in this file) and writes commands to the ***Out*** file (which is a temporary file and will be renamed later for TABS Call Accounting for Windows to read).
2. PMS Interface periodically checks the existence of the device's ***Destination*** file (the actual file that TABS Call Accounting for Windows will read).
3. In the case that the existing ***Destination*** file has been processed and deleted, PMS Interface rename its ***Out*** file to the name of the ***Destination*** file. If not, PMS Interface will wait some time which set in the ***Output*** tab.
4. After that, PMS Interface creates a new, empty ***Out*** file to store the commands again.
5. TABS Call Accounting for Windows reads data ("commands") from the ***Destination*** file. Once processed, the ***Destination*** file is deleted.

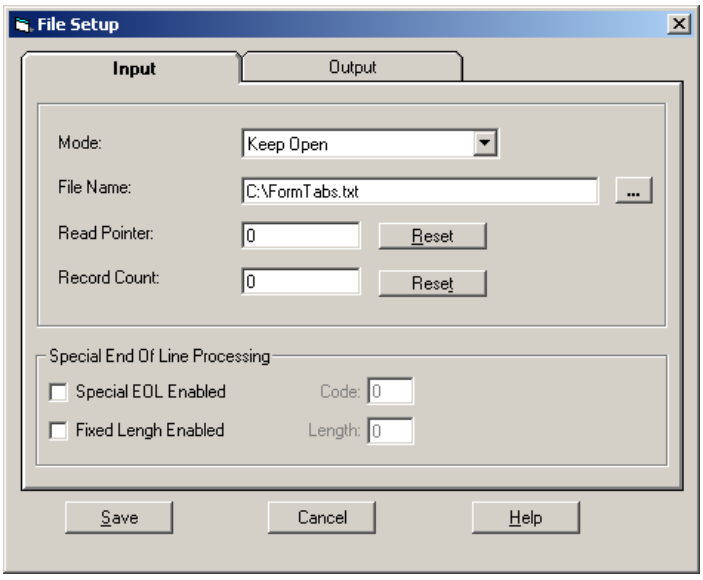
8.2. Special Considerations

- Input of messages and output of commands are directed from/to two separate files.
- The input file is opened by PMS Interface and kept open.
- PMS Interface never deletes the input file.
- PMS Interface assumes that the records in the input file are delimited by CR + LF (Carriage Return + Line Feed).
- It is assumed that the input file contains printable ASCII characters and no special control characters (except for CR and LF). An EOF character (ASCII code 26) will cause PMS Interface to stop reading from the file.

8.3. Setup Parameters

To access the connection parameters:

1. Select ***Devices/Setup*** from the PMS Interface menu.
2. Select the affected device.
3. Select the ***Connection*** tab and click ***Edit***. The following window opens:



4. Set the parameters as follows:

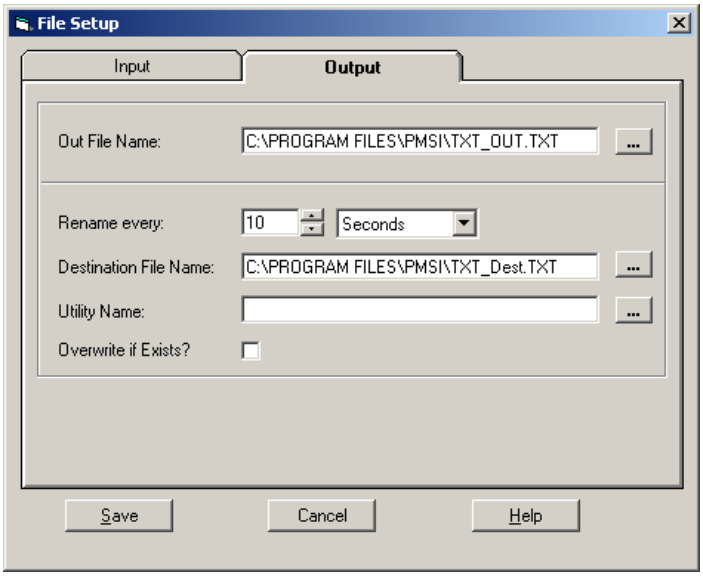
In the Input tab

Here you define file that is used as input to PMS Interface:

- ***Mode: Keep Open*** – Open the file once and reads new data add to the end of file.
- ***Mode: Rename and Delete*** – Opened a file, reads the data till the EOF and then deletes the file.
- ***File Name:*** The **In** file's name. Key-in the full path and name or click the adjacent Browse button and navigate to the desired file.
- ***Read Pointer*** and ***Reset:*** The number of bytes / characters PMS Interface has already processed from the input file. When PMS Interface reaches the end of the input file, ***Read Pointer*** will be equal to the physical size of the file. Click ***Reset*** to return to the beginning of the input file (read the messages again). This field cannot be edit except ***Reset***.
- ***Record Count*** and ***Reset:*** The number of records (messages) processed by PMS Interface since the last ***Reset***. This field cannot be edit except ***Reset***.
- ***Special EOL Enabled*** and ***Code:*** In some cases the text message does not have a CR or CR+LF in the end of line, the ***Special EOL Enabled*** should be checked and in the ***Code*** enter the ASCII code (0-255) for the desired end of line character.

- ***Fixed Length Enabled*** and ***Length:*** If the input file contains fixed length records (no CR+LF or other inter record delimiter), this checkbox should be checked and the appropriate length should be specified (Available in the future).

In the Output tab



- ***Out File Name:*** The **Out** file's name. Key-in the full path and name or click the adjacent Browse button and navigate to the desired file. PMS Interface will write commands to the end of this file.
- ***Rename every:*** The frequency of attempts to rename the ***Out File*** to the ***Destination File***. If the destination file exists, them PMSi will re-attempt a rename every 2 seconds.
- ***Destination File Name:*** The name of the file to be read by TABS Call Accounting for Windows. Key-in the full path and name or click the adjacent Browse button and navigate to the desired file.
- ***Utility Name:*** Reserved for TABS Call Accounting for Windows.
- ***Overwrite if Exists?:*** If checked, then if the destination file already exists, it will be deleted (Available in the future).

8.4. Testing Communication

1. Confirm that any data you add to the end of the ***In*** file is displayed as a message on the PMS Interface main window.
2. Use some viewer (e.g., NOTEPAD) to confirm that the commands sent to the device are written to the ***Out*** file (immediately) or the ***Destination*** file (after a short while).

   Note: In order to view the ***Out*** file, PMS Interface should be shut down.

8.5. PMS Interface Specification for KX-TDA/KX-TDE Series (TABS Call Accounting for Windows)

8.5.1. Introduction to TABS Call Accounting for Windows

TABS Call Accounting for Windows is the leading call management software on the market today. It interfaces between any telephone exchange and your PC system to register, collect, analyze, verify and store call information accurately. Its most distinguishing and powerful tool is the suite of reports it generates. TABS Call Accounting for Windows creates in-depth reports that are easy to read for beginners and experienced users alike.

Note: TABS call accounting for Windows version: 3.980 build 364

8.5.1.1. Introduction to TABS Call Accounting for Windows

Standard Version	
Directory Module	▪ Max. 8 organization levels. ▪ Supports up to 65000 extensions (different packages available). ▪ Supports up to 65000 accounts. ▪ Supports up to 65000 authorizations. ▪ Drag and drop directory migration. ▪ Import / Export directory data. ▪ Logged directory movement history.
Data Collecting Module	▪ Collect data from local file. ▪ Universal PBX CDR recognition.
Pricing Module	▪ Multi-carriers costing engine. ▪ Enhanced-markup by call-categories. ▪ Import / Export pricing tables. ▪ Cost date-back recalculation.
Reporting Module	▪ Varies build-in management reports in 26 groups and more than 100 styles. ▪ Flexible and extensive report filters. ▪ Reports customizable. ▪ Schedule reporting. ▪ Email reporting. ▪ Export call records to MS Excel.
Maintenance Module	▪ Archive / Restore call records with directory structure. ▪ Database files fixing. ▪ Automatic database analyzing. ▪ Technical report for trouble-shoot. ▪ Full-featured system log.

Advanced Version	
All features in standard version plus…	▪ Supports up to 99 multi-sites. ▪ Supports up to 99 multi-users. ▪ Collect data from FTP. ▪ Collect data from IP. ▪ Raw data backup (integrated with DACO). ▪ Schedule multi-sites data collecting.

Note:
1. TABS Call Accounting for Windows in different countries may have different features. Please contact your local distributor for details.
2. The above features are subject to change without prior notice.

This document describes the interface for TABS Call Accounting for Windows by MTS (MER Telemanagement Solutions Ltd.). There is 1 configuration file

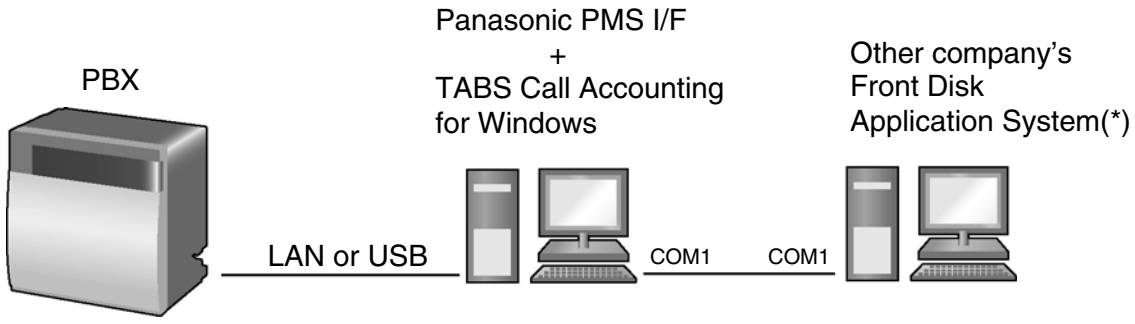
TABS2.pmd (defines the messages and commands for TABS Call Accounting for Windows)

8.5.2. General Description

1. Panasonic PMS I/F is a 32-bit Microsoft Windows application. It runs on Windows 2000 Professional (Service Pack 3 or later), Windows XP (Service Pack 2 or later), Windows Server 2003, and Windows Vista is recommended.
2. Panasonic PMS I/F is the communication gateway between the Panasonic PBX (model KX-TDA/KX-TDE Series) and TABS Call Accounting for Windows.
3. The physical link between PBX and Panasonic PMS I/F is USB or LAN.
4. The communication between Panasonic PMS I/F and TABS Call Accounting for Windows is via text files. Panasonic PMS I/F send the commands to a text file (File A) and receive messages from another text file (File B). In reverse, TABS Call Accounting for Windows receives the messages from File A and send its commands to File B.

   By default, the path & name of File A is C: \Program Files\PMSi\ToTabs.TXT, File B is C:\Program Files\PMSi\FromTabs.TXT.
5. The Command and Message are case sensitive.
6. The fields in Command and Message have fixed position and length.
7. The Communication between TABS Call Accounting for Windows and Panasonic PMS I/F will be describe below.

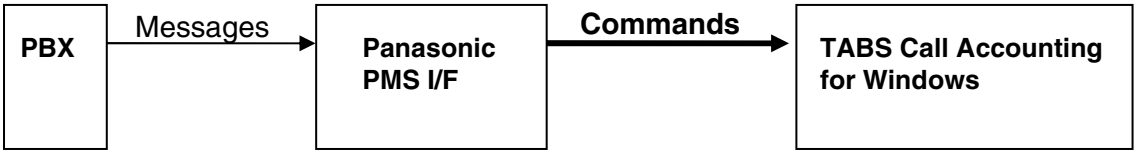
   It was a one-way communication between Panasonic PMS I/F and TABS Call Accounting for Windows. When Panasonic PMS I/F receives the SMDR message from Panasonic KX-TDA/KX-TDE Series, it sends the command to TABS Call Accounting for Windows via a text file (File A). TABS Call Accounting for Windows receives and processes the SMDR data, then generates the processed call charge record to File B. Panasonic PMS I/F will then receive the call charge record and post it to the FOS.
8. System Configuration – TABS Call Accounting for Windows and Panasonic PMS I/F are possible to install to the same PC.



(*)Note: One or more PC is used.

8.5.3. Commands from Panasonic PMS I/F to TABS Call Accounting for Windows

The command formats shown below are stored in file TABS2.PMD. They are sent from PBX to Panasonic PMS I/F and then converted into the formats below and passed to TABS Call Accounting for Windows.



Panasonic PMS I/F	**TABS Call Accounting for Windows**
Station Message Detail Recording	---------->

8.5.3.1. Station Message Detail Recording

Description

This command informs TABS Call Accounting for Windows the details of a call made by the guest.

Format
Command Name : SMDR-GOC
Possible Trigger Device, Message(s): PBX, SMDR-GOC (Global Out Charge) (from PBX)

PBXSMDR *Date Time ExtNumber CO* **O** *DialedNumber Duration Account*

Part	Position	Length	Description
PBXSMDR	1	7	Command identifier
Date	9	8	DD.MM.YY, D=day, M=month, Y=year
Time	18	5	HH:MM, HH=hour (24 hour system), MM=minute
ExtNumber	24	5	Right-justified, padded with Space
CO	36	3	Right-justified, padded with leading zero
O	40	1	Indicator for Outgoing call
DialedNumber	42	32	Left-justified, pad with Space Dialed Number for Outgoing Call
Duration	75	8	HH:MM:SS, HH=hour (24 hour system), MM=minute, SS= second
Account	84	10	Right-justified, pad with Space

Example

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890

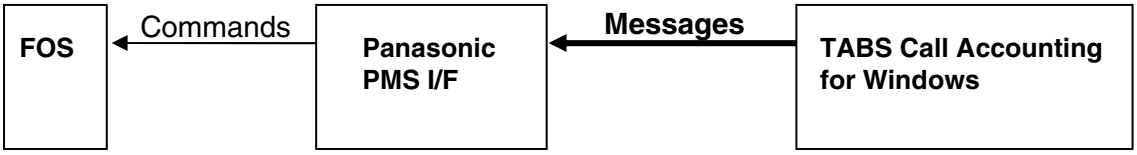
PBXSMDR 10.05.00 15:11   207        001 O 00181334491371


          8         9
123456789012345678901234567890

     00:00:26
```

8.5.4. Messages from TABS Call Accounting for Windows to Panasonic PMS I/F

The message formats shown below are stored in file TABS2.PMD. They are sent from TABS Call Accounting for Windows to Panasonic PMS I/F and then converted into the formats below and passed to FOS.



Panasonic PMS I/F	**TABS Call Accounting for Windows**
<----------	Call Posting

8.5.4.1. Call Posting

Description

This command sends call charge record to FOS when a guest had made a call.

Format
Message Name (description): Charge Record From TABS Call Accounting for Windows
Corresponding Device, Command: FOS, (*remark)

TABSSMDR ExtNumber Date Time Duration CO DialedNumber Destination Call_Category Account Charge

Part	Position	Length	Description
TABSSMDR	1	8	Message identifier.
ExtNumber	10	5	Extension number that has made the call.
Date	16	10	Date in format DD.MM.YYYY
Time	27	8	Time in format HH:MM:SS
Duration	36	8	Duration in format HH:MM:SS
CO	45	3	Right-justified, padded with leading zero
DialNumber	49	32	Left-justified, pad with Space Dialed Number for Outgoing Call
Destination	82	20	Name of the call destination.
Call_Category	103	4	Category of the call (LOC, AREA, LD or INT)
Account	108	10	Left-justified, pad with Space
Charge	119	10	Right-justified. The last 2digits are the figures in 2 decimal places. e.g. 1030 → $10.30

Example

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890

TABSSMDR   202 09.05.2000 12:49:00 00:08:47 002 074199688


          8         9        10        11        12        13        14
12345678901234567890123456789012345678901234567890123456789012345678901234567890

            LOCAL CALL           LOC  0749             8800
```

Remark: The destination command for this message depends on different FOS config file.

8.5.5. Procedures to apply this interface

TABS Call Accounting for Windows is not included in the Panasonic PMS standard interface. The SMDR information from PBX was sent to the FOS directly without using the TABS Call Accounting for Windows.

In order to integrate this TABS Call Accounting for Windows, we need some changes in the Panasonic PBX config file and the FOS config file.

Procedures for the Panasonic PMS I/F engineer

Change in PBX config file

- The original destination of the SMDR-GOC message was the command in FOS device. It should now change to the SMDR-GOC command in this TABS device.

Changes in this TABS config file

- The destination of the Charge Record From TABS Call Accounting for Windows message should change to the corresponding command in the FOS device.
- In order to fit the call posting format of different FOS, either the command in FOS device or the message in this TABS device may need to modify accordingly.

Procedures for the TABS Call Accounting for Windows engineer

- Install TABS Call Accounting for Windows version 3.980, 3.985 or 4.000.
- Prepare a PDF (PBX Definition File) to recognize the SMDR format listed in part 8.5.3.1.
- Define the TABS Call Accounting for Windows to export call records according to the format listed in part 8.5.4.1.

9. Connecting a DB-Type Device (DAO) (Available in the future)

9.1. General Description

The DB device type is connected to PMS Interface via an ODBC database. Messages are read from, and commands are written to, a single table in the specified database.

9.2. Special Considerations

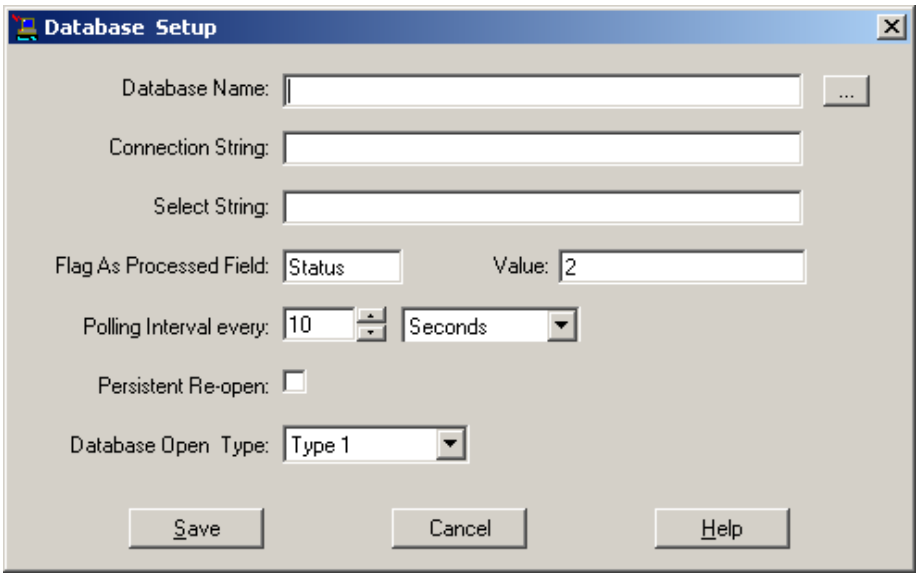
It is recommended to connect to a local database, that is, a database that resides on the PMS Interface machine.

Connecting to a **remote** database will result in a considerably longer response time for database operations, such as read, write or update.

9.3. Setup Parameters

To access the connection parameters:

1. Select ***Devices/Setup*** from the PMS Interface menu.
2. Select the affected device.
3. Select the ***Connection*** tab and click ***Edit***. The following window opens:



4. Set the parameters as follows:
   - ***Database Name:*** The full path and name of the database.
   - ***Connection String:*** Depending on the database involved, a connection string may be required.

- ***Select String:*** This string is the command that PMS Interface issues to the database, requesting messages to be processed. In the example above, PMS Interface reads records from a table named CDLOG whose records contain a STATUS of 1.

- ***Flag As Processed Field*** and ***Value:*** PMS Interface marks each record (message) it reads, in order to prevent it from being read again. After PMS Interface reads and processes a record (message) from the database, it sets the ***Flag As Processed Field*** to the specified ***Value***. If set ***Delete*** in the ***Flag As Processed Field*** will delete the record after PMS I/F processed.
- ***Polling Interval every:*** Indicates how often PMS Interface should look for messages (records) to be processed.
- ***Persistent Re-open:*** If checked then PMS Interface will close and then re-open the database before each attempt to read new messages (records).
- ***Database Open Type:*** Select ***Type 1*** for Access and Foxpro type databases. Select ***Type 2*** for SQL type databases.

9.4. Testing Communication

To test the connection, you may perform the following:

1. Manually add a record to the database. In that record, set the field specified in the ***Select String*** to the proper ***Value*** (in the example above, STATUS should be set to 1).
2. Within several seconds, PMS Interface should display the received message in the main window.
3. Perusing the database should then show that the value of the ***Select String*** field had changed to the value specified in the ***Flag As Processed Field*** and ***Value***. In the example above, STATUS will be changed to 2.

10. Connecting a Printer-Type Device

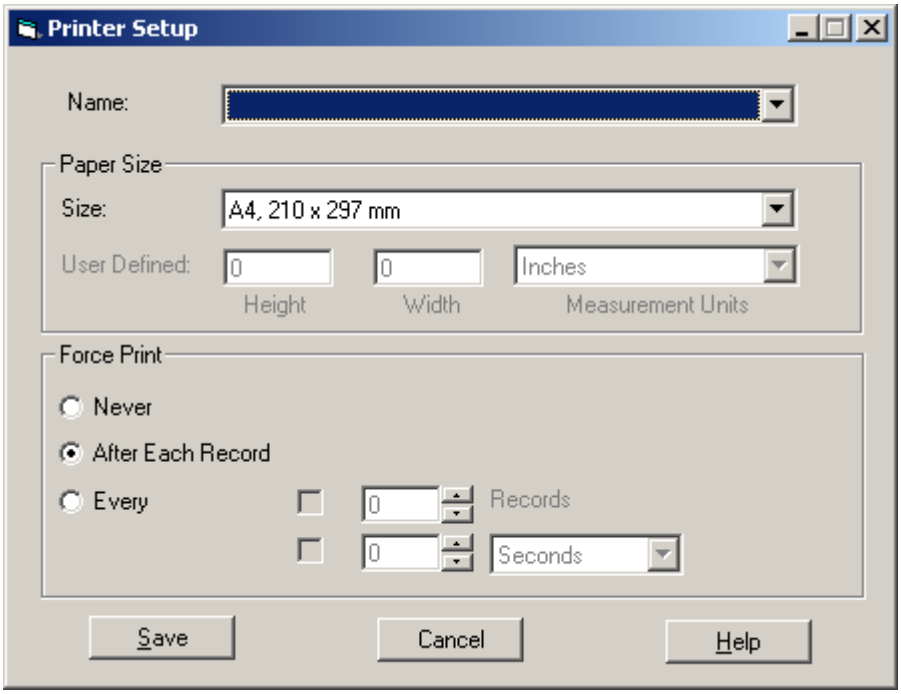
General Description

PMS Interface can route messages to printer that is defined in Windows Printers folder.

Special Considerations

When a laser printer is used and Force Print is used for each printed batch on page or more will be used.

Printer Device Setup Parameters



Name – Select the printer that is installed in the Windows Printers folder.
Paper Size – Selects the Paper size. Available Types:

	Value
1	Letter, 8 1/2 x 11 in.
2	Letter Small, 8 1/2 x 11 in.
3	Tabloid, 11 x 17 in.
4	Ledger, 17 x 11 in.
5	Legal, 8 1/2 x 14 in.
6	Statement, 5 1/2 x 8 1/2 in.
7	Executive, 7 1/2 x 10 1/2 in.
8	A3, 297 x 420 mm
9	A4, 210 x 297 mm
10	A4 Small, 210 x 297 mm
11	A5, 148 x 210 mm
12	B4, 250 x 354 mm
13	B5, 182 x 257 mm
14	Folio, 8 1/2 x 13 in.
15	Quarto, 215 x 275 mm
16	10 x 14 in.
17	11 x 17 in.
18	Note, 8 1/2 x 11 in.
19	Envelope #9, 3 7/8 x 8 7/8 in.
20	Envelope #10, 4 1/8 x 9 1/2 in.
21	Envelope #11, 4 1/2 x 10 3/8 in.
22	Envelope #12, 4 1/2 x 11 in.
23	Envelope #14, 5 x 11 1/2 in.
24	C size sheet
25	D size sheet
26	E size sheet
27	Envelope DL, 110 x 220 mm
29	Envelope C3, 324 x 458 mm
30	Envelope C4, 229 x 324 mm
28	Envelope C5, 162 x 229 mm
31	Envelope C6, 114 x 162 mm
32	Envelope C65, 114 x 229 mm
33	Envelope B4, 250 x 353 mm
34	Envelope B5, 176 x 250 mm
35	Envelope B6, 176 x 125 mm
36	Envelope, 110 x 230 mm
37	Envelope Monarch, 3 7/8 x 7 1/2 in.
38	Envelope, 3 5/8 x 6 1/2 in.
39	U.S. Standard Fanfold, 14 7/8 x 11 in.
40	German Standard Fanfold, 8 1/2 x 12 in.
41	German Legal Fanfold, 8 1/2 x 13 in.
256	User-defined

Height, Width, and Measurement Units
fields may be used when the Paper Type is set to 256 (User defined).

The values are in twips (There are approximately 1440 twips to a logical inch or 567 twips to a logical centimeter (the length of a screen item measuring one inch or one centimeter when printed).

Force Print – It is possible to control the printing.

Never – The records will be printed only when PMS Interface is shut down.

After Each Record – each record will be printed when it is send. (If laser printer is used that means that for each record a page will be used)

Every x Records – the user can specify the number of the records after which the records will be printed.

Every x Time Units – the user can specify the number of time units (Milliseconds, Seconds, Minutes or Hours) that the records will be printed.

Testing Communication

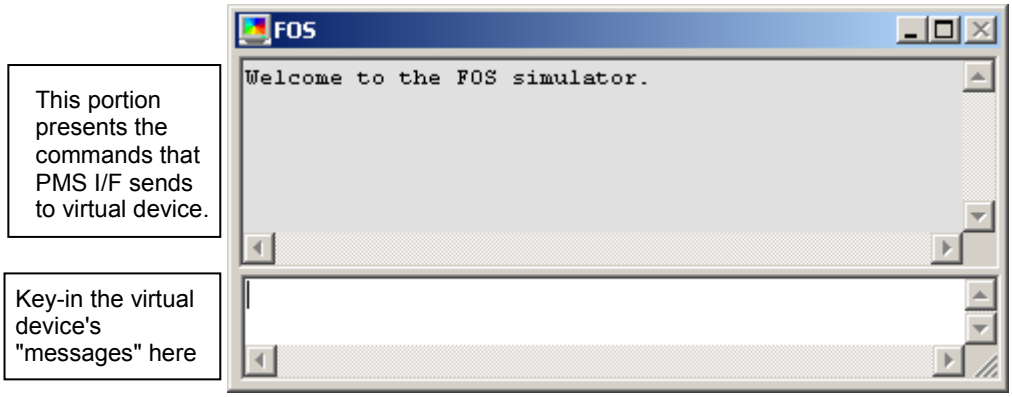
Force Print to after each record and send a message to the Printer.

11. Connecting a Disp-Type Device

11.1. General Description

A Disp-type device is a **virtual** device, which **emulates** the behavior of a real device.

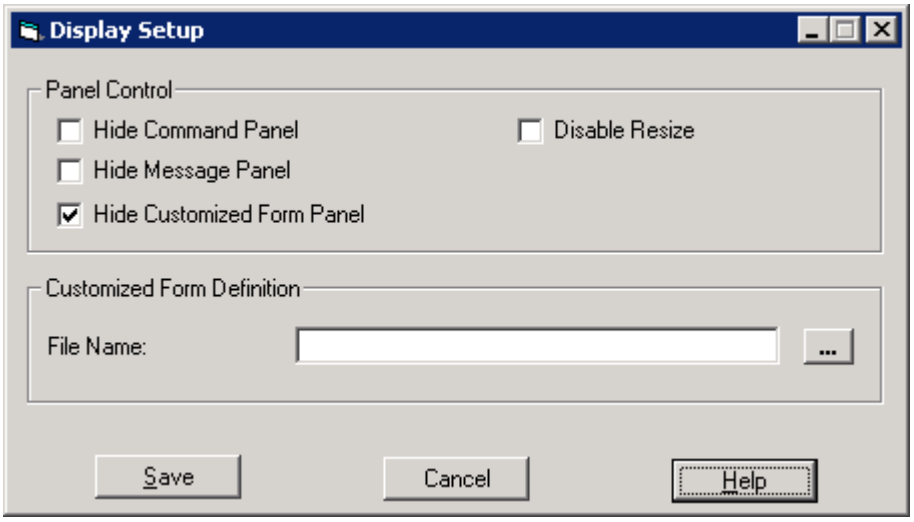
Emulation is performed by means of a dialog box that appears on the PMS Interface's PC screen. Messages from this virtual device are entered via the keyboard into the lower portion of the dialog box. The commands PMS Interface sends to the virtual device are presented on the upper portion of the dialog box:



11.2. Special Considerations

- Messages can contain printable ASCII characters only.
- To end a "message" and "send" it to PMS Interface, press Enter.

11.3. Setup Parameters (Available in the future)



Hide Command Panel: Check to suppress the viewing of all commands to this virtual device.

Hide Message Panel: Check to disable all input messages from this virtual device.

Hide Customized Form Panel: Should always be checked. If checked, then a customized form will be displayed. This form's fields, when filled by the users and send command button is pressed, will format and send a message to the device.

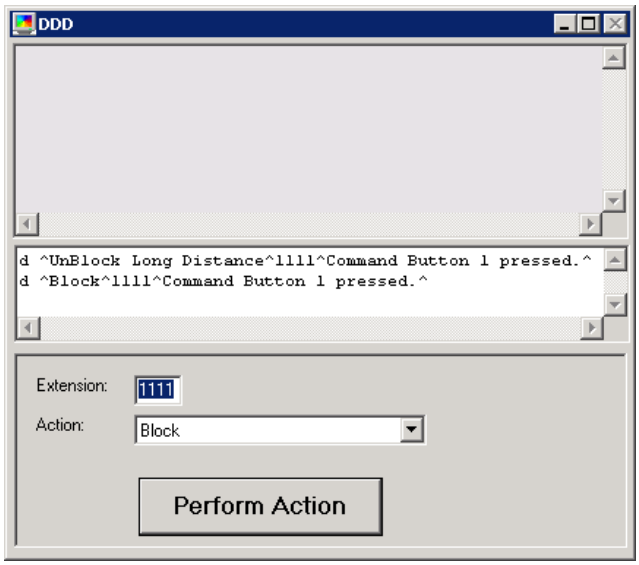
Disable Resize: Check to disable to resize the window of the virtual device.

Customized form File Name: The FDP (form definition file) that contains the definition of the customized form.

```
[Form]
1=Height,4,2000
2=Width,4,5000

[Controls]
1=1,200,200,200,1000,Extension:
2=5,200,1200,315,500,,9999
2.1=MaxLength,4,4
3=1,600,200,200,1000,Action:
4=4,600,1200,,3000,Block^UnBlock Local^UnBlock Long Distance^Unblock All,2
5=3,1250,C,600,2500,Perform Action,L.d ^4.text^2^L.Command Button 1 pressed.^F.2
5.1=Font.Size,4,12
5.2=Font.Bold,4,1
```

The above definition will result in the following customized panel:



11.4. Testing Communication

1. Key-in any text (message) and press Enter. Your message will be displayed in the main window of PMS Interface.
2. Any Command sent to this device will be displayed in the upper portion of the DISP dialog box. If not, then check the destination and command of the triggering message.

11.5. More on Customized forms (Available in the future)

- **Form Section:**

  Basic Format: n=PropertyName, 4, value
  n=MethodName, 1, param1, param2, ...

  Note:
  The Height Property is of the most importance as this will determine how high the user defined form will be. The value is in TWIPS.
  The Width property is not critical as the UDF will take on the with of the parent DISP form.

  By default, all sizing, and graphical-drawing statements use a unit of one twip. A twip is 1/20 of a printer's point (1,440 twips equal one inch, and 567 twips equal one centimeter).
  These measurements designate the size an object will be when printed. Actual physical distances on the screen vary according to the monitor size.

- **Control Section:**

  Basic Format:
  n=ControlType, Top, Left, Height, Width, Caption/Text, ControlSpecificData
  n.d=PropertyName, 4, value
  n.d=MethodName,1, Param1, Param2, ...

Control Type	Description	Control Specific Data	Note
1	Label		
2	Standard Text Box		
3	Command Button	Button Pressed Action	
4	Dropdown list Combo Box	Initial value (index)	Ignores Height setting. Caption/Text is a "^" delimited list of list items.
5	Masked Edit Text Box	Edit Mask	

- **Button Pressed Action:**

  A "^" delimited list of command directives used to build a message whenever the command button is pressed.
  Each Directive may be one of the following:

Directive	Result
n.property	The value of the property of the specified control. 'n' is the control's number
L.literal string	The actual literal string. Leading and trailing spaces are maintained.
F.n	After building and sending a message, set focus to control 'n'

Note: In the resulting Message, the '^' will be automatically inserted between the resulting values of each directive.

- **Edit Mask:**

  The input mask can consist of the following characters.

Mask Char	Description
#	Digit placeholder.
.	Decimal placeholder. The actual character used is the one specified as the decimal placeholder in your international settings. This character is treated as a literal for masking purposes.
,	Thousands separator. The actual character used is the one specified as the thousands separator in your international settings. This character is treated as a literal for masking purposes.
:	Time separator. The actual character used is the one specified as the time separator in your international settings. This character is treated as a literal for masking purposes.
/	Date separator. The actual character used is the one specified as the date separator in your international settings. This character is treated as a literal for masking purposes.
\	Treat the next character in the mask string as a literal. This allows you to include the '#', '&', 'A', and '?' characters in the mask. This character is treated as a literal for masking purposes.
&	Character placeholder. Valid values for this placeholder are ANSI characters in the following ranges: 32-126 and 128-255.
>	Convert all the characters that follow to uppercase.
<	Convert all the characters that follow to lowercase.
A	Alphanumeric character placeholder (entry required). For example: a – z, A – Z, or 0 – 9.
a	Alphanumeric character placeholder (entry optional).
9	Digit placeholder (entry optional). For example: 0 – 9.
C	Character or space placeholder (entry optional). This operates exactly like the & placeholder, and ensures compatibility with Microsoft Access.
?	Letter placeholder. For example: a – z or A – Z.
	Literal All other symbols are displayed as literals; that is, as themselves.

12. Connecting a TCP/IP

12.1. General Description

A TCP/IP type device is connected to the PC via the Ethernet LAN communications port to communicate to FOS software provided by other companies.
For Panasonic PMS I/F software, the following interfaces are available.

- As of the publication of this manual, there are no prepared TCP/IP interfaces. However, as more and more vendors move to TCP/IP this interface type will be employed.

12.2. Special Considerations

When connecting to a device via TCP/IP or UDP/IP the following factors must be considered by the installer:

- TCP or UDP – most devices make use of TCP
- Whether PMSi acts as a client or a server
- IP address (TCP Client or UDP only)
- IP port address

12.3. Setup Parameters

When connecting two computer systems via TCP/IP one machine is designated as a server and one as client. The server waits (listens) for a connection from a client.

Each machine in a TCP/IP configuration has an IP address. The Client connects to a server by specifying the servers IP address. Additionally, when establishing a TCP/IP connection there is a Port number. So when a client connects to a server, in addition to the IP address, the listener's Port number must also be specified.

Note: The Port number allows for many TCP/IP connections within a single IP address. IP port numbers are very often related to applications. Some reserved Port numbers that relate to specific applications are:

Port 80	HTTP (web browsers)
Ports 20 & 21	FTP (file transfer protocols)
Port 23	Telnet protocol
Port 25	SMTP (email protocol)

When connecting to an FOS server the installer must request / know the FOS's IP address as well as the IP port.

If PMSi is configured as a server (i.e. the FOS is the client) then the FOS must be informed of PMSi's IP address and Port.

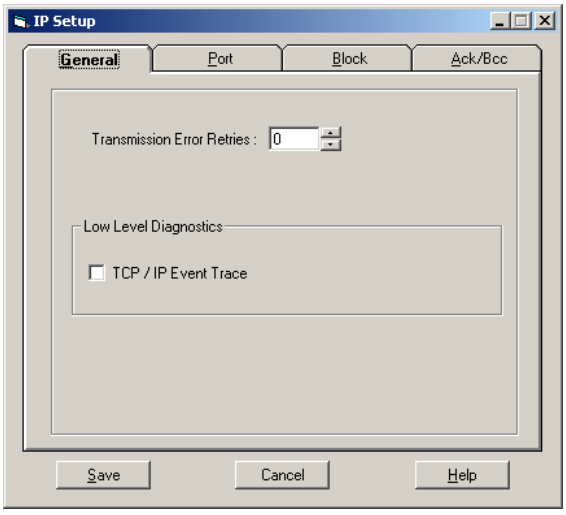
The IP address of the PMSi system may be retrieved via the IPCONFIG command (run from the cmd prompt).

When configuring the PMSi TPC/IP device as a server, then an arbitrary Port number (typically, a port number within the range of 51000 - 51099 is specified).

Once a connection is established, the TCP/IP may be thought of as a serial device very similar to that of RS232.

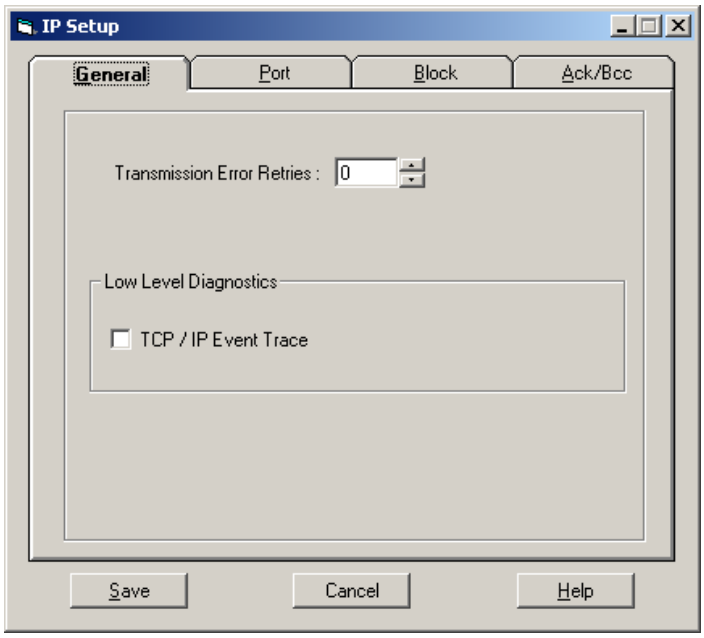
To access the connection parameters:

1. Select ***Devices/Setup*** from the PMS Interface menu.
2. Select the affected device.
3. Choose the ***Connection*** tab and click ***Edit***. The following window opens:



The parameters in each tab are described below.

12.3.1 The General Tab

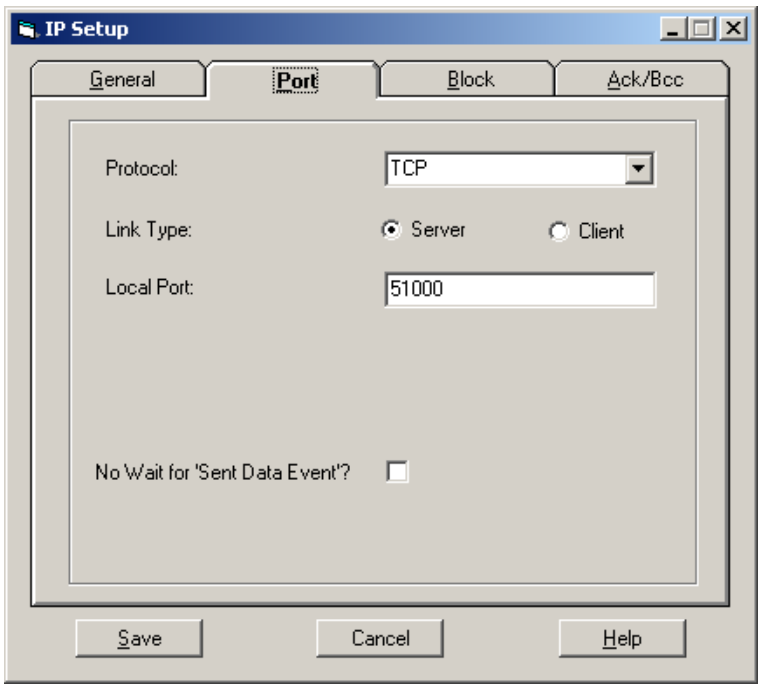


The parameters in this tab are as follows:

- ***Transmission Error Retries:***
  A setting greater than 0, instructs PMSi to re-try any TCP/IP transmission that resulted in an error. After the number of re-tries has been attempted, PMSi will treat the attempted write as 'failed'

- ***TCP / IP Event Trace:***
  Check this box to instruct PMSi to log all TCP / IP events. This feature should be enabled only to diagnose a communications problem with the device.

12.3.2 The Port Tab

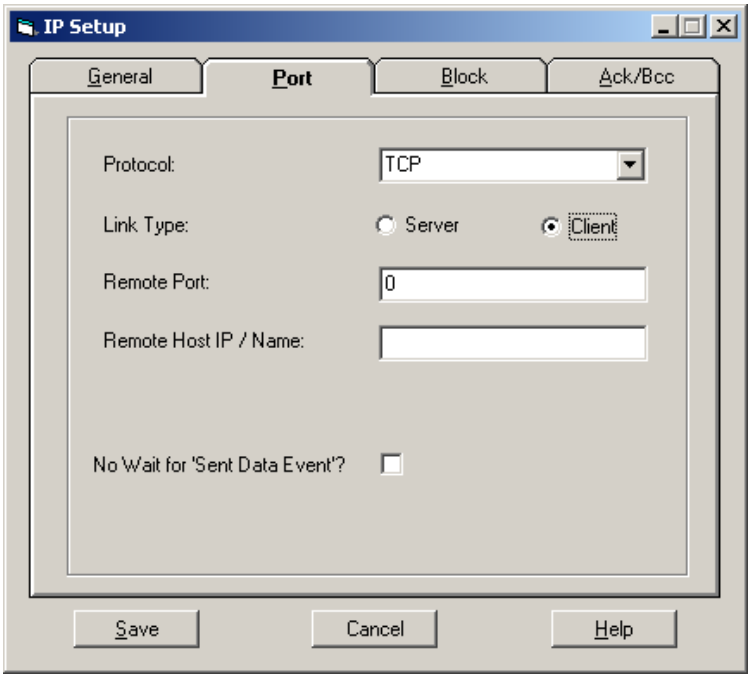


The parameters in this tab are as follows:

- ***Protocol:***
  Indicate the desired IP protocol. The chosen protocol will be dependent on the device to which PMSi is connecting. The possible choices are:
  - TCP
  - UDP

- ***Link Type:***
  When working with TCP/IP a decision must be made as to who is the client and who is the server. With this setting you are choosing the behavior of PMSi. The possible choices are:
  - Server
  - Client

- ***Local/Remote Port:***
  Specify the port address to be used when connecting to the Device. If PMSi is the client, then the port address is usually determined by the vendor's device. If PMSi is to determine the port address then an unused port must be specified. Port addresses within the range of 51000-51099 are usually not in use by other systems. This parameter must be specified for both Server and Client modes.



- ***Remote Host IP / Name:*** **(Client mode only)**

  Specify the IP address or the DNS name to be used when connecting to the Device. This address must uniquely identify the target device on your network. Additionally, if the device that you are trying to connect to resides outside a firewall (or behind a firewall outside the LAN that PMSi resides in), the IT managers involved may need to configure their firewalls to allow the connection.

  An IP address is in the form of aaa.bbb.ccc.ddd (e.g. 10.10.1.151)

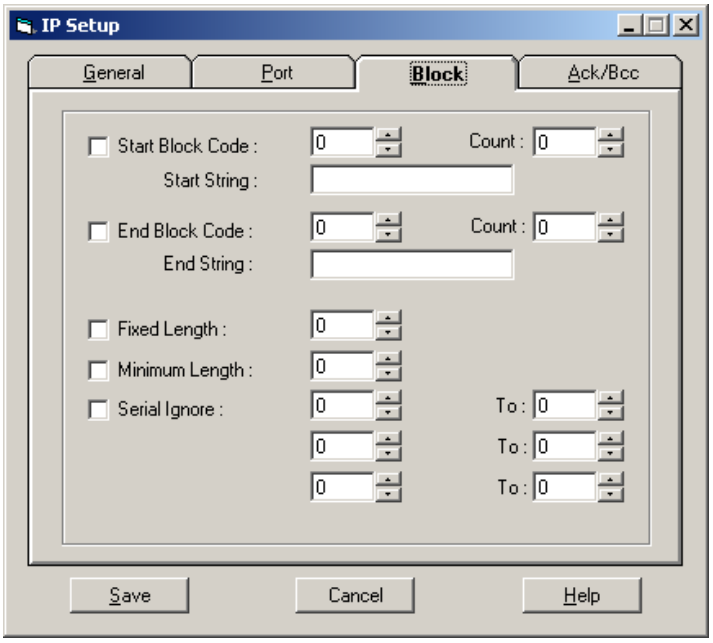
  A DNS (or computer name) may be in the form of www.somesite.com or \\somecomputername.

- ***No Wait for 'Sent Data Event'?:***

  If enabled (checked) then on write operations to the device, PMSi will not wait for the TCP/IP level acknowledge. This setting should be used only if the data sent to the device is not critical and subsequent loss of data is not an issue.

  If the system to which you are connecting is on the same computer as PMSi, then IP address **127.0.0.1** or **LocalHost** can be used.

12.3.3 The Block Tab



The parameters in this tab configure the incoming data block:

- ***Start Block Code*** and ***Count:***

  The ASCII code of the character, which is transmitted before all valid messages (PMS Interface **does not** store this character as a part of the message). A common example of a ***Start Block Code*** is an ASCII code 02 (STX) with a ***Count*** of 1. In case the ***Count*** is set to 2, PMS Interface will only receive the message after the second ***Start Block Code***. Those messages between the first and second ***Start Block Code*** will be ignored. There are, however, many devices that do not transmit a *Start* code before a message. In those cases, the ***Count*** field must be set to 0 to make ***Start Block Code*** disabled.

- ***Start String:***

  Used when more than a single character / byte is needed to identify the beginning of a block. If ASCII codes need to be specified, use the [*ccc*] format (where *ccc* is the ASCII code in decimal). This parameter overrides the Start Block Code parameter above.

- ***End Block Code*** and ***Count:***

  The character that terminates all messages. The 'end' character is included in the message. Common examples for an end code are ASCII code 03 (ETX), 10 (Line Feed) or 13 (Carriage Return). Usually, a ***Count*** of **1** is used**.** In case the ***Count*** is set to 2, PMS Interface receives all messages up to the second ***End Block Code***. In the rare case that a device does not transmit an *End* Character, then the ***Count*** field should be set 0 to make ***End Block Code*** disabled and the ***Fixed Length*** setting should be used.

  Note: Count of up to 255 may be defined for **start** or **end** characters.

- ***End String:***

  Used when more than a single character/byte is needed to identify the end of a block. If ASCII codes need to be specified, use the [*ccc*] format (where *ccc* is the ASCII code in decimal). This parameter overrides the End Block Code parameter above.

- ***Fixed Length:***

  In the rare case where a device is transmitting messages with no ***End Block Code*** and the messages are all fixed length, then the length of the message should be specified in this parameter. For example 5 is set in the Fixed Length field, then PMS Interface will recognize a new message after received every 5 characters from the device.

  Note: The ***End Block Code*** must be disabled in this case. If the ***End Block Code*** is set, then the ***Fixed Length*** setting will be ignored.

- ***Minimum Length:***

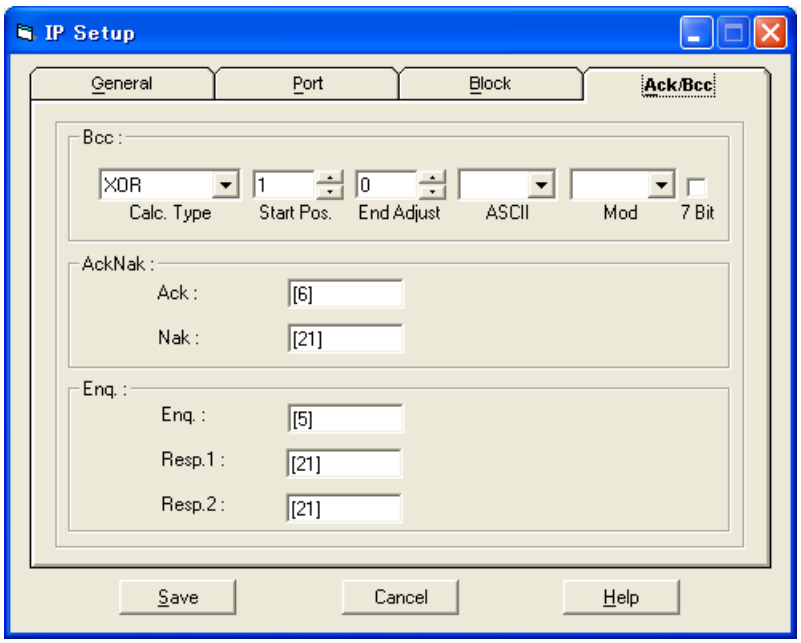
  The minimum length of a valid message. PMS Interface will ignore (discard) shorter messages.

  Maximum 255 may be defined.

- ***Serial Ignore:***

  Sometimes it is helpful and even necessary to consider some of the received characters as **not** being a part of the message. For example, some devices may send **control characters** within the message. For ease of parsing fields, you may choose to ignore these control characters.
  To ignore control characters within a certain range of ASCII code, check the ***Serial Ignore*** box and specify the ASCII codes range (e.g., 0-9) that you want to ignore.

12.3.4 The Ack/Bcc Tab



The parameters in this tab configure the communication's handshake method:

- ***Bcc:***

  Messages received by PMS Interface may be followed by a BCC (Binary Check Character), which enables PMS Interface to verify that the message has been received correctly (no lost or corrupted data). The following parameters control the BCC calculation:

  a) ***Calc. Type:***

  This parameter specifies the BCC algorithm to be used in order to calculate the BCC character for each message. The BCC algorithms are XOR and ADD (see table below for more BCC types). Setting this parameter to ***None*** disables the BCC check.

Bcc Types

Type	Description	Width (bytes)
1	XOR	1
2	ADD	1
3	CRC16	2
4	CRC32	4
5	CCITT	2
6	CRC16SUM	2
7	CRC32SUM	4
8	Adler	4
9	CRC16REV	2
10	MODBUS	2

b) ***Start Pos.:***

This parameter specifies the first character of the message to be included in the BCC computation (the characters before this position are ignored).
The values 1 indicate that BCC calculation begins with the first character of the received message.

In case of STX, if STX is defined as the ***Start Block Code***, then the STX was automatically removed from the message when it received by PMS I/F. So setting ***Start Pos*** to 1 will already exclude the STX in the BCC calculation. BUT if the STX is not set as ***Start Block Code***, then the STX is included in the message received by PMS I/F, then if the STX need to be excluded, the ***Start Pos*** should set to 2.

c) ***End Adjust:***

This parameter specifies the last character of the message for BCC calculation purposes. Any characters beyond this position are ignored when calculating BCC.
The values 0 indicate that BCC calculation ends with the last character (for example the ETX.) In order to exclude the ETX, set the value to 1.

d) ***ASCII:***

This parameter when checked, instructs PMSi to convert the hex value of the calculated BCC to ASCII.

e) ***7 Bit:***

This parameter when checked, instructs PMSi to mask off the most significant bit (leftmost bit) of the calculated checksum. For example, the calculated checksum value of 0xF9 will result in 0x79.

f) ***Mod:***

This parameter when checked, instructs PMSi to subtract the calculated checksum from 0x100 or 0x10000 (depending on the length). The calculated checksum of 0x77 will return 0x89.

- ***Ack / Nak:***

When PMS Interface receives a message and the BCC check is enabled (see above), then the following parameters are used to define the proper response to the device depending on whether the BCC check passed or failed.

a) ***Ack:***

The signal sent to the device whenever a valid message is received. This parameter is typically set to **[6]** (ASCII code 06). However, when required this parameter may be set to any character or set of characters (e.g. **OK [13]** - the word 'OK' followed by a carriage return).

b) ***Nak:***

The signal sent to the device whenever an invalid message is received. This parameter is typically set to **[21]** (ASCII code 21). However, when required this parameter may be set to any character or set of characters (e.g. **NOT OK [13]** - the words 'NOT OK' followed by a carriage return).

- ***Enq.:***

Some devices send an 'enquiry' character (ENQ) in an attempt to verify that PMS Interface is ready to receive a message. Upon PMS Interface's reception of the ENQ, either 'Resp. 1' or 'Resp. 2' is immediately sent to the device that issued the ENQ:

a) ***Enq.:***

This parameter defines the value of the ENQ character or string. Typically, this field is set to [5] (ASCII code 05).

b) ***Resp. 1:***

Defines PMS Interface's response to the ENQ, in case PMS Interface is **not** waiting for some reply to a command previously sent (by PMS Interface) to the device. Typically set to the same value as the **ACK**.

c) ***Resp. 2:***

Defines PMS Interface's response to the ENQ, in case PMS Interface **is** waiting for some reply to a command previously sent (by PMS Interface) to the device. Depending on the system, either set to the same value as the **NAK** or the **ACK**.

12.4. Testing Communication

1. In PMS Interface's main window, double-click on the **Data-Scope** icon  next to the device's name.
2. The **[DataScope]** window opens, enabling you to view the raw data exchange between PMS Interface and the device.
3. After verifying that the communications is working properly, double-click the **Data-Scope** icon again to close the **[DataScope]** window.

   Note: For more information about the Data-Scope tool, refer to Par. 5.1.

12.5. Troubleshooting

No.	Problem	Probable Cause	Remedy
1.	When PMS I/F attempts a connection: **Comm_Error: 10060 The attempt to connect timed out-2146818228**	Most probably, the selected IP address is invalid or blocked a firewall.	Sort out the problem with the IT managers.
		There may be a system problem	Use the HyperTerm accessory to check the operation of the desired TCP/IP port. If HyperTerm gives you the same error, then the problem is a system (and not PMS Interface) problem
2.	When PMS I/F attempts a connection: **Comm_Error: 10061 Connection is forcefully rejected-2146818227**	Most probably, the selected port address is invalid or blocked a firewall.	Make sure you have selected a unique port address. See remedies for Problem No. 1 above.
3.	When PMS I/F attempts a connection: **Timeout waiting for connection (-51)**	When in the Server mode, there is no device attempting to connect to the PMS I/F	See remedies for Problem No. 1 above.
4.	When PMS I/F attempts a connection: **Failed (10048)**	The specified port address is in use by another PMSI device or another application (on the PMSi I/F machine)	Select another port address
5.	**PMS I/F is receiving or transmitting no data**.	Some connection parameters do not conform to the device's specifications.	Refer to the device's technical documentation for the proper values

13. Connecting a DB-Type Device (ADO) (Available in the future)

13.1. General Description

The ADO device type is connected to PMS Interface via an ODBC or OLEDB database. Messages are read from, and commands are written to, a single table in the specified database.

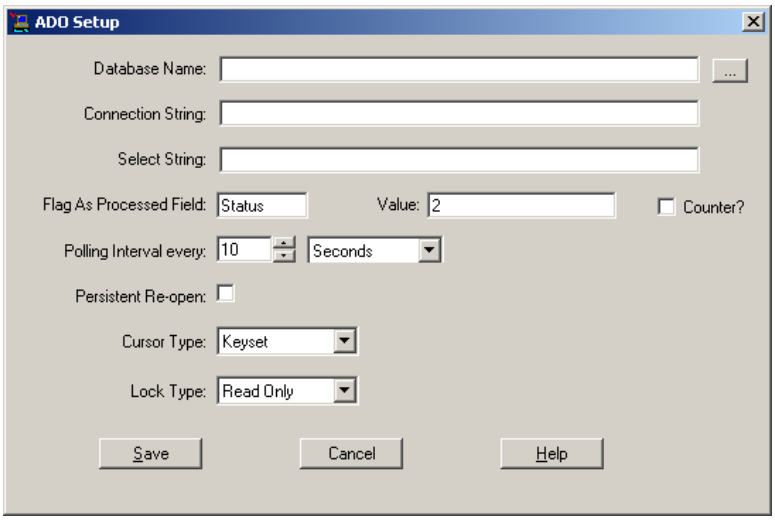
13.2. Special Considerations

The ADO DB device type is meant to replace the older DAO DB device type. Any device that requires a DB interface via an OLEDB driver (provided by the device vendor) will need to make use of ADO DB.

13.3. Setup Parameters

To access the connection parameters:

1. Select ***Devices/Setup*** from the PMS Interface menu.
2. Select the affected device.
3. Select the ***Connection*** tab and click ***Edit***. The following window opens:



4. Set the parameters are as follows:

   - ***Database Name:***

     Not usually used. This parameter is used only in the case of opening a FoxPro DBF file. This field should be set to the full path\filename of the dbf that you will be accessing via the Select String. By specifying, the file name of the dbf to be accessed, PMSi will fix up the DBF so that it will be opened without its accompanying index files. This feature is rarely used.

- ***Connection String:***

  Depending on the database involved, a connection string may be required. The following table provides some commonly used connection strings:

Database Type	Connect String	Notes
MS SQL	ConnectString=Data Source=212.68.130.140; Initial Catalog=CiscoTest; Provider=SQLOLEDB; uid=username; pwd=password;	
MS SQL (integrated security)	Data Source=127.0.0.1;Initial Catalog=OutBoundNew; Provider=SQLOLEDB; User ID=dbo; Integrated Security=SSPI; Persist Security Info=False; Data Source=(local); Initial Catalog=PBX; Provider=SQLOLEDB; User ID=dbo; Integrated Security=SSPI; Persist Security Info=False;	
MS Access	Provider=Microsoft.Jet.OLEDB.4.0;Data Source='D:\ SYN.MDB'	
dBASE IV	Provider=Microsoft.Jet.OLEDB.4.0;Data Source=c:\GlobalPhone;Extended Properties=dBASE IV	c:\GlobalPhone is a folder which contains one or more dbf's. Each dbf will be treated as a table.
ODBC	Interface	The name of the DSN
ODBC	DSN=B3; uid=ingtg1security; pwd=pp;	

  For a comprehensive list of connection strings visit one of the following sites:

  - http://www.connectionstrings.com/
  - http://www.carlprothman.net/Default.aspx?tabid=81

- ***Select String:***

  This string is the command that PMS Interface issues to the database, requesting messages to be processed. For example:

  SELECT * FROM Interface WHERE Status=1

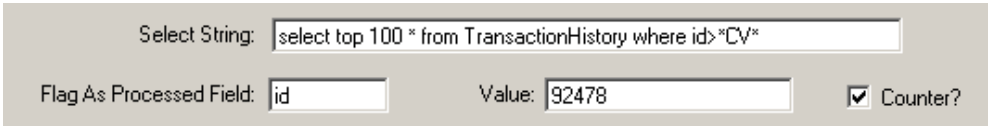
  Instructs the PMS I/F to read all records from a table named **Interface** whose records contain a **STATUS** of **1**. If the Status field was of type string, then SELECT * FROM Interface WHERE Status='1' would be used (enclosing the 1 in single quotes)

- ***Flag As Processed Field*** and ***Value:***

  PMS Interface marks each record (message) it reads, in order to prevent it from being read again. After PMS Interface reads and processes a record (message) from the database, it sets the ***Flag As Processed Field*** to the specified ***Value***. If ***Delete*** is specified in the ***Flag As Processed Field*** the record will be deleted after PMS I/F has successfully processed the message / record.

- ***Counter?:***

  When checked, it is assumed that there is a record counter (sequence number) field in the record. If this is the case, then PMSi will keep track of the sequence number of the last record processed. Subsequent reads will only return records whose sequence number is greater that that of the last processed record. In this mode, the records are never updated (and the read only cursor type may be employed). For example:



  The *CV* in the select is replaced with the counter stored by PMSi. That value may be viewed and subsequently re-set in the Value: parameter. The Flag as Processed field is not really used in this case.

- ***Polling Interval every:***

  Indicates how often PMS Interface should look for messages (records) to be processed.

- ***Persistent Re-open:***

  If checked then PMS Interface will close and then re-open the database before each attempt to read new messages (records).

- ***Cursor Type:***

Forward Only	This is the lightest (cheapest) cursor, and the default when opening a recordset. It allows only forwards movement. Only the most minimal information about the recordset is calculated by Jet (eg you can't even get a .recordCount of the total number of records in the recordset). If you try to move backwards using this cursor, the recordset is closed, and the query re-executed. Avoid doing this!
Static	A static snap-shot of the records that match your search criteria are put into the recordset. You can scroll forwards and backwards, and set bookmarks. Changes made to the database by other users however are not visible - all you can see are the records that matched your search at the point in time when the query was executed

Keyset	A static snap-shot of the primary key values of the records that match your search criteria are put into the recordset. As you scroll backwards and forwards, the primary key value in the recordset is used to fetch the current data for that record from the database. This cursor thus allows you to see updates to the data made by other users, but it doesn't let you see new records that have been added by other users (because the primary key values for those records are not in your recordset).
Dynamic	A dynamic snapshot of the database is maintained by OLEDB/ADO. All changes by other users to the underlying database are visible. Obviously this is the most sophisticated cursor, and thus is usually the most expensive.

For most interfaces the Keyset or Dynamic cursor type will suffice. If the interface is read only, meaning that you are using the record counter method, then the cursor type may be set to Read Only.

- ***Lock Type:***

Optimistic	This value indicates optimistic locking, record by record. The provider uses optimistic locking, locking records only when the **Update** method is called.
Pessimistic	This value indicates pessimistic locking, record by record. The provider does what is necessary to ensure successful editing of the records, usually by locking records at the data source immediately after editing.
Read Only	This value indicates read-only records where the data cannot be altered.
Batch Optimistic	This value indicates optimistic batch updates and is required for batch update mode.

For most interfaces the Pessimistic lock type will suffice.

13.4. Testing Communication

To test the connection, you may perform the following:

1. Manually add a record to the database. In that record, set the field specified in the ***Select String*** to the proper ***Value*** (in the example above, STATUS should be set to 1).
2. Within several seconds, PMS Interface should display the received message in the main window.
3. Perusing the database should then show that the value of the ***Select String*** field had changed to the value specified in the ***Flag As Processed Field*** and ***Value***. In the example above, STATUS will be changed to 2.

14. ASCII Code Table

14.1 General Description

PMS I/F handles all ASCII code from 0 to 127. Below listed the first commonly used 128 ASCII codes for reference.

DEC	CHARACTER	DEC	CHARACTER
0		64	@
1	☺	65	A
2	●	66	B
3	♥	67	C
4	♦	68	D
5	♣	69	E
6	♠	70	F
7	•	71	G
8	◘	72	H
9	○	73	I
10	◙	74	J
11	♂	75	K
12	♀	76	L
13	♪	77	M
14	♫	78	N
15	☼	79	O
16	►	80	P
17	◄	81	Q
18	b	82	R
19	!!	83	S
20	¶	84	T
21	§	85	U
22	■	86	V
23	↨	87	W
24	↑	88	X
25	↓	89	Y
26	→	90	Z
27	←	91	[
28	L	92	\
29	↔	93	]
30	▲	94	^
31	▼	95	_
32	Space	96	`
33	!	97	a
34	"	98	b
35	#	99	c
36	$	100	d
37	%	101	e
38	&	102	f
39	'	103	g
40	(	104	h
41	)	105	i
42	*	106	j
43	+	107	k
44	,	108	l
45	-	109	m
46	.	110	n
47	/	111	o
48	0	112	p
49	1	113	q
50	2	114	r
51	3	115	s
52	4	116	t
53	5	117	u
54	6	118	v
55	7	119	w
56	8	120	x
57	9	121	y
58	:	122	z
59	;	123	{
60	<	124	|
61	=	125	}
62	>	126	~
63	?	127	

15. VBA Format Directive

15.1 General Description

The following format directives can be used in the command to format the field. Put the format directives between a “!”. Example, !0000! gives the 4 digits with leading zero.

User-Defined Date/Time Formats (Format Function)

The following table identifies characters you can use to create user-defined date/time formats:

Character	Description
(**:**)	Time separator. In some locales, other characters may be used to represent the time separator. The time separator separates hours, minutes, and seconds when time values are formatted. The actual character used as the time separator in formatted output is determined by your system settings.
(**/**)	Date separator. In some locales, other characters may be used to represent the date separator. The date separator separates the day, month, and year when date values are formatted. The actual character used as the date separator in formatted output is determined by your system settings.
c	Display the date as ddddd and display the time as ttttt, in that order. Display only date information if there is no fractional part to the date serial number; display only time information if there is no integer portion.
d	Display the day as a number without a leading zero (1 - 31).
dd	Display the day as a number with a leading zero (01 - 31).
ddd	Display the day as an abbreviation (Sun - Sat).
dddd	Display the day as a full name (Sunday - Saturday).
ddddd	Display the date as a complete date (including day, month, and year), formatted according to your system's short date format setting. The default short date format is m/d/yy.
dddddd	Display a date serial number as a complete date (including day, month, and year) formatted according to the long date setting recognized by your system. The default long date format is mmmm dd, yyyy.
w	Display the day of the week as a number (1 for Sunday through 7 for Saturday).
ww	Display the week of the year as a number (1 - 54).
m	Display the month as a number without a leading zero (1 - 12). If m immediately follows h or hh, the minute rather than the month is displayed.
mm	Display the month as a number with a leading zero (01 - 12). If m immediately follows h or hh, the minute rather than the month is displayed.

mmm	Display the month as an abbreviation (Jan - Dec).
mmmm	Display the month as a full month name (January - December).
q	Display the quarter of the year as a number (1 - 4).
y	Display the day of the year as a number (1 - 366).
yy	Display the year as a 2-digit number (00 - 99).
yyyy	Display the year as a 4-digit number (100 - 9999).
h	Display the hour as a number without leading zeros (0 - 23).
Hh	Display the hour as a number with leading zeros (00 - 23).
N	Display the minute as a number without leading zeros (0 - 59).
Nn	Display the minute as a number with leading zeros (00 - 59).
S	Display the second as a number without leading zeros (0 - 59).
Ss	Display the second as a number with leading zeros (00 - 59).
t t t t t	Display a time as a complete time (including hour, minute, and second), formatted using the time separator defined by the time format recognized by your system. A leading zero is displayed if the leading zero option is selected and the time is before 10:00 A.M. or P.M. The default time format is h:mm:ss.
AM/PM	Use the 12-hour clock and display an uppercase AM with any hour before noon; display an uppercase PM with any hour between noon and 11:59 P.M.
am/pm	Use the 12-hour clock and display a lowercase AM with any hour before noon; display a lowercase PM with any hour between noon and 11:59 P.M.
A/P	Use the 12-hour clock and display an uppercase A with any hour before noon; display an uppercase P with any hour between noon and 11:59 P.M.
a/p	Use the 12-hour clock and display a lowercase A with any hour before noon; display a lowercase P with any hour between noon and 11:59 P.M.
AMPM	Use the 12-hour clock and display the AM string literal as defined by your system with any hour before noon; display the PM string literal as defined by your system with any hour between noon and 11:59 P.M. AMPM can be either uppercase or lowercase, but the case of the string displayed matches the string as defined by your system settings. The default format is AM/PM.

Named Date/Time Formats (Format Function)

The following table identifies the predefined date and time format names:

Format Name	Description
General Date	Display a date and/or time. For real numbers, display a date and time, for example, 4/3/93 05:34 PM. If there is no fractional part, display only a date, for example, 4/3/93. If there is no integer part, display time only, for example, 05:34 PM. Date display is determined by your system settings.
Long Date	Display a date according to your system's long date format.
Medium Date	Display a date using the medium date format appropriate for the language version of the host application.
Short Date	Display a date using your system's short date format.
Long Time	Display a time using your system's long time format; includes hours, minutes, seconds.
Medium Time	Display time in 12-hour format using hours and minutes and the AM/PM designator.

User-Defined Numeric Formats (Format Function)

The following table identifies characters you can use to create user-defined number formats:

Character	Description
None	Display the number with no formatting.
(**0**)	**Digit placeholder.** Display a digit or a zero. If the expression has a digit in the position where the 0 appears in the format string, display it; otherwise, display a zero in that position. If the number has fewer digits than there are zeros (on either side of the decimal) in the format expression, display leading or trailing zeros. If the number has more digits to the right of the decimal separator than there are zeros to the right of the decimal separator in the format expression, round the number to as many decimal places as there are zeros. If the number has more digits to the left of the decimal separator than there are zeros to the left of the decimal separator in the format expression, display the extra digits without modification.
(**#**)	Digit placeholder. Display a digit or nothing. If the expression has a digit in the position where the # appears in the format string, display it; otherwise, display nothing in that position. This symbol works like the 0 digit placeholder, except that leading and trailing zeros aren't displayed if the number has the same or fewer digits than there are # characters on either side of the decimal separator in the format expression.
(**.**)	Decimal placeholder. In some locales, a comma is used as the decimal separator. The decimal placeholder determines how many digits are displayed to the left and right of the decimal separator. If the format expression contains only number signs to the left of this symbol, numbers smaller than 1 begin with a decimal separator. To display a leading zero displayed with fractional numbers, use 0 as the first digit placeholder to the left of the decimal separator. The actual character used as a decimal placeholder in the formatted output depends on the Number Format recognized by your system.
(**%**)	Percentage placeholder. The expression is multiplied by 100. The percent character (**%**) is inserted in the position where it appears in the format string.
(**,**)	Thousand separator. In some locales, a period is used as a thousand separator. The thousand separator separates thousands from hundreds within a number that has four or more places to the left of the decimal separator. Standard use of the thousand separator is specified if the format contains a thousand separator surrounded by digit placeholders (**0** or **#**). Two adjacent thousand separators or a thousand separator immediately to the left of the decimal separator (whether or not a decimal is specified) means "scale the number by dividing it by 1000, rounding as needed." For example, you can use the format string "##0,," to represent 100 million as 100. Numbers smaller than 1 million are displayed as 0. Two adthousand separators in any position other than immediately to the left of the decimal separator are treated simply as specifying

	the use of a thousand separator. The actual character used as the thousand separator in the formatted output depends on the Number Format recognized by your system.
(**:**)	Time separator. In some locales, other characters may be used to represent the time separator. The time separator separates hours, minutes, and seconds when time values are formatted. The actual character used as the time separator in formatted output is determined by your system settings.
(**/**)	Date separator. In some locales, other characters may be used to represent the date separator. The date separator separates the day, month, and year when date values are formatted. The actual character used as the date separator in formatted output is determined by your system settings.
(**E- E+ e- e+**)	Scientific format. If the format expression contains at least one digit placeholder (**0** or **#**) to the right of E-, E+, e-, or e+, the number is displayed in scientific format and E or e is inserted between the number and its exponent. The number of digit placeholders to the right determines the number of digits in the exponent. Use E- or e- to place a minus sign next to negative exponents. Use E+ or e+ to place a minus sign next to negative exponents and a plus sign next to positive exponents.
- + $ ( )	Display a literal character. To display a character other than one of those listed, precede it with a backslash (\) or enclose it in double quotation marks (" ").
(\)	Display the next character in the format string. To display a character that has special meaning as a literal character, precede it with a backslash (\). The backslash itself isn't displayed. Using a backslash is the same as enclosing the next character in double quotation marks. To display a backslash, use two backslashes (\\). Examples of characters that can't be displayed as literal characters are the date-formatting and time-formatting characters (a, c, d, h, m, n, p, q, s, t, w, y, / and :), the numeric-formatting characters (#, 0, %, E, e, comma, and period), and the string-formatting characters (@, &, <, >, and !).
("ABC")	Display the string inside the double quotation marks (" "). To include a string in ***format*** from within code, you must use **Chr(**34**)** to enclose the text (34 is the character code for a quotation mark (")).

Named Numeric Formats (Format Function)

The following table identifies the predefined numeric format names:

Format name	Description
General Number	Display number with no thousand separator.
Currency	Display number with thousand separator, if appropriate; display two digits to the right of the decimal separator. Output is based on system locale settings.
Fixed	Display at least one digit to the left and two digits to the right of the decimal separator.
Standard	Display number with thousand separator, at least one digit to the left and two digits to the right of the decimal separator.
Percent	Display number multiplied by 100 with a percent sign (**%**) appended to the right; always display two digits to the right of the decimal separator.
Scientific	Use standard scientific notation.
Yes/No	Display No if number is 0; otherwise, display Yes.
True/False	Display **False** if number is 0; otherwise, display **True**.

User-Defined String Formats (Format Function)

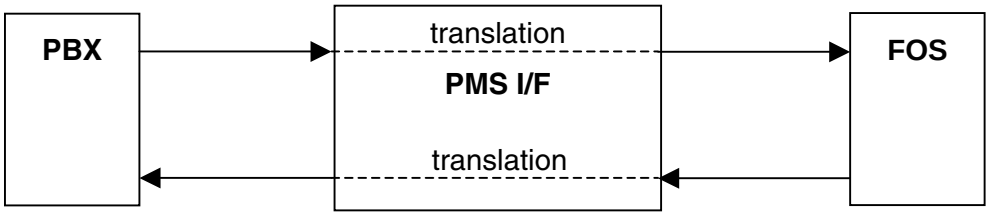
You can use any of the following characters to create a format expression for strings:

Character	Description
@	Character placeholder. Display a character or a space. If the string has a character in the position where the at symbol (@) appears in the format string, display it; otherwise, display a space in that position. Placeholders are filled from right to left unless there is an exclamation point character (!) in the format string.
&	Character placeholder. Display a character or nothing. If the string has a character in the position where the ampersand (&) appears, display it; otherwise, display nothing. Placeholders are filled from right to left unless there is an exclamation point character (!) in the format string.
<	Force lowercase. Display all characters in lowercase format.
>	Force uppercase. Display all characters in uppercase format.
!	Force left to right fill of placeholders. The default is to fill placeholders from right to left.

16. The Allowable Range of Settings

16.1 General

PMS I/F interconnects multiple devices by translating, or mapping a **message** received from a source device into a corresponding **command sequence** sent to the destination device.
PMS I/F enables the user to monitor the devices' status and messages online.



This document defines PMS I/F the system hardware requirements and system fields values.
The values are for minimum and maximum limits. Typical value is provided where applicable.
Note: For fields' explanation, please refer to PMS I/F user manual.

16.2 System Requirements

- Microsoft Windows 2000 (English), Windows Server 2003 (English), and Windows XP (English)

  Recommended Requirements (for installing PMS Interface software only)

	128 Rooms	256 Rooms	960 Rooms
CPU	Pentium 4 1.4 GHz	Pentium 4 1.4 GHz	Pentium 4 1.4 GHz
RAM	512 MB	512 MB	512 MB
HDD	20 GB	40 GB	60 GB

- Microsoft Windows Vista (English)

  Recommended Requirements (for installing PMS Interface software only)

	128 Rooms	256 Rooms	960 Rooms
CPU	Intel 2 GHz (32 bit) processor	Intel 2 GHz (32 bit) processor	Intel 2 GHz (32 bit) processor
RAM	1 GB	1 GB	1 GB
HDD	20 GB	40 GB	60 GB

CD-ROM drive should be included for installation purpose.

PMS Interface software need standard COMPORT for connection, the number of COMPORT (max. 16) needed depends on the devices intended to connect via PMS Interface.

If antivirus software is installed on your PC, system resources exceeding the recommended requirements will be necessary.

16.3 PMS I/F General Specifications

Number of Devices: Up to 99 devices (typical value: 10)

Connect Types: Comm, Text, Db (available in the future), Kme, Disp, Prnt, Ip, ADO (available in the future)

Device Name: up to 7 characters (the name is used to create file name. The characters must follow the OS file naming conventions)

16.3.1 Device-General Setup

Maximum communication retries: 0-100 (typical value: 5)

Heart Beat Command sent every: 0-99999 Milliseconds, Seconds, Minutes, Hours (typical value: 2 minutes)

16.3.2 Device-Alarm Setup

1 inactivity device per device.

Optional Actions: MsgShow, MsgPrint, Email, RestartDevice, RestartPMSI, Reboot (PC), Shell

Do Every: 1-50 times (typical value: 5)

Alarm Setup: 0-999 minutes (typical value: 30)

16.3.3 Device-Mask Setup

Optional Values: dd/mm/yy
dd/mm/yyyy
mm/dd/yy
mm/dd/yyyy
yy/mm/dd
yyyy/mm/dd
Short Date
YYMMDD
YYYYMMDD
YYDDMM
YYYYDDMM
DDMMYY
MMDDYY
DDMMYYYY
MMDDYYYY

16.3.4 Device-Macros Setup

Up to 99 macros may be defined for device.
Total number of characters in the *Name* and *Value* fields: 1024

16.3.5 Device-Command Setup

Total Number of Characters in the *Send* and *Expected Reply* fields: 1023

Number of Commands per device: up to 99

Wait (for response) Time: 0-32000 units.

Time Units: Milliseconds, Seconds, Minutes, Hours

Timeout Action: Retry this Command, Skip Only on Active Device, Skip Even on Inactive Device, Re-Queue on Active Device

Command Action: Send / Wait, PMSi Device Control

16.3.6 Device-Message setup

Number of Messages/Events per device: up to 99

Number of Fields in the Message: up to 99

Number of Messages/Events in the system: up to 8,000

Field Types: Fixed Position, Delimited, Search, Constant

Trigger Field:

Options: Equal to, NOT Equal To, In Range, NOT in Range, Found Within, NOT Found Within, Contains, Does NOT Contain, Is Empty, Is NOT Empty

General Group:

Start Position: 1-32767

Length: 1-32767

Mask: None

Date-M/D/Y
Date-D/M/Y
Date-Y/M/D
Date-Y/D/M
Date-Device Default
Date-YYMMDD
Date-YYYYMMDD
Date-YYDDMM
Date-YYYYDDMM
Date-DDMMYY
Date-DDMMYYYY
Date-MMDDYY
Date-MMDDYYYY
Numeric-Number
Time-H:M:S
Time-HHMMSS

Time-H:M
Time-HHMM
Date-M/D
Date-D/M
Date-MMDD
Date-DDMM
Date-PCDATE
Time-PCTIME
Duration-H:M:S
Duration-HHMMSS
Duration-H:M
Duration-HHMM
Time AM/PM-H:M:S
Time AM/PM-HHMMSS
Time AM/PM-H:M
Time AM/PM-HHMM

Delimited Field Options:

Field number: 1-32767

16.3.7 Protection

Dongle or Code

16.3.8 Option-Log Files

Number of Log Files: up to 366
Single Log File size: 100K – 2G bytes

16.3.9 Option-ReMap

Remap Tables: Up to 99
Entries in the Remap Table: Up to 5000

16.3.10 Option-Email

Host Address Mask: XXX.XXX.XXX.XXX

16.4 Connection Type Specifications

16.4.1. Comm

16.4.1.1. General tab

Toggle Duration: 0-32768 milliseconds

16.4.1.2. Com.Port tab

Port: COM1 to 16

Baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400

Parity: None, Even, Odd, Mark and Space

Word Length: 7, 8

Stop Bits: 1, 2

Transmit Pacing: 0-32768 milliseconds

Input buffer size: 1024-64000 bytes

Output buffer size: 512-64000 bytes

16.4.1.3. Block tab

Start Block Code: 0-255 (character Binary code)
Count: 0-255

End Block Code: 0-255 (character Binary code)
Count: 0-255

Fixed Length: 0-255 characters

Minimum Length: 0-255 characters

Serial Ignore: up to 3 ranges, character Binary code values 0-255

16.4.1.4. Ack/Bcc tab

Calc. Type: None, XOR, Add
Start Position: 0-255
End Adjustment: 0-255

ENQ: up to 12 characters
ACK: up to 12 characters
NAK: up to 12 characters

16.4.2. Text

Output file tab
Rename every: 0-99999
Time units: Milliseconds, Seconds, Minutes and Hours

16.4.3. DB (DAO) (Available in the future)

Connection String: up to 1024 characters

Select String: up to 1024 characters

Polling Interval: 0-9999

Time Unit: Milliseconds, Seconds, Minutes, Hours

Database type: 1 (MS_Access), 2 (others)

16.4.4. TCP/IP or UDP

16.4.4.1. General tab

Transmission Error Retries: 0-99999

16.4.4.2. Port tab

Protocol: TCP or UDP
Link Type: Server or Client
Local/Remote Port: 0-65535
Remote Host IP/Name: IP address (xxx.xxx.xxx.xxx) or DNS

16.4.4.3. Block tab

See Comm above

16.4.4.4. Ack/Bcc tab

See Comm above

16.4.5. DB (ADO) (Available in the future)

Database Name: up to 1024 characters
Connection String: up to 1024 characters
Select String: up to 1024 characters
Polling Interval: 0-9999
Time Unit: milliseconds, seconds, minutes, hours
Cursor Type: Forward Only, Keyset, Dynamic, Static
Lock Type: Optimistic, Pessimistic, Read Only, Batch Optimistic

16.4.6. Printer

Paper Size:

Letter, 8 1/2 x 11 in.
Letter Small, 8 1/2 x 11 in.
Tabloid, 11 x 17 in.
Ledger, 17 x 11 in.
Legal, 8 1/2 x 14 in.
Statement, 5 1/2 x 8 1/2 in.
Executive, 7 1/2 x 10 1/2 in.
A3, 297 x 420 mm
A4, 210 x 297 mm
A4 Small, 210 x 297 mm
A5, 148 x 210 mm
B4, 250 x 354 mm
B5, 182 x 257 mm
Folio, 8 1/2 x 13 in.
Quarto, 215 x 275 mm
10 x 14 in.
11 x 17 in.
Note, 8 1/2 x 11 in.
Envelope #9, 3 7/8 x 8 7/8 in.
Envelope #10, 4 1/8 x 9 1/2 in.
Envelope #11, 4 1/2 x 10 3/8 in.
Envelope #12, 4 1/2 x 11 in.

Envelope #14, 5 x 11 1/2 in.
C size sheet
D size sheet
E size sheet
Envelope DL, 110 x 220 mm
Envelope C3, 324 x 458 mm
Envelope C4, 229 x 324 mm
Envelope C5, 162 x 229 mm
Envelope C6, 114 x 162 mm
Envelope C65, 114 x 229 mm
Envelope B4, 250 x 353 mm
Envelope B5, 176 x 250 mm
Envelope B6, 176 x 125 mm
Envelope, 110 x 230 mm
Envelope Monarch, 3 7/8 x 7 1/2 in.
Envelope, 3 5/8 x 6 1/2 in.
U.S. Standard Fanfold, 14 7/8 x 11 in.
German Standard Fanfold, 8 1/2 x 12 in.
German Legal Fanfold, 8 1/2 x 13 in.
User-defined:

Height: 0-255

Width: 0-255

Force Print: 0-9999 records,
0-30000 time unit
time unit: Milliseconds, Seconds, Minutes, Hours

Serial No

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