



Datalogic Formula™



Quick Reference Guide



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Formula™ - Quick Reference Guide

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1 FORMULA™ PROGRAM INSTALLATION AND SETUP

The Formula™ terminal can accept different program options:

- custom programs developed and generated with the Formula™ Software Development Toolkits;
- ready to use applications preloaded and distributed with Formula™ CD;
- applications created by EasyGen™ application generator.

This document describes examples of the last two options.
 For details on the first option, see the SW Dev Toolkits Developer's manual.

The following software is preloaded on the Formula™:

- PALPRO (Portable Application Library)*.

The following softwares must first be installed on a PC through the Formula™ CD:

Software Tool	Installation Folder
EASYGEN	C:\INSTALLATION FOLDER\Formula Software Tools\EasyGen
SYSTOOLS	C:\INSTALLATION FOLDER\Formula Software Tools\SysTools
STANDARD MODE M1 APPLICATION FILES	C:\INSTALLATION FOLDER\Formula Software Tools\Applications\Standard Mode Application
ENHANCED MODE M2 APPLICATION FILES	C:\INSTALLATION FOLDER\Formula Software Tools\Applications\Enhanced Mode Application

See chapter 3.1 of Formula™ User's manual Software Overview for further details.

* A backup copy of the application is also in the Formula™ CD.

2 DATA COLLECTION WITH FORMULA™ APPLICATIONS

2.1 QUICK START

The Formula™ comes with an application named **PALPRO** loaded in memory. **PALPRO** includes two useful data-collection programs for using the Formula™ without additional programming. Follow the steps below to begin using the Formula™ with **PALPRO** immediately. Page references show where to find more information.

1. Turn the Formula™ on by pressing the **<PWR>** key. The following screen appears:

```
Select
Font
F1 = Wide English
F2 = Normal English
F3 = Simplified Chinese
F4 = Traditional Chinese
```

2. Select the font. The following screen appears:

```
FORMULA
Ver.: 1.00
System
RAM 1MB
01/01/08
00:21:48
Press F-key
```



NOTE

If the Formula™ does not turn on when the <PWR> key is pressed, you may need to recharge the main battery.

3. Press any function key to move to the next screen:

```
APPLICATION/TEST
F1=PALPRO
F2=SIMPLEAPPL
```

4. Once the unit has been initialized, the display will show the **APPLICATION** menu in the Figure above.

- Press **<F1>** to begin using **PALPRO**.
5. The application requests an update to the date and time. You can change them here if necessary. Or, press **<ENT>** twice to skip either the date or the time.
 6. Enter a password (refer to par. 2.2.3).
 7. Press any function key to continue on to the **PALPRO Options** menu.
 8. Press the **<F2>** key to display the list of available applications. Select the application to use. (refer to par. Switching to Another PALPRO Application).

The Formula™ is now ready to begin collecting data. For information about sending collected data from the Formula™ to a PC, refer to par. 3.5.

2.2 SETTING UP THE FORMULA™

You can collect data records on the Formula™, and send the records later to a host PC. The number of data records that can be collected before being uploaded are 2500 for each application.

2.2.1 Getting Started

Unless it has been customized, the Formula™ is programmed from the factory for basic data collection using **PALPRO**.



NOTE

This chapter describes how to use the Formula™ with its original PSC programming (i.e. PALPRO). If the Formula™ has been customized, it may operate differently. Check with a systems administrator for revised operating instructions.

*If the Formula™ does not turn on when the **<PWR>** key is pressed, you may need to recharge the main battery.*

2.2.2 Setting the Time and Date

**NOTE**

You can access the date and time prompts from other display screens and menus (such as the password prompt in par. 2.2.3).

```
Current Date:
09/23/02
Enter New Date:
▣
F1=US/INT
```

When starting the application for the first time, the display screen shows the date currently loaded in memory. If the displayed date is correct, press the **<ENT>** key. If the date is wrong, enter the correct date. Use two digits each for the month, day, and year (e.g., **092302** for the Figure above). Press **<ENT>** to accept the entry.

With the F1 key you can switch from US date format (MM/DD/YY) to International date format (DD/MM/YY).

```
Current Time:
21:17:32
Enter New Time:
▣
F1=12h/24h
```

The next display screen shows the time currently loaded in the Formula™'s memory. If the displayed time is correct, press the **<ENT>** key. If the time is wrong, enter the correct time in 24-hour format. Use two digits each for the hour, minute, and seconds (e.g., **211732** for the Figure above).

With the F1 key you can switch from 12 hour format to 24 hour format.

2.2.3 Setting a Password

A password is required when you install the entire suite of **PALPRO** applications. Password security allows a manager or supervisor to customize the **PALPRO** software and then hand it off to a worker. A password can contain up to 128 characters and can use any characters available on the Formula™.

ENTER CURRENT
OR NEW PASSWORD
▣
F-KEY=SET TIME

Without the password, the worker cannot switch applications or make changes to an application's title or prompts. The password prompt screen appears after entering the date and time from the application's initial startup.



If you lose or forget your password, you must reset the Formula™ and start over with a new password.

CAUTION

After you enter your password, the text in the following Figure 2-5 is displayed.

PSC PALPRO
08:18:04▣
10/16/02
F-KEY=CONTINUE

Press any function key to bring up the **PALPRO Options** menu. The Formula™ is now ready to collect data.

2.2.4 Setting Font Size

To shift from wide font to normal font press Shift-F2. This setting only works in Wide English and Normal English modes.

2.2.5 Switching Backlight On/Off

To switch backlight on/off press Shift-F4.

2.3 USING PALPRO TO COLLECT DATA

When finished setting up the Formula™ (refer to the previous section), the **PALPRO Options** menu appears on the display screen. Use the menu to choose a **PALPRO** application.

2.3.1 Installing PALPRO

PALPRO comes installed on your Formula™ from the factory. If you need to reinstall **PALPRO**, refer to par. 3.2 of this document.

2.3.2 Using PALPRO

PALPRO combines two Portable Applications Library (PAL) applications into a single, convenient program. With **PALPRO** installed on the Formula™, you can switch from one PAL application to another without installing each application.

Selecting a PALPRO Application

Complete the following steps to select a **PALPRO** application:

1. With the **PALPRO Options** menu displayed, press the **<F2>** key to select a PAL application.

PALPRO OPTIONS
 F2=SELECT PROG
 F4=PASSWORD
 ▣

2. Press **<F1>** to use **ASSETPRO**, press **<F2>** to use **INVPRO**.

F1=ASSET MGMT
 F2=INV MGMT
 F4=EXIT▣



NOTE

If you select INVPRO, the next screen asks you to select one or two prompts (refer to par. Using INVPRO). Make a selection before going on to the next step.

Changing Program Titles and Prompts

PALPRO allows the user to change the title that appears on the menu for each application, or change the prompts for each application. Changing titles or prompts can be done after selecting an application. To change the title or prompts, complete the following steps:

1. Press the **<F3>** key at the prompt. To use the application's current title and prompts, select **<F4>** at the prompt in Figure below.

CHANGE PROMPTS?

F3=YES

F4=NO▣

2. Enter a name for the application (for example, **FIXED ASSETS**) followed by the **<ENT>** key. The entered name appears at the top of the application menu for the current application.

ENTER APPL TITLE

FIXED ASSETS▣

3. Enter the text for the first prompt (for example, **BUILDING ID**) followed by the **<ENT>** key.

ENTER PROMPT 1

BUILDING ID▣

4. Enter the text for the second prompt (for example, **ASSET NO.**) followed by the **<ENT>** key.

ENTER PROMPT 2

ASSET NO.▣

Switching to Another PALPRO Application

To switch from one **PALPRO** application to another, complete the following steps:

1. Select SHIFT + <F1> from the current application's menu to exit the application.

ASSET MGMT␣
F2=COLLECT
F3=FILE OPTIONS
ShF1=PASSWORD

Enter <ShF1> on the keypad by pressing the <Shift> key and then the <F1> key.

2. At the prompt, enter the current password, or press any function key to return to the menu for the current application.

ENTER PASSWORD
␣

F-KEY=EXIT

3. When the correct password is entered, the first **PALPRO** screen opens.
4. Press any function key to display the **PALPRO Options** menu.
5. Follow the steps described in par. 2.3.2.

**NOTE**

If you select INVPRO, the next screen asks you to select one or two prompts (refer to the steps described in par. Using INVPRO). Make a selection before going on to the next step.

Using ASSETPRO

Use **ASSETPRO** to track assets (such as furniture, phones, computers, and electronic equipment) at various locations (e.g., departments, rooms, floors, buildings). With **ASSETPRO**, enter an identification code for a location, collect all the asset IDs at the location, and then enter an identification code for a different location.

To use **ASSETPRO**, complete the following steps:

1. From the **ASSETPRO** application menu, select **<F2>**.

ASSET MGMT␣
 F2=COLLECT
 F3=FILE OPTIONS
 F4=EXIT

2. The first prompt appears on the screen. Enter the identification code for the location (example, **WH3E**).
 - Scan a bar code for the location or use the keypad to enter the location ID.

LOCATION ID
 ␣
 F3=REV F4=EXIT



The code is entered automatically when using a scanner; when using a keypad, press the <ENT> key.

NOTE

3. The second prompt now appears on the first line of the screen, and the location ID appears on the third line.
 - Scan the bar code identifying an asset, or use the keypad to enter the asset's ID number or description (for example, **004322**).

ITEM ID
 ␣
 WH3E
 F3=REV F4=EXIT

4. The location ID and item ID appear together on the third line of the screen, separated by a comma, and the second prompt remains on the screen.
 - The Formula™ is ready to accept another ID for an asset at the current location.

ITEM ID
 ␣
 WH3E, 004322
 F3=REV F4=EXIT

5. When finished collecting asset IDs for the location, press the **<F4>** key to return to the first prompt.
6. Repeat steps 2 through 5, above, until IDs for each asset at every location is collected.
7. Press the **<F4>** key to return to the first prompt.
8. Press the **<F4>** key again to return to the application menu.

Refer to par. 3.5 to upload your data.

The Formula™ stores the collected data in a single ASCII text file. When uploading the file to the PC, the data appears as a list. Each line in the list contains two fields separated by a comma. The first field is the location, and the second field is the item's identification number. The example in the Figure below is part of a data file uploaded from a Formula™ that used **ASSETPRO** to collect data.

```

BLDG1, 000295
BLDG1, 001862
BLDG1, 000945
BLDG1, 001008
BLDG1, 000036
BLDG1, 000490
BLDG2, 000288
BLDG2, 002596
    
```

Using INVPRO

Use this application to track inventory. **INVPRO** provides a choice of one prompt or two. For example, use one prompt to scan or enter an ID number or description for each item. Two prompts would be used to scan or enter an item ID and the quantity of that item.

To use **INVPRO**, complete the following steps:

1. At the first screen that appears, press the **<F4>** key to use the application with only one prompt, or use the **<F3>** key for two prompts.

USE 2 PROMPTS?
 F3=YES
 F4=NO

2. Press the **<F3>** key to change the title or prompts that appear on the application's display screens.
 - Refer to par. Changing Program Titles and Prompts for instructions.
 - Otherwise, press the **<F4>** key to use the current title and prompts.

CHANGE PROMPTS?
 F3=YES
 F4=NO

3. The application menu appears next on the display screen.
4. Continue with the instructions for Using One Prompt below, or continue with "Using Two Prompts".

Using One Prompt

1. Select **<F2>** from the application menu. A prompt appears on the screen.

INV MGMT
 F2 = COLLECT
 F3 = FILE OPTIONS
 SHF1 = EXIT

2. Scan the bar code for an inventory item, or use the keypad to enter the item's ID number or description.

**NOTE**

Using a scanner, the code is entered automatically; with a keypad, press the <ENT> key.

3. The item ID number appears on the third line of the screen. The Formula™ is ready to accept another item ID.

```
ITEM ID
  ␣
40-000-00
F3=REV F4=EXIT
```

4. Repeat step 2 until all IDs for all items are collected.
5. Press the <F4> key to return to the application menu.

Refer to par. 3.5 to upload your data.

The Formula™ stores the collected data in a single ASCII text file. When uploading the file to the PC, the data appears as a list. Each line in the list contains the ID for a single item. The example shown below is part of a data file uploaded from a Formula™ that used **INVPRO** with one prompt to collect data.

```
R44 – 2173
R44 – 2260
R44 – 2278
R44 – 2283
R44 – 2285
R44 – 2287
R44 – 2289
R44 – 2314
```


Using Two Prompts

1. Select **<F2>** from the application menu. The first prompt appears on the screen.

```

ITEM ID
␣
F3=REV F4=EXIT
    
```

2. Scan the bar code for an inventory item, or use the keypad to enter the item's ID number or description.



The code is entered automatically with a scanner; with a keypad, press the <ENT> key.

NOTE

3. The second prompt now appears on the first line of the screen, and the item ID appears on the third line.

```

QUANTITY
␣
40-000-00
F3=REV F4=EXIT
    
```

4. Enter the number of individual units of the item in inventory.
5. The item number and quantity appear together on the third line of the screen, separated by a comma, and the first prompt reappears on the screen. The Formula™ is ready to accept another item ID.

```

ITEM ID
␣
40-000-00, 25
F3=REV F4=EXIT
    
```

6. When finished collecting inventory data, press the **<F4>** key to return to the application menu.

Refer to par. 3.5 to upload your data.

The Formula™ stores the collected data in a single ASCII text file. When uploading the file to the PC, the data appears as a list. Each line in the list contains two fields separated by a comma. The first field is the item ID, and the second field is the

number of units of that item. Figure 2-9 shows part of a data file uploaded from a Formula™ that used **INVPRO** with two prompts to collect data.

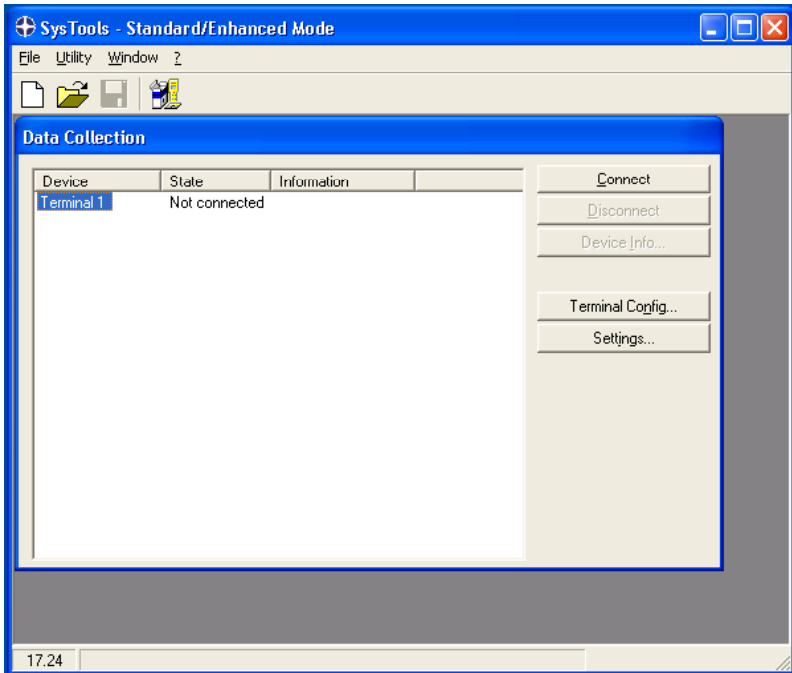
R44 – 2173, 25
R44 – 2260, 12
R44 – 2278, 56
R44 – 2283, 30
R44 – 2285, 47
R44 – 2287, 16
R44 – 2289, 4
R44 – 2314, 85

2.4 UPLOADING COLLECTED PALPRO FILE DATA TO A PC

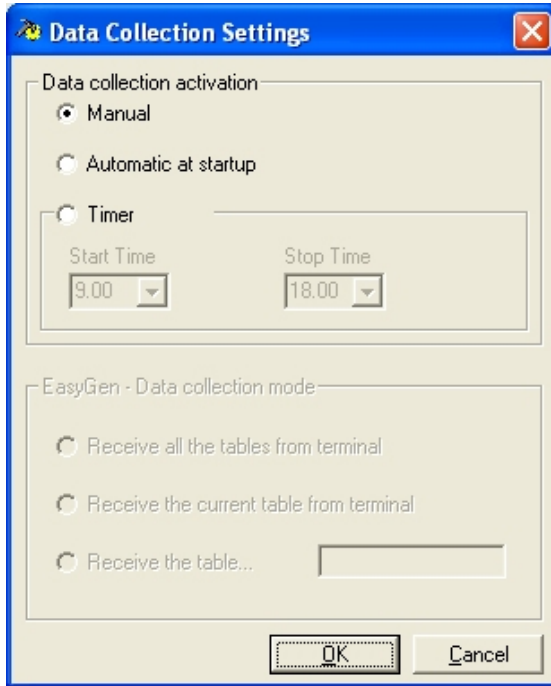
To upload the data (PALPRO file) to a PC, do the steps shown in the following paragraphs.

2.4.1 Prepare Host PC

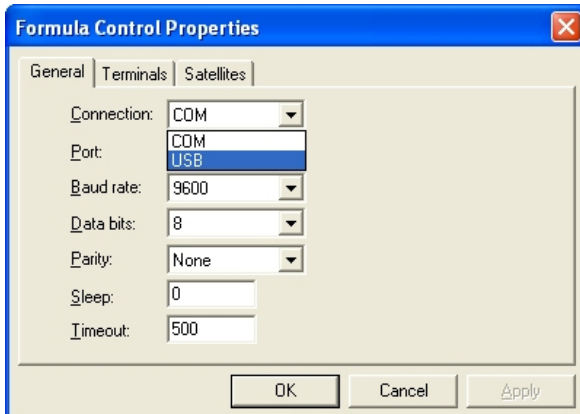
Verify that USB/RS232 cable is connected and open SysTools™ (Standard/Enhanced mode) to view the following main menu screen:

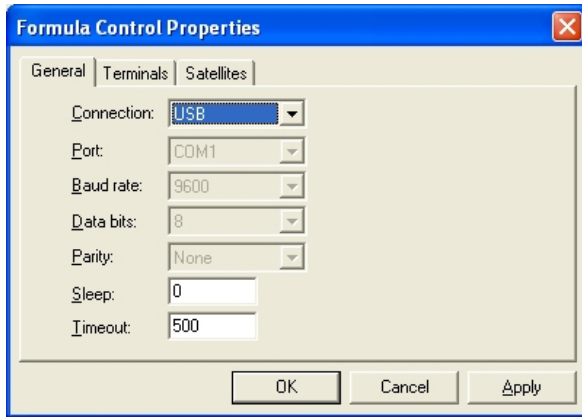


Select the **SETTINGS** button to view the following screen; configure the settings according to the figure below and press **OK**:



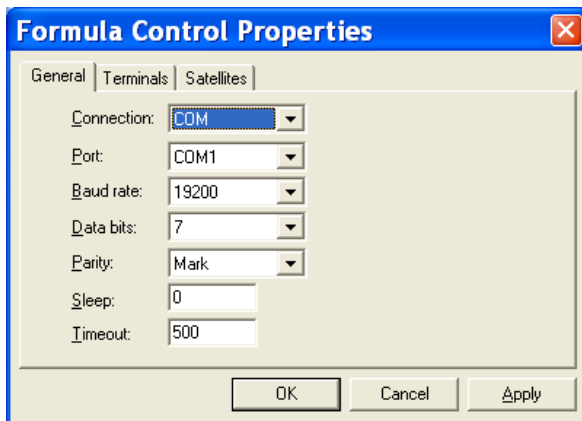
Select the **NETWORK SETUP** button to view the following screen; insure the Connection Type is set to **USB**:



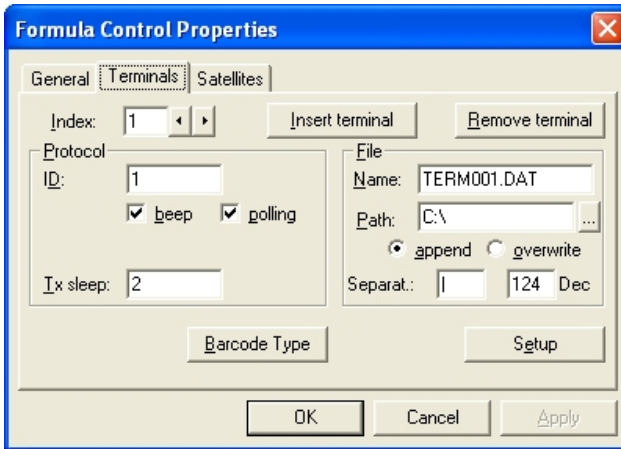


If you choose COM connection, select the following parameters to allow PALPRO to run:

Baud rate: 19200
 Data bits: 7
 Parity: Mark



Select the TERMINALS tab to view the following screen. It is recommended that the FILE NAME for collected data have a .dat extension (default name is TERM001.dat), followed by the PATH where the data will be uploaded to on the PC.



Select OK in the Formula Control Properties to return to the main SysTools™ screen. Select CONNECT (the Formula™ will emit a tone).

Now Systools™ is ready to receive data from the terminal.

2.4.2 Prepare Formula™ to upload Data

1. Prepare the Formula™ to upload (transmit) the collected data. From the program menu on the Formula™; select <F3> to display the **File Options** menu.

INV MGMTα
 F2=COLLECT
 F3=FILE OPTIONS
 F4=EXIT

2. Select <F2> to display the **Send File** menu.

FILE OPTIONS
 F2=SEND FILE
 F3=ERASE FILE
 F4=EXITα

3. Select <F2> to upload the data via the USB connection.

```

*SEND FILE*
F2=USB
F3=SERIAL
F4=EXIT

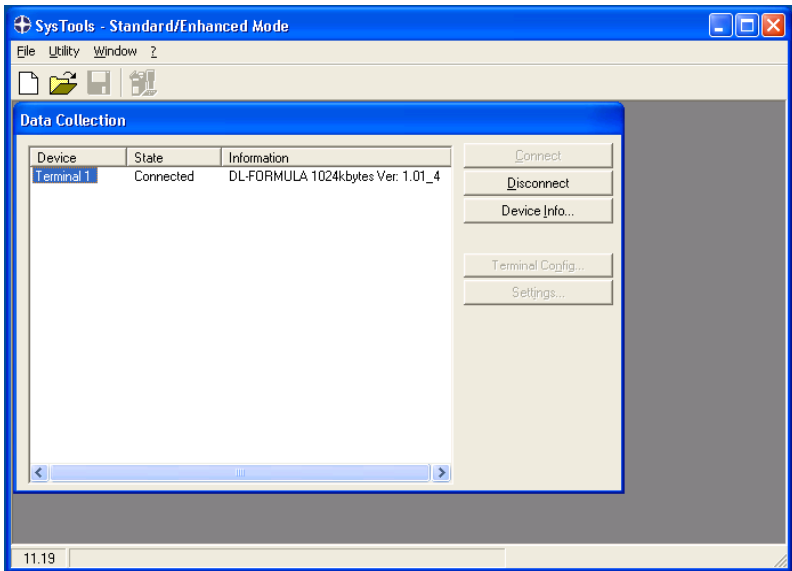
```

During upload, Systools™ assumes the following statuses:

STATE: BUSY: appears while data is being uploaded.

STATE: CONNECTED: appears after the data is sent.

STATE: NOT CONNECTED: the device is not recognizable; check the cables.



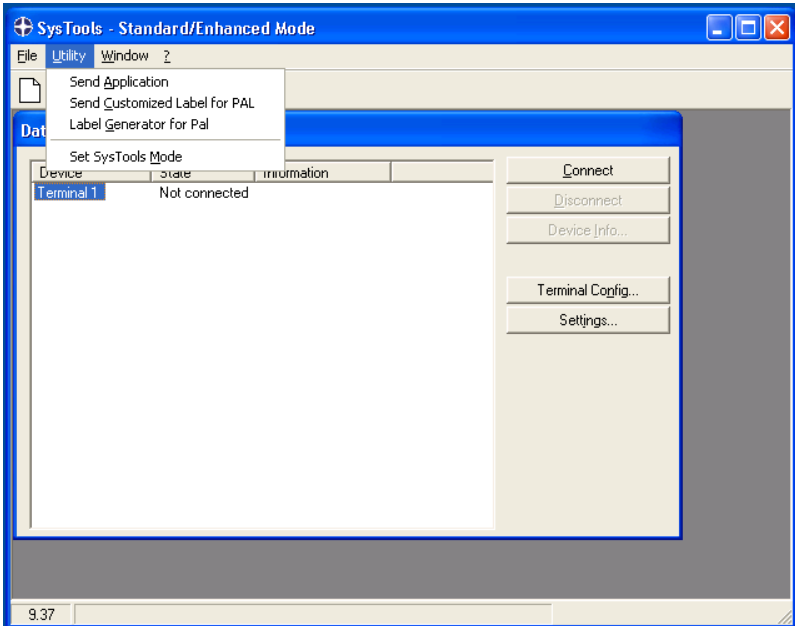
NOTE 1: Click DISCONNECT or remove the terminal from the dock to end the data transfer session.

NOTE 2: The collected .dat file data will be uploaded to the FILE NAME and PATH settings selected earlier.

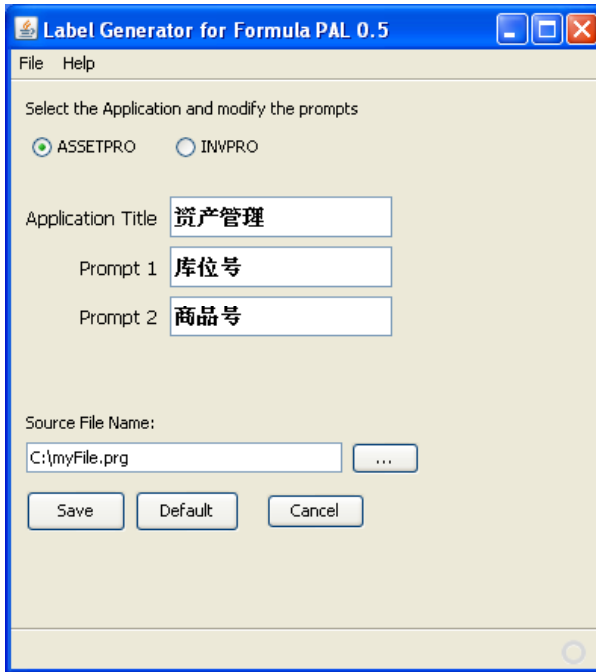
2.5 PROMPT CUSTOMIZATION FOR CHINESE VERSION

To customize the prompts of the Chinese Version of Formula, use the two Utility options of Systools:

- Send Customized Label for PAL
- Label Generator for PAL



Select “Label Generator for PAL” to load the utility that generates the labels.



Follow these steps:

- Select the available Application option
- Customize the prompts
- Select the target file name
- Press the “Save” button to save the customized labels in the selected file.

Select F3 key on the CHANGE PROMPT menu of the device:

CHANGE PROMPT Using F2: Keyboard F3: Systools F4: No Change

Launch Systools application and select the Systools Utility option “Send Customized Label for PAL”.

Select the file you generated in the “Open” dialog box.

When the file is sent the following dialog appears:



2.6 CONFIGURING WITH BAR CODES

This section provides bar codes for common setup parameters that can be used for programming the Formula™. Factory default settings are underlined.

Predefined Defaults



Code 39

ENABLE



MINIMUM LENGTH



* For a description of programmable parameter settings, refer to table “General Programming Parameters” in par. 2.7.

MAXIMUM LENGTH



ENABLE CHECKSUM



SEND CHECKSUM



FULL ASCII MODE



Italian Pharmacode

ENABLE



SEND ITALIAN PHARMACODE CHECK DIGIT



SEND ITALIAN PHARMACODE PREFIX

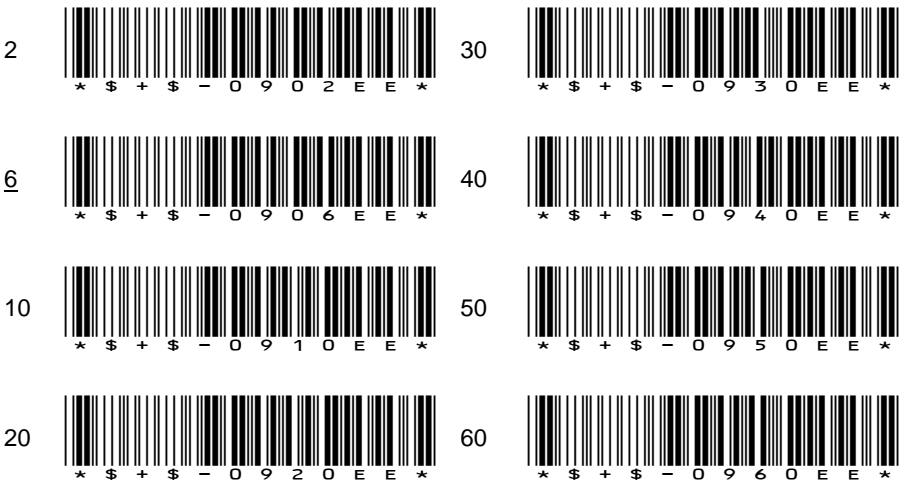


Interleaved 2 of 5

ENABLE






MINIMUM LENGTH



MAXIMUM LENGTH

10	 * \$ + \$ - 0 A 1 0 E E *	40	 * \$ + \$ - 0 A 4 0 E E *
20	 * \$ + \$ - 0 A 2 0 E E *	50	 * \$ + \$ - 0 A 5 0 E E *
30	 * \$ + \$ - 0 A 3 0 E E *	60	 * \$ + \$ - 0 A 6 0 E E *

REQUIRED LENGTH (*no default; overrides minimum and maximum settings*)

2	 * \$ + \$ - 0 9 0 2 0 A 0 2 E E *
4	 * \$ + \$ - 0 9 0 4 0 A 0 4 E E *
6	 * \$ + \$ - 0 9 0 6 0 A 0 6 E E *
8	 * \$ + \$ - 0 9 0 8 0 A 0 8 E E *
10	 * \$ + \$ - 0 9 1 0 0 A 1 0 E E *



ENABLE CHECKSUM



SEND CHECKSUM



USE LENGTHS 6 AND 14 ONLY (*case code*)



Codabar

ENABLE

On



Off



MINIMUM LENGTH

04



40



10



50



20



60



30



MAXIMUM LENGTH

10



40



20



50



30



60



SEND STOP/START



Code 93

ENABLE



MINIMUM LENGTH



MAXIMUM LENGTH



20



50



UPC-A

ENABLE UPC-A

On



Off



SEND SYSTEM DIGIT

On



Off



SEND CHECK DIGIT

On



Off



CONVERT UPC-A TO EAN-13

On



Off



UPC-E

USE SYSTEM DIGIT 0



USE SYSTEM DIGIT 1



CONVERT UPC-E TO UPC-A



SEND SYSTEM DIGIT



SEND CHECK DIGIT



EAN/JAN

ENABLE EAN-8/JAN-8

<u>On</u>	 * \$ + \$ - 3 9 1 E E *	Off	 * \$ + \$ - 3 9 0 E E *
-----------	--------------------------------------------------------------------------------------------------------------	-----	--------------------------------------------------------------------------------------------------------------

ENABLE EAN-13/JAN-13

<u>On</u>	 * \$ + \$ - 3 A 1 E E *	Off	 * \$ + \$ - 3 A 0 E E *
-----------	--------------------------------------------------------------------------------------------------------------	-----	--------------------------------------------------------------------------------------------------------------

ENABLE EAN-13 TO ISBN

<u>On</u>	 * \$ + \$ - 3 B 1 E E *	<u>Off</u>	 * \$ + \$ - 3 B 0 E E *
-----------	--------------------------------------------------------------------------------------------------------------	------------	--------------------------------------------------------------------------------------------------------------

SEND CHECK DIGIT

<u>On</u>	 * \$ + \$ - 3 F 1 E E *	Off	 * \$ + \$ - 3 F 0 E E *
-----------	--------------------------------------------------------------------------------------------------------------	-----	--------------------------------------------------------------------------------------------------------------

UPC/EAN/JAN Extensions

ALLOW 2-DIGIT EXTENSIONS

<u>On</u>	 * \$ + \$ - 3 C 1 E E *	Off	 * \$ + \$ - 3 C 0 E E *
-----------	----------------------------------------------------------------------------------------------------------------	-----	----------------------------------------------------------------------------------------------------------------

ALLOW 5-DIGIT EXTENSIONS

<u>On</u>	 * \$ + \$ - 3 D 1 E E *	Off	 * \$ + \$ - 3 D 0 E E *
-----------	----------------------------------------------------------------------------------------------------------------	-----	----------------------------------------------------------------------------------------------------------------

REQUIRE EXTENSIONS



Code 128

ENABLE



MINIMUM LENGTH



MAXIMUM LENGTH

10	 * \$ + \$ - 4 2 1 0 E E *	40	 * \$ + \$ - 4 2 4 0 E E *
<u>20</u>	 * \$ + \$ - 4 2 2 0 E E *	50	 * \$ + \$ - 4 2 5 0 E E *
30	 * \$ + \$ - 4 2 3 0 E E *	60	 * \$ + \$ - 4 2 6 0 E E *

ENABLE UCC128

On	 * \$ + \$ - 4 3 1 E E *	<u>Off</u>	 * \$ + \$ - 4 3 0 E E *
----	--------------------------------------------------------------------------------------------------------------	------------	--------------------------------------------------------------------------------------------------------------

GS1 DataBar Omnidirectional

ENABLE

On	 * \$ + \$ - 1 0 1 E E *	<u>Off</u>	 * \$ + \$ - 1 0 0 E E *
----	---------------------------------------------------------------------------------------------------------------	------------	---------------------------------------------------------------------------------------------------------------

GS1 DataBar Limited

ENABLE

On	 * \$ + \$ - 1 1 1 E E *	<u>Off</u>	 * \$ + \$ - 1 1 0 E E *
----	----------------------------------------------------------------------------------------------------------------	------------	----------------------------------------------------------------------------------------------------------------

GS1 DataBar Expanded

ENABLE



MINIMUM LENGTH



MAXIMUM LENGTH



Other Controls

AUTO-OFF *(in minutes)*

Off	 * \$ + \$ - B 2 0 0 E E *	2	 * \$ + \$ - B 2 0 2 E E *
5	 * \$ + \$ - B 2 0 5 E E *	10	 * \$ + \$ - B 2 1 0 E E *

BACKLIGHT DURATION *(in seconds)*

On	 * \$ + \$ - E 2 0 0 E E *	30	 * \$ + \$ - E 2 3 0 E E *
<u>10</u>	 * \$ + \$ - E 2 1 0 E E *	60	 * \$ + \$ - E 2 6 0 E E *

BEEPER VOLUME

<u>On</u>	 * \$ + \$ - B C 0 7 E E *	Off	 * \$ + \$ - B C 0 0 E E *
-----------	-----------------------------------------------------------------------------------------------------------------	-----	-----------------------------------------------------------------------------------------------------------------

Clock and Calendar

TIME/DATE FORMAT

Set Time	 * % - *	Set Date	 * % . *
-------------	------------------------------------------------------------------------------------------------	-------------	------------------------------------------------------------------------------------------------

TIME FORMAT

12-
Hour



24-
Hour



DATE FORMAT

U.S.



Int.



2.7 PROGRAMMING PARAMETERS

Predefined Defaults

Three default sets can be defined:

- D0 Turns every **ON/OFF** parameter **OFF** and sets all minimum and maximum lengths to zero.
- D1 Turns every **ON/OFF** parameter **ON**, sets all minimum lengths as low as possible and sets all maximum lengths as high as possible (see the table below).
- D2 Default set installed on the terminal at the factory. This default set will work for most applications (see the table below).

Factory default settings are underlined.

General Programming Parameters

Code Parameter	ID #	Type	Acceptable Input	Predefined Defaults	
				D1	D2
Code 39 <i>Enter 1 for On and 0 for Off.</i>					
Enable	00	On/Off	On or Off	On	On
Minimum length	01	Value	00–60	00	00
Maximum length	02	Value	00–60	60	20
Enable checksum	03	On/Off	On or Off	Off	Off
Send checksum	04	On/Off	On or Off	Off	Off
Full ASCII mode	05	On/Off	On or Off	On	On
Italian Pharmacode <i>Enter 1 for On and 0 for Off.</i>					
Enable	06	On/Off	On or Off	On	Off
Send check digit	07	On/Off	On or Off	On	On
Send prefix	0F	On/Off	On or Off	On	Off
Interleaved 2 of 5 <i>Enter 1 for On and 0 for Off.</i>					
Enable	08	On/Off	On or Off	On	On
Minimum length	09	Value	02–60	02	06
Maximum length	0A	Value	02–60	60	10
Enable checksum	0B	On/Off	On or Off	Off	Off
Send checksum	0C	On/Off	On or Off	Off	Off
Use lengths 6 and 14 only (case code)	0D	On/Off	On or Off	Off	Off
Codabar <i>Enter 1 for On and 0 for Off.</i>					
Enable	20	On/Off	On or Off	On	On
Minimum length	21	Value	00–60	02	04
Maximum length	22	Value	00–60	60	20
Send start/stop	23	On/Off	On or Off	Off	Off
Convert Codabar to CLSI	24	On/Off	On or Off	Off	Off

Code Parameter	ID #	Type	Acceptable Input	Predefined Defaults	
				D1	D2
Code 93 <i>Enter 1 for On and 0 for Off.</i>					
Enable	2C	On/Off	On or Off	On	On
Minimum length	2D	Value	00–50	01	02
Maximum length	2E	Value	01–50	50	20
Universal Product Code-A (UPC-A) <i>Enter 1 for On and 0 for Off.</i>					
Enable	30	On/Off	On or Off	On	On
Send system digit	31	On/Off	On or Off	On	On
Send check digit	32	On/Off	On or Off	On	Off
Convert UPC-A to EAN-13	33	On/Off	On or Off	On	Off
Universal Product Code-E (UPC-E) <i>Enter 1 for On and 0 for Off.</i>					
Use system digit 0	34	On/Off	On or Off	On	On
Use system digit 1	35	On/Off	On or Off	On	On
Convert UPC-E to UPC-A	36	On/Off	On or Off	On	Off
Send system digit	37	On/Off	On or Off	On	Off
Send check digit	38	On/Off	On or Off	On	Off
European Article Numbering (EAN)/ Japan Article Numbering (JAN) <i>Enter 1 for On and 0 for Off.</i>					
Enable EAN-8/JAN-8	39	On/Off	On or Off	On	On
Enable EAN-13/JAN-13	3A	On/Off	On or Off	On	On
Convert EAN-13 to ISBN	3B	On/Off	On or Off	Off	Off
Send check digit	3F	On/Off	On or Off	Off	On
UPC, EAN, JAN Extensions <i>Enter 1 for On and 0 for Off.</i>					
Allow 2-digit extensions	3C	On/Off	On or Off	On	On
Allow 5-digit extensions	3D	On/Off	On or Off	On	On
Require extensions	3E	On/Off	On or Off	Off	Off
Press code activation	E9	On/Off	On or Off	Off	Off
If the above feature is activated, bar code data will only be used if the data format includes the starting digits 378 or 379 AND a 2-digit or 5-digit extension is present.					

Code Parameter	ID #	Type	Acceptable Input	Predefined Defaults	
				D1	D2
Code 128			<i>Enter 1 for On and 0 for Off.</i>		
Enable	40	On/Off	On or Off	On	On
Minimum length	41	Value	00-60	02	02
Maximum length	42	Value	00-60	60	20
Enable UCC128	43	On/Off	On or Off	Off	Off
Other Controls			<i>Enter 1 for On and 0 for Off.</i>		
Enable manual reset	B0	On/Off	On or Off	On	On
Add symbology identifiers	B5	On/Off	On or Off	On	Off
Auto-Off	B2	Value	00-99 <i>(minutes)</i>	60	10
BackLight Timeout	E2	Value	00-99 <i>(1 second units)</i>	10	10
Beeper volume	BC	Value	00 = Off 01 (low) – 07 (high) 08 = One level higher 09 = One level lower	07	07
Contrast (LCD)	E3	Value	01 (low) – 63 (high)	16	16
Date format	D9	On/Off	On = International Off = U.S.	Off	Off
Error tone	BD	Value	00 (low) – 07 (high)	03	03
Good-read tone	B8	Value	00 (low) – 07 (high)	05	05
Good-read number of beeps	B9	Value	01-04	01	01
Good-read tone duration	BA	Value	00 = 0.14 sec. 01 = 0.07 sec. 02 = 0.45 sec. 03 = 0.22 sec.	01	01
Keyboard click	DD	On/Off	On or Off	On	On
Keypad Timeout <i>(Intercharacter delay)</i>	E4	Value	00-99 <i>(1/4 second units)</i>	3	3
Laser delay	DE	Value	00-99 <i>(10-millisecond units)</i>	01	01
Time format	D8	On/Off	On = 24-hour Off = 12-hour	On	On
B0 = UPC-A	10 = Code 39	D0 = EAN-8	80 = Code 128	E0 = EAN-13	
30 = Interleaved 2 of 5	A0 = UPC-E	50 = Codabar	90 = Code 93		

3 READY TO USE APPLICATIONS

3.1 SET UP THE TERMINAL FOR THE CONNECTION WITH THE PC

Insert the battery set into the terminal, close the cover, connect the power adapter to the terminal and let it initially charge overnight. Then insure the charging LED light displays a GREEN status (refer to Formula™ User's manual for further details).

The Formula™ Terminal must first be REFLASHED via the following sequence:

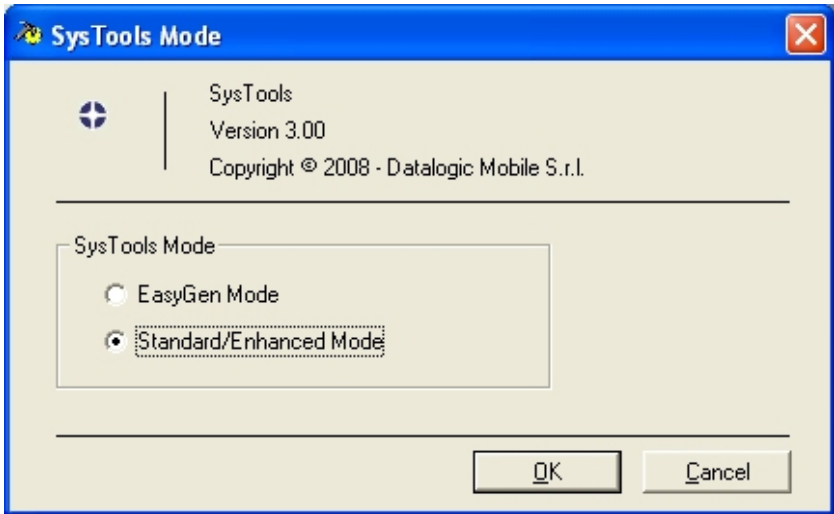
Press and hold the POWER button, then press the SCAN key. Press the DOWN arrow to erase the program when prompted. Select option 1 (USB). The Formula™ will display the following information, indicating it is in receive mode via USB communications:

BOOTSTRAP-
LOADER
WaitDownload USB

Connect USB cable for next step.

3.2 DOWNLOADING A READY TO USE APPLICATION

To correctly download a ready to use application on the Formula™ terminal, open the SYSTOOLS software program. There are two versions of this program: “STANDARD and ENHANCED” mode, and “EASYGEN” mode. Insure the STANDARD and ENHANCED” mode is enabled by selecting Utility Menu – Set SysTools Mode.



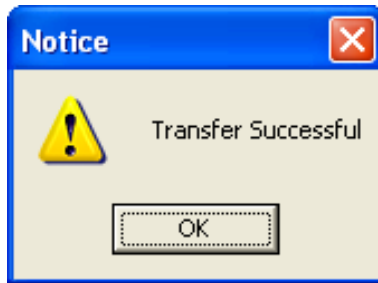
Select Utility Menu – Send Application and browse to the Enhanced Mode M2 application file, setting type file as “Multibank (*.h00):
 C:\Program Files\Datalogic\Formula Software Tools\Applications\Enhanced Mode Application\ FORMULA_M2_XXX.H00.

Alternatively you can select the Standard Mode M1 application file skipping the custom configuration file transmission, described in par. 3.4 of this document.

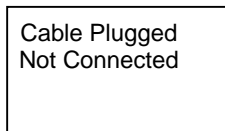
Refer to Ready-to-Use Applications User’s manual for further details.



Select SEND to transmit the file to the Formula™. A second “multi-bank” file (FORMULA_M2_XXX.H01) will also be sent automatically. After it is successfully transmitted, the following message window will be displayed on the screen:



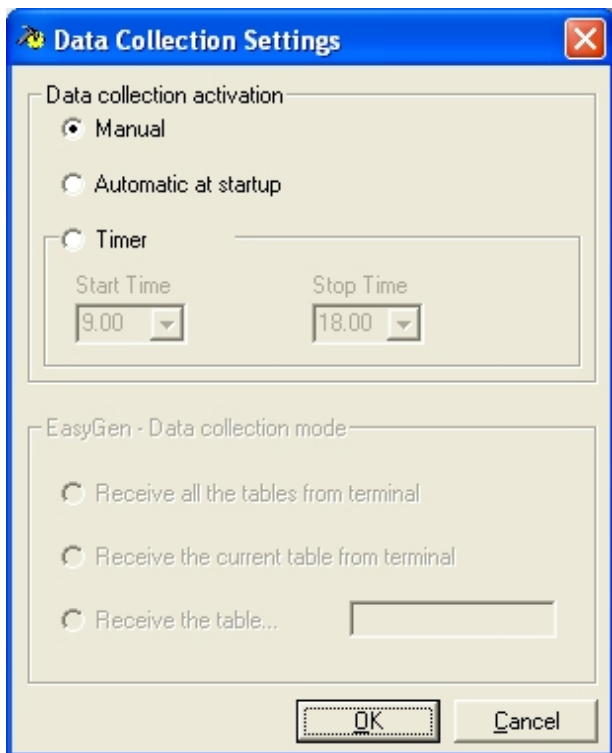
The Formula™ LCD screen should now display the following information:



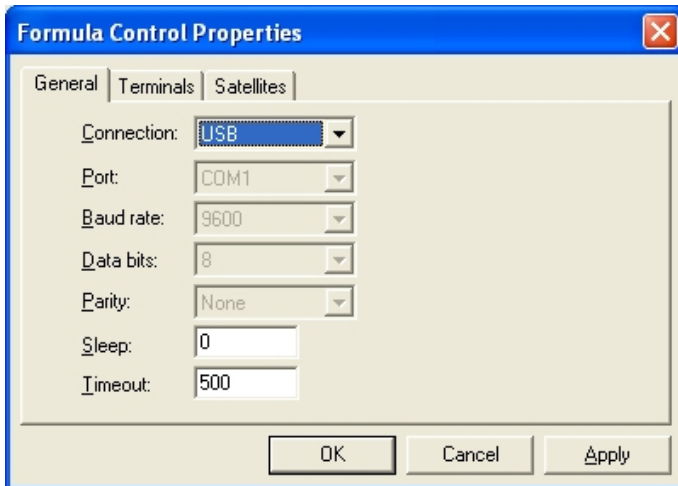
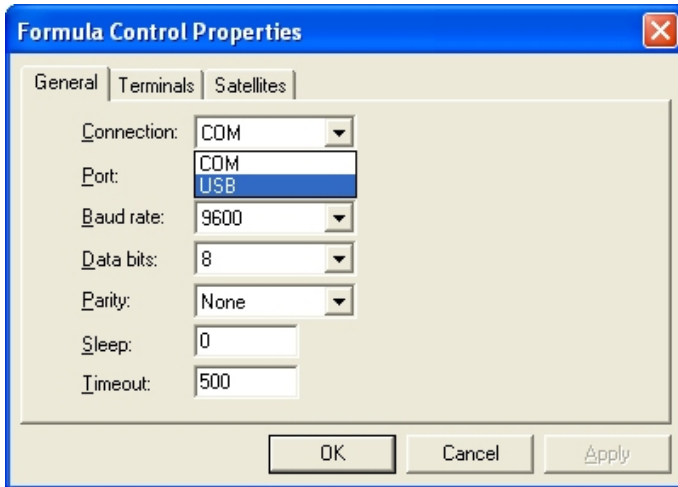
Remove the USB cable and wait until the Formula™ LCD screen displays “LOAD PROGRAM”.
Connect the USB cable again.

3.3 CONFIGURING READY TO USE APPLICATIONS THROUGH SYSTOOLS™

Once the ready to use application has been downloaded to the terminal, both the data collection parameters and the application parameters need to be configured.



Select the NETWORK SETUP button to view the following screen; insure the Connection Type is set to USB:



If you choose COM connection, select the following parameters to allow PALPRO to run:

Baud rate: 19200
Data bits: 7
Parity: Mark

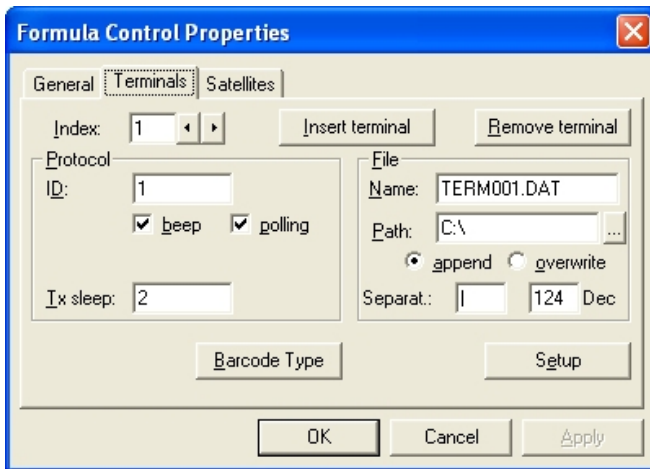


The following instructions are not required for PALPRO.

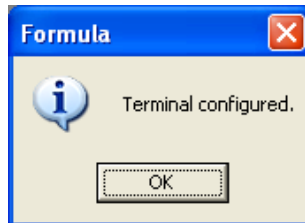
NOTE

Select the TERMINALS tab to view the following screen. The FILE NAME for collected data must have a .dat extension (default name is TERM001.dat), followed by the PATH where the data will be uploaded to on the PC. Default symbology setting is Code 39. OPTION 1: Select the BARCODE TYPE button to enable other symbology types before sending it to the terminal. OPTION 2: Use the Ready to Use Applications Programming BarCode for programming options including symbology settings.

See the Ready-to-Use Applications User's manual or the Ready-to-Use Applications Programming BarCode Document for further details.



Select SETUP, the following screen should appear:



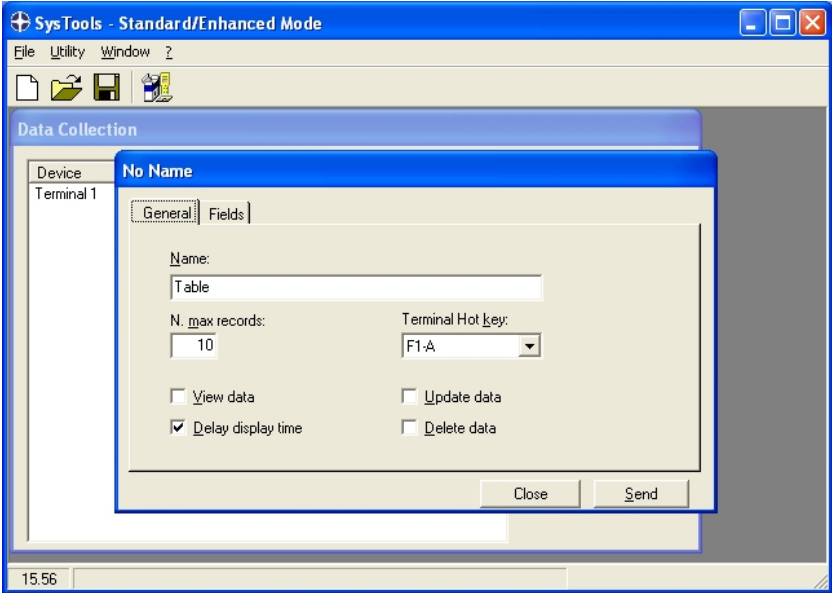
Select OK in the Formula Control Properties to return to the main SysTools™ screen. The Formula™ is now associated with the SysTools™ software program.

3.4 TRANSMITTING A CUSTOM CONFIGURATION FILE TO THE FORMULA™

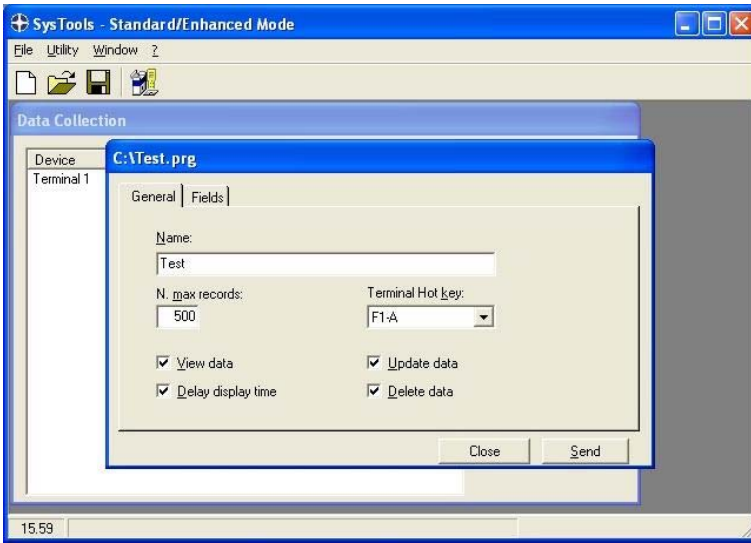
Once the Formula™ has been associated with the SysTools™ Software program, a custom configuration file (.prg) can be sent. Refer to SysTools™ User's manual for further details.

Select FILE – NEW in order to create a custom configuration for your needs. In the example below, we will create a two prompts program where: Prompt 1 = CODE for barcode data and Prompt 2 = QUANTITY.

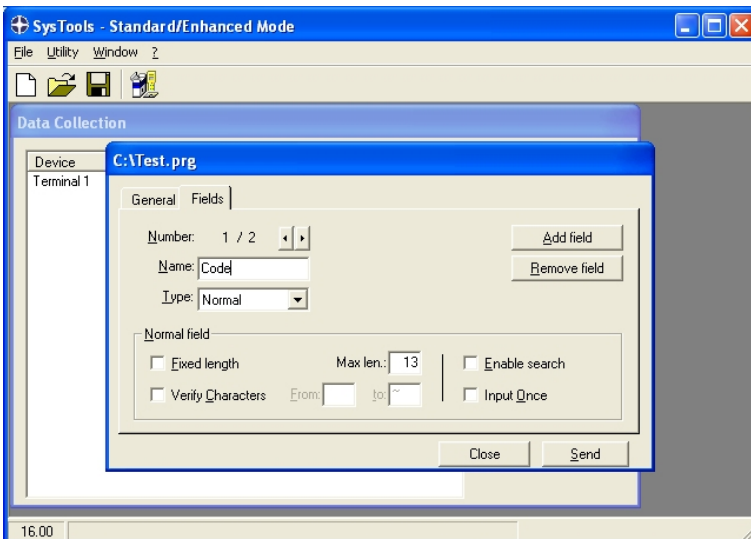
Select FILE – NEW to access the following screen:



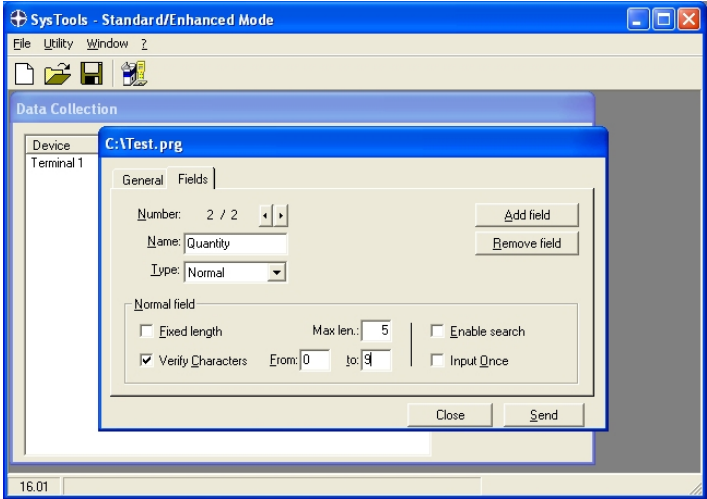
For our two prompts example, set the parameters to the following settings. (NOTE: the program name can be changed). The number of maximum records are now set to 500.



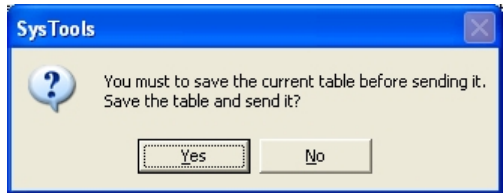
Select the FIELDS tab to view the following screen. Our program will use CODE as a prompt 1 title (for barcode data) with a maximum length of 13 digits.



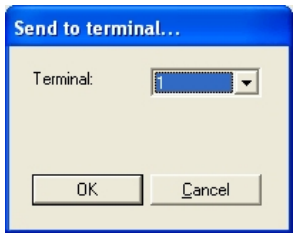
Click on ADD FIELD for a second prompt and set the parameters to the settings shown below, where: NAME = QUANTITY, VERIFY CHARACTERS are only numeric (0-9). For additional fields, simply click on ADD FIELD for a new input. NUMBER (2/2) indicates the number of the fields created, click on the forward or the back arrow to move between the field screens.



Once all the parameters has been entered, insure the Formula™ is connected. Select SEND. The following screen will appear prompting for a program name:

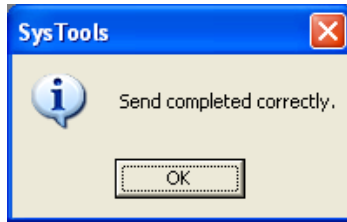


Select YES and verify the program name. The following prompt will appear to verify the terminal. In this case it is Terminal #1:



Select OK.

After the program has been installed, the following screen will display:



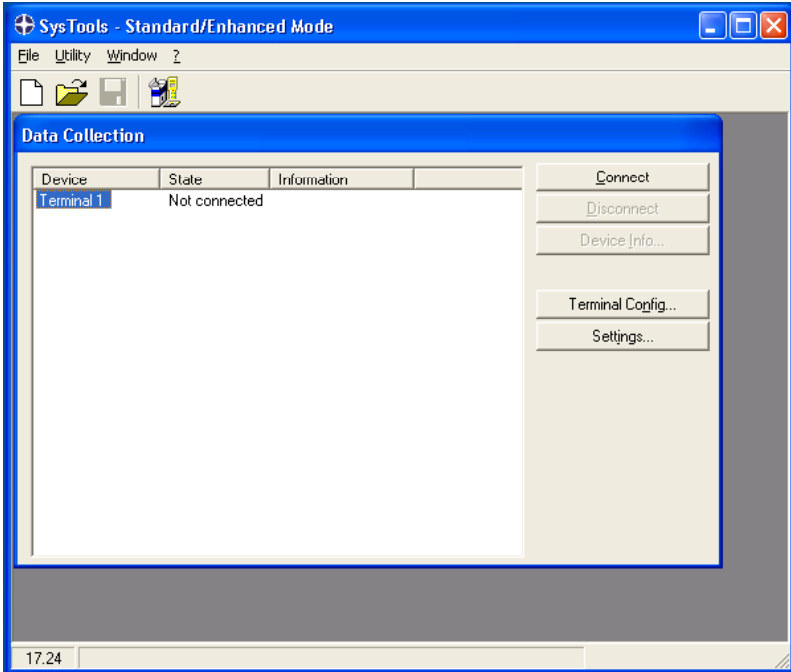
The Formula™ is now ready for use. Collect data using the installed CODE and QUANTITY two prompts program!

*NOTE: For barcode programming options, refer to the program document titled "Ready-to-Use Applications Programming BarCode Document" via the installation CD, USER MANUALS section.

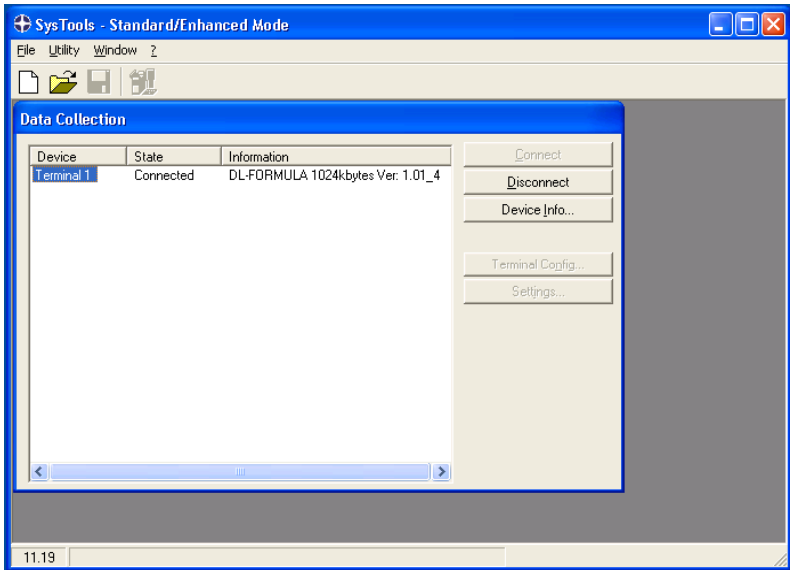
3.5 UPLOADING COLLECTED .DAT FILE DATA TO A PC

To upload the data (.dat file) to a PC, do the following steps:

Verify that USB cable is connected and open SysTools™ (Standard / Enhanced mode) to view the following main menu screen:



Select CONNECT (the Formula™ will emit a tone). STATE: BUSY appears while data is being uploaded, STATE: CONNECTED: appears after the data is sent. NOTE 1: Click DISCONNECT P to end the data transfer session. NOTE 2: The collected .dat file data will be uploaded to the FILE NAME and PATH settings selected earlier.



4 EASYGEN™

4.1 SET UP THE TERMINAL FOR THE CONNECTION WITH THE PC

Insert the battery set into the terminal, close the cover, connect the power adapter to the terminal and let it initially charge overnight. Then insure the charging LED light displays a GREEN status (refer to Formula™ User's manual for further details).

The Formula™ Terminal must first be REFLASHED via the following sequence:

Press and hold the POWER button, then press SCAN key. Press the DOWN arrow to erase the program when prompted. Select option 3 (Serial). The Formula™ will display the following information, indicating it is in receive mode via serial communications:

```
BOOTSTRAP-  
LOADER  
WaitDownload Ser
```

Insert the terminal into the cradle and connect it to any standard 9-pin serial null-modem cable (see Formula™ User's manual for connection details).

4.2 INSTALLING AN EASYGEN™ EXAMPLE

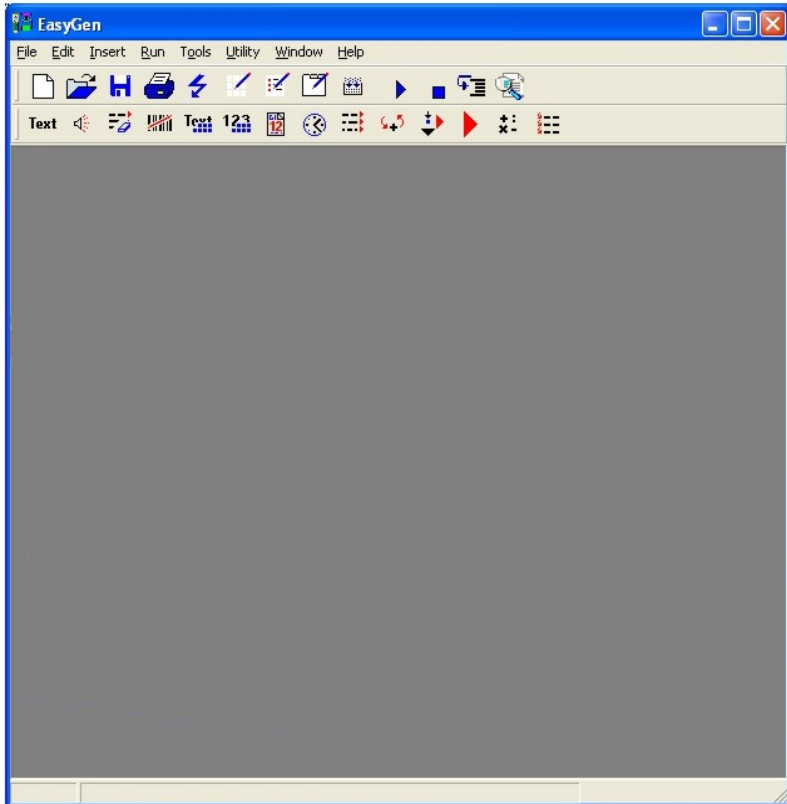
To correctly download an EasyGen™ application open the SYSTOOLS software program. There are two versions of this program: "STANDARD and ENHANCED" mode and "EASYGEN" mode. Insure that EASYGEN mode is enabled by selected Utility Menu – Set SysTools Mode.

Select Utility Menu – Send EasyGen Interpreter, browse and select the interpreter file (EIFOR_XXX.H00).

Default path:

C:\Program Files\Datalogic\Formula Software Tools\EasyGen\Interpreters).

Open the EASYGEN software program:



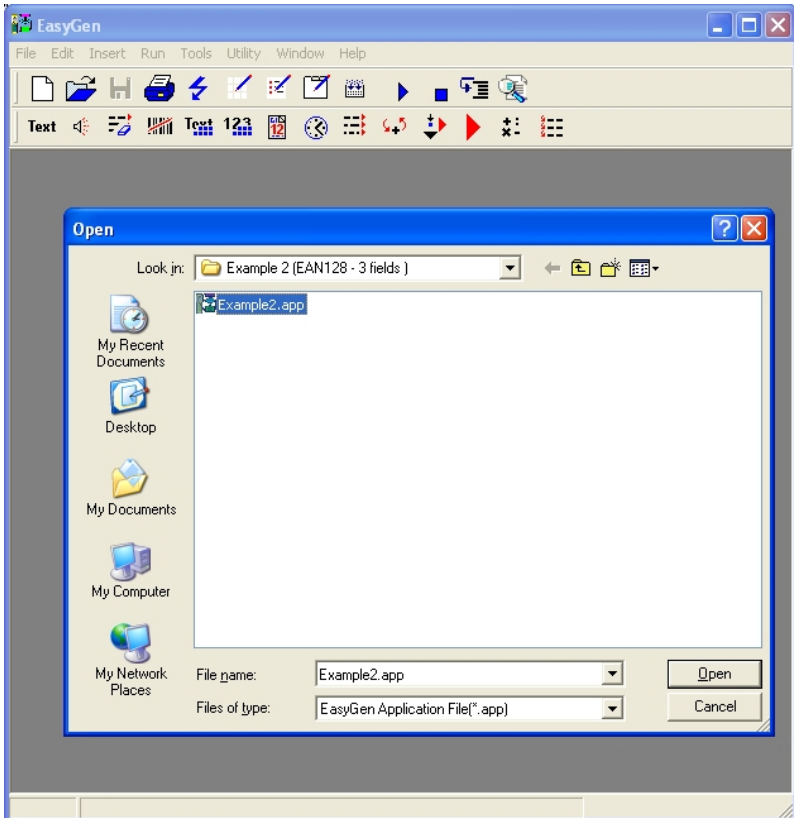
Select FILE – OPEN. Browse to the folder where the default Example applications are installed:

C:\INSTALLATION FOLDER\Datalogic\Formula Software
Tools\EasyGen\Examples\English

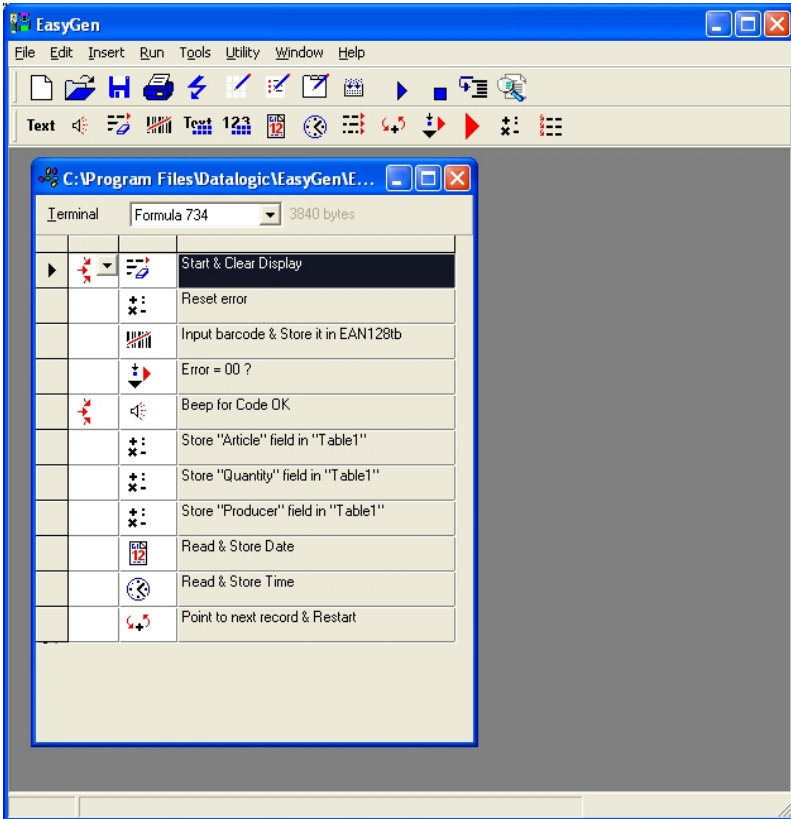
Example Default Programs are:

EXAMPLE 1 (CODE + QUANTITY)
EXAMPLE 2 (EAN128 – 3 FIELDS)
EXAMPLE 3 (ASSISTED SALES)
EXAMPLE 4 (LISTED PICKING)
EXAMPLE 5 (INVENTORY)

For this example we will install the EXAMPLE 2 (EAN128 – 3 FIELDS) application (.app) file:



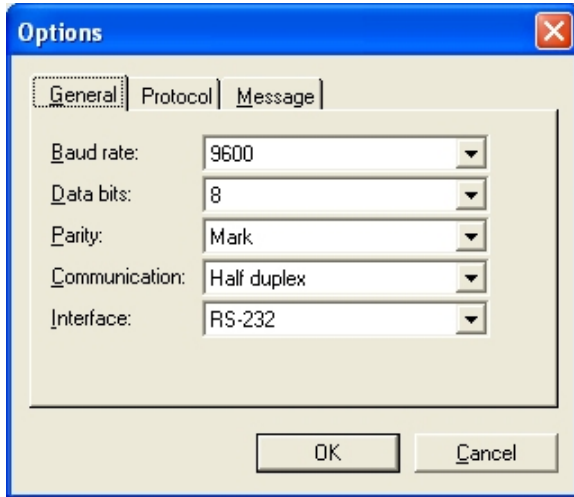
Select OPEN to view the following screen:



Insure that Formula is the selected terminal type. The program steps are also displayed.


Remove the Formula™ from the cradle, it will display Interpreter for EASYGEN Rel 2.1. Press ENTER on the Formula™ (it will display READ ERROR). Place it back in the cradle.

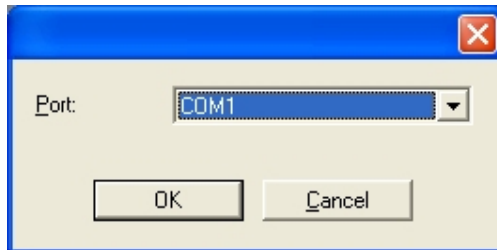
In EASYGEN, Select TOOLS – OPTIONS (GENERAL TAB) to view the following protocol settings box. Insure the settings are set to the following parameters:



Select OK.



To send the program, select the  button or the File – Send menu to display the following screen:



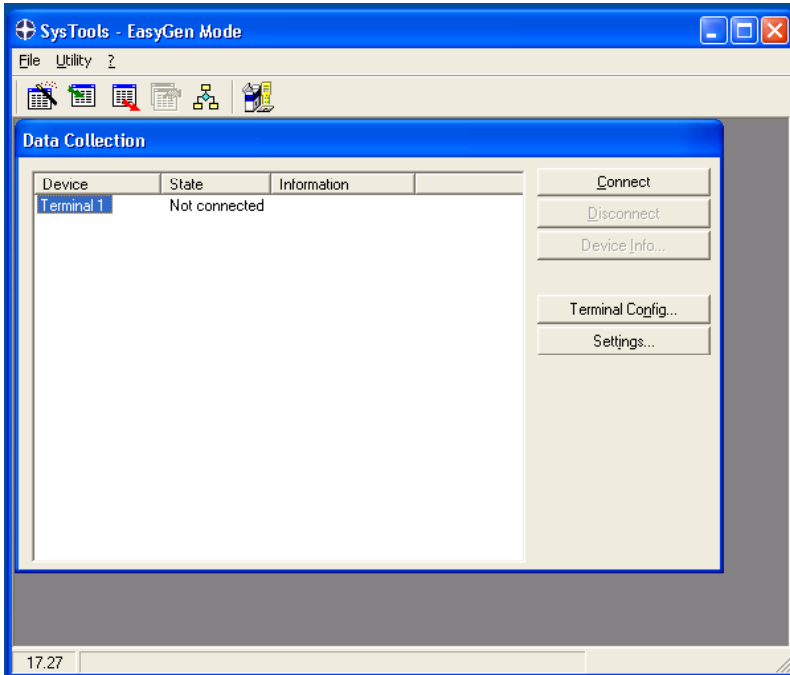
Select OK (insure the comport of choice is selected). An UPLOADING PLEASE WAIT screen will appear and then disappear when the application is transmitted.

Remove the Formula™ from the dock and press ENTER.
The program prompt will then be displayed.

4.3 UPLOADING COLLECTED .DAT FILE DATA TO A PC

To upload the data (.dat file) to a PC, do the following steps:

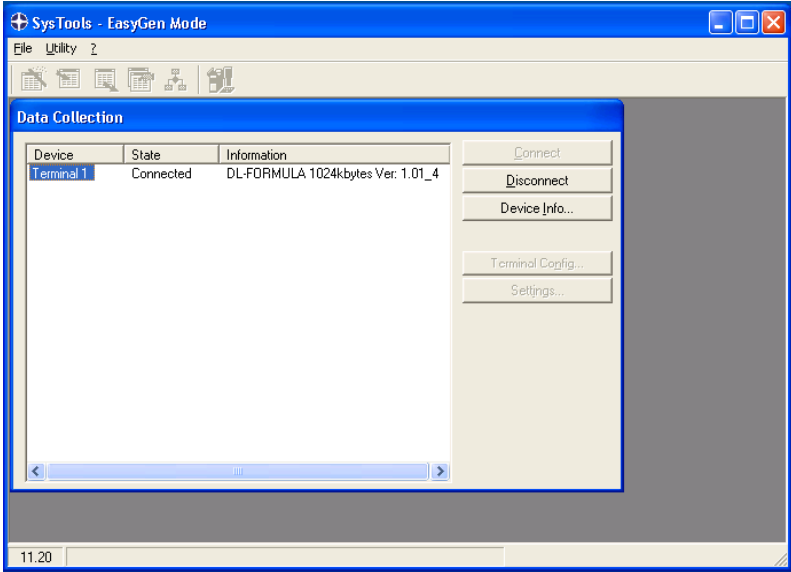
Open SysTools™ and set EasyGen™ mode to view the following main menu screen:



Select the NETWORK SETUP button and insure the Connection Type is set to COM.

Select CONNECT (the Formula™ will emit a tone). STATE: BUSY appears while data is being uploaded, STATE: CONNECTED: appears after the data is sent. NOTE 1: Click DISCONNECT to end the data transfer session.

NOTE 2: The collected .dat file data will be uploaded to the FILE NAME and PATH settings selected earlier.



GLOSSARY OF TERMS

APPLICATION DEVELOPMENT:

1. **EASYGEN:** a Rapid Application Generator to generate easy and quick applications to operate on a Formula™ device. It requires an interpreter file to be installed before installing an application. A set of ready to use EasyGen™ application example programs are also provided.

EXAMPLE 1 (CODE + QUANTITY)

EXAMPLE 2 (EAN128 – 3 FIELDS)

EXAMPLE 3 (ASSISTED SALES)

EXAMPLE 4 (LISTED PICKING)

EXAMPLE 5 (INVENTORY)

2. **SW Developer's Toolkit (DS FOR FORMULA):** a software development toolkit to develop applications with the 8051 compiler. A set of work demo examples are available on the CD for each main communication feature.(See Sw Dev Toolkits Developer's Manual).

READY TO USE APPLICATIONS:

STANDARD MODE M1: ready to use application that can be installed to automatically install a basic inventory program ready for use.

STANDARD MODE M2: ready to use application that can be installed to work with custom program creation via SysTools™.

COMMUNICATION:

SYSTOOLS: PC based communication software to download applications and exchange data between a PC and Formula™ terminal through serial interface. It also provides an option to create a quick custom program for installation.



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