ALLEN-BRADLEY

PLC-5 PROFIBUS Local Station Manager

(Cat. No. 1785-PFB)

Getting Started

What this Document Describes

This document describes how to use the Local Station Manager with the PLC-5™ PROFIBUS Coprocessor. Use this document to learn how to:

- Open the Local Station Manager
- Select a language
- Use the help utilities
- Select a communication port
- Check the battery level and switches
- Set and verify the bus parameters
- Monitor the system events
- Reset the module
- Reset communications
- Convert addresses
- Get module information

Before You Begin

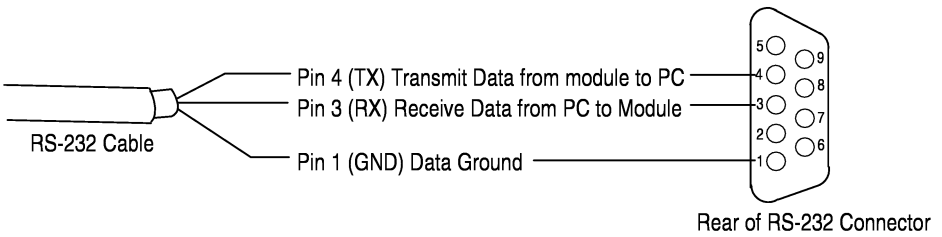
To use the Local Station Manager, you must:

- know how to use Microsoft® Windows™, version 3.1 or later
- connect your computer to the coprocessor using an RS-232 cable and connector
- install the Local Station Manager

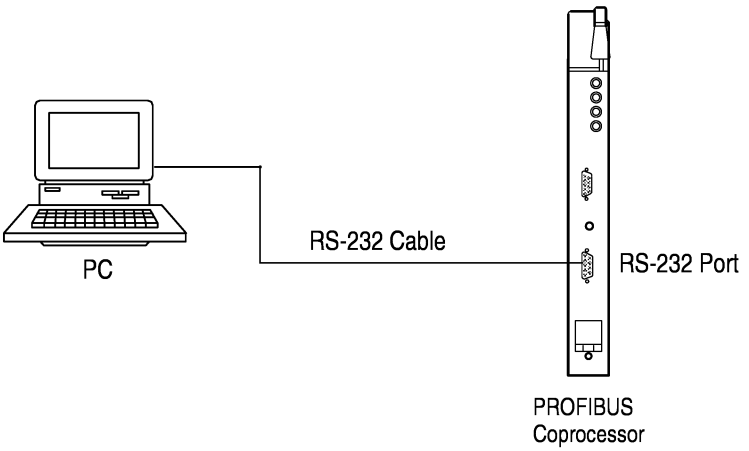
Connect your Computer to your PROFIBUS Coprocessor

1. Connect an RS-232 cable to your computer.

2. Wire the other end of the RS-232 cable to a 9-pin female connector:



3. Plug the 9-pin female connector into your coprocessor at the RS-232 port:



Install the Local Station Manager

1. Open Windows 3.1.

2. Insert the Local Station Manager diskette into your computer's drive.

3. In the **`File`** menu, select **`Execute.`**

4. In the **`Command Line`** box, type **`a:install`** (or **`b:install`**) and press **`Enter`** to install the program.

5. Enter the drive and directory where you want the program installed.

   The default is C:\AB_PROF and will overwrite the contents of this directory (if it already exists). The install program copies Local Station Manager files into the C:\AB_PROF directory.

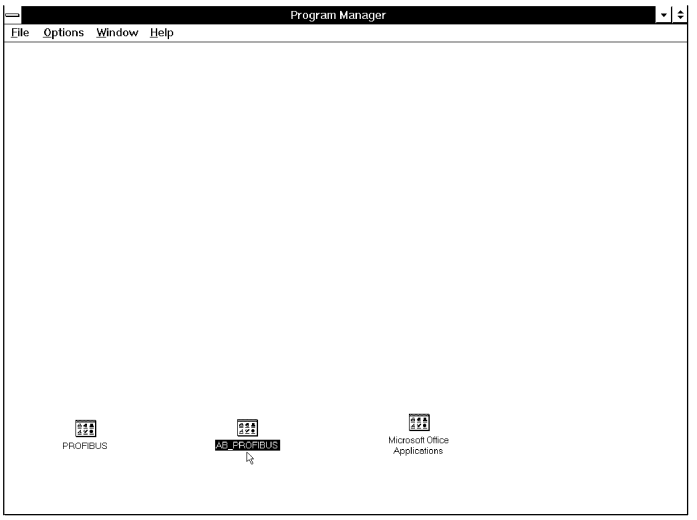
6. The program asks if it should modify the SYSTEM.INI file in the C:\WINDOWS directory. Click **`Yes`** unless you previously modified it.

   The program inserts the Local Station Manager into the AB_PROFIBUS Group.

Open the Local Station Manager

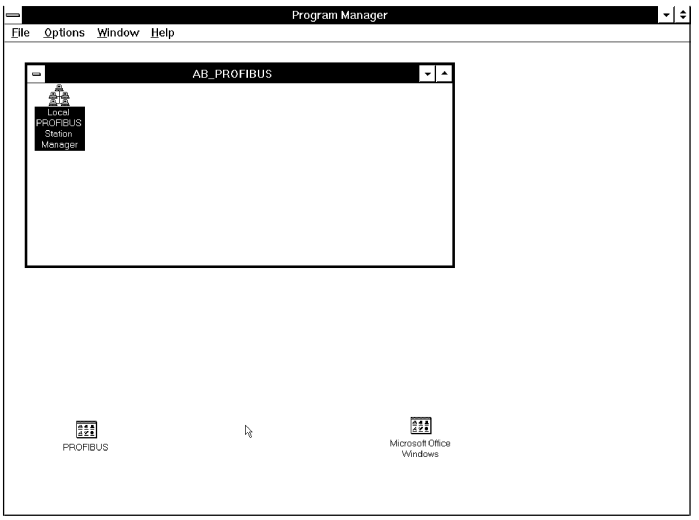
1. Start Windows.

   You see a screen similar to this:



2. Double-click on the **AB_PROFIBUS** icon.

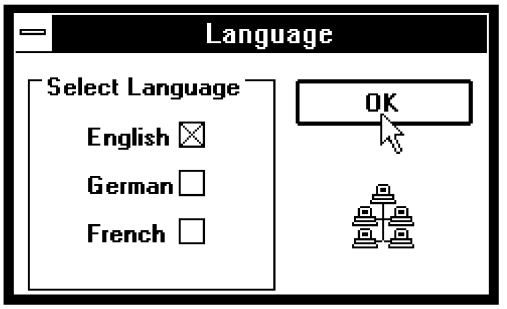
   You see:



Select a Language

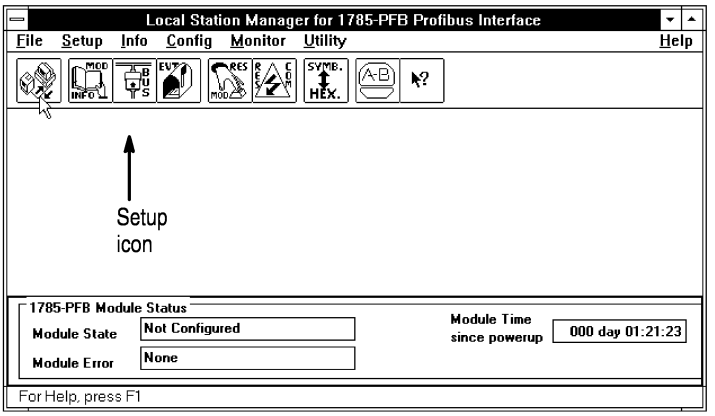
1. Double-click on the **`Local Station Manager`** icon or press Enter.

   You see:



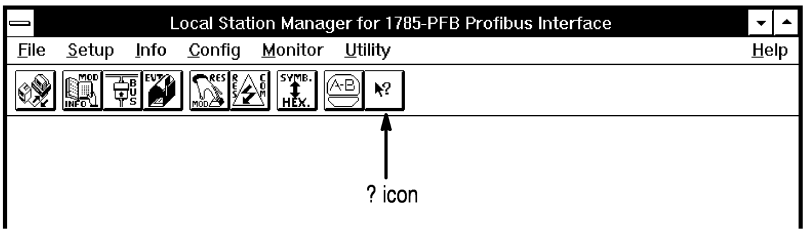
2. Select the language you prefer and click **`OK`** or press Enter.

   You see the main screen:

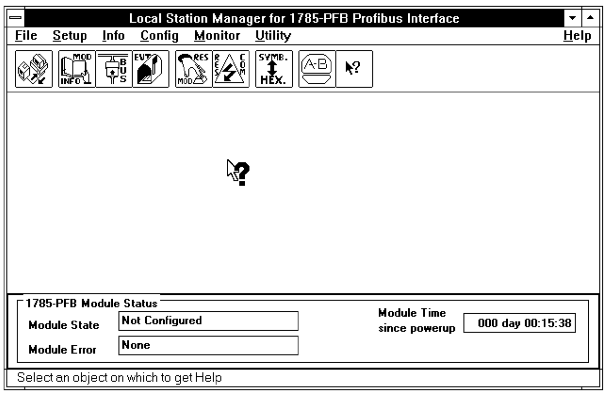


Use the Help Utilities

1. For context help with the Local Station Manager, click the **?** icon.



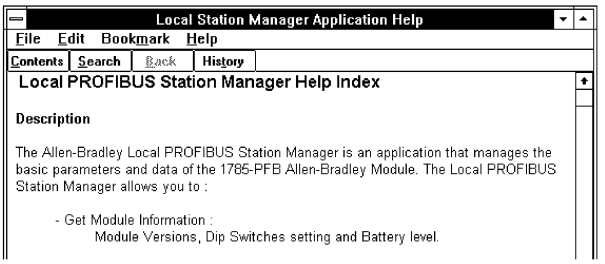
You see:



The mouse pointer changes to an arrow and question mark. Click on the specific menu you need help with and the help topic appears.

2. For the Local Station Manager help index, press F1 or choose **Index** under the **Help** menu.

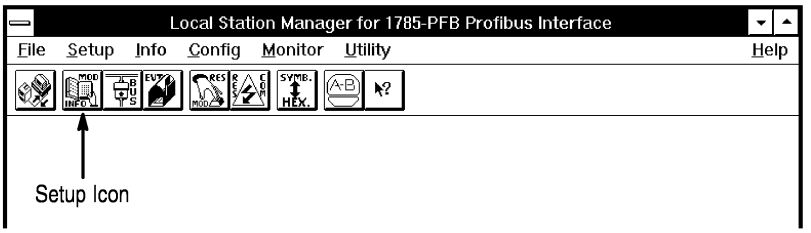
You see:



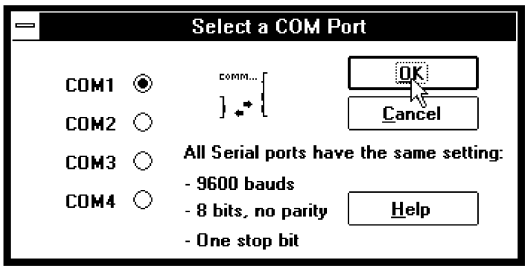
To continue through (or exit) the help utility, use the menus.

Select a Communication Port

1. Click on the **Setup** icon or choose **COM Port** from the **Setup** menu.

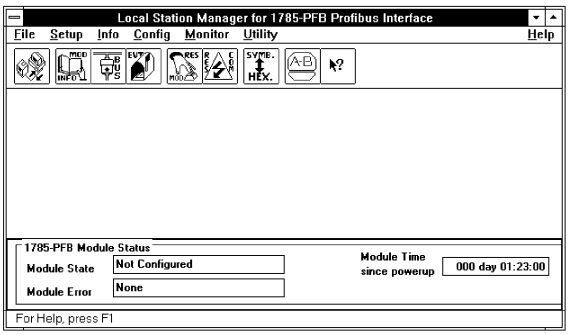


You see:



2. Indicate to which communication port on your PC you connected your RS-232 cable. Click **OK** or press Enter.

You see:



Three module status windows appear at the bottom of this screen:

- **`Module State`**
- **`Module Error`**
- **`Module Time since powerup`**

- The **`Module State`** window indicates your module's status. The program updates this status every 2 seconds with one of the following states:

Module State	Description:
`Operational`	Module is configured for communication
`No Communication`	Module is busy or not running (in error), or the RS-232 cable is disconnected.
`Module Resetting`	Module is resetting upon your command or after setting Bus Parameters
`Communication Resetting`	Module's communication board is resetting
`Uploading Events`	Application is receiving events from the module
`Not Configured`	Module has no user Communication Relationship List in memory
`CRL Configuring`	Module is receiving a new Communication Relationship List
`OD Configuring`	Module is receiving a new Object Dictionary
`ERROR`	Module is in error state
`Noise on Serial Line`	The module is receiving wrong frames on its serial line

- The **`Module Error`** window indicates the location of an error. The following error locations may appear:

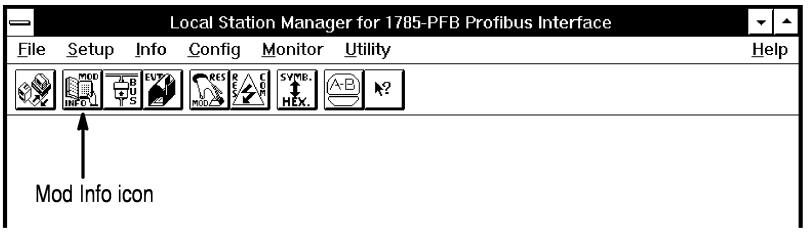
Module Error
None
Hardware
System
Bus Parameters
CRL
OD
Unknown

For more information on these errors, execute **`Module Events`** under the **`Monitor`** menu.

- The **`Module Time since powerup`** status indicates the current time since the last power-up or reset. Monitor this status to verify when an event occurs.

Check the Battery Level and Switches

1. Click the **`MOD INFO`** icon or choose **`Module Info`** from the **`Info`** menu.

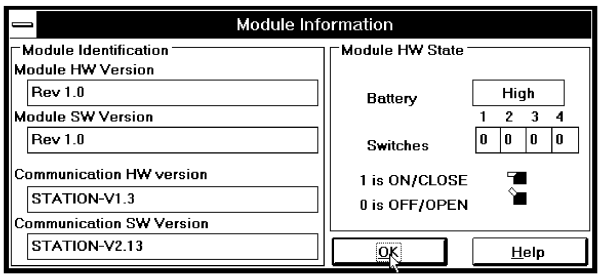


If the **`Module State`** indicates **`No Communication`**, you see:

The local station manager message asks you to check your RS-232 connections and port settings. Click **`OK`** or press Enter.

If the **`Module State`** indicates any other status,

You see:

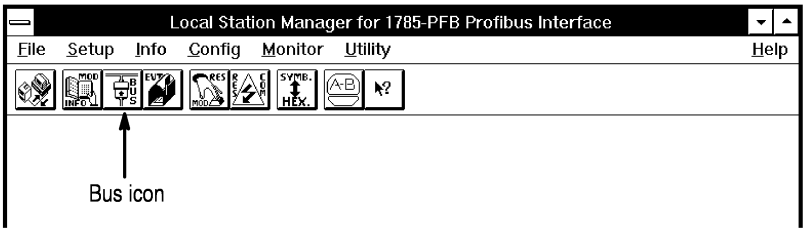


The left side of the screen informs you about module and communication versions. The right side informs you about the battery's power level and the module's switch settings. Refer to the PROFIBUS Installation Instruction or click **`Help`** for information on switch settings.

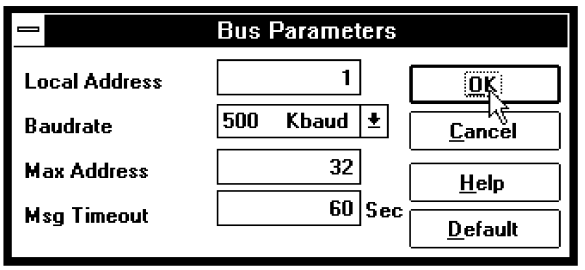
2. Click **`OK`** or press Enter.

Set and Verify the Bus Parameters

1. Click on the **BUS** icon or choose **Bus Parameters** from the **Config** menu.

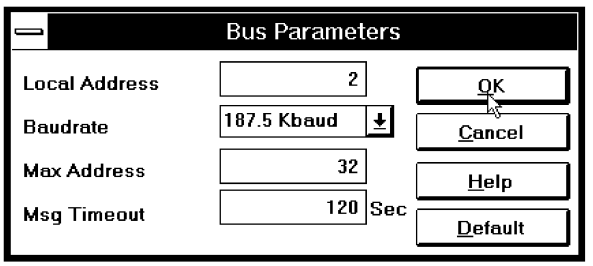


You see:



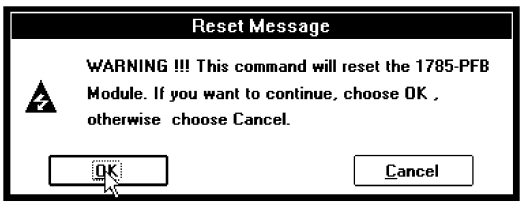
To choose the default bus and communication parameters, click **Default**. To make changes, enter new parameters.

For example:



2. Choose **OK** or **Cancel.**

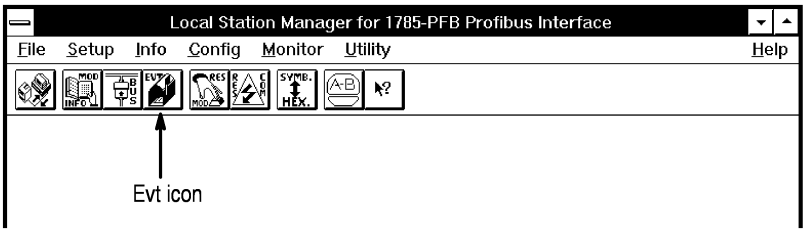
When you choose OK, you see:



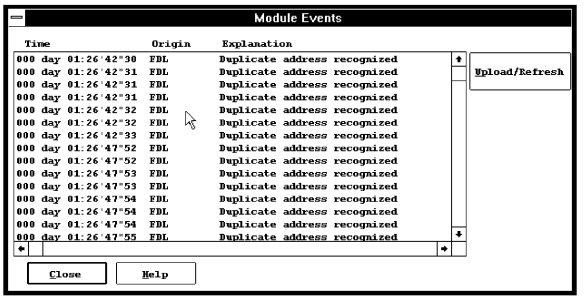
To validate your new parameters, you must first set switch 2 to the 'off' position, then click **OK**.
To disable your changes, click **Cancel**.

Monitor System Events

Click on the **EVT** icon or choose **Module Events** from the **Monitor** menu.



You see:



Three indications are shown for each module event:

- **Time**
- **Origin**
- **Explanation**

- **Time** – displays the time when the module logs the event. Compare this time to the **Module Time since powerup** in the module status to get the elapsed time since the module event occurred.

- **Origin** – displays the category of the event. One of the following categories appears:

Origin	Description
FDL	PROFIBUS Network Event from FDL layer
LLI	PROFIBUS Network Event from LLI layer
TASK#x	Fatal Application Error
KERNEL	Fatal System Error (Operating System)
REJECT	Connection Monitoring: Error (message rejected)
ABORT	Connection Monitoring: Release (error or disconnect)
CONF_NEG	Connection Monitoring: Error (requested service could not be performed)
INITIATE	Connection Monitoring: Establishment

- **`Explanation`** – contains a comment which describes the event.

Origin	Comment
`FDL`	`s`
Where: `s` is a *text description* of the PROFIBUS FDL event	

Origin	Comment
`LLI`	`s`
Where: `s` is a *text description* of the PROFIBUS LLI event	

Origin	Comment
`TASK#%n`	`n` `s`
Where: `n` is a *number* that identifies the task where the problem occurred. `s` is a *text description* of the error. **NOTE:** If this error occurs, call Allen-Bradley Global Technical Support for assistance.	

Origin	Comment
`KERNEL`	`TASK#n1 -> ERROR#n2`
Where: `n1` is a *number* that identifies the task where the problem occurred. `n2` is a *number* that identifies the error code. NOTE: If this error occurs, call Allen-Bradley Global Technical Support for assistance.	

Origin	Comment
`REJECT`	**CR:n1 Source:s1 INVOKE_ID:n2 PDU:n3 REASON:n4**
Where: `n1` is a *number* that identifies the connection where the message was rejected. `s1` is a *text description* where the message was rejected (see table on page 20. `n2` is a *number* of the invoke identifier of the message. `n3` and `n4` are *numbers* that describe the PDU type of message and reason of reject as defined by the PROFIBUS standard.	

The following table describes FMS PDU types:

Number (n3)	Text Description
1	Confirmed request PDU
2	Confirmed response PDU
3	Unconfirmed PDU
4	Unknown PDU type

The following table describes reject reason codes:

Number (n4)	Text Description
0	Other
1	Invoke ID exists
2	Maximum services overflow
3	Feature not supported (connection-oriented)
4	Feature not supported (connectionless)
5	PDU size
6	User error (connectionless)

Origin	Comment
ABORT	**|CR:n1|SRC:s1|AbortID:s2|REASON:n2|Detail:s3**

Where: **n1** is a *number* that identifies the connection which was released.
s1 is a *text description* where the message was released (see table on page 20).
s2 is a *text description* that indicates which PROFIBUS layer released the connection ("USR", "LLI_USR", "LLI", "FDL").
n2 and **s3** is a *number* and a *text description* that describe the reason of the connection release as defined by the PROFIBUS standard

The following table describes **USR** (FMS or FMA) abort reason codes:

Number (n2)	Text Description
0	Disconnect
1	Incompatible OD version
2	Password error
3	Incompatible profile number
4	Limited service permitted
5	OD loading interacting

The following table describes **LLI_USR** (FMS specific) abort reason codes:

Number (n2)	Text Description
0	FMS CRL error
1	User error
2	FMS PDU error
3	Connection state conflict LLI
4	LLI error
5	PDU size
6	Feature not supported
7	Invoke id error response
8	Max services overflow
9	Connection state conflict FMS
10	Service error
11	Invoke id error request

The following table describes **LLI** (FMS or FMA) abort reason codes:

Number (n2)	Text Description
0	LLI negative context check (see remote context in Abort Detail)
1	Invalid LLI PDU during associate or abort
2	Invalid LLI PDU during data transfer phase
3	Unknown or invalid LLI PDU received
4	DTA-ACK-PDU received and SAC=0
5	Max number of parallel services exceeded (by remote station)
6	Unknown invoke id
7	Priority error
8	Local error at remote station
9	Timeout during associate
10	Timeout on cyclic connection
11	Timeout of idle receive time
12	Error while activating LSAP (see stat in Abort Detail)
13	Illegal FDL primitive during ASS or ABT (see Abort Detail)

Number (n2)	Text Description
14	Illegal FDL primitive in data transfer (see Abort Detail)
15	Unknown FDL primitive
16	Unknown LLI primitive
17	Illegal LLI primitive during ASS or ABT (see Abort Detail)
18	Illegal LLI primitive in date transfer (see Abort Detail)
19	Invalid CRL entry
20	ASS connection state conflict
21	Procedural error on cyclic connection
22	Max number of parallel services exceeded (by FMS)
23	CRL being loaded, LLI is disabled
24	Confirm/indication mode error
25	Illegal FMA 1/2 primitive
26	Illegal service on cyclic connection
27	FMS PDU too large on cyclic connection
28	Resource error during associate
29	Resource error in transfer phase
30	Resource error during abort
31	LLI state error
32	LLI timer error
33	Resource transfer to FDL failed

The following table describes **LLI** Abort details (FMS or FMA):

Number	Text Description (s3)
0	Error while loading update buffer
1	Error while activating poll list entry
2	Error while deactivating poll list entry
3	Transmit error (SDA.con)
4	Transmit error (CSRD.con)
5	Transmit error (SRD.con)
6	Receive error (CSRD.con)

The following table describes **FDL** Abort reason codes (FMS or FMA):

Number (n2)	Text Description
1	Remote user interface error
2	No remote resources available
3	Service not activated at remote SAP
12	No resource for send response data low
13	No resource for send response data high
16	Service not activated at local SAP
17	No reaction from remote station
18	Disconnect station
19	FDL service not OK
20	No local resources available
21	Invalid request parameters

If an immediate connection release occurs because of a negative context check by the LLI layer, the comment will contain more detail:

Origin	Comment
ABORT	**|CR:n1|SRC:s1|AbortID:LLI|Negative Context Check |Type:%n2 |Max SCC:%n3|Max RCC:%n4|Max SAC:%n5|Max RAC:%n6|ACI:%n7|**

Where: **n2** to **n7** are *numbers* that describe the type of the connection, the maximum numbers of parallel confirmed and unconfirmed services, and the monitoring level as defined by the PROFIBUS standard. Compare these numbers with those defined with the other partner.

Number (n2)	Text Description
0	Master-master connection for acyclic data transfer
1	Master-slave connection for acyclic data transfer with no slave initiative
5	Master-slave connection for acyclic data transfer with slave initiative
3	Master-slave connection for cyclic data transfer with no slave initiative
7	Master-slave connection for cyclic data transfer with slave initiative
8	Broadcast communication relationships
10	Multicast communication relationships

Origin	Comment
CONF_NEG	**CR:n1 INVOKE_ID:n2 Source:s1 SERVICE:n3 CLASS:n4 ERROR# n5**

Where: **n1** is a *number* that identifies the connection on which the service request was refused.
n2 is a *number* that indicates the invoke identifier of the message.
s1 is a *text description* that indicates where the request was refused (see table on page 20).
n3 is the identifier of the service.
n4 and **n5** are the *numbers* that describe the reason by error class and code, as defined by the PROFIBUS standard (see table on page 20).

If the refused service request was an initiate (connection establishment) because of a mismatch in connection parameters, the comment will contain more detail:

Origin	Comment
CONF_NEG	**|CR:n1|PDU Type:s1|SRC:s2|CLASS:n2|ERR:n3 |SND_h:n4|SND_:n5|RCV_h:n6|RCV_l:n7|Features:n8, n9, n10, n11, n12, n13**

Where: **n1** is a *number* that identifies the connection on which the initiate request was refused.
s1 is a *text description* that indicates the direction of rejection ("CON" or "RES").
s2 is a *text description* indicates where the request was refused (see table on page 20).
n2 and **n3** are the *numbers* that describe the reason by error class and code, as defined by the PROFIBUS standard (see table on page 20).
n4 to **n13** are *numbers* that describe the maximum size for high and low priority messages, features supported on this connection as defined by the PROFIBUS standard. Compare these numbers with those defined within the other partner.

The following table describes service identifiers:

Number (n3)	PROFIBUS FMS Services
0	Initiate
2	Status
3	Identify
4	Read
5	Write
6	Get OD
21	Start PI
22	Stop PI
23	Resume PI
24	Reset PI
28	Physical Read
29	Physical Write
30	Initiate Put OD
31	Put OD
32	Terminate Put OD
33	Information Report
34	Unsolicited Status
38	Abort
39	Reject
42	Read OD (local)
43	Initiate Load OD (local)
44	Load OD (local)
45	Terminate Load OD (local)
46	Create VFD (local)
47	Set VFD Physical Status (local)
48	Set PI Status (local)

The following table lists error classes and codes that can be returned in a negative confirmation to a PROFIBUS request:

Class (n2, n4)	Error (n5, n3)	Description
0	0	The node refused connection establishment for other reasons than those listed below.
0	1	The node refused connection establishment because of an insufficient maximum PDU size.
0	2	The node refused connection establishment because of not supported features.
0	3	The node refused connection establishment because of an incompatible OD version .
0	4	Connection establishment has been denied by user.
0	5	The node refused connection establishment because of a password error.
0	6	The node refused connection establishment because of an incompatible profile number.
1	0	The current state of the VFD at the node does not allow execution of requested service.
2	0	The application prevents execution of requested FMS service on this connection.
2	1	The application process is unreachable for the FMS service.
3	0	Undefined problem with object definition in the OD.
3	1	The required object does not exist in the OD.
3	2	The specified object has been defined in the OD with inconsistent attributes.
3	3	The name specified for a new object already exists in the OD.
4	0	The node has exhausted resources (other than memory) needed for execution of FMS service.
4	1	The node has no memory available for execution of FMS service.
5	0	The node identified a problem with the FMS service itself (other than those listed below) preventing its execution.
5	1	The current state of an object (OD element, or OD itself) does not allow execution of the FMS service on this object..
5	2	The response PDU to requested service exceeds the maximum PDU size that the node can send.
5	3	Some constraints at the node prevent execution of requested FMS service.
5	4	Requested FMS service has been specified with inconsistent parameters.
5	5	A parameter specified with the FMS service has an illegal value.
6	0	Access to object is rejected for reasons other than those listed below.
6	1	Access refers to an object with an undefined reference. This is a permanent error.

Class (n2, n4)	Error (n5, n3)	Description
6	2	Access to requested object failed because of a hardware error.
6	3	The FMS local client has not sufficient access rights to access the object.
6	4	The physical address specified in a service is out of legal range in node.
6	5	Attributes of specified object are inconsistent.
6	6	Requested access to object is not allowed in its definition.
6	7	The specified object does not exist in the node.
6	8	Access to required object is rejected because of an incorrect data type.
6	9	The node does not support named access to its objects.
7	0	An error (other than those listed below) has occurred upon creation of an object.
7	1	Legal name length has been exceeded upon creation of an object.
7	2	Legal length of Object Dictionary has been exceeded.
7	3	Object Dictionary is write protected.
7	4	Legal length of extension has been exceeded upon creation of an object.
7	5	Legal length of a single object description has been exceeded upon creation of an object.
7	6	The Object Dictionary currently loaded at the node is incorrect.
8	0	The FMS service has been rejected by the node for a reason other than those listed above.

Origin	Comment
`INITIATE`	**|CR:n1|PDU Type:s1|SRC:s2|SND_h:n2|SND_l:n3|RCV_h:n4|RCV_l:n5|Features:n6, n7, n8, n9, n10, n11**

Where: `n1` is a *number* that identifies of the connection being established.
`s1` is a *text description* indicating the direction of corresponding initiate request ("REQ" or "IND").
`s2` is a *text description* indicating where the request originates (see following table).
`n2` and `n11` are the *numbers* describing the maximum sizes for high and low priority messages, features supported on this connection as defined by the PROFIBUS standard.

Several of the events described above display a text description indicating where the event was generated.

The values and meanings of the text descriptions are described in the following table:

This value (s1, s2):	Means the event:
"REMOTE"	Comes from the network or a remote partner
"COMMUNICATION"	Was generated or detected locally within the communication part of the module
"MODULE"	Was generated or detected within the module
"PROGRAM"	Was generated by the PLC-5 program (MSG instruction)

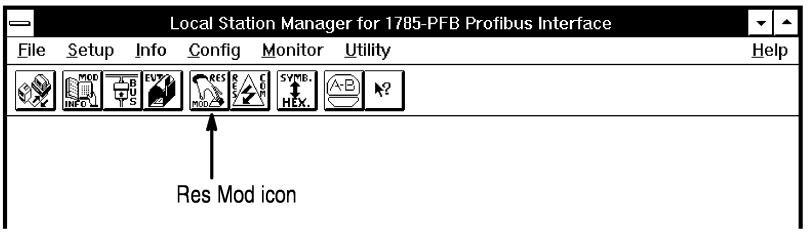
In addition to these event types, the module will also log both **Module** and **Communication** resets. These two events are associated with the following comments without any indication of origin:

—MODULE RESET DETECTED————————————————————
—PROFIBUS COMMUNICATION RESET DETECTED————————————

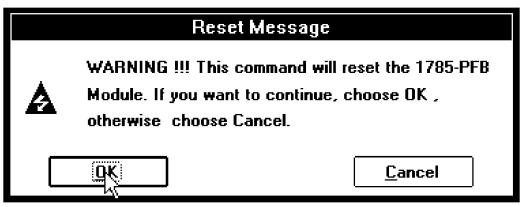
To exit the module events screen, click **Close** or press Enter.

Reset the Module and Plug

To reset the 1785-PFB module, click on the **RES MOD** icon or choose **Module Reset** from the **Monitor** menu (or skip to step 15). If you reset the module, you may have to reconfigure it depending on the switch settings.



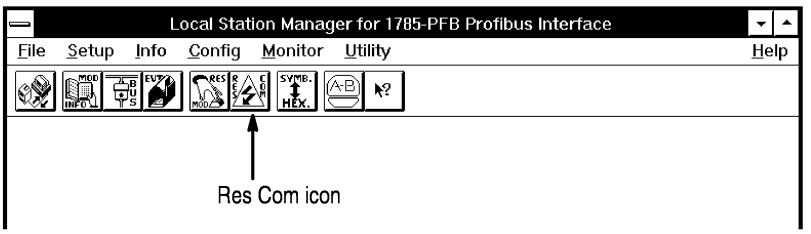
You see:



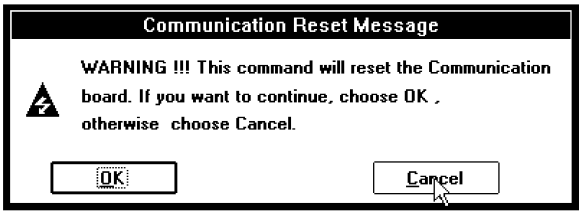
Click **OK** or **Cancel**. Resetting the module may take up to 1 minute (similar to recycling power). The module's LED diagnostics cycle four times through each color while resetting.

Reset Communication

To reset PROFIBUS communications, click on the **RES COM** icon or choose **Communication Reset** from the **Monitor** menu (or skip to step 16).



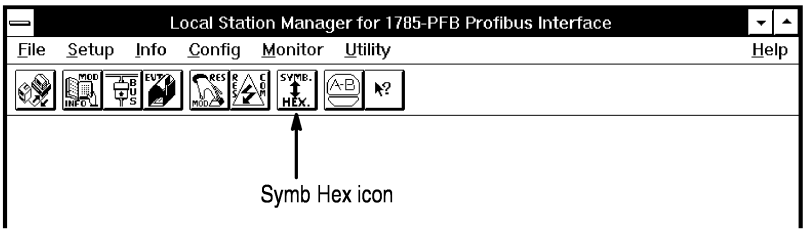
You see:



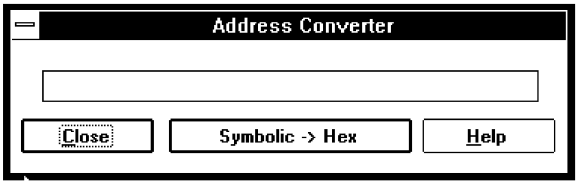
Click **OK** or **Cancel**. Resetting communications may take up to 30 seconds to complete. The module's LED diagnostics cycle twice through each color while resetting.

Convert Addresses

1. Click on the **SYMB HEX** icon or choose Address Converter from the **Utility** menu.

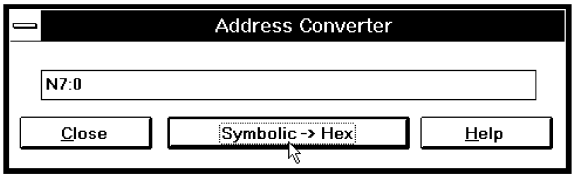


You see:

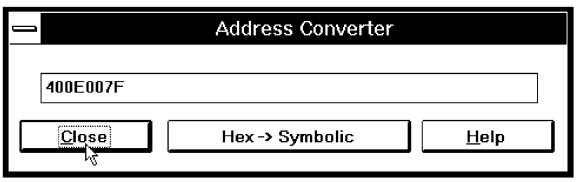


The address converter converts a PLC-5 data table address (symbolic) to a PROFIBUS physical address (32 bit hexadecimal) and vice versa.

2. Enter your symbolic address data and click on **`Symbolic -> Hex.`** For example:

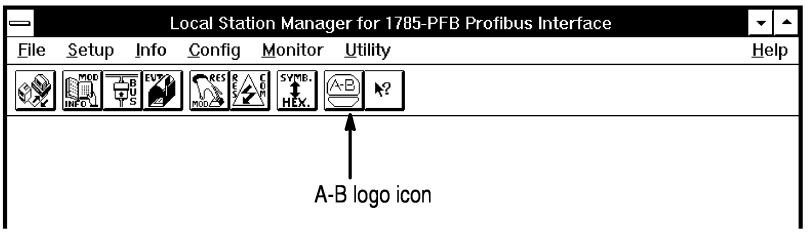


3. Click on **`Hex -> Symbolic`** to switch from one address format to another. For example:



4. Click on **`Close`**.

5. For information about the Local Station Manager, click on the A-B logo icon.



You see:

6. Click on **OK** to return to the main screen.

You are done using the Local Station Manager. Read the next document in the PROFIBUS documentation set, the PLC-5 PROFIBUS Coprocessor User Manual.

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Getting Started
PLC-5 PROFIBUS Local Station Manager

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