IDentity MaX

Installation and Software User's Guide

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Notices

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Installation and Maintenance Manual
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IDentity MaX Installation Manual.doc

⚠ **NOTICE**

This equipment has been tested and found to comply with the limits for a Class B digital device,

pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection

against harmful interference in a residential installation. This equipment generates, uses, and can

radiate radio frequency energy and, if not installed and used in accordance with the instructions,

may cause harmful interference to radio communications. If this equipment does cause harmful

interference to radio or television reception, which can be determined by turning the equipment

off and on, the user is encouraged to try to correct the interference by one or more of the

following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet or circuit different to that which the receiver is connected.
- Consult SIRIT.

⚠ NOTICE

Note: This equipment complies with FCC Part 15.247 and Industry Canada RSS 210 rules. Any changes or modifications not expressly approved by SIRIT could void the user's authority to operate the equipment. To maintain compliance, the IDentity Flex reader must be used with the power supply that was supplied with the reader.

⚠ RF Exposure Warning

To comply with the FCC radiofrequency (RF) Exposure requirements, the antenna(s) used with this device must be installed to provide a minimum separation distance of 1 meter from all persons.

⚠ NOTICE

For PLUGGABLE EQUIPMENT, the socket/outlet shall be installed near the equipment and shall be easily accessible. For PERMANENTLY CONNECTED EQUIPMENT, a readily accessible disconnect device shall be incorporated into the fix

⚠ TRANSPONDER NOTICE

WARNING! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
ed wiring.

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Version 1.2

1.0 Overview

The ID*entity* MaX reader is an RFID device capable of reading EPC Class 0, Class1, and Class 1 Gen 2 RFID tags, and processing the data for a gated access type application. Generally, the reader is configured, upon installation, to work with specific inputs and outputs to interface with customer systems including access panels, gates and visual indicators. All system configurations are accomplished using either a PC based application or a web based user interface.

2.0 Communications

The ID*entity* MaX reader supports a variety of communication interfaces and protocols.

2.1 Ethernet

The reader Ethernet port is fully 802.3 compatible with Auto 10/100 and Auto MDIX functionality. It also supports Power over Ethernet and is classified as a Class 0 powered device. The Ethernet is the primary interface for the web based user interface.

2.2 USB

The USB port of the ID*entity* MaX is USB 2.0 compliant and is accessed via a type B connector on the bottom of the unit. The USB port is the primary communication method for the PC based user interface.

2.3 Host Serial

The Host serial port supports a variety of protocols and signaling, including RS-232, RS-422, and RS-485. It is primarily used to transfer RFID tag information to a host or maintenance PC.

2.4 Wiegand Port

The Wiegand port is a simplex type communication from the reader to a host or access panel compliant to the SIA 26-bit standard but also supports extended formats.

3.0 Installation and Connections

3.1 Installation Overview

This section lists the steps required to install and test an IDentity MaX system comprised of a single reader. The installer should have a successful installation by completing each step before moving on to the next.

The Suggested installation steps are:

1. Gather all necessary tools and materials. See section 3.2.
2. Install reader in desired location using provided hardware. See section 3.3.
3. Complete power and communication connections. See section 3.4.
4. Perform system verification and configuration using either the PC based interface or the web based interface. See sections 4.0 or 5.0.

3.2   Tools and Materials

The installation uses the following materials provided by Sirit.

1. IDentity MaX reader
2. Interface cable (Available from Sirit, but not standard)
3. 48 VDC power supply
4. IEC to three prong power cable
5. Universal mounting bracket

The only tools required will be standard hand tools.

However, the interface cable will require additional tools and material to install Ethernet, RS-232, I/O, and power connectors.

3.3   Reader Installation

The IDentity MaX reader may be mounted on vertical poles or horizontal pipes utilizing the supplied universal mounting bracket (UMB). Note that the U-bolts provided with the UMB are designed to be used with a 1.5-inch pole. The reader requires the supplied interface cable be attached to the Amphenol connector on the rear of the reader. The cable may be clamped to walls with clips or run through appropriate conduits.

The location and angle of the reader define its read zone. Establish the location and mounting method in conjunction with the Site Planning Guide

prior to installation. It is essential that the reader be installed in the correct orientation and location for accurate transponder reads.

The figure below illustrates a typical parking access installation. This is an example only and should not be substituted for the installation setup.

IDEntity MaX Reader

POLE HEIGHT
8 FEET MAX

3 - 4 FEET

8 -10 FEET

READ ZONE

ARMING / ENTRY LOOP

ENTRY
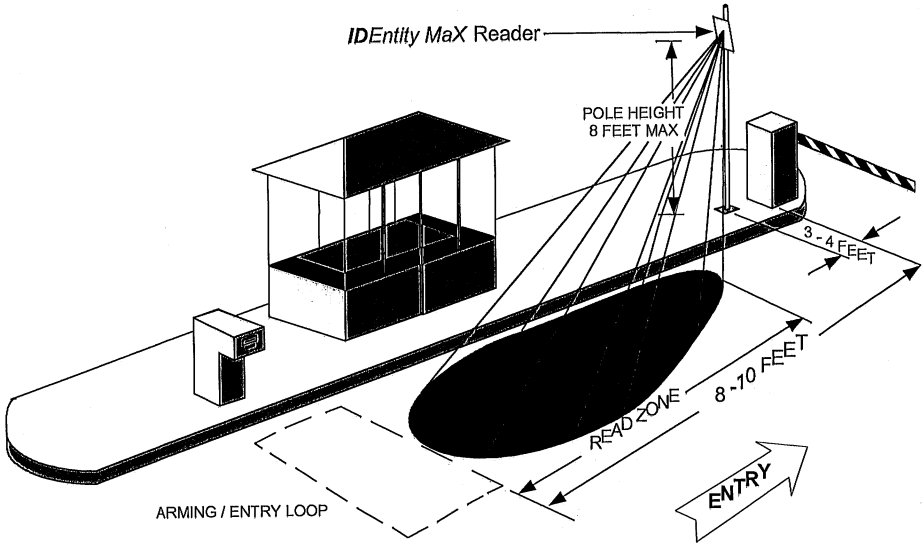
The Figure below shows the method and hardware required to install the ID*entity* MaX reader on a pole. All items (except for the pole) are supplied by Sirit.
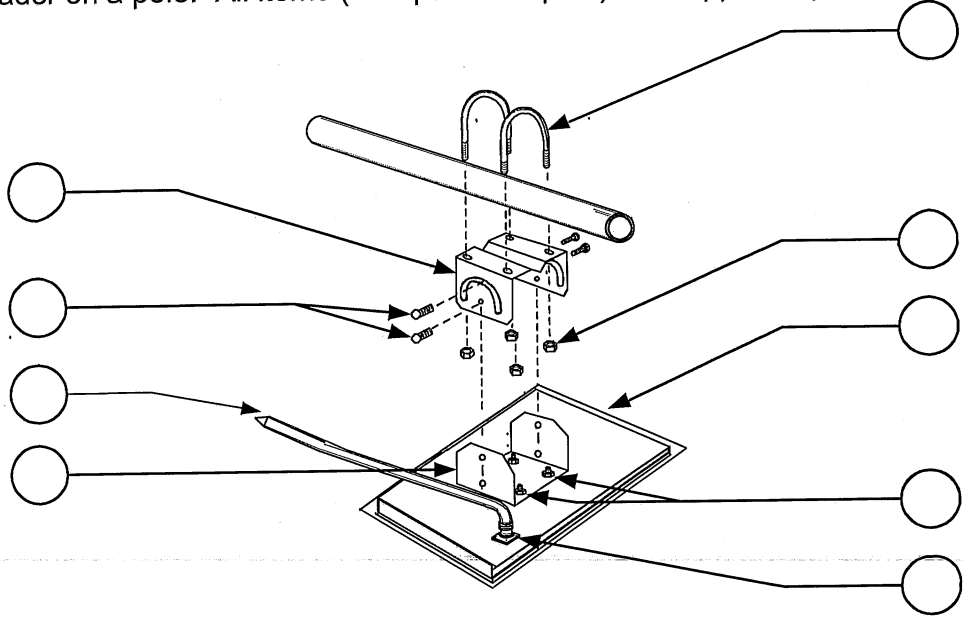
Item	Description
1	U-bolts (for 1.5 inch pole), reader mounting bracket, 2 per bracket
2	UMB bracket half, conduit mount side
3	UMB bracket half, reader mount side
4	Interface cable
5	Bracket pinning bolts, 2 required
6	Nuts for U-bolts, 4 per bracket
7	IDentity MaX reader
8	Bracket mounting nuts, ¼-20, 4 per bracket
9	Amphenol connector

3.4 Communication and Power Connections

The interface cable is comprised of approximately 20 feet of a 30 conductor (15 pair) twisted pair cable with an Amphenol connector on one end, the mate of the connector on the rear of the reader. The opposite end will have all communications, power, and I/O connections as loose wire ends. The appropriate communication connectors will be required for configuration and remote communication. See Appendix B for proper cable pin outs.

To attach the cable to the reader, carefully align the single connector on the interface cable with the Amphenol connector on the reader. With minimal pressure, screw the outer housing of the cable connector onto the reader connector. The connectors should automatically lock in place when they are properly attached.

Next, connect the communications connectors to their mates on the user systems. The Ethernet connection is required to use the web based interface, the USB interface is required to use the PC based interface, and the serial connection is required for host attachment.

Finally, plug the IEC power cable into the power supply, and the DC side of the power supply into the connector on the interface cable. Plug the three prong connector into a 120V, 60Hz AC power socket.

4.0   PC based User Interface

The PC based application maxgui.exe is the primary user interface for system configuration and monitoring. It is designed to use the USB connection for communication to the maintenance PC. Microsoft .NET framework version 2.0 needs to be installed on the maintenance PC in order to run the GUI. The .NET framework installation file is also included as part of the documentation package for the ID*entity* MaX.

To install the .NET framework, copy dotnetfx.exe to the maintenance PC and run the application. Follow all prompts to install.

Because this GUI is based on xml formatted commands, there is a folder called "allxmlcmd" that needs to be copied to the c:\ directory. All xml commands are in this folder.

Connect the USB port of the interface cable to the USB port of the PC. Verify that the reader has power and is operational. At the initial installation, a dialog box may appear asking for the USB driver. A copy of this driver has been included with the IDentity MaX software package. Run the interface program maxgui.exe.

Looking at the main screen of the interface, disregard the "Test Hardware" and "Flash Memory Operation" tabs. These were used by the developer for test and debug and will be removed at a later revision. All sub menus will have a "Confirm" button. This button needs to be clicked after making any changes to the configuration in that particular menu. Otherwise, the changes will not be written into the Random Access Memory on the reader.

4.1   Setting reader date and time

The ID*entity* MaX reader will be configured during the manufacturing process for the date and time based upon US central time zone (GMT-6). The "Set Date and Time" tab allows the user to change the reader time and date.

"Get Time and Date" is used to view current reader date and time.

To change the time and date, simply use the drop down options provided for each parameter. Hours are in 24 hour format. Press "Set Time to board" to overwrite values currently in the reader.

Though not necessary, it is sometimes desirable to synchronize date and time on the reader and maintenance PC. "Set PC clock to board" will change the reader clock to the same time and date as the PC clock.
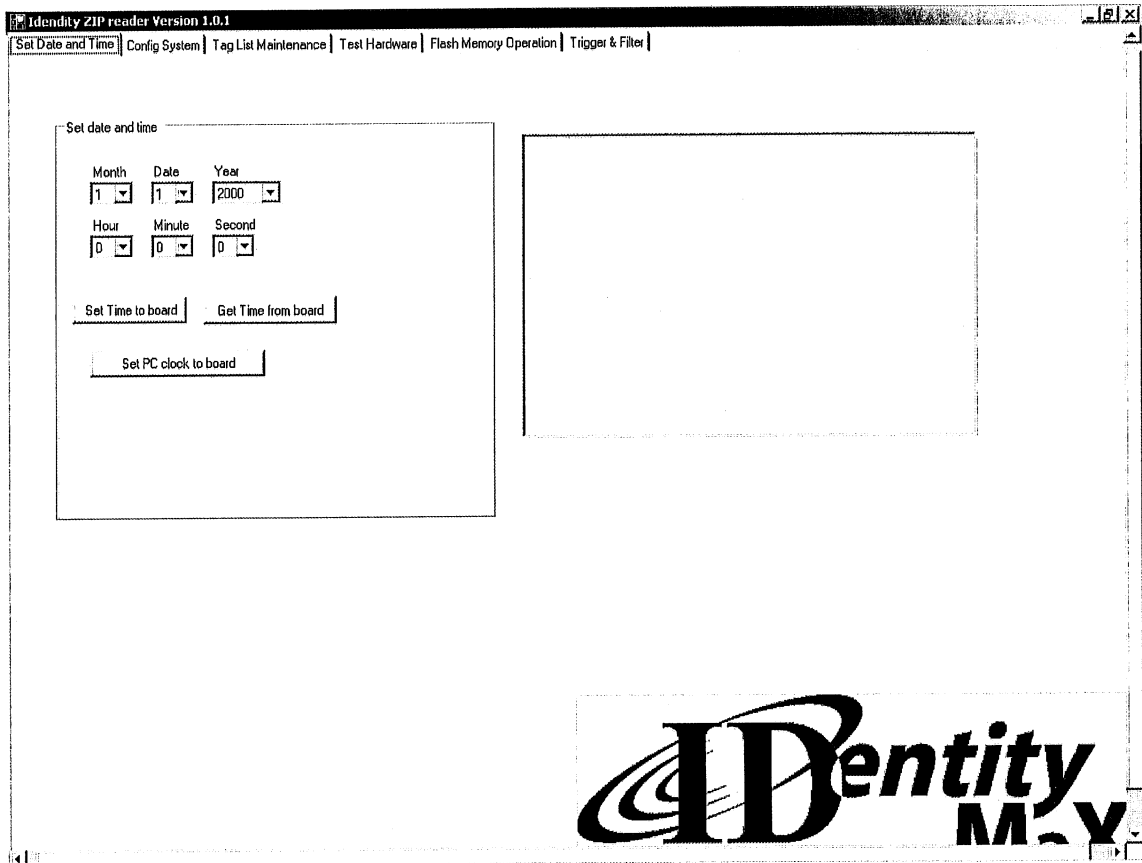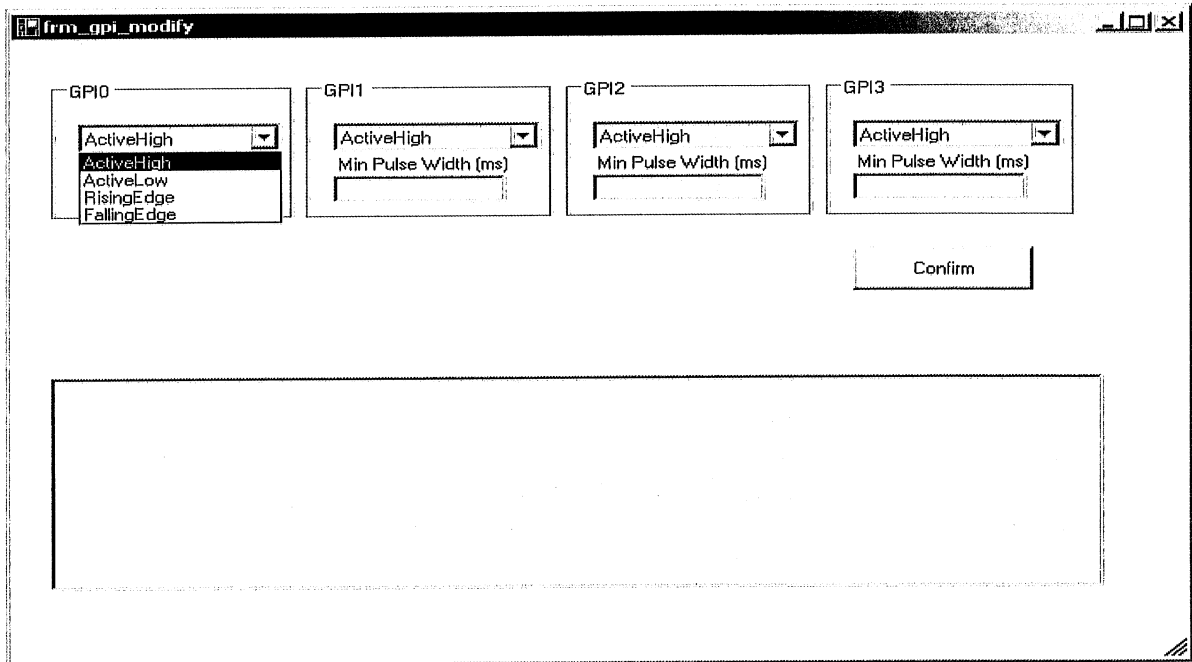
4.2   Configuring the System

The Configuration System menu is used to verify and change all parameters related to system interface. This includes the general purpose inputs and outputs, the serial port, Wiegand port, gate control, and translation table exception handling.
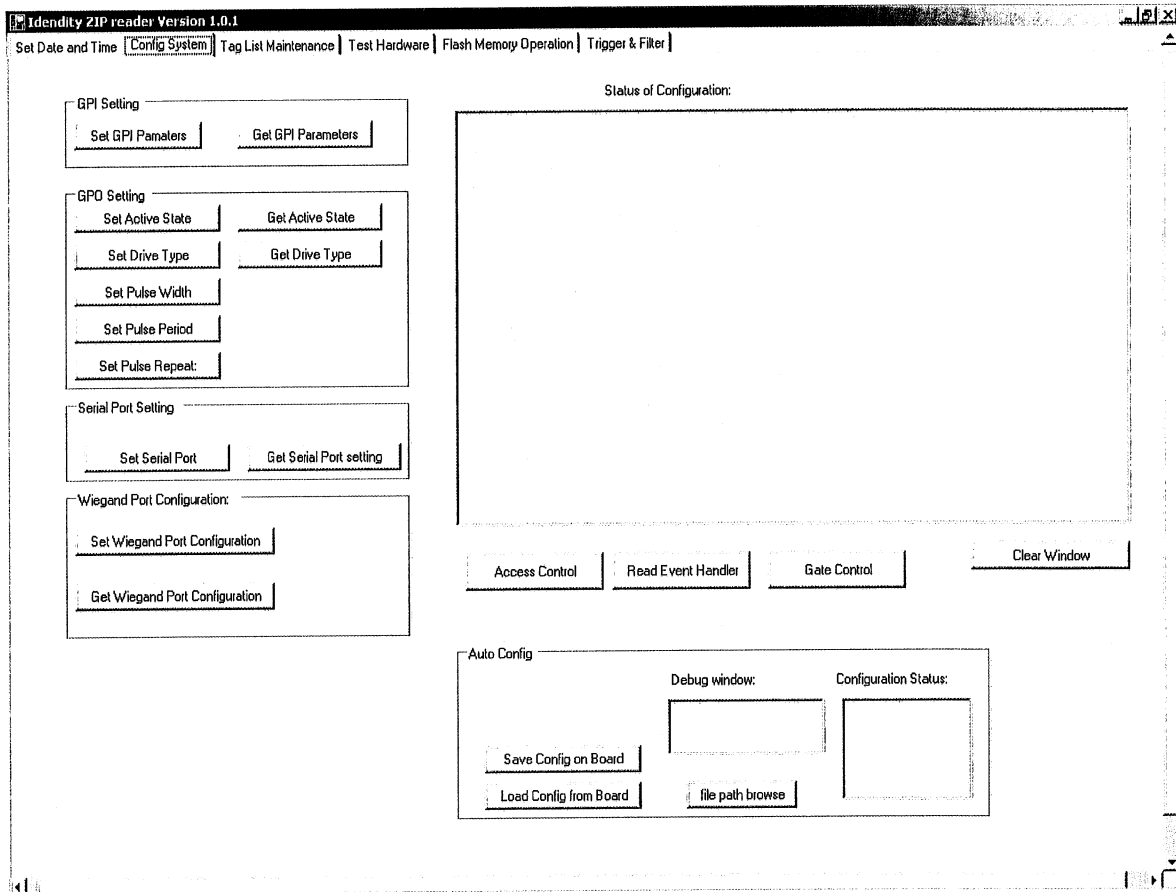
4.2.1 General Purpose Inputs (GPI)

To view current GPI settings use "Get GPI Parameters."

To change GPI settings, use "Set GPI Parameters"
Each input can be set to an active high, active low, or edge
triggered event.

```
frm_gpi_modify                                                    _ |□| x|

 ┌─GPI0─────────┐ ┌─GPI1─────────┐ ┌─GPI2─────────┐ ┌─GPI3─────────┐
 │                │ │                │ │                │ │                │
 │ ActiveHigh  ▼ │ │ ActiveHigh  ▼ │ │ ActiveHigh  ▼ │ │ ActiveHigh  ▼ │
 │ ActiveHigh    │ │ Min Pulse Width (ms) │ │ Min Pulse Width (ms) │ │ Min Pulse Width (ms) │
 │ ActiveLow     │ │                │ │                │ │                │
 │ RisingEdge    │ │                │ │                │ │                │
 │ FallingEdge   │ └────────────┘ └────────────┘ └────────────┘
 └───────────┘
                                                    ┌──────────┐
                                                    │  Confirm │
                                                    └──────────┘
```
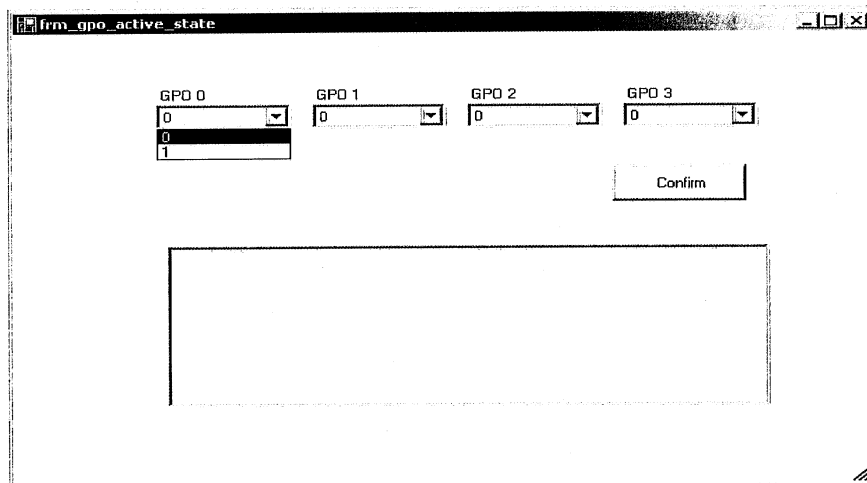
### 4.2.2 General Purpose Outputs (GPO)

The four general purpose outputs have several parameters that can
be configured for a variety of applications.
To view the current values of Active state and Drive type, use the
respective button.
Active state can be set to active low (0) or active high (1).


```
frm_gpo_active_state                                              _ |□| x|

    GPO 0        GPO 1        GPO 2        GPO 3
    ┌────┬─┐    ┌────┬─┐    ┌────┬─┐    ┌────┬─┐
    │ 0  │▼│    │ 0  │▼│    │ 0  │▼│    │ 0  │▼│
    ├────┴─┘    └────┴─┘    └────┴─┘    └────┴─┘
    │ 0  │
    │ 1  │                          ┌──────────┐
    └────┘                          │  Confirm │
                                    └──────────┘
```

There are three options for output drive state. Open drain, where the user will need to supply pull up resisters, Push pull, and none for a tri-stated output.
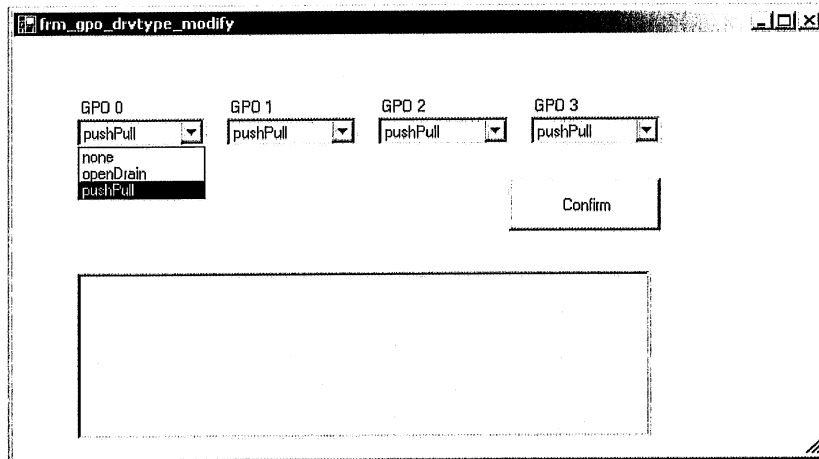
Each output waveform is specified with three parameters: Pulse width, pulse period and pulse repetition. The width is the time that the signal is active. Period is the time from rising edge to rising edge (Active high state) or falling edge to falling edge (Active low state). Pulse repeat is the number of times the active signal is repeated. The relationship between the three is shown below:
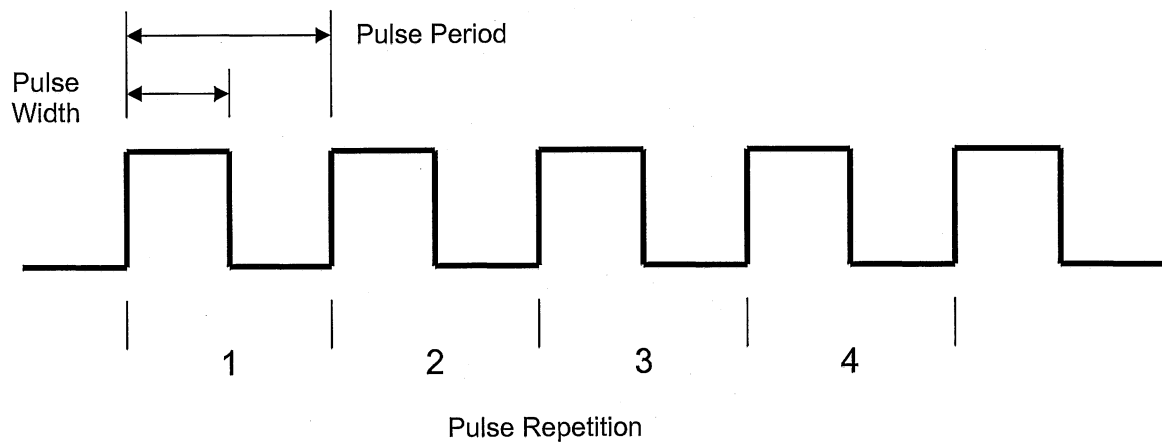
All four outputs can be created using the three menus: "Set Pulse Width", "Set Pulse Period", and "Set Pulse Repeat".

frm_pulse_w

GPO0 pulse width: (ms)	25
GPO1 pulse width: (ms)	25
GPO2 pulse width: (ms)	25
GPO3 pulse width: (ms)	25

Confirm

frm_pulse_p

GPO0 pulse period: (ms)	50
GPO1 pulse period: (ms)	50
GPO2 pulse width: (ms)	50
GPO3 pulse width: (ms)	50

Confirm

frm_pulse_r

GPO0 pulse repeat	0
GPO1 pulse repeat	0
GPO2 pulse repeat	0
GPO3 pulse repeat	0

Confirm

4.2.3 Serial Port Configuration

The serial port supports a variety of protocols and signaling. To view the current serial port set up, use "Get Serial Port setting". To change any of the parameters, use "Set Serial Port",

To enable the host port, check the enable box. This serial port supports WPS and ACOM protocols, as well as RS-232, RS-422, and RS-485 signaling. To change any of the parameters, simply choose the value from the pull down menus. Hold off time refers to the time that is inserted between output data.

4.2.4 Wiegand Port Configuration

The Wiegand port is a simplex type communication compliant to the SIA 26-bit standard as well as extended formats.
Use "Set Wiegand Port Configuration" to specify Wiegand parameters.

Wiegand Port Status

Hold Off time (ms):	Pulse Interval (ms):	Index:	Protocol Type:
1000	100	32	none

Drive Type:	Pulse Width (ms):	Length:	Endian Type:
pushPull	25	24	Little

Confirm

Transmission on the Wiegand interface can only occur when a corresponding Host Upload Event has been configured and satisfied. As before, the pulse width is the time that a data pulse is active for valid data and the pulse interval is the time between those pulses. Index is the offset (in bits) within the translated tag data where the serialization information will begin. Length specifies the length of the data packet, not including any protocol overhead. Both Parity and Checksum protocols are supported in addition to raw data format. Endian type denotes whether most significant (Big) or least significant (Little) will be transmitted first.

4.2.5 Access Control Configuration

The ID*entity* Max reader uses a translation table to reference all actions and ID associated with specific tags. Access control is used to determine the action(s) taken for any tag read. Use the "Access Control" button to start configuring these parameters.
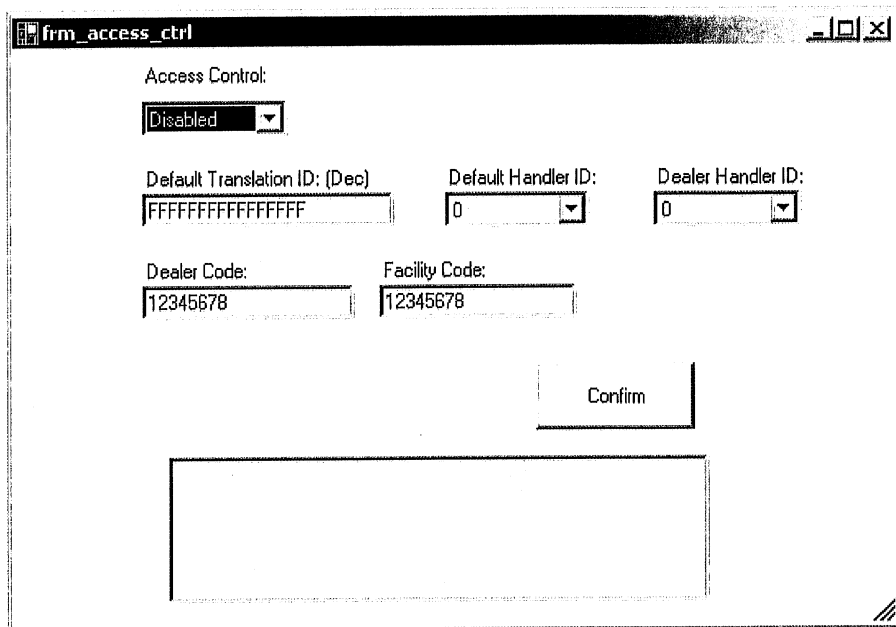
To enable access control features, select "enabled" from the pull down menu. The default translation ID is the value the reader will enter in the log and is set by the user to any 16 digit or less value. The default handler indicates the reporting action(s) the system will take if an unknown tag is read. See section 4.2.6 for a full list of options available.

The dealer and facility codes are programmed by Sirit during the manufacturing process and are unique to every Sirit customer. However, the Dealer code and the Dealer handler ID are not implemented in this version of the IDentity MaX reader.

4.2.6 Read Event Handler

The read event handler allows the user to specify a variety of actions to be taken when a tag is read and looked up in the translation table. In the event that an unknown tag is read, the default event handler specified in the Access Control menu will be used. With this menu, the user will be able to turn on a warning lamp, send a warning using the host serial port, raise the gate, or all of these.

To configure the handler, select the desired action from the pull down menu.

4.2.7 Gate Control

The Gate Control menu is used to select the gate type (normal or feedback), the control input should synchronization be used, and the control output. All parameters are changed using the respective pull down menus.
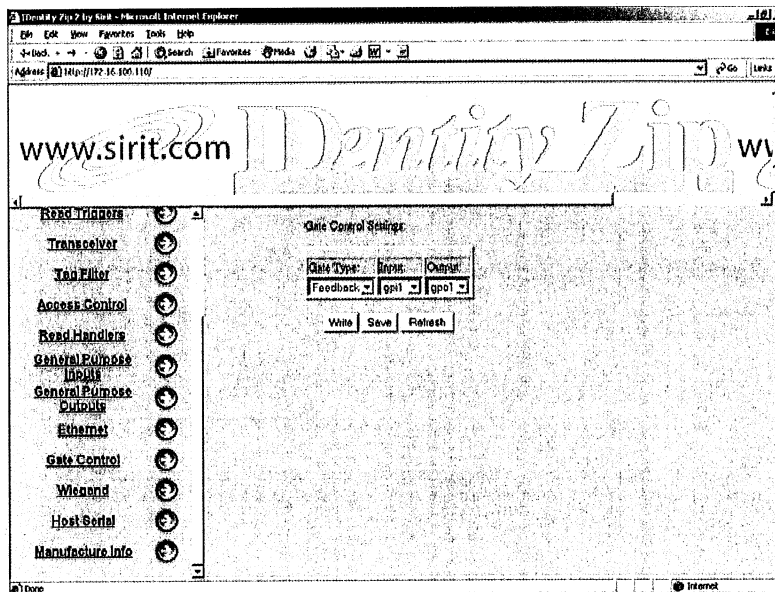
4.2.7 AutoConfig

All configuration changes made using this application and subsequently "confirmed" are stored only in the Random Access Memory (RAM) of the reader and will be lost upon power down. Should the user desire to create a permanent configuration, press the "Save Config on Board" button. This will instruct the reader to copy the contents of the configuration to Flash memory so that it can be retrieved upon reader power up or by using the "load" command. The "Load Config from Board" command will load the set up currently in Flash memory into the on board RAM. Note that loading the configuration into RAM will not change the settings in this application. The "file path browse" button is a debug feature only and should not be used.

4.3 Tag List Maintenance

The Tag List Maintenance tab is used to view events monitored by the ID*entity* MaX reader. The only two active windows in this section are the "Translation List" and the "Realtime Tag ID".
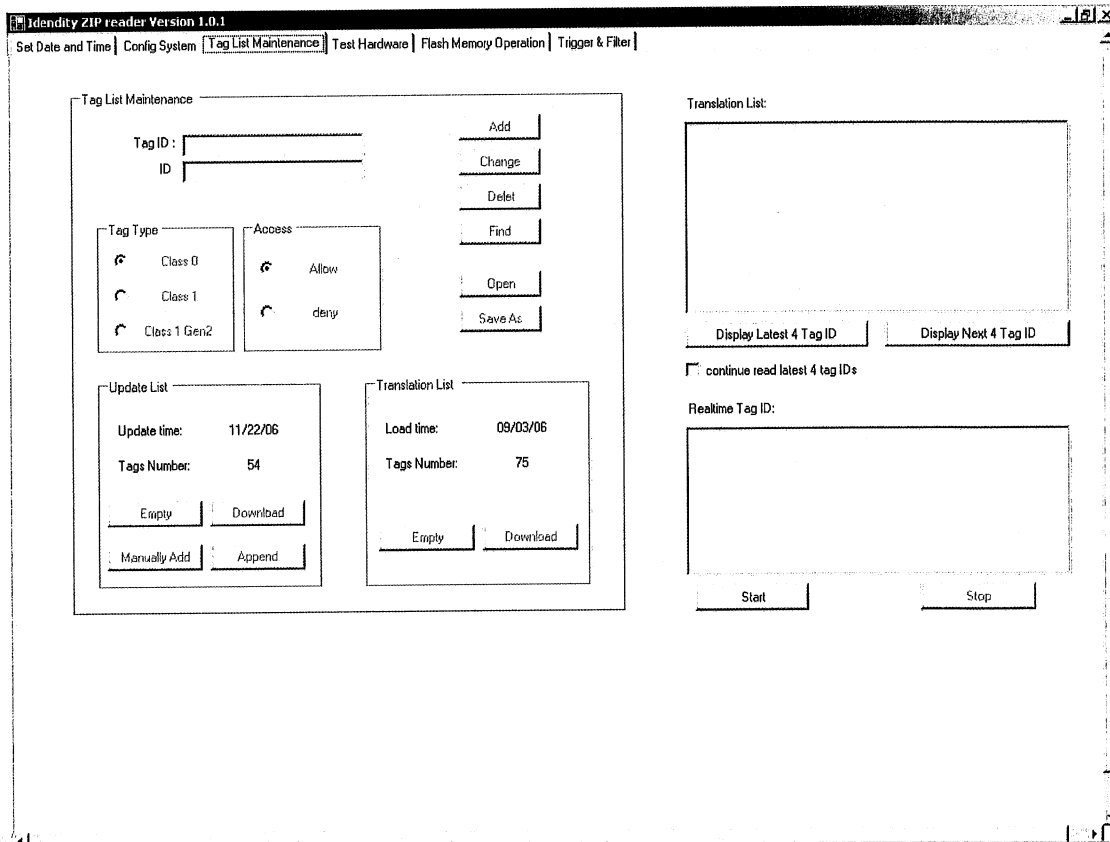
The "Display Latest 4 Tag ID" button will show the most recent four tags read. The source of information for this window is the USB port on the controller.
The "Display Next 4 Tag ID" will show the next most recent four tags read. Repeated uses of "Display Next 4 Tag ID" will in essence allow the user to scroll through all read activity four tags at a time.
The "continue read latest 4 tag IDs" feature is not used in this version of this application.

Hit the Start button to display all tag reads as they happen. Use the Stop button to discontinue the display. Note that this will not disable reading of tags. The source of information for the "Realtime TagID" window is the host serial port.
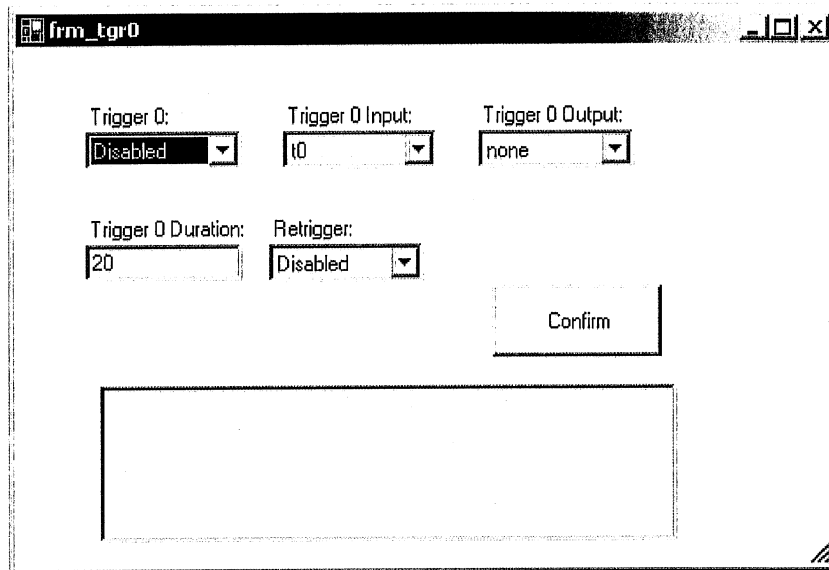
4.4 Trigger and Filter

The Trigger and Filter tab allows the user to set specific events which will initiate RFID transactions and to filter incoming data to reduce the amount of redundant information being reported back to the user.
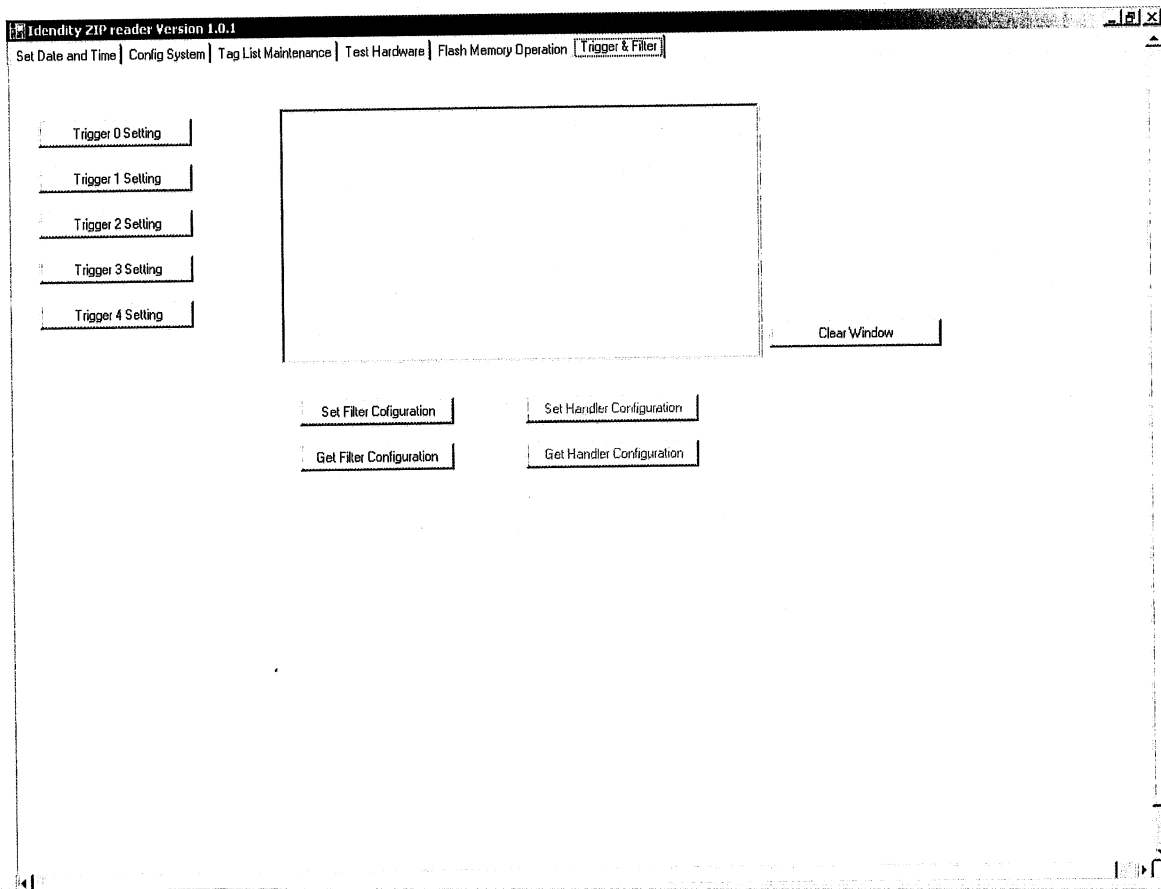
4.4.1 Trigger Settings

There are five independent triggers that are given to the user to use. Use the "Trigger Settings" menu to configure the respective triggers to be used. All trigger event parameters are configured using the pull down menus.

Each trigger can have the input linked to a general purpose input or to the internal timer (t0). The Trigger duration determines the amount of time the reader will attempt an RFID transaction before going inactive..
The resultant output will be routed to the general purpose output selected here. By enabling retrigger, all subsequent occurances of this event can be monitored.

4.4.2 Filter Configuration

To view the current filter parameters, use "Get Filter Parameters".

To edit or create a filter, use "Set Filter Parameters"

frm_filter_config

Duplicate filter:

DuplicateFilter:
Enabled

DuplicateFilter timeout:(s)
2

Validation Count:
1

Validation Attempts:
5

PassBack:
Enabled

Confirm

The duplicate filter will remove all subsequent instances of a particular tag after the initial read. This can greatly reduce the amount of data reported back to the user caused by a tag remaining in the read zone for a longer than average time. This will not suspend the actual tag read for the time out period, but rather will cease duplicate data reporting only.

Validation is designed to discard all erroneous incoming data prior to reporting and processing. The validation count is the number of times a tag must be successfully read to be considered valid. The validation attempt is the number of tries the reader will make in order to obtain a validation count. Naturally, the value in validation attempts needs to be greater than validation count.

The passback feature will allow the time stamp on all duplicate tag reads to be updated for each read, extending the timeout. If passback is enabled, a tag must leave the read zone for the duration of the duplication filter timeout period.

5.0 Web based User Interface

The second user interface included with the ID*entity* MaX reader is a web based interface that is actually built into the control hardware. There is no extra application needed to use this interface. This web based interface is designed to be used with the Ethernet channel rather than the USB port.

The one requirement to use the interface is that the ip address of the reader must be known. If used in a networked environment with a DHCP server, simply use the network admin application to determine the reader ip address.

To begin, open an internet browser window. This GUI has been tested only with Microsoft's Internet Explorer v6. However, it is very likely that it will function properly with other browsers such a Mozilla or Firefox. Enter the reader ip address previously determined into the URL line of the browser and press Enter. The title screen of the User Interface should appear. All other menus are brought up using the links along the left side. Simply click on the text or arrow to navigate to the desired menu. All sub menus will have "write", "save" and "refresh" buttons. The write button will update the configuration in the RAM on the reader. The Save button will update the configuration in the Flash memory on the reader, thus making it permanent. The Refresh button will refresh the screen of the maintenance PC with any new configuration parameters.
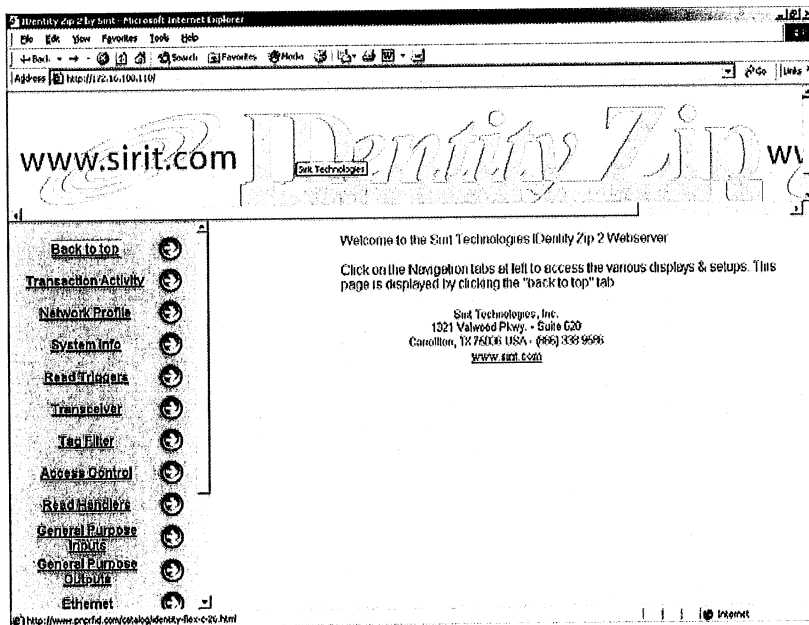
5. 1   Transaction Activity

This is a display only screen showing a list of all tag reads in realtime.
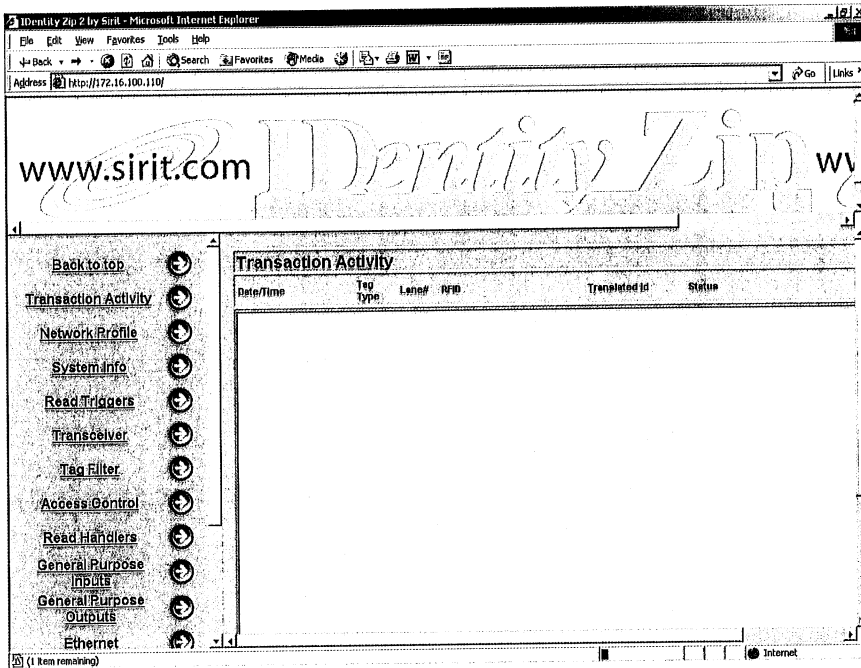
5.2 Network Profile

Another display only screen showing the loading upon the internal CPU of the reader by the various software and hardware modules.