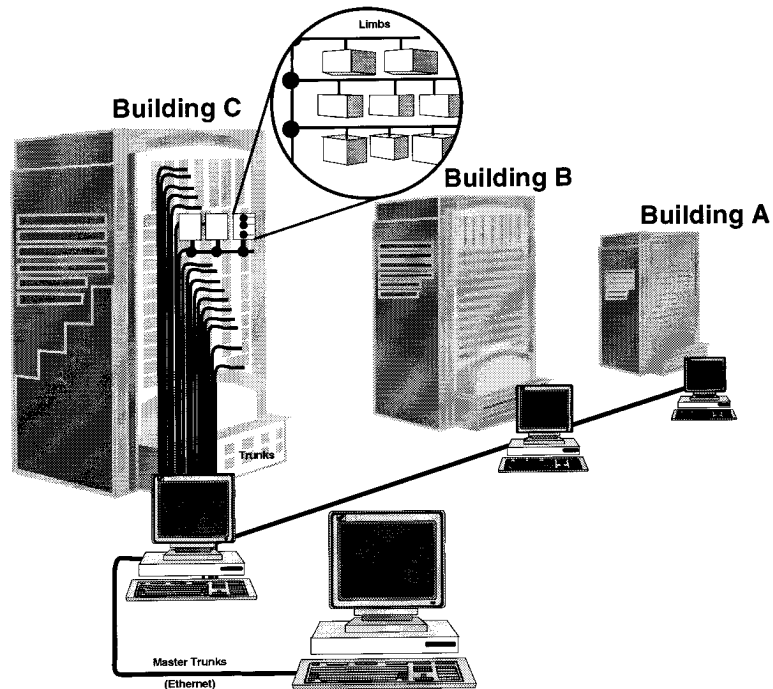# DALLAS
SEMICONDUCTOR

DS0630x
TMEX^{TM} Performance Modules

DS0630N TMEX MicroLAN^{TM} Manager

The 'TMEX MicroLAN Manager' is a software layer which extends the usefulness of the iButton^{TM} operating software TMEX to an environment in which Addressable Switches are used to connect from the truck to individual limbs, and from limbs to twigs, etc. as shown in the figure above.

The 'TMEX MicroLAN Manager' converts the computing power of a PC into meaningful iButton data that can be readily used. The 'MicroLAN Manager' is a single Windows DLL that contains only one function in its API. It in turns calls the standard Windows TMEX driver. It was designed to perform complex iButton operations without requiring expertise in TMEX or iButtons.

A key feature of the 'MicroLAN Manager' is that it divides a job, such as reading all of the devices on a MicroLAN, into many small parts. Each time it is called it does only a small part of that job and then returns. If a part of the job is complete then it may return data but often it will return the 'IN_PROGRESS' return code. This enables the developer to decide how much time the PC spends in iButton operations. This allows applications to be responsive even when reading large MicroLANs.

The 'MicroLAN Manager' uses a connection topology utilizing the DS2407 Addressable Switch to create limbs and branches. It provides the following advantages:

A. Location

The primary feature of the branched topology is that it allows the user to identify the physical location of an asset that has been labeled with a iButton and connected to one of the limbs, twigs, etc. of the MicroLAN.

B. Capacity

This connection topology allows the capacity of the MicroLAN (number of accessible iButtons) to be extended exponentially, while the load on the 1–Wire^{TM} bus grows only linearly. Many thousands of iButtons can be addressed by this means on a single MicroLAN without exceeding its loading capacity.

C. Expandability

The architecture of the branched topology is compatible with expansion to a LAN or WAN networked environment to provide access to much larger volumes of iButton data. In this expanded architecture, a master trunk is a connection to an Ethernet having many computers, each of which is identified by a unique Ethernet node number. Each of these computers may have several MicroLAN trunks, each identified by the unique registration number (or assigned text label) of the trunk marker memory connected to that trunk.

D. Fault Isolation

The use of Addressable Switches to selectively connect parts of the MicroLAN provides a means to isolate faults resulting from open or short circuits on the 1–Wire bus. A short circuit can be identified when the closure of a particular Addressable Switch causes the 1–Wire bus to go to zero volts. Inability to find a branch point's associated marker indicates an open circuit in a portion of the MicroLAN.

MODES

The 'TMEX MicroLAN Manager' is provided for the MS Windows operating environment as a Dynamic Link Library which the software developer can link with his Windows programs. While the library has only one API function, it has several modes associated with it. The library provides all that is needed to build and access a directory tree containing both the connection topology and the identities (registration numbers) of all Addressable Switches and iButtons in the network. With the possible exception of file data, all of the values returned are in easily read ASCII text. The purpose and operation of some of these modes is described briefly below.

A. READ_TOPOLOGY

This mode reads and returns the registration numbers of all of the iButtons on all of the branches on all of the MicroLANs. The returned data is in a form similar to a path giving port type and number and the registration numbers of the Addressable Switches to get to the iButton. If it is desired not to scan all of the MicroLANs then another mode 'SET_SCAN_MASK' will set the ports to scan.

B. NON_BRANCH_EVENTS

This mode is employed after 'READ_TOPOLOGY' has been used to find all of the branches in the network. This mode will then report arrivals and departures of all non–branch iButtons. This will speed up detection of any non–branch changes in a network.

C. READ_FILES

This mode performs all of the same operations as 'READ_TOPOLOGY' but it also reads all of the files in all of the sub–directories of each iButton detected.

D. READ_TEMPERATURE

This mode searches for all of the DS1920/DS1820 temperature chips and performs temperature conversions. As with the two previous modes, the DS1920/DS1820 can be on any MicroLAN down any branch.

E. OPEN_PATH

This mode also takes as its argument a path identical to the return value from the mode 'READ_TOPOLOGY' and opens the appropriate Addressable Switches to enable direct communication to the desired iButton. This mode is provided to enable conventional TMEX operations to be done on an iButton that is in a network.

F. UPLOAD_PEN

This mode also takes as its argument a path identical to the return value from the mode 'READ_TOPOLOGY' that indicates where to find the TouchPen to upload.

ADDITIONAL FUNCTIONS

The 'TMEX MicroLAN Manager' also contains several additional modes that provide some level of customization and increase the convenience of use. These functions include a) setting the scan mask to scan only ports that are connected to MicroLAN and b) retrieving version and test mode information. The current version of the 'TMEX MicroLAN Manager' supports the TMEX Dynamic Link Library TMEXALL.DLL which can scan both COM and LPT adapters.

The DS0630N 'TMEX MicroLAN Manager' is licensed for individual use. Licenses are available for multiple installation – contact Dallas Semiconductor for details.