General Information

Introduction

The ADM-1 is connected to a Control Application which allows management of equipment, monitoring and configuration operations.

This system is composed of a Personal Computer with a serial connection with the ADM-1.

The control system management functions are provided by the software resident in the equipment MOST Unit; the system user interface is based on proprietary software application (Control Application) running on a standard platform on MS Windows based systems.

System Architecture

Local Control

The Control Application can control ADM-1 equipment via a local connection.

The dialogue between the Control Application and the controlled Network Element (see Fig. 1.1- 1) is based on a F-Interface (RS232 link).
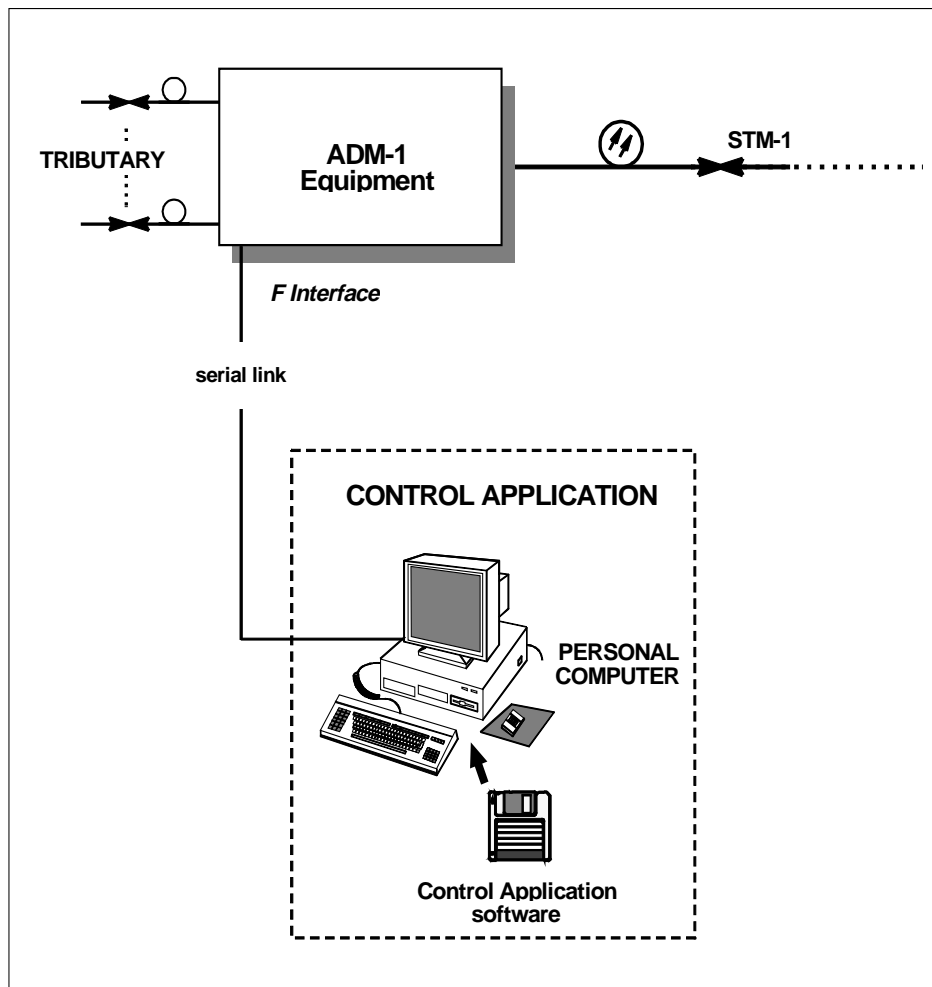

Fig. 1.1- 1   Local Control using the Control Application.

Remote Login

The Remote Login option allows to manage an ADM-1 Network via SDH Data Communication Channel (DCC) using pass-through functionality of a NE locally connected (see Fig. 1.1- 2).
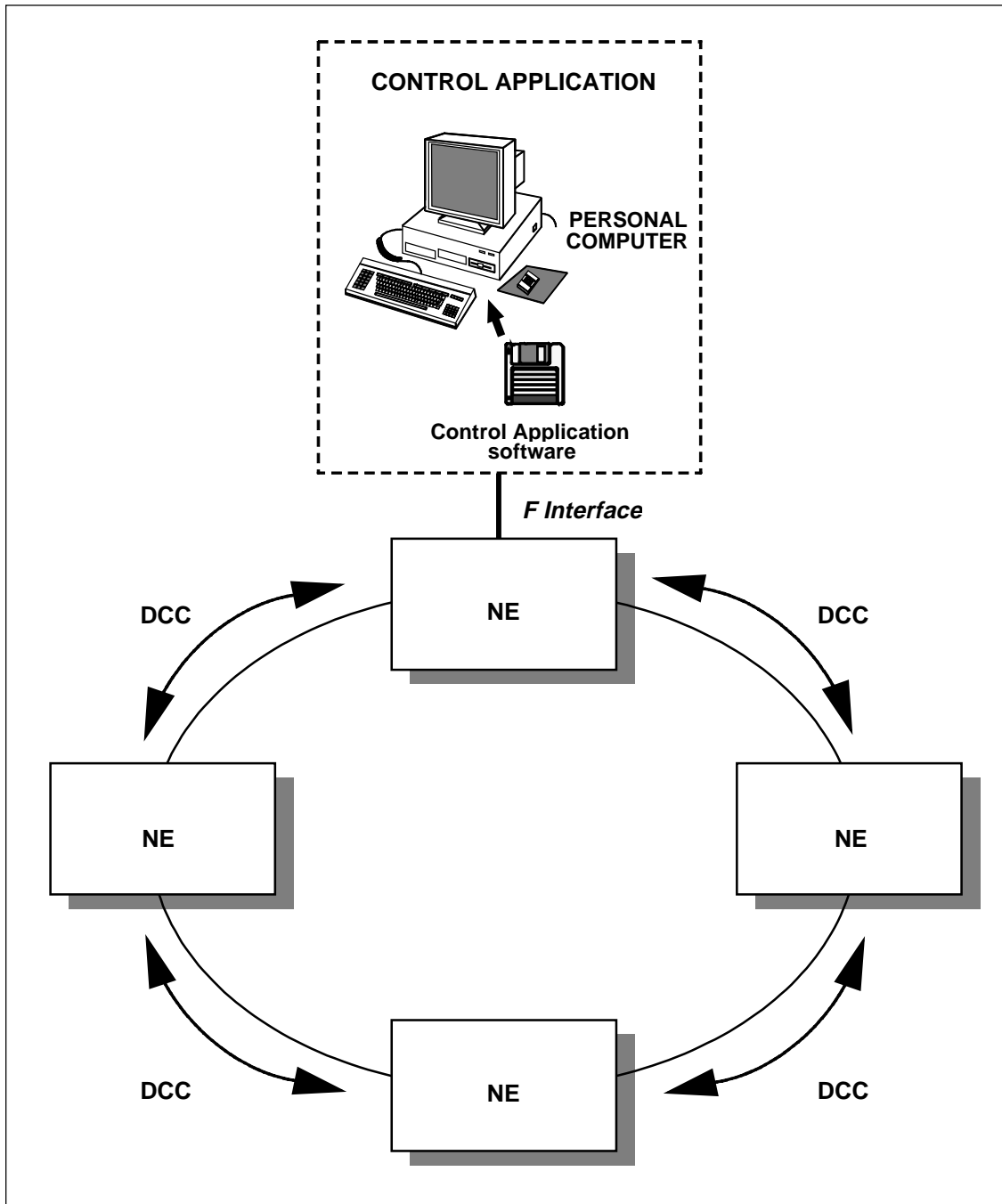
Fig. 1.1- 2   Remote Control using the Control Application (Ring Network example).

Operational Features

The Control Application is used to perform different functions, as described in the following.

Login

Once the personal computer, containing the local controller program, is properly connected to the equipment (correctly powered and switched on), the operator must perform a login to access the local controller program.

When the login is realised, the Control Application starts to communicate to the equipment software and database.

If the login has been performed for the first time or after a database deletion, the database is completely cleared and the operator must configure the whole equipment.

General Parameters Configuration

The local controllers allows the operator to define the main characteristics of the equipment:

♦ **Redundancy**: the ADM-1 can be equipped with one or two MOST units (single or double configuration). The double configuration permits common parts circuits protection (matrix, timing, alarm and control circuits). This function declares the presence of one or two MOST units.

♦ **Control**: the equipment can be controlled by Communication unit or MOST control circuits. This option allows the operator to define which unit must be used to perform all the equipment control functions (unit configuration, alarm detection and collection, etc.) and to communicate from/to the local controller. This function is used to create the Communication unit.

♦ **Type**: the ADM-1can be used as regenerator as well. In this case, the MOST matrix circuits do not work and the line streams are connect in passing-through mode; moreover the equipment uses a through-timing synchronisation scheme. By using this option, the operator can decide if the network element must be used as regenerator or as multiplexer.

♦ **DLC Handling**: the equipment can be connected to a DLC system via V.11 interface, for management purposes; this features used to enable the use of this additional control interface.

Unit Management

The control circuits are only able to manage the cards in terms of configuration and alarms collection when the units are created. To "create' a unit means to declare the presence of the unit to the control circuits.

Port Equipment and Configuration

To perform operation on traffic streams, both in terms of traffic management and control and maintenance services, a port must be equipped.

Once a port is equipped, it can be configured and used for other purposes (i.e. as synchronisation source, to create cross connections, to carry DCCs, etc.). Moreover an equipped port supports optional functions (i.e. alarm management and performance data collection).

A port can be equipped when the right protection role has been assigned and is automatically equipped if the unit is used in a MS protection scheme; moreover the protection roles are automatically assigned to units involved in MSP or equipment protection schemes.

Remote Control Parameters Configuration

The system can be remotely controlled by using LAN network and/or Data Communication Channels of SDH streams.

To use of DCCs, the channels must be unlocked; furthermore the operator must assign the network addresses (MAC and NSAP) and (if required) enable the ethernet interface. This interface (Q interface) is only available when a Communication unit is installed in the equipment.

After these operations, the equipment (properly inserted in an SDH network) can be controlled by the NMC or a local controller connected to a remote equipment.

The NMS can also manage a DLC system, properly connected to the ADM-1 via V.11 interface. The user must enable the use of the interface, when the general parameters are configured.

Alarm Parameters Setting

Different parameters, regarding the alarms management and detection, can be configured by using the local controller program:

♦   monitoring and reporting management

♦   category

♦   persistence thresholds

♦   fault actions

◆ incoming and outgoing ground contacts configuration

◆ rack lamp settings

The operator can change the default settings, according to specific system demands.

Protection Configuration

The ADM-1 supports different protection schemes: common parts protection, unit protection and network protections.

The common parts protection is realised by using two MOST unit (in this case the equipment Redundancy must be defined "double", as previously described). The equipment and the traffic protections (Multiplex Section Protection and Sub-Network Connection Protection) must be configured by the user.

NOTICE   The SNC protection can be configured on cross connected channels only.

When the operator creates the protection scheme, depending on the type of protection, different parameters can be set (i.e. wait to restore time, hold-off time, revertive or not revertive type, etc.). The operator can also modify these parameters once the protection has been created.

After these operations, in case of unit or line failure conditions the equipment can correctly route the traffic streams and managed the switching between the units or channels involved in the protection scheme, according to the configured parameters.

Traffic Management

The ADM-1 can perform different type of cross connections (i.e. bidirectional, unidirectional, broadcast, etc.) at each level of the SDH frame structure.

Cross connections configuration defines how the incoming/outgoing traffic should be multiplexed/demultiplexed and allocated to/taken from the channels of the STM-1 frame Virtual Containers (VC).

Synchronism Management

The equipment can be synchronised by using its own internal oscillator or locked to synchronisation sources, according to programmable schemes. The synchronisation sources and all the parameters relevant to the synchronisation schemes can be set by the user: after these operations, the timing circuits will follow the entered settings.

The ADM-1 can also provide outgoing synchronisation references and the operator can set them as well.