The main enhancements made to the XTEL-CAD TXT L CAD V5 version of the program since the TXT L CAD V42 version are described below:

Support for remote I/O

XTEL-CAD V5 supports the new TBX family of remote I/O systems using the FIPIO bus, in addition the rack mounted I/O.
These I/O are stored in the .FNE file using the same key words as rack mounted I/O:
- The connection point is in the RACK (RACK) field,
- The module is in the CARD (CARTE) field,
- The channel is in the CHANNEL (VOIE) field.

Compatibility with installed systems

TXT L CAD V5 software can only be installed in a V5 level X-TEL or MINI X-TEL Software Workshop system and allows the user access to TSX 27/47, TSXV3, TSX/PMXV4, TSX/PMXV5 type stations.
When used with a V3 or V4 level station, it also lets the user read existing V4 level .FNE files (with rack mounted I/O only) and generate new ones.
When used with a V5 level station, it lets the user:
- Read V4 level .FNE files (with rack mounted I/O only),
- Read and generate V5 level .FNE files (with rack mounted and remote I/O).

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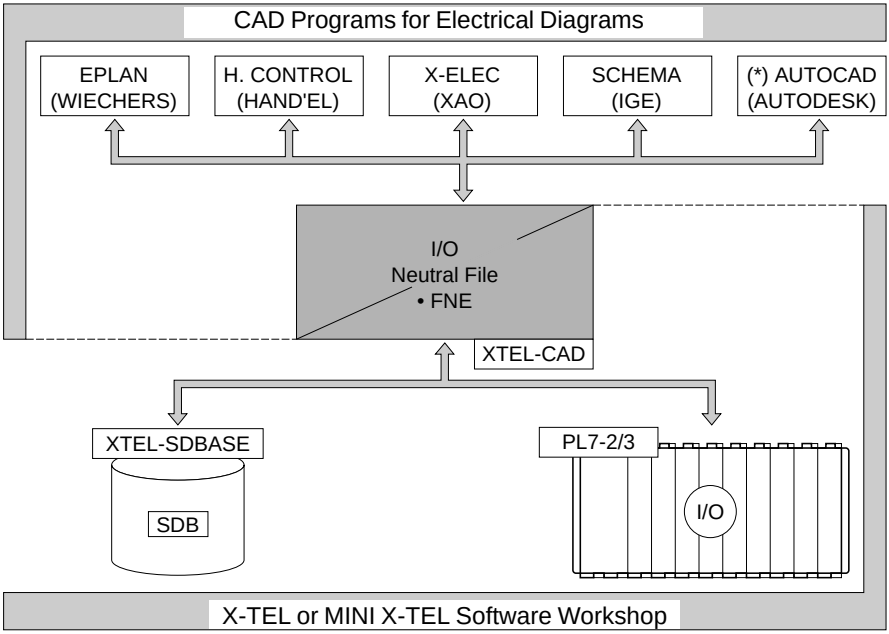
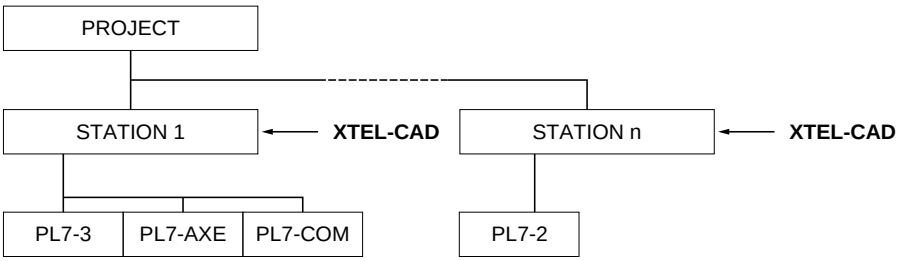
1.1 Presentation of the Software

XTEL-CAD is an X-TEL or MINI X-TEL Software Workshop option that allows the user to interface the Software Workshop with other vendors' software for the CAD (Computer Aided Design) of electrical diagrams in order to avoid the double entry of the addresses, symbols and comments of the discrete I/O of a PLC. The file that performs this function is the I/O Neutral File .FNE which conforms to the CNOMO standard.
(**CNOMO: C**omité de **N**ormalisation des **O**utillages de **M**achines **O**utils).



(*) Development for use with XTEL-CAD in progress.

This software is accessible at station level and works on a file that describes only one PLC.



1.2 Functions

The XTEL-CAD tool permits:

- The reading of an I/O neutral file (xxx.FNE) generated by a CAD program for use by the X-TEL or MINI X-TEL Software Workshop station functions,
- The creation of an I/O neutral file (xxx.FNE) by an application generated by the X-TEL or MINI X-TEL Software Workshop for use by a CAD program.

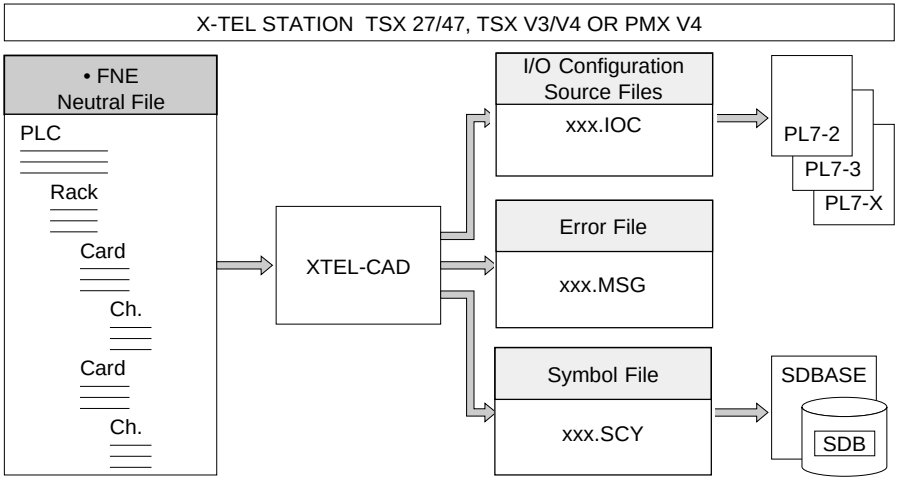
The objective being to avoid the double entry of the I/O symbols of the PLCs and thus ensure a coherence between the hardware configuration and that used in the application program.

1.2-1 Reading a Neutral I/O File

In the X-TEL or MINI X-TEL Software Workshop, the I/O neutral file must have the extension .FNE. From a .FNE neutral file generated by a CAD program, XTEL-CAD generates several files that can be used by the functions of TSX 27/47, TSX V3/V4/V5 or PMX V4/V5 stations:

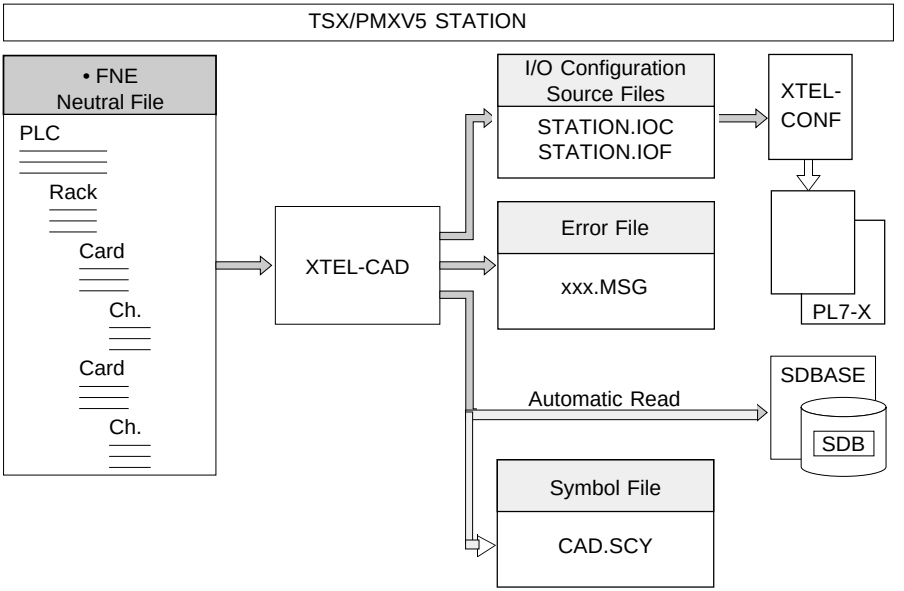
TSX 27/47, TSXV3/V4, PMXV4 Stations

- **xxx.IOC file:** This file contains the image of the rack mounted I/O configuration. It is stored in the APP field of the station. It is available to all PL7-X programs.
- **xxx.SCY file:** This file contains the table of symbols relative to the application. They can be merged with the station Symbol Data Base.
- **xxx.MSG file:** This file contains a list of any errors generated when the symbols where recovered.



TSXV5 or PMXV5 Stations

- **STATION.IOC File:** This file contains the image of the rack mounted I/O configuration. It is stored in the APP field of the station. It is available to all PL7-X programs.
- **STATION.IOF File:** This file contains the remote I/O configuration accessed via a FIPIO bus. It is stored in the APP field of the station. It is available to all PL7-X programs,
- **CAD.SCY File:** This file contains the table of symbols relative to the application and read automatically by XTEL-SDBASE,
- **xxx.MSG file:** This file contains a list of any errors generated when the symbols where recovered. It takes the same name as the .FNE source file.



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1.2-2 Creating a Neutral I/O File

From a TSX V3/V4/V5 or a PMX V4/V5 station, the XTEL-CAD tool permits the creation of a .FNE neutral file that can be used by CAD programs.

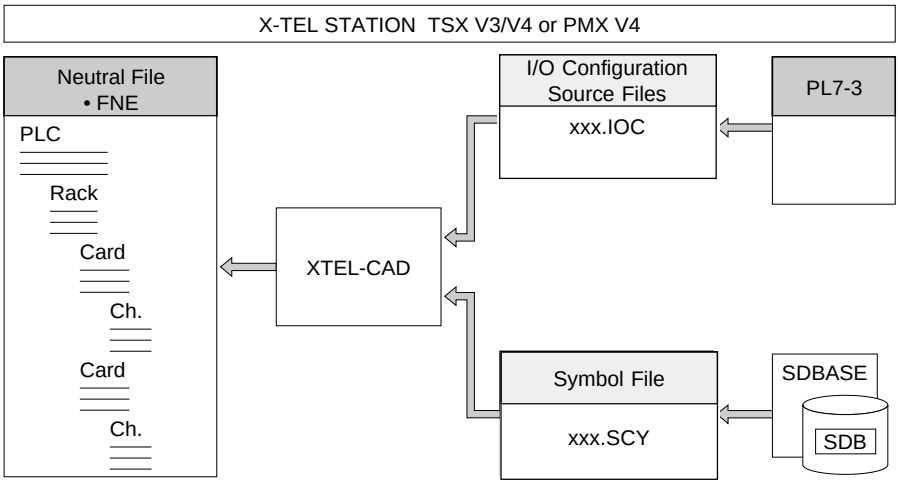
Note

As PL7-2 software does not create an .IOC and/or .IOF file containing the I/O configuration of an application, XTEL-CAD cannot generate a neutral file from a TSX 27/47 station.

Source files permitting the generation of the .FNE neutral file

TSXV3/V4 or PMXV4 Station

- File containing the I/O configuration of an application (xxx.IOC),
- File containing the symbols for an application (xxx.SCY).



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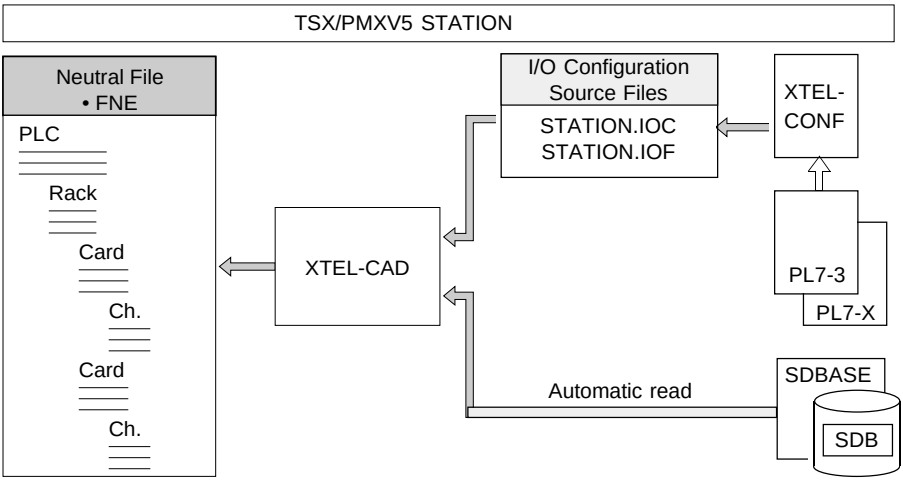
TSXV5 or PMXV5 Station

- Configuration files containing the I/O for an application (STATION .IOC and/or STATION .IOF files). The symbol data base is read automatically.



1.3 Description of Files Used

1.3-1 Telemecanique Neutral File (.FNE)

The Telemecanique .FNE neutral file is an ASCII file conforming to the CNOMO E03-03-231N recommendations of January 1991, appended in July 1991, and which describes, in the form of a tree structure, the configuration of a PLC.
This file has a precise structure and is composed of the following hierarchical entities. (Both the English and the French terms used are given here):

- HEADER (ENTETE) = Identification of the file,
- PLC (AUTOMATE) = PLC with a set of racks,
- RACK (RACK) = Rack with a set of cards (modules),
- CARD (CARTE) = Module or card identification,
- CHANNEL (VOIE) = Type, address, symbol and comment.

Description of the various entities

The O/F column indicates whether the information is obligatory (O) or facultative (F), The LG Max. column indicates the maximum number of characters.

- **HEADER (ENTETE)**

ENTITY (ENTITE): HEADER (ENTETE)				
IDENTIFIER	**O/F**	**LG Max.**	**DEFINITION**	**VALUE(S) generated by XTEL-CAD**
DATE	O	16	Documentation date	DD/MM/YY
VERSION	F	9 (*)	Neutral file version	Index of the pgm. that created the file V5.0 IE.
AUTEUR	O	16	File creator program	XTEL-CAD
APPLICAT	O	40	Application name	Project name in X-TEL.

(*) CNOMO standard: LG. Max=8

- **PLC (AUTOMATE)**

ENTITY (ENTITE): PLC (AUTOMATE)				
IDENTIFIER	**O/F**	**LG Max.**	**DEFINITION**	**VALUE(S) generated by XTEL-CAD**
AUTOMATE	O	8	Number of the PLC in the application	Value from 0 to 99 requested on execution
FABRICAN	O	16	Vendor's name	TELEMECANIQUE
REFERENC	O(*)	19(*)	Vendor's catalog reference number	E.g.:TSX 67-455 From .IOC file
DESIGNAT	F	25(**)	Vendor's designation: Processor code number	Internal code: 5 to 25 From .IOC file
SERIE	F	8	Vendor's serial number	TSX 7
TYPE	F	17(***)	Type of PLC	Type of X-TEL station E.g.: TSXV4, TSXV5
NOMBRE	O	8	Number of racks and FIPIO connection points installed	Calculated by XTEL-CAD from .IOC and .IOF file data (FIPIO connection points are seen as racks).
ADRESSE	F	24	PLC address	X-TEL station network address (E.g.: 0.254)
MNEMO	O	8	User symbol	Station name in X-TEL
COMMENT	F	40	User comment	Left blank in write Lost in read

(*) CNOMO standard: O/F=F, LG. Max=16
(**) CNOMO standard: LG. Max=24
(***) CNOMO standard: LG. Max=16

• RACK (RACK)

ENTITY (ENTITE): RACK				
IDENTIFIER	**O/F**	**LG Max.**	**DEFINITION**	**VALUE(S) generated by XTEL-CAD**
RACK	O	8	Number of the rack or of the FIPIO connection point	0 to F for racks, 00 to 063 for connection points
FABRICAN	O	16	Vendor's name	TELEMECANIQUE
REFERENC	O(*)	19(*)	Vendor's catalog reference number for racks only	E.g.:TSX RKN 8 from the .IOC file Blank for connection points
DESIGNAT	F	25(**)	Vendor's designation	Left blank
SERIE	F	8	Vendor's serial number	TSX 7
TYPE	F	17(***)	Type of rack or connection point	BASE if rack 0 or 1 DIRECT EXTENSION if rack 2 or 3 EXTENSION if rack 4 to F FIPIO DEVICE if connection point
NOMBRE	0	8	Number of modules installed in the rack or the number of elements on the connection point	Calculated by XTEL-CAD based on .IOC and .IOF file data 1 to 8 for racks 1 to 3 for connection points
ADRESSE	F	24	Address of the rack or FIPIO connection point	Identical to the number that follows the rack field
MNEMO	F	8	User symbol	(1)
COMMENT	F	40	User comment	(1)

(*) CNOMO standard: O/F=F, LG. Max=16
(**) CNOMO standard: LG. Max=24
(***) CNOMO standard: LG. Max=16

(1) When the neutral (.FNE) file is read, the MNEMO and COMMENT fields are stored in the I/O configuration (.IOC and .IOF) files by XTEL-CAD and are retrieved when the .FNE file is written if the .IOC and .IOF files are not modified, by:
- PL7-3 if a TSXV3 or TSX/PMXV4 station is used (.IOC file),
- XTEL-CONF if a TSX/PMXV5 station is used (.IOC and .IOF files).

PL7-3 or XTEL-CONF do not manage this data and it will be lost if the .IOC and .IOF files are modified.

- **CARD (CARTE)**

ENTITY (ENTITY): CARD (CARTE)				
IDENTIFIFIER	**O/F**	**LG Max.**	**DEFINITION**	**VALUES(S) generated by XTEL-CAD**
CARTE	O	8	Number of the card (module) in the rack or number of the element on the connection point	Cards in the rack: 0 to 7 Connection point: Basic module: 0 Extension module: 1 Communication module: 7
FABRICAN	O	16	Vendor's name	TELEMECANIQUE
REFERENC	O(*)	19(*)	Vendor's catalogue ref. number from .IOC file for modules and from .IOF file for FIPIO remote I/O	E.g.: TSX DET 32 12 E.g.: TBX DES 1622
DESIGNAT	F	25(**)	Short designation of the local module or FIPIO bus remote I/O module	E.g.: 32 inputs combined 24 VDC E.g.: TBX-7 FIP Com. Mod. 24/48V
SERIE	F	8	Vendor's serial number	TSX 7
TYPE	F	17(***)	Type of module in the rack	Module code if module in rack, blank if remote I/O
NOMBRE	O	8	Max. number of channels in the card (module) or in the remote I/O module	Modules in rack: 4, 8, 16, 24, 32 if DET/DST, 16 if TSX PCM, else blank. Remote I/O: 16 if base or extension module, 0 if communication module
ADRESSE	O	24	Card address	Identical to the number that follows the card field
MNEMO	O	8	User symbol	(1)(2)
COMMENT	F	40	User comment	(1)

(*) CNOMO standard: O/F=F, LG. Max=16, (**) CNOMO standard: LG. Max=24

(***) CNOMO standard: LG. Max=16

(1) When the .FNE file is read, the MNEMO and COMMENT fields are stored: in the .SCY file by XTEL-CAD for a TSXV3 or TSX/PMXV4 station; in the XTEL-SDBASE symbol data base for a TSX/PMXV5 station. They are retrieved when the .FNE file is written.

(2) The card symbol is not obligatory in X-TEL. If it does not exist, XTEL-CAD adds a symbol with the same structure as the optional object symbols.
Example for a module in the rack: Input module 2, rack 1. MNEMO = #I12).
Example for a remote I/O module: 16 input basic module at connection point 3. MNEMO = #ri3,0 . For modules other than I/O modules (E.g.:TSX LEP 020), MNEMO=#$ii - j with ii= Rack Nbr. and j= Card Nbr.

• CHANNEL (VOIE)

ENTITY (ENTITE): CHANNEL (VOIE)				
IDENTIFIER	**O/F**	**LG Max.**	**DEFINITION**	**VALUE(S) generated by XTEL-CAD**
VOIE	O	8	Number of the I/O pont (channel) in the module	0 to 3, 7, 15, 23, 31 if card in rack is TSX DET/DST or PCM; No channel specified for other types of cards (modules). 0 to 15 if remote I/O; No channel specified for communication modules.
TYPE	O	17(*)	Type of I/O point (channel)	Modules in rack or remote I/O via FIPIO I if bit I (Input) Q if bit O (Output)
ADRESSE	O	24	Address of the I/O point	Modules in rack E.g.: I12,3 O12,3 Remote I/O E.g: RI4,0,9 RO4,0,10
MNEMO	F	8	User symbol	Stored or from .SCY for TSXV3 or TSX/ PMXV4 stations. Stored or from SDBASE for TSX/ PMXV5 stations.
COMMENT	F	40	User comment	Identical to MNEMO

(*) CNOMO standard: LG. Max=16

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Specificities of the Telemecanique .FNE neutral file

- **For cards other than discrete I/O modules and remote I/O on a FIPIO bus:**
  - When creating an .FNE neutral file with XTEL-CAD, the description of the card (module) is given, but not the description of the I/O point (channel),
  - If an intelligent module has discrete I/O symbolized in SDBASE, these are lost during creation of the .FNE neutral file.

. **Presence of non-symbolized I/O points**
  When reading a .FNE neutral file, XTEL-CAD offers the possibility of either:
  - Generating all the I/O points (whether symbolized or not), or
  - Generating only the symbolized I/O points.

- **Symbols and comments for Racks, Modules and I/O points**
  When reading a .FNE neutral file, the symbols and comments for the racks are stored in the .IOC and .IOF files, whereas those of the modules and I/O points are stored in the SDBASE symbol data base (for TSX/PMXV5 stations) or in the .SCY file (for TSXV3 or TSX/PMXV4 stations) as the objects are used by PL7-3.
  When creating an .FNE neutral file:
  - If the I/O configuration source files are created by PL7-3 (.IOC file for TSXV3 or TSX/PMXV4 stations), or by XTEL-CONF (STATION.IOC and STATION.IOF files for TSX/PMXV5 stations) only the module and I/O symbols and comments are generated in the .FNE neutral file, as the rack symbols and comments don't exist in X-TEL.

Example of an .FNE neutral file

```
DATE          10/06/93
VERSION       V5.0 IE10
AUTEUR        XTEL-CAD
APPLICAT      project1
AUTOMATE      9
FABRICAN      TELEMECANIQUE
REFERENC      TSX 87 455
DESIGNAT      47
SERIE         TSX 7
TYPE          TSXV5
NOMBRE        2
ADRESSE       30.60
MNEMO         station 1
COMMENT
      RACK          0
      FABRICAN      TELEMECANIQUE
      REFERENC      TSX RKN 82F
      DESIGNAT
      SERIE         TSX 7
      TYPE          BASE
      NOMBRE 2
      ADRESSE       0
      MNEMO
      COMMENT
            CARTE         0
            FABRICAN      TELEMECANIQUE
            REFERENC      TSX DET 16 12
            DESIGNAT      16 Inputs 24 VDC
            SERIE         TSX 7
            TYPE          56
            NOMBRE 16
            ADRESSE       7
            MNEMO         #I00
            COMMENT
                  VOIE          0
                        TYPE          I
                        ADRESSE       I00,0
                        MNEMO         Input 1
                        COMMENT       Sensor 1
                  ----------------------------
                  ----------------------------
                  VOIE          15
                        TYPE          I
                        ADRESSE       I00,F
                        MNEMO         Input 15
                        COMMENT       Sensor 15
            CARTE         1
            FABRICAN      TELEMECANIQUE
            REFERENC      TSX DST 32 92
            ------------------------------
            ------------------------------
```

```
            ---------------------------
            VOIE        0
            TYPE        Q
            ADRESSE     O01,0
            ---------------------------
            ---------------------------
            VOIE        31
            ---------------------------
            ---------------------------
RACK        01
FABRICAN    TELEMECANIQUE
REFERENC
DESIGNAT
SERIE       TSX 7
TYPE        FIPIO  Device
NOMBRE      2
ADRESSE     01
MNEMO
COMMENT
      CARTE       0
      FABRICAN    TELEMECANIQUE
      REFERENC    TSX DES 1622
      DESIGNAT    TBX-7 Base 16 I 24VDC
      SERIE       TSX 7
      TYPE
      NOMBRE      16
      ADRESSE     0
      MNEMO       #ri_0
      COMMENT
            VOIE        0
                  TYPE        I
                  ADRESSE     RI1,0,0
                  MNEMO       Input 1
                  COMMENT     Sensor 1
            ---------------------------
            ---------------------------
            VOIE        15
                  TYPE        I
                  ADRESSE     RI1,0,15
                  MNEMO       Input 15
                  COMMENT     Sensor 15
      CARTE       7
      FABRICAN    TELEMECANIQUE
      REFERENC    TSX LEP 020
      DESIGNAT    TBX-7 FIP Com. Mod. 24V48V
      SERIE       TSX 7
      TYPE
      NOMBRE      0
      ADRESSE     7
      MNEMO       #$01,7
      COMMENT
```

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1.3-2 Rack I/O Configuration Source File (.IOC)

The I/O configuration source file (.IOC) is an ASCII file that contains the rack mounted I/O configuration of a PLC.
This file is created:

- By PL7-3 in configuration mode for TSXV3 or TSX/PMXV4 stations, in which case it can be used to create an .FNE neutral file (from X-TEL to CAD),
- By XTEL-CONF for TSX/PMXV5 stations, in which case it can be used to create an .FNE neutral file (from X-TEL to CAD) and the file will systematically be named STATION.IOC,
- By XTEL-CAD from the data in an .FNE neutral file (from CAD to X-TEL).

Example of an I/O configuration source file for a TSXV3, TSX/PMXV4 station

```
RACK 0 ;
MODULE 0 REF "TSX DET  8 12" CODE 32 TASK MAST ;
MODULE 1 REF "TSX DET 16 12" CODE 56 TASK AUX0 ;
MODULE 2 REF "TSX DET 16 12" CODE 56 TASK AUX0 ;
RACK 1 ;
MODULE 0 REF "TSX DET  8 24" CODE 36 TASK MAST ;
```

Example of an I/O configuration source file for a TSX/PMXV5 station

```
47 "TSX  87/455 "
RACK 0 REF "TSX RKN 82F";
  MODULE 0 REF "TSX DET 16 12" CODE 56 TASK MAST;
  MODULE 1 REF "TSX DET 32 52" CODE 56 TASK MAST;
  MODULE 4 REF "TSX DST 32 92" CODE 53 TASK MAST;
```

1.3-3 Remote I/O Configuration Source File (.IOF)

The I/O configuration source file (.IOF) is an ASCII file that contains the FIPIO bus remote I/O configuration of a PLC.
This file is created:

- By XTEL-CONF for TSX/PMXV5 stations, in which case it can be used to create an .FNE neutral file (from X-TEL to CAD),
- By XTEL-CAD from the data in an .FNE neutral file (from CAD to X-TEL).

```
RACK 01 ;
   MODULE 0 REF "TBX DES 1622" ;
   MODULE 7 REF "TBX LEP 020" ;
RACK 03 ;
   MODULE 0 REF "TBX CEP 1622" ;
```

1.3-4 Symbol Source File (.SCY)

The symbol source file is an ASCII file that contains the description of all the symbolized data of an application.
For each data object, the information contained in this file includes the:

- Variable or program address,
- Symbol or mnemonic,
- Comment.

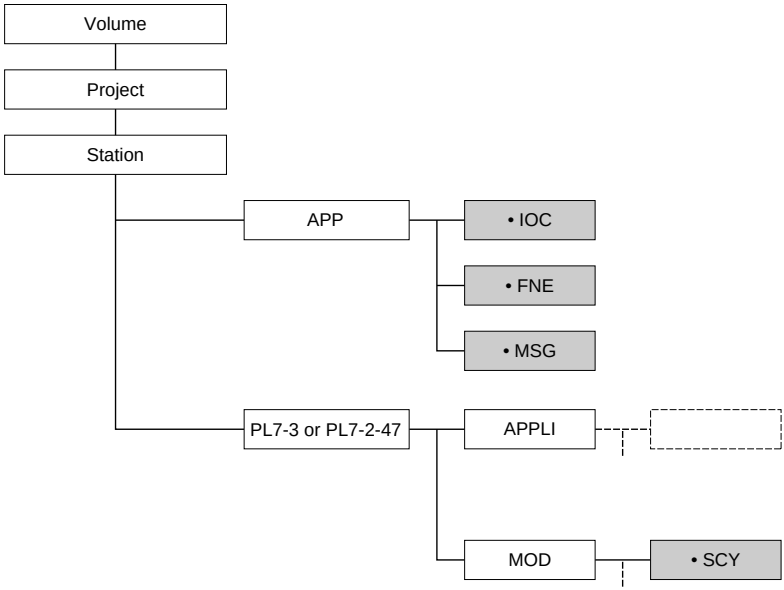
When the .FNE neutral file is read on a TSX/PMXV5 station (i.e. from the CAD program to X-TEL), the file is automatically merged with the station data base and is only used in this direction. It is systematically named CAD.SCY.

1.3-5 Message File (.MSG)

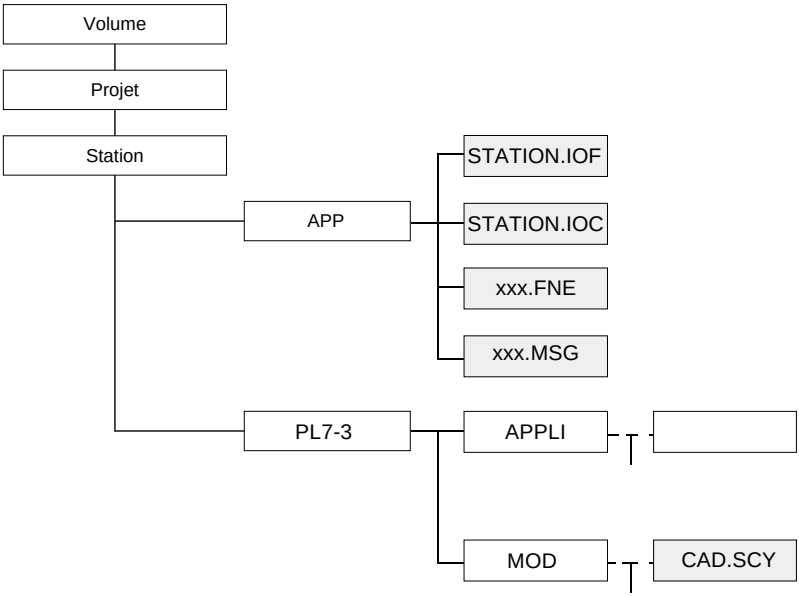
An ASCII file that is created when the .FNE neutral file is read (i.e. from the CAD program to XTEL).
The .MSG file that is created contains the number of the PLC concerned and any errors that may have occurred in the original .FNE neutral file. The .MSG file has the same name as the original .FNE neutral file.
With TSXV3 or TSX/PMXV4 stations and during the merging or redefinition of the I/O of a symbol source file (.SCY) with a neutral file (.FNE), it contains the differences between the .SCY file created and the one used for merging or redefinition.

1.3-6 X-TEL File Tree Structure

- **TSX 27/47, TSXV3, TSX/PMXV4 Stations**



- **TSX/PMXV5 Station**



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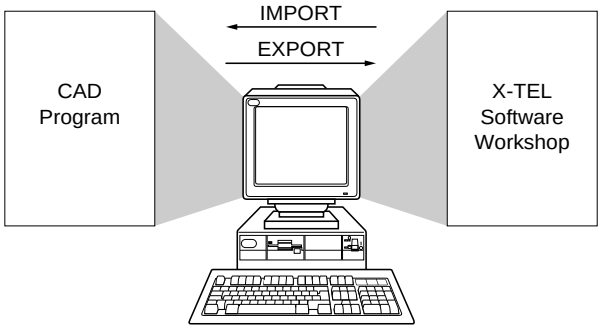
1.4 Neutral File Data Exchange Medium

- **Case of a CAD program in a PC/PS microcomputer**

If the program runs in a DOS or OS/2 environment and on the same type of device as the X-TEL Software Workshop, the file can be transferred by using the X-TEL services (IMPORT/EXPORT commands associated with the XTEL-CAD icon).
In the case of an import, the user must check that the extension of the neutral file is .FNE.



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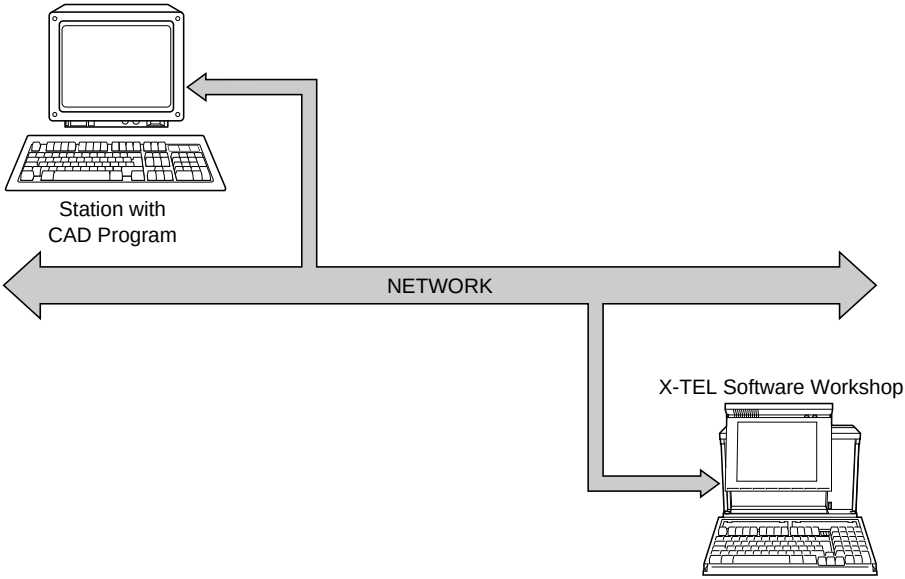
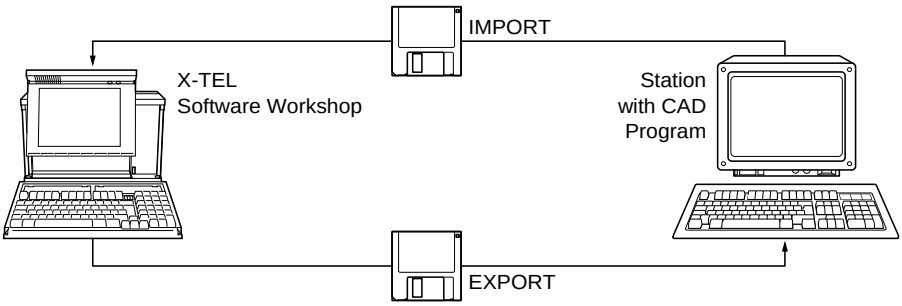
- **Case of a CAD program on a computer or workstation**

  - Workstations connected by a network, the microcomputer or FTX 507 terminal supporting X-TEL must have a slot for receiving a PC/PS network board of the same type. The neutral files are exchanged via the network. Refer to the workstation and CAD program vendors for information on the appropriate installation procedures.



  - Workstations not connected by a network, the neutral files are exchanged between systems using diskettes, taking account of the type of diskette used by each system. The diskettes are read and written by the X-TEL Software Workshop is done by using the IMPORT/EXPORT commands supported by XTEL-CAD.



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Sub-section **Page**

2.1 Hardware Description

To use XTEL-CAD, the following software configuration is required:

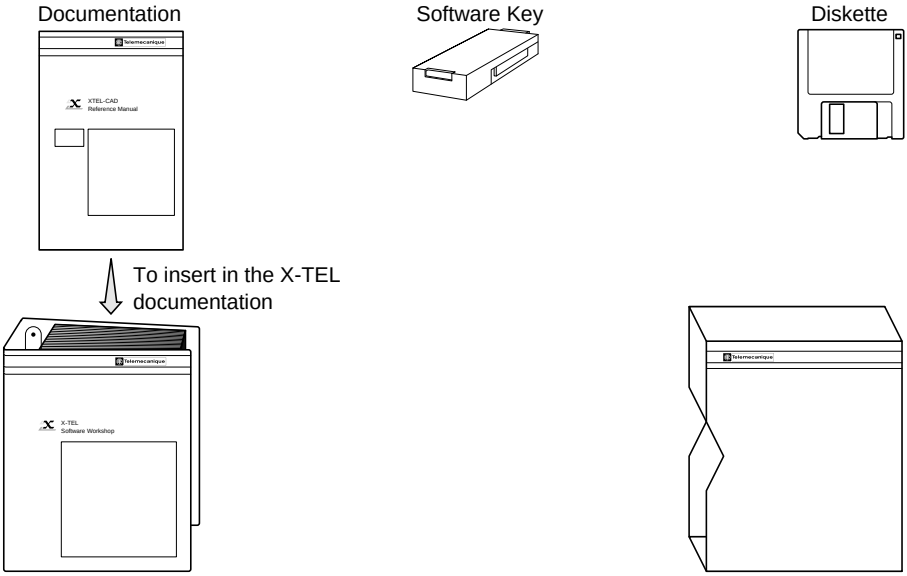
- OS/2, Version 1.2, 1.3 or 2.1,
- X-TEL (TXT L BASE V5) or MINI X-TEL (TXT L BJR V5) Software Workshop,
- PL7-3 programming software.

This implies using a hardware configuration that meets the requirements described below:

- FTX 507 terminal:
  - 6 MBytes RAM recommended,
  - 40 MByte hard disk.
- An IBM PS/2 or PC compatible micro-computer comprising:
  - A CPU comprising an 80286 or later microprocessor (80386 recommended),
  - 6 Mbytes RAM recommended,
  - 40 Mbytes hard disk,
  - A high resolution EGA or VGA monitor,
  - The appropriate national or international keyboard.

The XTEL-CAD software package, ref. TXT L CAD V5E, comprising:

- A 3 1/2" program diskette (TXT LF CAD V5),
- A software protection key module,
- This documentation, ref. TXT DM CAD V5E.



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2.2 Software Installation

2.2-1 Installing the Software Key Module

Fit the software key module into the empty location in the software key module holder.

> Ensure that the terminal is powered-down before performing this operation.

Note

The software key module contains the right of use required to run the XTEL-CAD program. The Key Manager, supplied with the X-TEL and MINI X-TEL Software Workshops, lets the user transfer this right of use to the work key module, freeing a software key module holder slot. For detailed information on how to use the Key Manager, refer to the appropriate TXT L BASE V5E or TXT L BJR V5E documentation.

2.2-2 Preliminary Operations

Before installing XTEL-CAD on the hard disk, it is recommended that the user:

- Make a copy of the program disk and that this disk be used for all installation procedures to avoid accidental damage to the original. Once it has been copied, the original disk should be kept in a safe place,
- Carefully read the licence and guarantee certificates that come with this program and that detail the conditions of use and the restrictions that apply to copying and installing the program.

Important

> The XTEL-CAD program diskette is supplied write protected. Do not change the position of the write protect tab on the diskette.

2.2-3 Installation Conditions

XTEL-CAD runs in the X-TEL or MINI X-TEL Software Workshop environment.

The Software Workshop must already be installed on the microcomputer before XTEL-CAD is installed.

Before installing XTEL-CAD, make sure that at least 350 KBytes of free space is available on the target hard disk partition.

2.2-4 Installation Procedure

Installing XTEL-CAD

An X-TEL or MINI X-TEL V5 Software Workshop must already be installed on the terminal. If this is not the case, first install an X-TEL (TXT L BASE V5) or MINI X-TEL (TXT L BJR V5) Software Workshop, the:

- Open an OS/2 full screen session, to do so:

  With OS/2 1.2 or 1.3.
  - Open the **Group - Main** window,
  - Select **OS/2 Full Screen**. The prompt [C:\] is displayed.

  With OS/2 2.1
  - Open the **OS/2** folder,
  - Open **Guests**,
  - Open **OS/2 Full Screen**. The prompt [C:\] is displayed.
- Insert the TXT LF CAD V5 diskette into the appropriate diskette drive,
- Type the drive identification letter (a: or b:) corresponding to the drive where the diskette is located, then press <Enter> to confirm,

Once the correct prompt (e.g. [a:\] or [b:\] is displayed), type Install and press <Enter> to confirm.

The following screen is displayed:

```
                    INSTALLATION LOGICIEL XTEL-CAD

                    XTEL-CAD SOFTWARE INSTALLATION

                  (C) TELEMECANIQUE 1991-1993 V5.0
```

Press <Enter> to continue:

After pressing <Enter>, the XTEL-CAD program files are copied to the various Software Workshop sub-directories. Once this is done, the following screen is displayed:

```
    CONFIGURATION CHECK...

The installation procedure can perform a check on the program
configuration of the XTEL Software Workshop installed under OS/2.

If you have just completed the last program installation required before
starting the XTEL Software Workshop, you can run a complete check on the
program configuration. If not, run the complete check once you have
installed all XTEL software.

1   Last installation completed, run configuration check.
2   Run check later, other programs still waiting to be installed in the
    XTEL software workshop.

Your choice:
```

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After each program installation, it is recommended that the user run a configuration check by selecting 1 from the screen shown on the previous page.

After the check is performed, the program installation procedure is complete and the following screen displayed:

```
INSTALLATION COMPLETE...
The installation procedure is complete.
XTEL-CAD is now installed in the Telemecanique XTEL Software Workshop.
```

Press <Enter>:

Enter Returns the user to the OS/2 full screen window.

2.3 General

2.3-1 Accessing XTEL-CAD

XTEL-CAD software is run at station level and its user interface only supports use of the keyboard.

X-TEL

- Select a volume
  - Select a project
    - Select a station
      - Select XTEL-CAD from Station Tools

MINI X-TEL

- Primary Window
  - Select XTEL-CAD from the Primary Window

Primary Window

The XTEL-CAD primary window displays a menu selection bar that lets the user:

- Select the conversion direction,
  - CAD to X-TEL/MINI X-TEL: Read the neutral file from the CAD program,
  - X-TEL/MINI X-TEL to CAD: Generate the neutral file,
- Display the various files that can be used by XTEL-CAD,
- Call-up the help screen (HELP),
- Exit the program (END).

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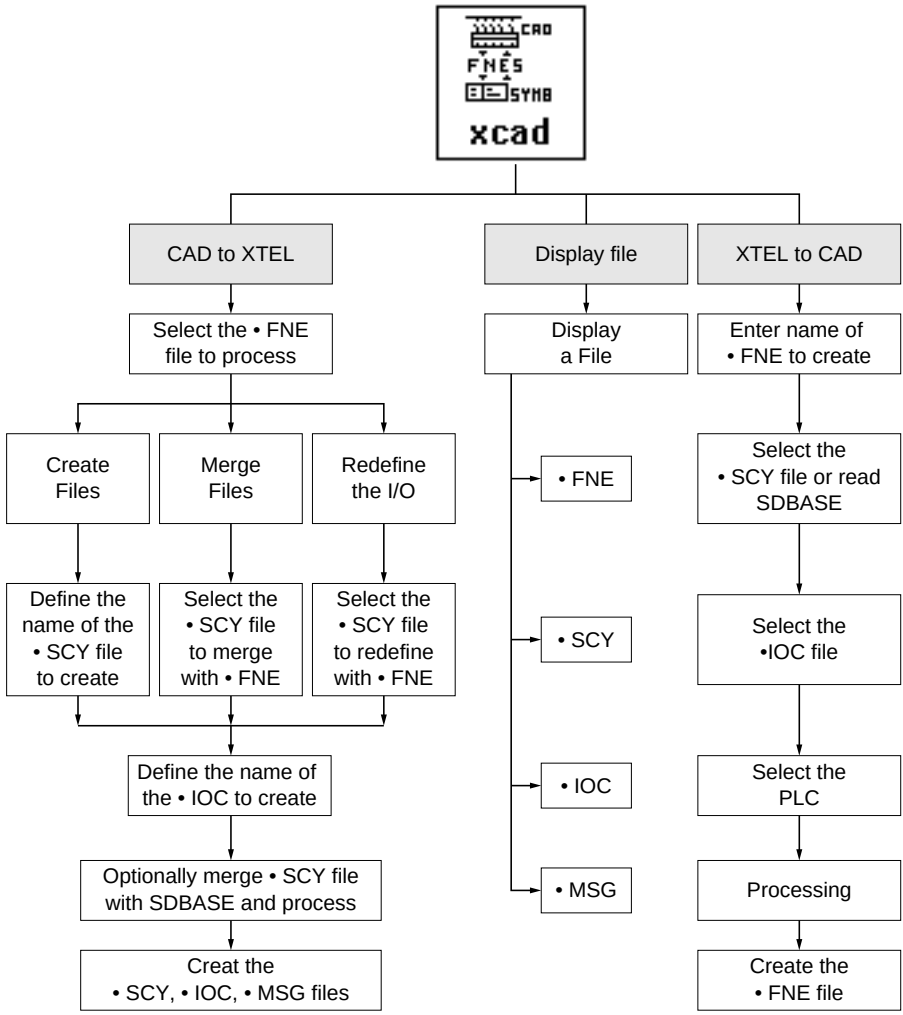
2.3-2 Functions for TSXV3, TSX/PMXV4 Stations

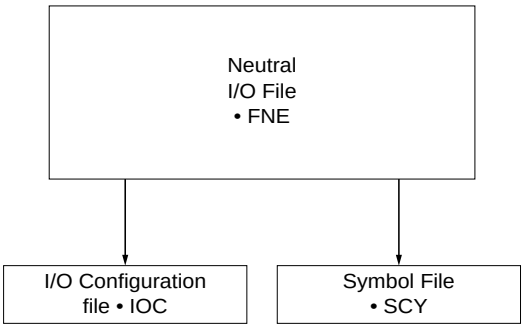
- **Diagram**



- **Operation in CAD to XTEL mode**

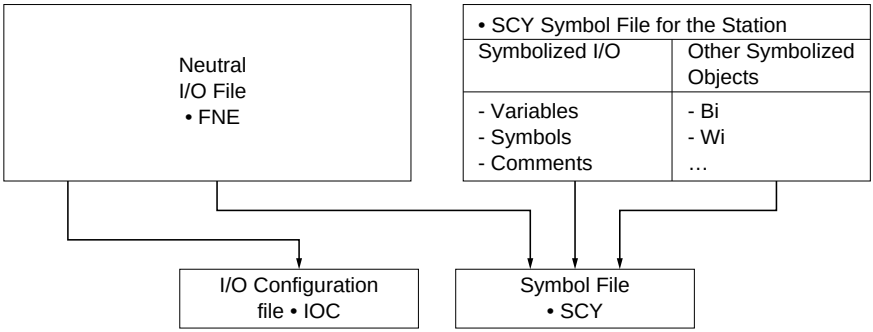
  In this mode, XTEL-CAD offers three possibilities.

  CREATION: The creation from an I/O neutral file (.FNE) of a symbol file (.SCY) and an I/O configuration file (.IOC).
  If errors occur during the creation of these files (for example a symbol too long), XTEL-CAD generates an error file (.MSG).



  MERGING: The merging of the I/O of a neutral file (.FNE) with a symbol file (.SCY) present in the station. In this case, the .SCY file created contains:
  - All the I/O contained in the neutral file (.FNE),
  - The I/O and all the other objects symbolized in the original symbol file (.SCY).

  The I/O configuration source file (.IOC) created by XTEL-CAD is the image of the I/O described in the neutral file (.FNE).



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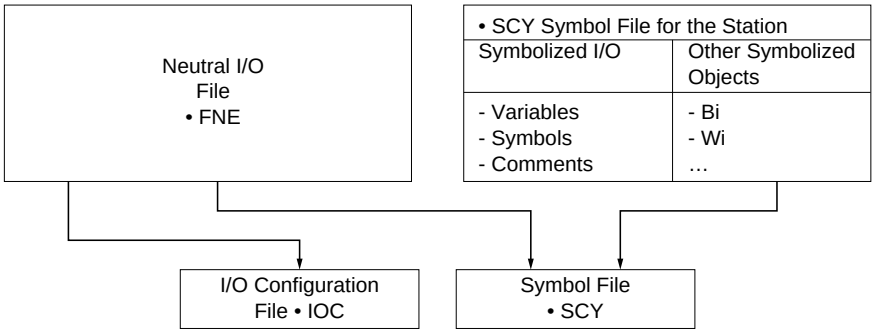
REDEFINITION OF THE I/O: The redefinition from an I/O neutral file (.FNE) of the I/O of a symbol file (.SCY) present in the station. In this case, the symbol file (.SCY) created contains:
- All the I/O contained in the neutral file (.FNE),
- All the other objects except the I/O of the original symbol file (.SCY).

The I/O configuration file (.IOC) is also created from the information present in the neutral file (.FNE).



In the case of **MERGING** or **REDEFINITION OF THE I/O**, the error file (.MSG) contains, in addition to any errors in the .FNE file, the differences between the original symbol file (.SCY) and the newly created symbol file (.SCY).

Remark 1

The Telemecanique reference numbers are defined according to a precise structure, for example: TSX DET 16 35 (Refer to Sub-section 2.8 for the precise syntax).

If this structure is not respected, XTEL-CAD cannot correctly restore the I/O configuration source file (.IOC).

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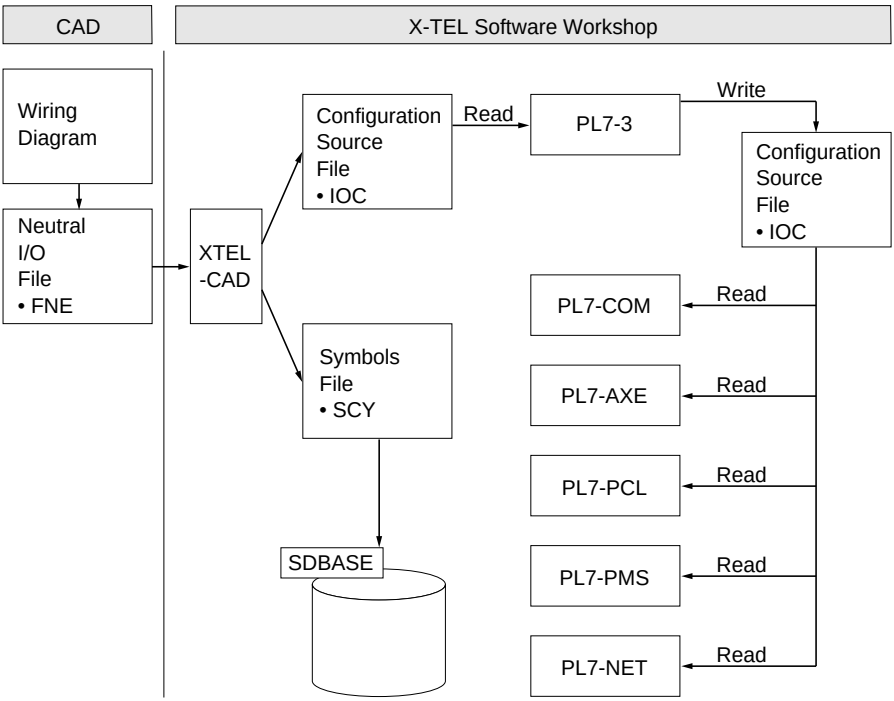
Remark 2

In the Software Workshop, the PL7 dedicated functions (PL7-COM, PL7-AXE, etc.) use for development in Local mode the information contained in the I/O configuration source file (.IOC). This file can be generated by either of the following:

- PL7-3: The file contains all the information describing the configuration,
- XTEL-CAD: The file contains the information supplied to it by the CAD program.

In the neutral file, the information concerning the processor is optional. As the PL7 dedicated functions require this information, it is necessary in the case of these programs to use the .IOC file generated by PL7-3 in the configuration mode (refer to the diagram below).



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- **XTEL to CAD Mode**

  In this mode, XTEL-CAD creates an I/O neutral file (.FNE) from a symbol file (.SCY) and an I/O configuration described in a configuration source file (.IOC).
  The symbols can be read from a symbol file (.SCY) that already exists for the station, or can come from the symbol data base (SDBASE).

Remark

In the case of the creation of a neutral file, it may occur that the contents of the I/O source file and the symbol file are not the same.

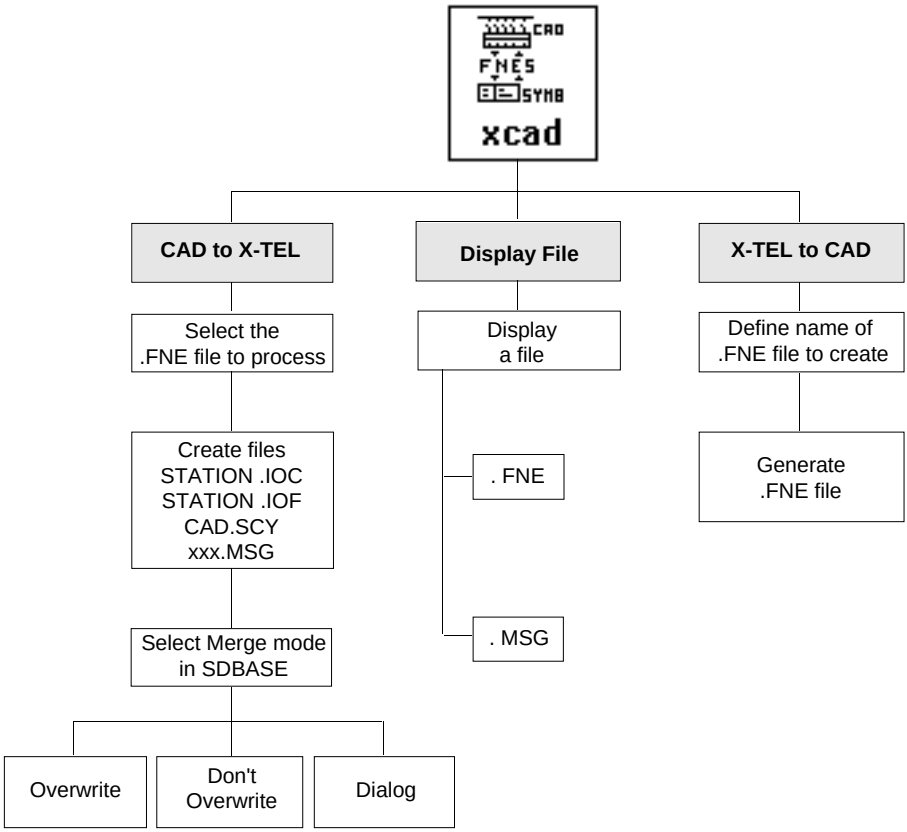
Example 1: Input module at address 0 and an output module symbolized at the same address.

Example 2: Input is symbolized and no rack.

In this case, XTEL-CAD indicates the incoherence but proposes the creation of the neutral file. The file generated may be incomplete regarding the I/O points, and even the modules if there is an incoherence. This case cannot occur if the two files are created by the same PL7-3 application (saving of all the "STORE" context of all the files).

2.3-3 Functions for TSX/PMXV5 Stations

- **Diagram**



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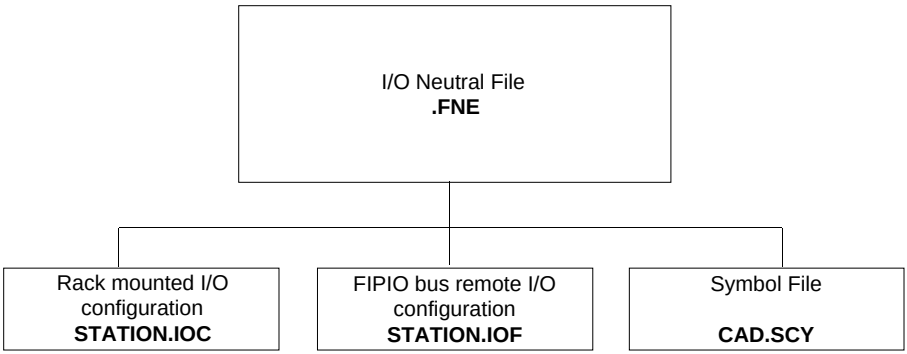
- **CAD to XTEL Mode**

  XTEL-CAD performs the creation from an I/O neutral file (.FNE) of a rack mounted I/O configuration file (STATION.IOC), a FIPIO bus remote I/O configuration file (STATION.IOF) and a symbol file (CAD.SCY).

  If errors occur during the creation of these files, XTEL-CAD also generates an error file (.MSG).



- **XTEL to CAD Mode**

  XTEL-CAD creates an I/O neutral file (.FNE) from the I/O configuration files (STATION.IOC and STATION.IOF) and the symbols in the SDBASE symbol data base.

2.3-4 Using the Keyboard

On-screen, the selections are made using the Cursor Keys:
- Up or Down < ↑ > < ↓ >,
- Left or Right < ← > < → >.

Each selection is confirmed by pressing <Enter>.
The <ESC> key lets the user return to the primary window to modify execution parameters if an incorrect entry is made.

Note
The mouse is not supported by XTEL-CAD.

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2.4 CAD to XTEL Menu

2.4-1 TSXV3 or TSX/PMXV4 Station

This menu permits the creation, from an I/O neutral file (.FNE), of the following files for use by the Software Workshop:

- The symbols file (.SCY),
- The I/O configuration file (.IOC).

- **Selection of the source .FNE file**

- Display all the .FNE files present in the station,
- Select the file to be processed,
- Pressing <Enter> confirms the selection made and calls up a new window called "Traitement" ("Processing").

- **Selection of the type of processing required**

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The Processing window offers three possibilities for the creation of the symbol file (.SCY):

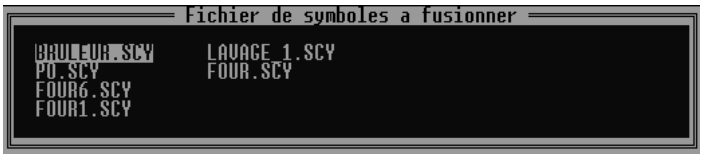
- CREATION,
- MERGING,
- REDEFINITION OF THE I/O.

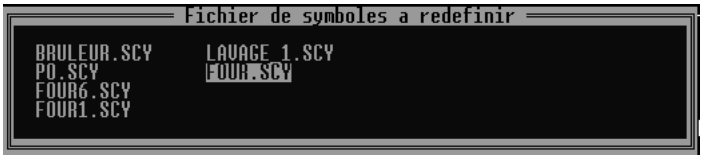
Select the type of processing required.

- **CREATION**
  XTEL-CAD prompts the user to enter in succession, the names of the .SCY and .IOC files to be created. If these files already exist, the user can overwrite them or select another name.

  After entering the names of the two file, pressing <Enter> starts the conversion.

- **MERGING or REDEFINITION OF THE I/O**
  XTEL-CAD proposes a window with the list of .SCY files present in the station. Select the symbol file to be merged or redefined, depending on the choice that was previously made (MERGING or REDEFINITION OF THE I/O). The final symbol file will have the same name as the original symbol file.





< ↓ > < ↑ > Select the .SCY file to be merged or redefined.
< ← > < → >

<Enter> Confirms the selection made and assigns the name of the source .SCY file to the one that will be created. The system then displays a window allowing the user to define the name of the corresponding .IOC file.

- **Starting the processing**

  When all the elements have been defined (original .FNE file, type of processing, names of .SCY and .IOC files), the window shown below allows the user to start the processing.

<YES> Starts the processing and an animated display appears indicating that processing is in progress.

<NO> Returns the user to the primary window and cancels the context that was defined. The user can then define a new context.

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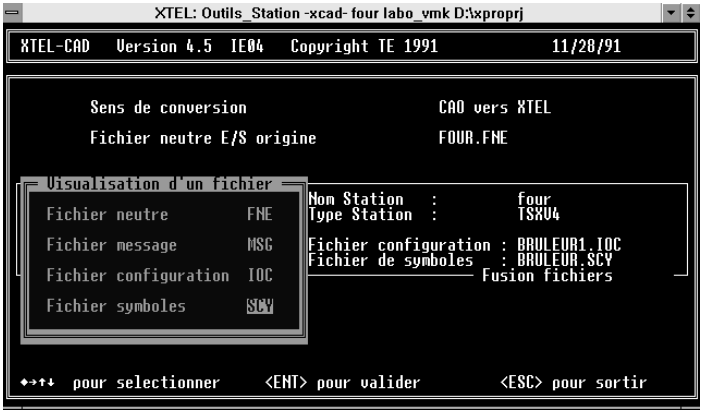
- **Connection to the symbol data base**

  When processing is complete, the "Connexion base des symboles" (Connection to the symbol data base) window is displayed, allowing the user to merge the new symbols into the SDBASE station symbol data base. This merging of the new symbols cannot take place if the station symbol data base is empty (at least one symbol must already have been created).

If the user chooses merging, XTEL-CAD detects the discrepancies between .SCY file that has been created and the symbol data base, such as:

- The same object with a different symbol,
- The same symbol with a different object,
- An object/symbol pair with a different comment.

In such cases, XTEL-CAD informs the user and prompts them to modify the symbol data base or leave it unchanged.
At the end of processing, the user can display all the files that have been created by using the screen below.



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2.4-2 TSX/PMXV5 Stations

This menu permits the creation from an I/O neutral file (.FNE), of the following files that can be used by the Software Workshop:

- The rack mounted I/O configuration file (STATION.IOC),
- The FIPIO bus remote I/O configuration file (STATION.IOF),
- Symbols file (CAD.SCY).

- **Selecting the source .FNE file**

- Display of all the .FNE files present in the station,
- Selection of the file to process,
- **<Enter>** confirms the selection made.
  XTEL-CAD scans the selected .FNE file to determine whether it applies to a single PLC or multiple PLC system:
  - If the .FNE file applies to a single PLC application, the configuration read will be stored in the STATION.IOC (rack mounted I/O) and STATION.IOF (FIPIO bus remote I/O) files,
  - If the .FNE file applies to a multiple PLC application, a window will be displayed so that the user can select the name of the .IOC and .IOF files to be used. XTEL-CAD will create as many sets of .IOC/.IOF files as there are PLCs present in the .FNE file. The .IOC/.IOF files will all be stored in the currently selected station and it is up to the user to place the .IOC/.IOF files in the correct stations.

- **Starting the processing**

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YES Starts the processing and an animated "traitement en cours" window is displayed during processing.

NO Returns the user to the primary window and cancels the context that was defined. The user can then define a new context.

- **Selecting the type of merge to perform using SDBASE**

Overwrite If when a merge action is selected, XTEL-CAD detects a double declaration between the .FNE file and the SDBASE symbol data base, the value in the .FNE file will overwrite the value in the SDBASE data base.

Don't overwrite If when a merge action is selected, XTEL-CAD detects a double declaration between the .FNE file and the SDBASE symbol data base, the value in the SDBASE data base will be retained.

Dialog If when a merge action is selected, XTEL-CAD detects a double declaration between the .FNE file and the SDBASE symbol data base, it will be displayed and the user will have to select whether to retain the SDBASE data base or the .FNE file version.

Types of double declaration that can be detected:
- The same object with a different symbol,
- The same symbol used by a different object,
- An object/symbol pair that has a different comment.

Remark

> After each conversion, the user can view the files to ensure that they were correctly converted.

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2.5 XTEL to CAD Menu

2.5-1 TSXV3 or TSX/PMXV4 Stations

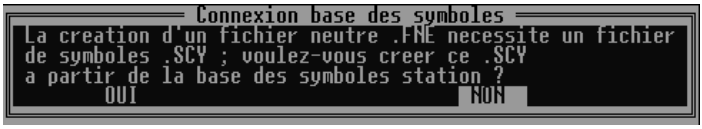
This menu lets the user create, from a station symbol base or an existing symbol file (.SCY) and an I/O configuration file (.IOC), a neutral file (.FNE) relating to an application and that can be used by CAD software.

- **Defining the name of the target neutral file (.FNE)**

  A "Fichier neutre E/S destinataire" (Target I/O neutral file) window lets the user define the name of the file.

- **Defining the .SCY symbol file**

  As soon as the name of the neutral file (.FNE) file has been defined, a "Connexion base des symboles" (Symbol base connection) window proposes:
  - Either the creation of a symbols file (.SCY) from the station symbol base,
  - Or the selection of a symbol file (.SCY) from those already present in the station.



<OUI>(YES) Enables creation of the symbol file (.SCY) with all the objects of the station symbol base. Define a file name.

<NON>(NO) Displays the list of all the symbol files (.SCY) already present in the station. Select the name of the file to be integrated in the neutral file (.FNE).

- **Selecting the I/O configuration file (.IOC)**

  After defining the symbol file (.SCY), select the I/O configuration file (.IOC) that describes the configuration of the application.

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- **Defining the PLC number**

  A window permits the definition of the PLC number to be used in the neutral file (.FNE) that will be created.
  This item is defined in the neutral file (.FNE), but does not exist in the X-TEL environment.

- **Starting the processing**

  After all the preceding parameters have been entered, the window shown below allows the user to start the processing.

<NO> Returns the user to the primary window.

<YES> Starts the processing. If the I/O addresses in the symbols file (.SCY) do not agree with the description in the I/O configuration file (.IOC), the following message is displayed "Fichiers .SCY et .IOC incompatibles; voulez-vous néanmoins continuer le traitement ?" (.SCY and .IOC files incompatible; do you want to continue processing?). The user must then decide either to produce a .FNE file that conforms to the .IOC file, or to recommence entering the parameters.

Special case of I/O configuration files (.IOC) created by PL7-3

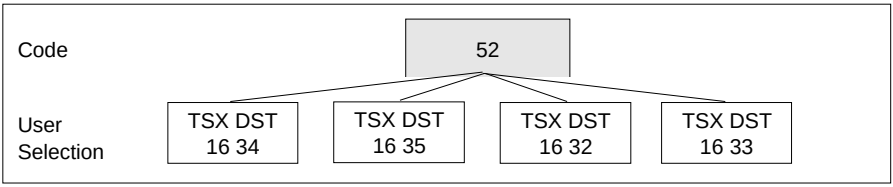
In some cases, the module code does not indicate whether the module has 16, 24, or 32 bits, as several modules can have the same codes.

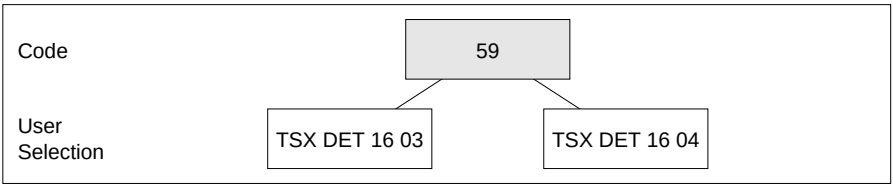
Codes and modules concerned

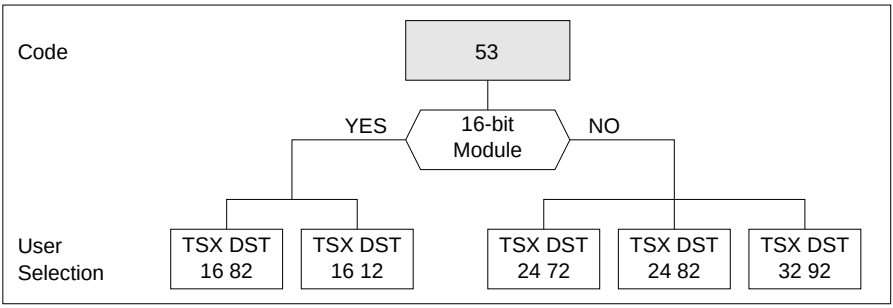
Codes	Modules Concerned
52	TSX DST 16 34, TSX DST 16 35, TSX DST 16 32, TSX DST 16 33
59	TSX DET 16 03 and TSX DET 16 04
53	TSX DST 16 12 and TSX DST 16 82 TSX DST 24 72, TSX DST 24 82 and TSX DST 32 92
56	TSX DET 16 12 TSX DET 32 12, TSX DET 32 42, TSX DET 32 32 and TSX DET 32 52
13	TSX MAP 1074/100/110
696	TSX SCM 2011/2012/2013/2014/2022/2044/2055
697	TSX SCM 2111/2112/2113/2114/2122/2116/2126/2146
698	TSX SCM 2211/2212/2213/2214/2222/2244

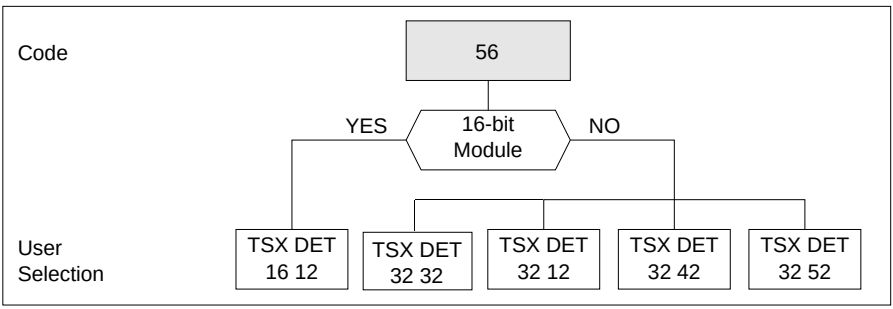
When XTEL-CAD reads an .IOC source file and encounters one of the codes referred to previously, it prompts the user to define the module(s) concerned.

Example: Discrete I/O modules.









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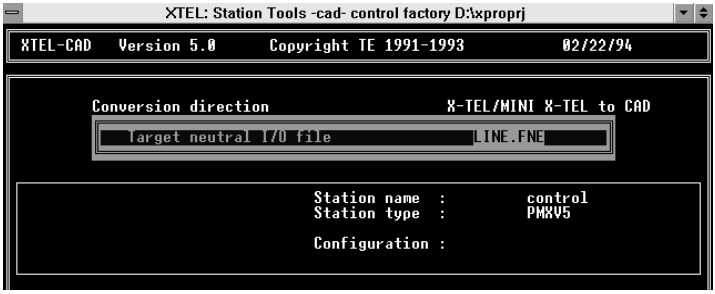
2.5-2 TSX/PMXV5 Stations

The X-TEL to CAD menu allows the user to create, from the station symbol data base and the configuration files STATION.IOC and STATION.IOF, a neutral file (.FNE) relating to an application and that can be used by the CAD program.

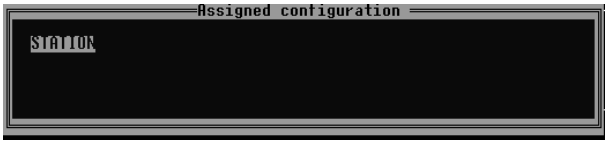
- **Defining the name of the target neutral .FNE file**

The "Target neutral I/O file" window lets the user enter the file name.



Enter the file name,

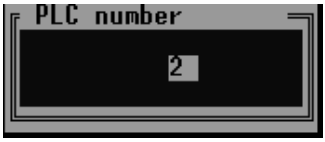
<Enter> Confirms the operation and displays a window that describes the I/O configuration files (.IOC and .IOF) that describe the application configuration. For a TSX/PMXV5 station, these files take the names STATION.IOC and STATION.IOF and are unique and therefore no action is required in this window.



<Enter> Displays the window allowing the user to enter the PLC number.

- **Defining the PLC number**

This window lets the user define the number of the PLC in the neutral file (.FNE) that will be created. This item is defined in the neutral file (.FNE), but does not exist in the X-TEL environment.



Enter the PLC number,

<Enter> Confirms the operation and displays a window that lets the user select generation of the neutral file (.FNE) with all channels or only those that have symbols.

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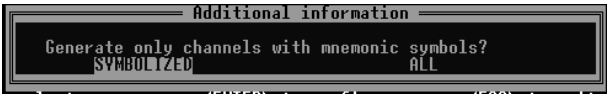
- **Generating the neutral file (.FNE) with all channels or only those with symbols**

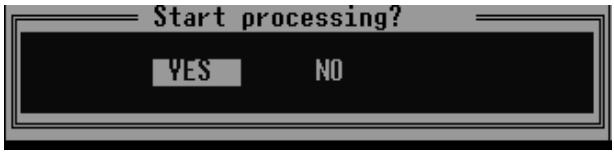


Select the type of generation

<Enter> Confirms the selection and displays a window that lets the user start processing.

- **Start processing**

  Once all of the above parameters have been entered, a window is displayed that allows processing to start.



<NO> Cancels the context defined and returns the user to the primary window.

<YES> Starts processing.

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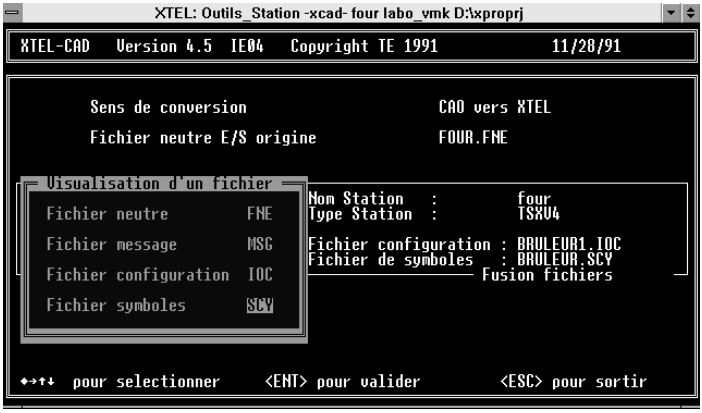
2.6 File Display Menu

2.6-1 TSXV3 or TSX/PMXV4 Stations

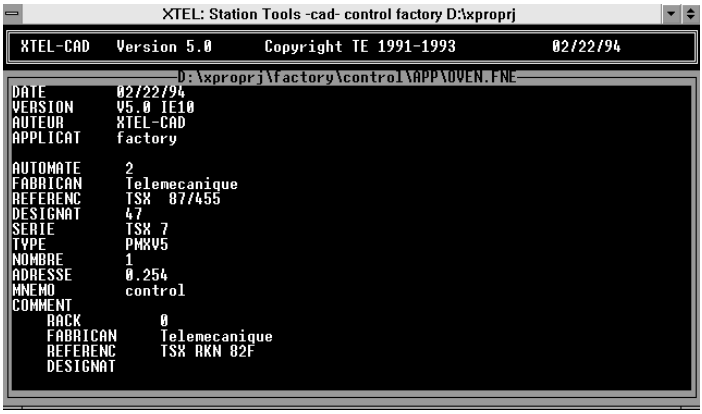
This menu permits the display of all the .FNE, .SCY, .IOC and .MSG files present in the station.



< ↓ > < ↑ > Select the type of file to be displayed.

<Enter> Displays the list of files of the same type present in the station. Select the file to be displayed using the < ↓ > < ↑ > keys and confirm the selection made.

Example of neutral file (.FNE) display

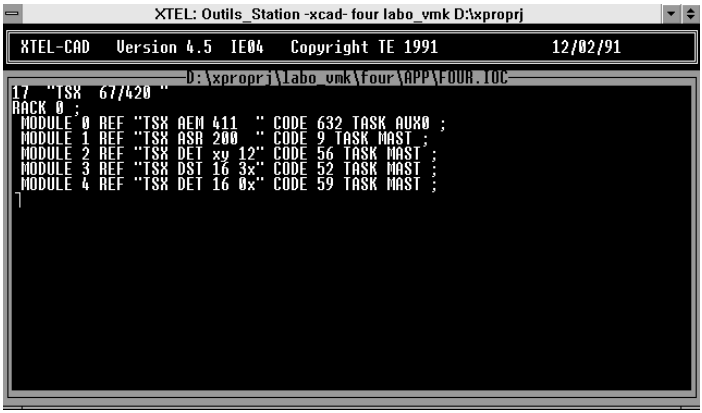


< ↓ > < ↑ > Display the next or previous page.

G

Example of symbol file (.SCY) display

Example of configuration file (.IOC) display



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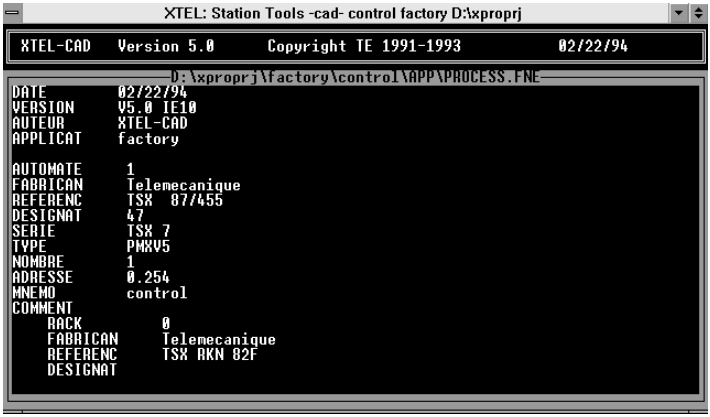
2.6-2 TSX/PMXV5 Stations

This menu permits the display of all the .FNE and .MSG files present in the station.

< ↓ > < ↑ > Select the type of file to be displayed.

<Enter> Displays the list of files of the same type present in the station. Select the file to display using the < ↓ > < ↑ > and confirm the selection made.

Example of neutral file display (.FNE)



< ↓ > < ↑ > Display the next or previous page.

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2.7 Warning and Error Messages

2.7-1 Messages for V4/V5 Stations

"End of processing of PLC number x; enter the processing for the next PLC"

Probable Cause	Corrective Action
The .FNE file read is for multiple PLCs; number x has just been processed.	• ESC if processing is ended (only the first PLC has been processed). • If not, select the processing for the next PLC (Creation, Merging or Redefinition of the I/O). In this case, the files created are stored in the same station.

"This file already exists. Do you want to delete it?"

Probable Cause	Corrective Action
The file to be created already exists.	Select another name or overwrite this file.

"Start processing?"

Probable Cause	Corrective Action
XTEL-CAD asks the user to check the selected processing and to confirm the start of processing.	

"Ixy,z AAA replaced by Ixy,z BBB"

Probable Cause	Corrective Action
Warning of the replacement of an object or symbol by another one in the case of a merge.	None.

"1st. mnemonic character not alphabetic"

Probable Cause	Corrective Action
Incorrect symbol.	Correct the first character.

"Unauthorized mnemonic character"

Probable Cause	Corrective Action
Incorrect symbol.	Correct the incorrect character(s).

"Problem of automatic generation of mnemonic or object prohibited in PL7-2"

Probable Cause	Corrective Action
XTEL-CAD assigns a default symbol to all objects that don't have them unless the object is incorrect.	Correct the object.

"Mnemonic already present"

Probable Cause	Corrective Action
Two objects have the same symbol.	Change one of the symbols.

"Mnemonic too long"

Probable Cause	Corrective Action
The symbol has more than 8 characters.	Change the symbol.

"Address already present"

Probable Cause	Corrective Action
Two objects have the same address.	Change one of the objects.

"Illegal mnemonic"

Probable Cause	Corrective Action
This symbol is a PL7 object.	Change the symbol.

".FNE file tree structure incorrect"

Probable Cause	Corrective Action
The .FNE file does not conform to the CNOMO standard.	Correct the .FNE file.

"Rack or module number absent from the .FNE"

Probable Cause	Corrective Action
The keyword RACK or CARTE (Module) is not followed by a number.	Correct the .FNE file.

"The .FNE file has no rack or module"

Probable Cause	Corrective Action
The keywords RACK and CARTE (Module) are absent.	Correct the .FNE file.

"Rack x, module y: I/O points lost (digital module or incorrect reference)

Probable Cause	Corrective Action
Digital module or incorrect reference: The I/O points are lost.	None (warning only).

"Incorrect keyword in the .FNE file"

Probable Cause	Corrective Action
Unknown word in the .FNE file.	Correct the .FNE file.

"Absence of a space in a line of the .FNE file"

Probable Cause	Corrective Action
A keyword is not followed by a space before the value.	Correct the .FNE file.

"Keyword absent in the .FNE file"

Probable Cause	Corrective Action
The CNOMO tree structure is not respected.	Correct the .FNE file.

"Incorrect rack number"
"Incorrect module number"
"Incorrect I/O point number"

Probable Cause	Corrective Action
Incorrect number.	Correct the .FNE file.

"Rack x, module y: comma absent in an address"

Probable Cause	Corrective Action
Comma missing from an address.	Correct the syntax.

"Rack x, module y: I/O point number absent in an address"

Probable Cause	Corrective Action
I/O point number missing an address.	Correct the syntax

"The selected .IOC file does not correspond to this .SCY file; do you still want to generate the .FNE file?"

Probable Cause	Corrective Action
The racks/modules present in the .SCY file do not exist in the .IOC file.	Decide whether or not to generate the .FNE file.

".IOC configuration file empty"

Probable Cause	Corrective Action
	Select another .IOC file.

".IOC file incorrect or absence of a semi-colon"

Probable Cause	Corrective Action
.IOC file format incorrect.	Correct the .IOC file.

"Rack or module incorrect in the .SCY file"

Probable Cause	Corrective Action
Incorrect number in the .SCY file.	Correct the number.

"No I/O in this .SCY symbol file"

Probable Cause	Corrective Action
The .SCY file has no I/O.	Select another .SCY file.

"The source file contains more than 1930 I/O"

Probable Cause	Corrective Action
XTEL-CAD cannot process more than 1930 I/O.	None (exceeds limits).

"The number of I/O processed exceeds 1930"

Probable Cause	Corrective Action
When merging, the number of I/O from the .FNE and .SCY files exceeds 1930.	None (exceeds limits).

"Rack x, module y: 16-bit module type?"
"Rack x, module y: 16-bit module?"

Probable Cause	Corrective Action
Problem for the user to resolve.	Answer the question.

"Press any key to continue"

Probable Cause	Corrective Action
This is an XTEL-CAD prompt to continue processing.	Press any key to continue.

"Do you want to generate only the symbolized I/O points?"

Probable Cause	Corrective Action
Select whether to generate all the I/O points or only those symbolized in the .SCY files.	Reply to the question.

"Do you want to merge the .SCY created with the symbol data base?"

Probable Cause	Corrective Action
Merge the I/O from the .FNE file with those of the symbol data base.	Reply to the question.

"The object xxx is symbolized by yyy; in the base object xxx is symbolized by zzz"

Probable Cause	Corrective Action
Two identical objects with different symbols.	Select the desired symbol.

"The symbol xxx symbolizes the object yyy. In the base the symbol xxx symbolizes the object zzz"

Probable Cause	Corrective Action
The same symbol designates several objects.	Select the desired symbol.

"This object and symbol already exist with a different comment. Do you want to replace it?"

Probable Cause	Corrective Action
The comment is different.	Reply to the question.

"The creation of a .FNE neutral file necessitates a .SCY symbol file; do you want to create the .SCY file from the symbol base?"

Probable Cause	Corrective Action
Choice of creating a .SCY or using the one that exists in the station.	Reply to the question.

"Directory empty: Import the file to the station"

Probable Cause	Corrective Action
	Warning.

"Cannot read .SCY file"

Probable Cause	Corrective Action
The .SCY file to be merged with the .FNE file is incorrect.	Select another.SCY file.

"Insufficient space on disk"

Probable Cause	Corrective Action
350 KB is needed to run XTEL-CAD.	Warning.

"Write-protected disk"

Probable Cause	Corrective Action
The disk or diskette containing the directory is write-protected.	Warning.

"Symbol file write-protected"
"I/O configuration file write-protected"
"Message file write-protected"
"I/O neutral file write-protected"

Probable Cause	Corrective Action
A file is write-protected.	Warning.

"This directory contains too many files"

Probable Cause	Corrective Action
This directory contains more than 200 files.	Delete some of the files.

"The PL7_3\MOD and APP directories must be created before running XTEL-CAD"
"The PL7_2_47\MOD and APP directories must be created before running XTEL-CAD"

Probable Cause	Corrective Action
PL7-3 or PL7-2 must be installed before XTEL-CAD.	Install PL7-2 or PL7-3.

"SDBASE inexistent or already in use"

Probable Cause	Corrective Action
Either the symbol editor is open, or SDBASE is not present in the station.	

"Rack x: the racks must be entered in ascending order"
"Rack x, module y: the modules must be entered in ascending order"

Probable Cause	Corrective Action
The .FNE neutral file is not correct.	Modify the order of the racks/modules in the .FNE file.

"Rack x, module y: 24/32 bit modules forbidden in odd racks"

Probable Cause	Corrective Action
	The 24 or 32 bit modules must be installed in even racks.

"Rack x, module y: slot already occupied by the 24/32 bits of the even rack"

Probable Cause	Corrective Action
The even rack contains a 24 or 32 module and the odd rack another module.	Leave the slot of the even bit module empty.

2.7-2 Messages for V5 Stations Only

"This rack configuration already exists: Do you want to delete it?"

Probable Cause	Corrective Action
The selected .IOC file already exists	Select another name or overwrite this file

"This remote configuration already exists: Do you want to delete it?"

Probable Cause	Corrective Action
The selected .IOF file already exists	Select another name or overwrite this file

"Symbol error: illegal character or PL7 object"

Probable Cause	Corrective Action
One or more symbols have illegal write syntax or this symbol is a PL7 object	Change the symbol

"Automatic generation problem or illegal object in PL7-2 "

Probable Cause	Corrective Action
Cannot automatically create a symbol or illegal object in PL7-2	Change the symbol

"Symbole too long"

Probable Cause	Corrective Action
le nombre de caractères maximum pour l'écriture d'un symbole est dépassé	Change the symbol

"Remote channels lost (reference absent or incorrect)"

Probable Cause	Corrective Action
The reference is absent therefore the corresponding I/O is not taken into account	Change the reference

"Racks must be stored in rising order"

Probable Cause	Corrective Action
The racks are not stored in rising order	Warning

"The module must be stored in rising order"

Probable Cause	Corrective Action
The modules are not stored in rising order	Warning

"24/32 bit modules forbidden in odd racks"

Probable Cause	Corrective Action
A 24/32 bit module is located in an odd rack	Place the module in an even rack

"Slot already occupied by the 24/32 bits of the even rack"

Probable Cause	Corrective Action
A module is located in the odd rack and the slot is already fictively taken by the 24/32 bit module in the even rack	Delete the module from the odd rack

"(in an address) not valid"

Probable Cause	Corrective Action
The rack or module number (in an address) is not valid	Change the channel variable

"Incorrect or incomplete channel address"

Probable Cause	Corrective Action
Incorrect address syntax	Change the address

"Cyhannel address incompatible with current rack-module"

Probable Cause	Corrective Action
This channel address must not be saved in the description of this rack or module	Move the channel to the rack or module that corresponds to its address

"Illegal for this connection point"

Probable Cause	Corrective Action
The module number is not 0, 1 or 7	Change the module number

"Incorrect or incomplete remote channel"

Probable Cause	Corrective Action
Incorrect syntax	Change

"This channel is incompatible with the connection point"

Probable Cause	Corrective Action
This channel address must not be assigned to this connection point	Move the channel

"Incorrect connection point in a channel"

Probable Cause	Corrective Action
63 < connection point < 0	Change

"Incorrect module in a channel"

Probable Cause	Corrective Action
The module number is not 0 or 1	Change

"A channel is incompatible with the module"

Probable Cause	Corrective Action
The module number is different from the one being processed	Change

"Channel file error in a field"

Probable Cause	Corrective Action
The channel number value exceeds 16	Change

"Blank or incomplete rack configuration file"

Probable Cause	Corrective Action
.IOC file blank or incorrect	Redefine in XTEL-CONF

"Rack configuration file format error"

Probable Cause	Corrective Action
Incorrect .IOC file	Redefine in XTEL-CONF

"Blank or incomplete remote configuration file"

Probable Cause	Corrective Action
.IOF file blank or incorrect	Redefine in XTEL-CONF

"Remote configuration file format error"

Probable Cause	Corrective Action
Incorrect .IOF file	Redefine in XTEL-CONF

"Incorrect reference in the neutral file"

Probable Cause	Corrective Action
There is an incorrect reference in the .FNE file	Change

"Channel lost (remote I/O module without channel)"

Probable Cause	Corrective Action
The module has no channel with syntaxe RI ou RO	Change

"Reference absent from the neutral file"

Probable Cause	Corrective Action
No refrence in the .FNE file	Change

"A rack number is a connection point: remote I/O are allowed for V5 stations only"

Probable Cause	Corrective Action
When reading the .FNE file a V4 connection file is found	Change the .FNE file

"Incorrect connection point"

Probable Cause	Corrective Action
Connection point number not in range 0 to 63	Change

"A rack is described after the remote I/O"

Probable Cause	Corrective Action
The remote I/O description preceeds the rack I/O description	Warning

2.8 Appendix: Telemecanique Module Reference Information

2.8-1 PLC Rack Mounted Modules

The references of the PLC rack mounted modules are stored in the following files:

- For TSXV3, TSX/PMXV4 stations: IOTSX7.CAT. Path XPROSYS\DSC\IOTSX7.CAT
- For TSX/PMXV5 stations: IO7V5.CAT. Path XPROSYS\DSC\IOV5.CAT

1-DISCRETE I/O MODULES - INPUTS

Reference Number	Module Code	Description
TSX DET 4 66	39	4 INDEP NAMUR INPUTS
TSX DET 8 02	34	8 INDEPEND. INPUTS 24 VAC
TSX DET 8 03	35	8 INDEPEND. INPUTS 48 VAC
TSX DET 8 05	37	8 INDEPEND. INPUTS 220/240VAC
TSX DET 8 12	32	8 INDEPEND. INPUTS 24 VDC
TSX DET 8 13	33	8 INDEPEND. INPUTS 48 VDC
TSX DET 8 14	38	8 INDEPEND. INPUTS 125VDC
TSX DET 8 24	36	8 INDEPEND. INPUTS 110VDC/115VAC
TSX DET 16 03	59	16 COMBINED INPUTS 48 VAC
TSX DET 16 04	59	16 COMBINED INPUTS 110/115 VAC
TSX DET 16 12	56	16 COMBINED INPUTS 24 VDC
TSX DET 32 12	56	32 COMBINED INPUTS 24 VDC
TSX DET 32 42	56	32 COMBINED INPUTS 24 VDC
TSX DET 32 52	56	32 NON-ISOL. INPUTS 24VDC
TSX DET 32 32	56	32 FAST INPUTS 24VDC
TSX DET 16 13	58	16 COMBINED INPUTS 48 VDC

2-DISCRETE I/O - OUTPUTS

Reference Number	Module Code	Description
TSX ADA 200	1	FAILURE TOLERANCE MODULE
TSX LSM 200	2	LINK SWITCHING MODULE
TSX DST 4 17	4	4 O. 24/48 VDC 2A/PROT.LP
TSX DST 8 04	21	8 OUTPUTS 110/127 VAC 2A
TSX DST 8 05	22	8 OUTPUTS 110/240 VAC 2A
TSX DST 8 82	23	8 OUTPUTS 24VDC 2A PROT.LP
TSX DST 8 35	24	8 IND. RELAY O (1A/240 VAC)
TSX DST 8 17	29	8 O. 24/48VDC 0.5A/PROT.LP
TSX DST 16 34	52	16 RELAY O. 125 VDC 50W DC1
TSX DST 16 35	52	16 RELAY O. (0.5A/240VAC)
TSX DST 16 32	52	16 RELAY O. 24VDC 50W DC1
TSX DST 16 33	52	16 RELAY O. 100VAC 24/240VAC
TSX DST 16 12	53	16 O. 5-24V(0.4A/24VCC) LN
TSX DST 16 82	53	16 O. 24VDC 0.5A PROT.LP
TSX DST 24 72	53	24 O. 24VDC 0.5A PROT.LP
TSX DST 24 82	53	24 O. 24VDC 0.4A PROT.LP
TSX DST 32 92	53	32 OUTPUTS 24VDC 0.1A LP
TSX DST 16 04	55	16 SS. OUTPUTS 110-127VAC 0.5A

3-DISCRETE I/O - FAST I/O

Reference Number	Module Code	Description
TSX DMR 16 52	776	8I/8O FAST 24 VDC"

4-ANALOG MEASUREMENTS - INPUTS

Reference Number	Module Code	Description
TSX ADT 201	45	2 CH. HIGH LEVEL THRES.
TSX ADT 202	46	2 CH. THERMOC. THRES.
TSX ADT 203	47	2 CH. PT100 PROBE THRES.
TSX AEM 411	632	4 CH. ANA.HL.HR.ISOL.IND.
TSX AEM 412	633	4 CH. ANA.TC.HR.ISOL.IND.
TSX AEM 413	634	4 CH. ANA.RTD.HR.ISOL.IND.
TSX AEM 811	648	8 CH. ANA.HN.HR.ISOL.IND.
TSX AEM 821	649	8 CH. FAST ANAL. HL.
TSX AEM 16 01	650	16 ANALOG. IN. VOLTAGE
TSX AEM 16 02	651	16 ANALOG.IN. CURRENT
TSX AEM 16 13	652	16 PT100 3-WIRE INPUTS

5-ANALOG MEASUREMENTS - OUTPUTS

Reference Number	Module Code	Description
TSX AST 200	54	2 ANA. O. 8B.0-10V,0/4-20MA
TSX ASR 200	9	2 ANA. O. 12B.ISOL.IND.V&MA
TSX ASR 401	665	4 ANA. O. 0/10V INT. SUPPLY
TSX ASR 402	666	4 ANA. O. 4/20MA INT. SUPPLY
TSX ASR 403	667	4 ANA. O. 4/20MA EXT. SUPPLY

6-COUNTING

Reference Number	Module Code	Description
TSX AXT 200	57	FAST POSIT./COUNT. MODULE
TSX CTM 100	730	FAST COUNT. MODULE 1 CH.
TSX CCM 100	730	FAST COUNT. MODULE 1 CH. CAM
TSX DTM 100	733	ABS. ENCODER INPUT

7-POSITIONNING

Reference Number	Module Code	Description
TSX AXM 171	728	POSITION. MODULE RELAY OUT.
TSX AXM 171 1	731	POSITION. MODULE TRANS. OUT.

8-AXIS CONTROL

Reference Number	Module Code	Description
TSX AXM 172	729	ANALOG OUT. AXIS CONTROL
TSX AXM 182	732	FAST AXIS CONTROL
TSX AXM 162	735	AXIS I/O MODULE
TSX AXM 292	736	2 AXIS CONTROL MODULE
TSX AXM 492	737	4 AXIS CONTROL MODULE

9 - COMMUNICATION - CHARACTERS

Reference Number	Module Code	Description
TSX SCM 2011	696	2 RS232C IS. CHAR.
TSX SCM 2012	696	RS232C IS/CL CHAR.
TSX SCM 2013	696	RS232C IS/MODEM CHAR.
TSX SCM 2014	696	RS232C IS/RS485 IS. CHAR.
TSX SCM 2022	696	2 CL ISOL. CHAR.
TSX SCM 2044	696	2 RS485 ISOL. CHAR.
TSX SCM 2055	696	2 RS232 SIMPL. IS. CHAR.
TSX SCM 2111	697	2 RS232 IS HD/FD/UNI-TE
TSX SCM 2112	697	RS232 IS/CL HD/FD/UNI-TE
TSX SCM 2113	697	RS232 IS/MDM HD/FD/UNI-TE
TSX SCM 2114	697	RS232 IS/RS485 FD/UNI-TE
TSX SCM 2122	697	2 BC IS HD/FD/UNI-TE

10- COMMUNICATION - PROTOCOL MANAGEMENT

Reference Number	Module Code	Description
TSX SCM 2211	698	2 RS232C IS. PROTOC.
TSX SCM 2212	698	RS232C IS/CL PROT.
TSX SCM 2213	698	RS232C IS/MODEM PROT.
TSX SCM 2214	698	RS232C IS/RS485 IS. PROT.
TSX SCM 2222	698	2 CL ISOL. PROT.
TSX SCM 2244	698	2 RS485 ISOL. PROT.

11- RESEAUX - TELWAY 7

Reference Number	Module Code	Description
TSX MPT 10 4	12	TELWAY 7 COM. MODULE

12- UNI-TELWAY BUS

Reference Number	Module Code	Description
TSX SCM 2116	697	RS232 IS/UTWAY HD/UNI-TE
TSX SCM 2126	697	BC IS/UTWAY HD/UNI-TE
TSX SCM 2146	697	RS485 IS/UTWAY HD/UNI-TE

13- NETWORKS - MAPWAY

Reference Number	Module Code	Description
TSX MAP 107 4	13	MAPWAY MODULE - TSX 7

14- NETWORKS - ETHWAY/ETHERNET

Reference Number	Module Code	Description
TSX ETH 107	14	ETHWAY MODULE TSX 7
TSX ETH 200	14	ETHERNET MODULE TSX 7/5

15- MAN-MACHINE INTERFACE

Reference Number	Module Code	Description
TSX PCM 27	712	PC MONOCHROME MODULE
TSX PCM 37	713	PC COLOR MODULE
TSX BMP010	715	PERIPH. PC/PCM MODULE

16- EXTENSION MODULES

Reference Number	Module Code	Description
TSX LES 120	893	START ELECTRICAL LD
TSX LFS 120	891	OPT. LINK TRANS. MOD.
TSX LFS 121	891	OPT. LINK TRANS. MOD.

2.8-2 TBX Modules on the FIPIO Bus

The reference numbers of the TBX modules are stored in the following files:

- xxx.REF in path XPROSYS\FIP\TBX\xxx.REF

1 - Single block input modules

Reference Number	Description
TSX CEP 1622	TBX-7 Compact 16 I 24 VDC

2 - Single block output modules

Reference Number	Description
TSX CSP 1622	TBX-7 Compact 16 OS 0.5A
TSX CSP 1625	TBX-7 Compact 16 OR 24VDC

3 - Input bases

Reference Number	Description
TSX DES 1622	TBX-7 Base 16 I 24VDC
TSX DES 16C22	TBX-7 Base 16 I CF 24VDC
TSX DES 16F22	TBX-7 Base 16 I RAP. 24VDC
TSX DES 1633	TBX-7 Base 16 I 48VDC

4 - Output bases

Reference Number	Description
TSX DSS 1622	TBX-7 Base 16 OS 0.5A
TSX DSS 16C22	TBX-7 Base 16 O 0.5A
TSX DSS 1235	TBX-7 Base 16 OR 24/48/110VDC
TSX DSS 1625	TBX-7 Base 16 OR 24VDC

5 - Mixted bases (Inputs and Outputs)

Reference Number	Description
TSX DMS 16C22	TBX-7 Base 8I+8O 0.5A
TSX DMS 16C222	TBX-7 Base 8I+8O NO 2A
TSX DMS 16P22	TBX-7 Base 8I+8O 0.5A
TSX DMS 1025	TBX-7 Base 8I+2OR 24VDC
TSX DMS 1625	TBX-7 Base 8I+8OR 24VDC

6 - Communication module

Reference Number	Description
TSX LEP 020	TBX-7 FIP Com. Mod. 24/48V

CAD PACK "packaged" range
Installation notice

ENGLISH

Products included in CAD PACK

The composition of the complete PACK kit (TXT **P** CAD V52E) for installation on a station is given in the following table :

Component reference	Description of the components
TXT P CAD V52	TE90 standard protection key
W9 ...	licence agreement
W9	information sheet
TXT LF CAD V5	XTEL-CAD V5 software diskette
TXT DM CAD V5 E	XTEL-CAD software installation manual
TXT LF SVW V5	software diskette for S-VIEW under X-TEL V5
TXT DM SVW V5 E	S-VIEW EP software installation manual

Description of the operations to be performed

2 operations must be performed :

① install the software with the diskettes supplied

② prepare the software keys.

① Software installation

The software must be installed on an FTX terminal, IBM PC or compatible microcomputer with OS/2 operating system version 1.3, 2.1 or WARP3.0.

The complete installation of CAD PACK is achieved by installing the following software :

Software name	**Software reference**	**Number of diskettes**
XTEL CAD	TXT LF CAD V5	1
S-VIEW	TXT LF SVW V5	1

Installation procedure :

- stop all the X-TEL software running on the station,
- place one of the software diskettes in drive A,
- open an OS/2 session as a window or full screen,
- at the OS/2 prompt [C:\] enter the command :
  [C:\] **A:<Enter>**
  then [A:\] **INSTALL<Enter>**
- follow the software instructions,

- enter the following command to install the other software :
  [C:\] **A:<Enter>**
  then [A:\] **INSTALL <Enter>**, (or press the **<up arrow>** key then **<Enter>**), and follow the instructions for each one.

② Preparation of the software keys

Use the X-TEL "KEY MANAGER" function described in the X-TEL V52 software workshop manual (TXT DM XTEL V52E) section C-9 to process the software keys.

This kit contains a TXT P CAD V52 protection key, moreover you must have the working key for the station and its backup key. The protection key rights must be transferred to the working key for the station by :

- inserting the working key and the backup key in slots A and B of the station or of the key support,
- restoring the rights (Restore function) of the station backup key to its working key,
  Result : the working key becomes the original key for the station again and the backup key becomes a blank key,
- leaving the original key in the station,
- inserting the TXT P CAD V52 protection key, selecting the rights which it contains and transferring them (Increment function) to the original key,
  Result : the key of the update kit become blank and the original key contains the V52 rights
- save (Backup function) the original key to one of the blank keys,
  Result : the original key becomes the working key for the station and the blank key becomes the backup key,
- keep the backup key in a safe place.

All the software can now be started from this station.