

ASG-DataManager™ SESAM Interface

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Germany	00.800.9932.5536	Switzerland	00.800.9932.5536
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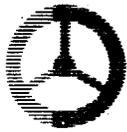
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PREFACE

This manual is one of a series describing DATAMANAGER, the dictionary driven data and information resource management system developed by MSP for use on Siemens 7.5xx and 7.7xx series with the operating system BS2000. This manual describes DATAMANAGER's facility for interfacing with the Siemens SESAM Database System, a facility which enables the user to include SESAM database data definitions in the data dictionary.

MSP provides Maintenance Service for MANAGER Products in IBM OS and DOS and Siemens BS2000 environments, where the release of OS or DOS or BS2000 in use is defined in Appendix 2 of the MANAGER Products Installation in OS Environments, Installation in DOS Environments or Installation in BS2000 Environments manual in the table column headed "Compatible Release Level". MSP's Maintenance Service for a particular OS, DOS or BS2000 environment (Compatible Release Level) will continue for a period equal to or greater than the IBM or Siemens support for that environment. Particular MANAGER Products selectable units interface with certain IBM and/or Siemens software products that run within OS and/or DOS and/or BS2000 environments and/or with other vendor software: the Compatible Release Levels at which these products interface with MANAGER Products and the support provided by MSP are also documented in Appendix 2 to the MANAGER Products Installation in OS Environments, Installation in DOS Environments and Installation in BS2000 Environments manuals. Throughout MSP's technical documentation, the terms OS and DOS respectively cover all those variants of OS and of DOS for which MSP has defined a Compatible Release Level.

The terminals currently supported by MANAGER Products are defined in Appendix 2 of the Installation manuals listed above.

This edition relates to Release 5.0.0 and subsequent releases of DATAMANAGER, and to Release 1.0.0 and subsequent releases of CONTROLMANAGER.

It is assumed that the reader has a knowledge of DATAMANAGER to the extent covered by the User's Guide, and is familiar with SESAM.

Chapter 1 of this manual summarizes the interface between DATAMANAGER and SESAM.

Chapter 2 discusses briefly the concept of SESAM databases and illustrates how they can be defined to DATAMANAGER.

Chapter 3 gives the specifications of the DATAMANAGER data definition statements for SESAM databases.

Chapter 4 describes the interface between SESAM and the DATAMANAGER Source Language Generation facility.

Chapter 5 specifies the correspondences that relate SESAM databases and processing views of the databases to DATAMANAGER data definitions.

The notation used in the specification of DATAMANAGER statements is described on page ix.

To assist you to make full use of this manual, the Contents table commencing on page vii is supported by a combined keyword index and usage index under the heading 'Usage Directory' at the back of the manual. The Usage Directory provides a means of accessing information by word occurrence or by function.

For the storage and job control requirements for installing and running DATAMANAGER with the SESAM Interface facility, reference should be made to the MANAGER Products Installation in BS2000 Environments manual.

A range of manuals is available covering the MANAGER Family of Products. Details of the manuals and other documentation available are published every six months (at the end of June and the end of December) in the MSP Documentation Bulletin, which is distributed to all Users.

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NOTATION FOR STATEMENT FORMATS

In all MANAGER Products manuals, the following notation is used in the specification of statement formats (for commands and member definition statements):

- all words printed in capitals are statement identifiers or keywords that must be present in full or truncated form in the circumstances stated in the statement specification. The extent beyond which a word must not be truncated (because it would become ambiguous) is indicated by underlining of the characters that must be retained. (But note that truncation limits shown are to avoid ambiguity within the Product concerned and between that Product and CONTROLMANAGER; they could be affected by the presence of other MANAGER Products, and particularly by the presence of User Defined Commands or User Defined Syntax.)
- all words printed in lower case are variables for which the user must substitute a value consistent with the specification
- material enclosed in square brackets [] is an option which may be included or omitted as required
- braces { } indicate that a choice must be made of one of the options enclosed within them
- three periods or full stops ... indicates that the material they immediately follow may be repeated. Where ... immediately follows a closing square bracket or brace, the material that can be repeated is bounded by that square bracket or brace and the corresponding opening square bracket or brace. If material can be repeated only a limited number of times the repetition permitted is stated in the specification.
- other punctuation marks and symbols must be coded as shown, subject to the implications of any square brackets or braces enclosing them; except that where a single quote, ' , is shown, a double quote, " , can alternatively be used, provided that the opening and closing quotes of any pair of quotes are the same character (single quote or double quote). Quote characters are used in syntax as delimiters, marking the beginning and end of a string of characters. Your Systems Administrator may have specified an additional character that may be used as an alternative delimiter character. You can find out if this has been done by entering the command:

QUERY STRING-DELIMITER

CHAPTER 1 DATAMANAGER SESAM INTERFACE FACILITIES

This manual is intended for users of the DATAMANAGER Siemens SESAM Database System Interface facility (selectable unit **DMR-DD11**). In a SESAM environment, the interface provides you with the following capabilities:

- the ability to define SESAM databases to DATAMANAGER, to hold the definitions in a data dictionary, and to process them using standard MANAGER Products commands
- the ability to define processing views of SESAM databases, to hold the definitions of these views in a dictionary, and to process them using MANAGER Products commands
- the ability to generate from the data dictionary, and to insert into the required source library, database conceptual schema, device assignment control cards, global structure statements, password definitions, secondary index specification statements, record buffer layouts and **format** buffer layouts, which are compiled into user programs and utilized by SESAM at program execution time.

These capabilities are provided by means of three additional (SESAM-specific) DATAMANAGER member types and a SESAM-specific version of the PROCESSES clause in the DATAMANAGER SYSTEM, PROGRAM, and MODULE member type data definitions. Two of the additional member types are required to define SESAM databases. These are:

- SESAM-STORAGE
- SESAM-TABLE.

SESAM-STORAGE and SESAM-TABLE members are used to define the physical content of a database.

The other additional member type, that is:

- SESAM-VIEW,

is used, together with the PROCESSES clause of the DATAMANAGER member types indicated above, to provide processing views of a SESAM database. The complete hierarchy of relevant member types in a SESAM environment is pictured in Figure 1.1.

The syntax of the DATAMANAGER data **definition** statements for the SESAM-specific member types is given in Chapter 3 together with the specifications for the PROCESSES clause of the SYSTEM, PROGRAM, and MODULE data definitions that are used to provide processing views of a SESAM database. An example illustrating the use of these data definition statements is given in Chapter 2 following a brief conceptual discussion of SESAM databases.

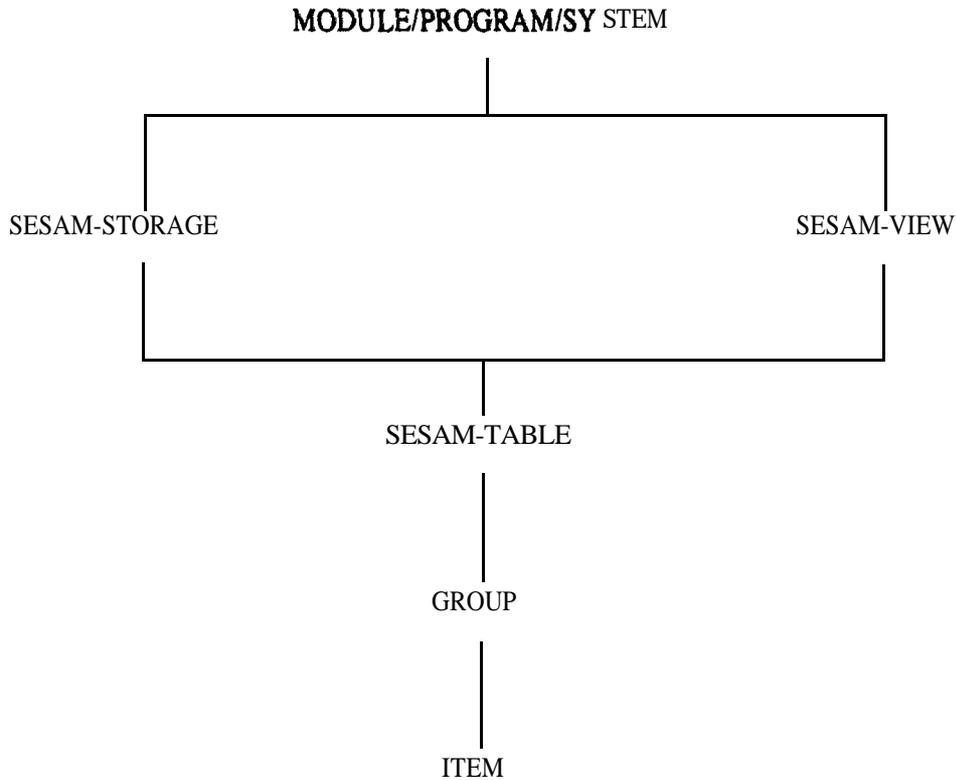


Figure 1. I Hierarchy Relating SESAM-Specific and Basic DATAMANAGER Member Types

The SESAM-specific dictionary members can be processed by DATAMANAGER in the same way as other dictionary members, using the member type selection keywords:

- **SESAM-STORAGES**
- **SESAM-TABLES**
- **SESAM-VIEWS**

that have been added to the list of member type keywords available in the following DATAMANAGER commands:

- BULK
- GLOSSARY
- LIST
- PERFORM
- REPORT
- WHICH.

These selection keywords are also available in certain Controller's private commands.

An additional set of SESAM-specific keywords is available for use in the GIVING clause of the GLOSSARY command, and in the attribute specification of a WHICH HAS/HAVE command. They are listed in the table at the end of this chapter. (The keywords marked with ‘*’ may only be used when the SPECIFIED keyword is used).

In addition, the following keywords are available for use with the VIA clause of ‘the DATAMANAGER interrogation commands. WHICH and WHAT:

- for SESAM-STORAGE members:

- **COMPOUND-KEY**
- **SECONDARY-KEYS**
- **KEY**

- for SESAM-TABLE members:

- KEY-VALUES-FOR
- SYMBOLIC-NAMES-FOR

- for SESAM-VIEW members:

- **SELECT-MEMBER**
- **SELECT-FROM**

- for SYSTEM, PROGRAM and MODULE members:

- PROCESS-SESAM

The keywords listed above are additional to those described in the **DATAMANAGER** User’s Guide.

VIA KEY refers to both the KEY relationship of a SESAM-STORAGE member and the ‘KEY-VALUES FOR’ relationship of a SESAM-TABLE.

The ability to generate SESAM databases and processing views from data dictionary members requires the use of the SESAM Source Generation facility (selectable unit **DMR-SL1** 1). The DATAMANAGER Source Language Generation manual describes the basic version of the facility which can output data descriptions in COBOL, **PL/I** or Assembler. and/or record layouts. The enhancements to the facility which enable it to generate SESAM-specific output are discussed in Chapter 4 of this manual.

Keywords Allowed for **SESAM** Member Types in the Command GLOSSARY FOR member-type **GIVING** clauses and in the attribute-specification on the **WHICH HAS/HAVE** command

SESAM-STORAGE	SESAM-TABLE	SESAM-VIEW
STORAGE-NAME IDENTIFIER PARCEL-SIZE RECORD-NUMBERING * SECONDARY-INDEX SI-DENSITY SI-REORGANIZATION SI-REORGAMSATION SI-SORTUNIT * ZD-FILE ZD-FILE-NAME * ZD-DEVICE * ZD-PUBLIC * ZD-PRDISC ZD-PRDISC-NUMBER ZD-VOLUME * ZD-PRIMARY ZD-PRIMARY-NUMBER ZD-SECONDARY ZD-DENSITY ZD-REORGANIZATION ZD-REORGANISATION * ORG-FILE ORG-FILE-NAME * ORG-DEVICE * ORG-PUBLIC * ORG-PRDISC ORG-PRDISC-NUMBER ORG-VOLUME ORG-WORK-AREA * ORG-PRIMARY ORG-PRIMARY -NUMBER ORG-SECONDARY ORG-DENSITY ORG-REORGANIZATION ORG-REORGANIS ATION * PASSWORD PASSWORD-OPTION CODE CATALOG-SIZE ATTRIBUTE-CATALOG CHECKPOINT AFTER-IMAGE * ACCESS-IS KEY * COMPOUND-KEY * SECONDARY-KEYS * CONTAINS	* KEY-VALUES * SYMBOLIC-NAME * CONTAINS	* SELECT * AND * WHERE

Note: The keywords marked with '**' may only be used when the SPECIFIED keyword is used in attribute-specification with a WHICH HAS/HAVE command.

CHAPTER 2 **SIEMENS SESAM DATABASES AND DATAMANAGER**

2.1 **SESAM CONCEITS AND DEFINITIONS**

The DATAMANAGER SESAM **Interface** facility enables you to define a SESAM database completely using the additional DATAMANAGER member types SESAM-STORAGE and SESAM-TABLE (see sections 3.2 and 3.3). The other additional member type, SESAM-VIEW (see section 3.4), can be used with the SESAM-specific version of the PROCESSES clause (see section 3.5) to define processing views of a SESAM database for particular user applications. The syntax for the additional member types and the PROCESSES clause appears in Chapter 3. Use of these member types to define a SESAM database is illustrated in the example in section 2.2. The remainder of this section contains a brief discussion of some of the SESAM terminology and data structures.

In SESAM terminology the organizational unit is the database. In the simplest case, the database is a relation or a two-dimensional table. Most users spread their data over more than one database and use them simultaneously. In those cases a **SESAM** database is a collection of more than one relation or two-dimensional table.

Bach table in turn is a collection of attributes or named items (and/or named groups of such items) that together characterize the entities represented by the table. An attribute or data item is the smallest nameable and accessible unit in a SESAM database.

Each **SESAM** database may consist of up to 26136 attributes, including multiple attributes. In every case a primary key must be specified. Bach key of a SESAM database is a single data item/attribute or a collection of data items/attributes and is defined by the database designer.

If more than one table is contained in a SESAM database, the primary key of that database must be shared by every table, that is, the primary key of every table has the same specific value. This is not maintained by the database system itself; it is the user's responsibility.

The database designer can define additional keys (secondary indices), each consisting of one or more data items/attributes, to provide additional access paths to the database.

Processing views of the SESAM database (that is data structures) are built up according to the principles of relational databases, during the run of a user program for a particular application. These views are achieved by relational operations, such as Join and Select.

For more information see the Siemens SESAM **BS2000** Datenbankverwaltung manual.

An example of a SESAM database illustrating the above definitions and the corresponding DATAMANAGER member definitions appears in section 2.2.

EXAMPLE OF A SESAM DATABASE DEFINED USING DATAMANAGER MEMBER TYPES

Consider the SESAM database shown in Figure 2.1. on the next page. The database, named COMPANY. consists of three relations. ARTICLE, CUSTOMER and EMPLOYEE.

This example is based on that which appears in the Siemens **BS2000** SESAM Datenbankverwaltung manual.

To describe this database using DATAMANAGER member types, you would define the following members:

- one SESAM-STORAGE member specifying the above relations and the environment of the database
- three SESAM-TABLE members.

Each SESAM-TABLE definition lists the data items and/or groups of data items that constitute the relation, and specifies for each data item SESAM-specific Symbolic Names. Data items and groups of data items are defined, respectively, as standard DATAMANAGER **ITEMs** and **GROUPs**.

To define the processing views which may be taken of the database from application programs requires view descriptions together with a SYSTEM, PROGRAM or MODULE definition that includes a PROCESSES clause. Processing views are used to build up the data structures required for an application. A DATAMANAGER SESAM-VIEW statement specifies, for not more than two given tables, which of its/their data items (and/or groups of data items) may be accessed in a processing view by a program. The PROCESSES clause of a SYSTEM, PROGRAM or MODULE dictionary member specifies the SESAM-VIEWS processed by the application. Any number of SESAM-VIEW members may be listed in a single PROCESSES clause.

The DATAMANAGER data definition statements given below illustrate the use of SESAM-specific DATAMANAGER members to describe the database pictured in Figure 2.1.

The required **ITEMs** and **GROUPs** are specified in the CONTAINS clause of the SESAM-VIEW. In this example, only **ITEMs** are specified. Data definitions are included below for these **ITEMs** in order to illustrate the DATAMANAGER syntax used (see sections 5.1 and 5.2) in generating, via the PRODUCE command, SESAM control cards. The DATAMANAGER ADD command is used in the example to enter members in the currently open dictionary.

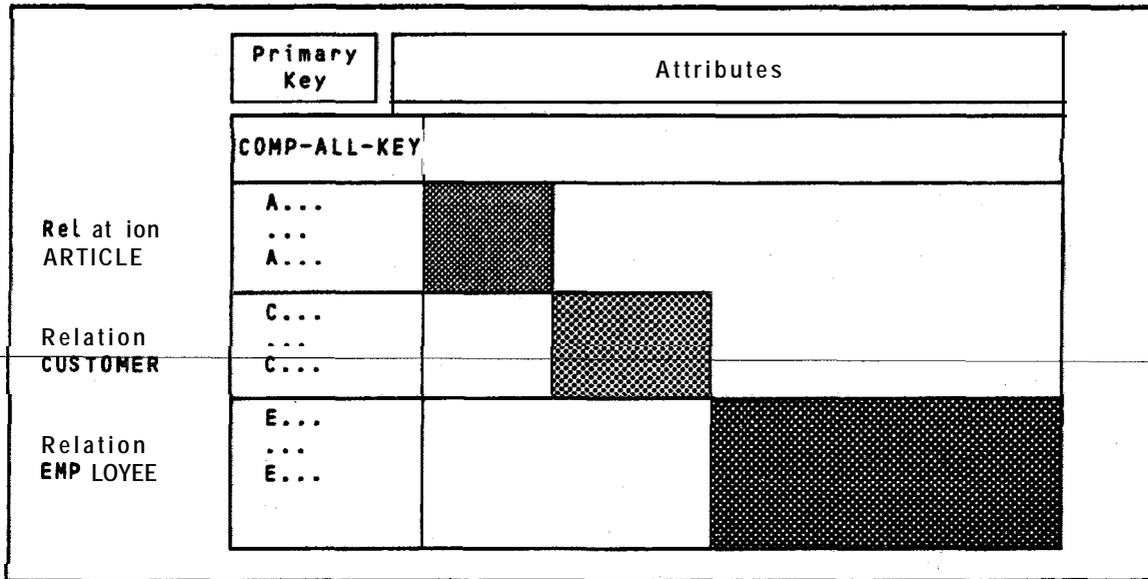


Figure 2.1 Example of SESAM Database for a Company

Sample DATAMANAGER **SESAM-specific** Member Definitions

```

ADD COMPANY;
SESAM-STORAGE
STORAGE-NAME COMPANY
IDENTIFIER 15
PARCEL-SIZE 4
RECORD-NUMBERING YES
SECONDARY-INDEXING DENSITY 80
REORGANIZATION 50
SORTUNIT 99999

ZD-FILE 'COMPANY.Z'
DEVICE PUBLIC
PRIMARY 6 3 SECONDARY 12
DENSITY 80
REORGANIZATION 50

```

```

ORG- FILE      'COMPANY.O'
              DEVICE      PUBLIC
              PRIMARY     30      SECONDARY     9
              UORK-AREA   300
              DENSITY     80
              REORGANIZATION 50
PASSWORD NO    CATALOG-SIZE  3
ATTRIBUTE-CATALOG 100
CHECKPOINT     NO
AFTER-IMAGE   YES
ACCESS-IS KEY      COMP-ALL-KEY
SECONDARY-KEYS COMP-ALL-KEY
CONTAINS      ARTICLE
              ,CUSTOMER
              ,EMPLOYEE
DESCRIPTION    'A SAMPLE SESAM DATABASE'
NOTE          'EXANPLE EXTRACTED FROM SIENENS BS2000'
              'SESAM V13.1 DATENBANKVERYALTUNG MANUAL'

```

```

;
ADD EMPLOYEE;
SESAH- TABLE
KEY-VALUES FOR COMP-ALL-KEY IS 'E'
SYMBOLIC-NAMES AKP FOR E-NAME
              ,ALM FOR E-FNAME
              ,AMK FOR E-BNAME
              ,ANH FOR E-STREET
              ,APF FOR E-CITY
              ,AQD FOR E-BDATE
              ,ARB FOR HEALTH-INSURANCE
              ,AR9 FOR DEPARTMENT
              ,AS7 FOR TAX
              ,AT5 FOR SALARY
CONTAINS E-NAME, E-FNAME, E-BNAME,
          E-STREET, E-CITY, E-BDATE, HEALTH-INSURANCE,
          DEPARTMENT, TAX, SALARY

```

```

;
ADD ARTICLE;
SESAH- TABLE
KEY-VALUES FOR COHP-ALL-KEY IS 'A'
SYMBOLIC-NAMES AA8 FOR ART-NAME
              ,AB6 FOR PRICE
              ,AC4 FOR STOCK
CONTAINS ART-NAME, PRICE, STOCK

```

```

;
ADD CUSTOMER;
SESAH- TABLE
KEY-VALUES FOR COMP-ALL-KEY IS 'C'
SYMBOLIC-NAMES AD2 FOR C-NAME
              ,AEZ FOR C-FNAME
              ,AFX FOR C-STREET
              ,AGV FOR C-CITY
              ,AHT FOR C-SINCE
              ,AJR FOR C-DISCOUNT
CONTAINS C-NAME, C-FNAME, C-STREET,
          C-CITY, C-SINCE, C-DISCOUNT

```

```

;
ADD COHP-ALL-KEY;
ITEM
HELD-AS CHARACTER 6

```

```

;
ADD E-NAME;
ITEM
HELD-AS CHARACTER VARIABLE 15

```

```

;
ADD E-FNAME;
ITEM
HELD-AS CHARACTER VARIABLE 15

```

```

;
ADD E-BNAME;
ITEM
HELD-AS CHARACTER VARIABLE 15

```

i

```

ADD E-STREET;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD E-CITY;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD E-BDATE;
ITEM
HELD-AS CHARACTER 8
;
ADD HEALTH-INSURANCE;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD DEPARTRENT;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD TAX;
ITEM
HELD-AS CHARACTER 3
;
ADD SALARY;
ITEM
HELD-AS NUMERIC-CHARACTER 6.2
;
ADD ART-NAME;
ITEM
HELD-AS CHARACTER VARIABLE 20
;
ADD PRICE;
ITEM
HELD-AS NUMERIC-CHARACTER 8.2
;
ADD STOCK;
ITEM
HELD-AS NUMERIC-CHARACTER 4
;
ADD C-NAME;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD C-FNAME;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD C-STREET;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD C-CITY;
ITEM
HELD-AS CHARACTER VARIABLE 15
;
ADD C-SINCE;
ITEM
HELD-AS CHARACTER 8
;
ADD C-DISCOUNT;
ITEM
HELD-AS NUMERIC-CHARACTER 5.2
;

```


CHAPTER 3 DATAMANAGER DATA DEFINITIONS FOR SIEMENS SESAM DATABASES

3.1 INTRODUCTION

To enable a Siemens SESAM environment to be **fully** reflected in a dictionary maintained by DATAMANAGER, the DATAMANAGER SESAM **Interface** provides:

- the following three additional SESAM-specific member types:
 - SESAM-STORAGE
 - SESAM-TABLE
 - SESAM-VIEW
- an extension to the basic DATAMANAGER MODULE, PROGRAM and SYSTEM data definition statements, to **reflect** the processing view of the database. See section 3.5.

As in the case of the basic DATAMANAGER member types, members of each of the above member types are held in a dictionary as data definitions. They can be entered into a dictionary using data definition statements each preceded by a DATAMANAGER INSERT, ADD, or REPLACE command, and subsequently modified by preceding with a MODIFY or ALTER command. On-line users with the CONTROLMANAGER Extended Interactive Facility (selectable unit **CMR-FE01**) installed can make use of the MSP Full Screen Editor's UPDATE capabilities to add, replace, or modify dictionary data definitions. Descriptions of these commands are available in the Infosystem. You can display them on the screen by typing HELP and the command-name in the Command Area.

Data definition statement specifications for the above SESAM-specific member types are given in sections 3.2 to 3.4. General rules that apply to the coding of **all** data definition statements, and a general discussion of DATAMANAGER data definitions appears in Chapter 2 and section 4.1 of the DATAMANAGER User's Guide, respectively.

THE SESAM-STORAGE DATA DEFINITION STATEMENT

The SESAM-STORAGE data definition statement allows you to define a SESAM database to DATAMANAGER.

Format

```

SESAM-STORAGE
[STORAGE-NAME storage-name]
[IDENTIFIER id-name]
[PARCEL-SIZE j 1]

[RECORD-NUMBERING {YES}]
                    {NO}
                    {NEW}

CSECONDARY-INDEXING [DENSITY k1]
                    { [REORGANISATION] [] }
                    (REORGANIZATION)
                    [SORTUNIT m]]

[ZD-FILE file-name]

[DEVICE {PUBLIC
        {PRDISC device VOLUME yyyyyy,}]]

[PRIMARY n [SECONDARY 0]]
[DENSITY k1]
{ [REORGANISATION] [] ]
{ REORGANIZATION!

[ORG-FILE file-name]

[DEVICE {PUBLIC
        {PRDISC device VOLUME yyyyyy}]]

[PRIMARY n [SECONDARY 0]]
[YORK-AREA p]
[DENSITY k]
{ [REORGANISATION] [] ]
{ REORGANIZATION

[PASSWORD {YES CODE 'string' } [CATALOG-SIZE q]]
          {NO

[ATTRIBUTE-CATALOG r]

[CHECKPOINT {YES}]
            {NO}

[AFTER-IMAGE {YES} 1]
              {NO}

[ACCESS-IS {KEY item-name
            {COMPOUND-KEY item-name [,item-name]...}}] 1

[SECONDARY-KEYS item-name [,item-name]...]

[CONTAINS table-name [,table-name]...]

[common clauses1]

{ ; }
{ . }

```

where:

storage-name is the name of a SESAM database. It can be up to 17 characters long, and must comply with the rules stated in the SESAM manuals.

id-name is the hexadecimal specification of the database identifier in the range **01** to **FE**. The default value is **01**.

- j** is an integer from 3 to 8 (with a default value of 3). specifying. as a power of two. the logical grouping of a number of **ORG** blocks
- k** is an integer from 30 to **100** (with a default value of **80**), specifying the percentage of a block to be filled in the Secondary Index File, the **ZD-FILE** or the **ORG-FILE**
- l** is an integer from 0 to 999 (with a default value of 50). specifying the percentage of external storage at which a reorganization should be recommended
- m** is an integer from 1 to 9999999 (with a default value of 99999). specifying, the maximum number of updating records

file-name is the name of a DATAMANAGER FILE member defining a Siemens **BS2000** data set.

device specifies the disk model on which the ZD-FILE **and/or** the ORG-FILE is stored. if a private device is specified. and is one of the following:

D458	D3460	D5801
D4580	D3465	D5802
D3440	D3468	D5804
D3450	D3470	D5881
D3455	D580	D5882

yyyyyy specifies the volume of the disk complying with the rules stated in the Siemens **BS2000** Command Language manual

- n** is an integer from 1 to 9999, specifying the space allocation requirement for the ZD or ORG file on the device, according to the rules stated in the Siemens **BS2000** Command Language manual
- o** is an integer from 1 to 9999, specifying the space allocation requirement for the Save file or Work file used in database management, according to the rules stated in the Siemens **BS2000** Command Language manual
- p** is an integer from **100** to 990 (with a default value of 300). specifying the size in blocks of a work area for multi-user operation
- string is a character string of eight printable characters
- q** is an integer from 3 to 999 (with a default value of 3). specifying the size of the password catalog, its index and the password attribute list
- r** is an integer from 20 to 999 (with a default value of **20**), specifying the number of ORG blocks needed for the attribute catalog

item-name is the name of a member that is an ITEM

table-name is the name of a member that is a SESAM-TABLE

common clauses are any of the following clauses. as defined in section 4.3 of the DATAMANAGER User's Guide. in any order:

- ACCESS-AUTHORITY	- FREQUENCY
- ADMINISTRATIVE-DATA	- NOTE
- ALIAS	- OBSOLETE-DATE
- CATALOGUE	- QUERY
- COMMENT	- SECURITY-CLASSIFICATION
- DESCRIPTION	- SEE
- EFFECTIVE-DATE	

Remarks

- 1 The SESAM-STORAGE data definition statement enables you to define a Siemens SESAM database to DATAMANAGER. In so doing, you must comply with the rules given in the Siemens BS2000 SESAM Datenbankverwaltung manual.
- 2 The STORAGE-NAME clause identifies the SESAM database name. If the name is specified, DATAMANAGER software will accept any printable character string. However, when the PRODUCE command of the Source Language Generation facility is used to generate SESAM control cards, the name will be checked against the rules stated in the SESAM Datenbankverwaltung manual. Storage-names with periods (fullstops) as separators are valid.
- 3 The IDENTIFIER clause assigns a unique identifier to the SESAM database. It designates the relevant logical tile in acknowledgment of SESAM CALL DML calls.
- 4 The PARCEL-SIZE clause defines the number of ORG-blocks, as a power of two, in a parcel.
- 5 The RECORD-NUMBERING clause specifies whether in a PRODUCE command, the database is to be created with or without record numbers. The parameter NEW means that the PRODUCE command can be used to re-number or to add numbers to records after the database has been created.
- 6 If the, SECONDARY-INDEXING clause is specified, the RECORD-NUMBERING clause is ignored (if present) when the PRODUCE command of the Source Language Generation facility is used to generate SESAM control cards.
- 7 The keywords DENSITY and REORGANIZATION available in the SECONDARY-INDEXING clause are as defined in the Siemens BS2000 Datenbankverwaltung manual.
- 8 The SORTUNIT clause specifies the maximum number of records for updating during the SESSIA utility routine for generating and managing secondary indices.
- 9 If no keywords are stated in the SECONDARY-INDEXING clause, default values are assumed when the PRODUCE command of the Source Language Generation facility is used to generate SESAM control cards.

- 10 The ZD-FILE clause defines the data set name valid for this particular database. Within it:
- the DEVICE sub-clause specifies whether the data set is allocated on a public or a private disk. If the DEVICE sub-clause is omitted, the keyword PUBLIC is assumed.
 - the PRIMARY and SECONDARY sub-clauses define the disk space allocation for this data set
 - the DENSITY sub-clause specifies the percentage of a block to be filled during a creation or updating routine
 - the REORGANIZATION sub-clause defines the percentage of the ZD-file to be stored externally, before reorganization is recommended.
- 11 The ORG-FILE clause defines the data set name valid for this particular database. Within it:
- the DEVICE, PRIMARY and SECONDARY, DENSITY, and **REORGANISATION/REORGANIZATION** sub-clauses operate on the ORG-FILE as described above for the ZD-FILE
 - the WORK-AREA sub-clause defines the size of a disk work area for multi-user operation.
- 12 The PASSWORD clause defines the password valid for the database.
- 13 The CATALOG-SIZE sub-clause specifies the size of the area for the password catalog, its index and the password restriction list.
- 14 The ATTRIBUTE-CATALOG clause specifies the number of blocks needed for the attribute catalog.
- 15 The CHECKPOINT clause specifies whether the database is to operate with checkpoint saving.
- 16 The AFTER-IMAGE clause specifies whether the database is to operate with logical data saving.
- 17 The ACCESS-IS clause specifies whether the database is accessed by a primary key or by a compound key. If the primary key is specified, by using the KEY sub-clause, one data item only is valid; if the key is specified as a COMPOUND-KEY, you must list all the data items which form the compound key.
- 18 The SECONDARY-KEYS clause provides additional direct access to the tables stored in the database when it contains more than one table. The items listed in the SECONDARY-KEYS clause are the keys of the tables listed in the CONTAINS clause.
- 19 The CONTAINS clause enables you to specify all of the relations (tables) within the database (storage). The maximum number of tables permitted is 256.

- 20 Common clauses, listed under Format above, can be present in any type of data definition statement: they are therefore defined separately, in section 4.3 of the DATAMANAGER User's Guide. Not more than one of each of these clauses can be declared. If a common clause has a subordinate clause or keyword, the subordinate clause identifier or subordinate keyword must not be truncated to an extent where it becomes ambiguous with any other clause identifier or other keyword available in the data definition syntax for this member type.
- 21 Clauses can be declared in any order, provided that subordinate clauses are not separated from the other elements of the clause of which they form a part.
- 22 A record containing the SESAM-STORAGE data definition statement can be inserted into the dictionary's source data set by a suitable command (see Chapter 3 of the DATAMANAGER User's Guide or Chapter 5 of the CONTROLMANAGER User's Guide) and an encoded record can subsequently be generated and inserted into the data entries data set. If, when the encoded record is generated, any member whose name appears in a SEE clause has no data entries record, DATAMANAGER creates a dummy data entries record for that member. The dummy record is created as a dummy ITEM.

Example

An example is given in section 2.2.

3.3

THE SESAM-TABLE DATA DEFINITION STATEMENT

The SESAM-TABLE data definition statement allows you to define a SESAM relation to DATAMANAGER

Format

```
SESAM-TABLE
[KEY-VALUES FOR item-name IS 'string'
  [, item-name IS 'string']... ]
[SYMBOLIC-NAMES sesam-name FOR item-name
  [, sesam-name FOR item-name]... ]
[CONTAINS content [, content]... ]
[common clauses]
{
  ;
}
```

where:

item-name is the name of a member that is an ITEM

string is a character string with up to 254 printable characters, to be added as a prefix to attribute names which are common to more than one table or relation. to identify the attribute as belonging to the table defined in DATAMANAGER.

sesam-name is the three-character name conforming to the SESAM rules for SESAM Symbolic Aspect Names

content declares an item or subordinate group, which is directly or indirectly **CONTAINED** in a SESAM-TABLE. in the format:

```
{(n)} {item-name Cversion} [KNOWN-AS Local-name]
  (group-name)
```

where:

item-name is the name of a member that is an ITEM

group-name is the name of a member that is a GROUP

version is an unsigned integer in the range 1 to 15.

indicating which version of the specified item is **relevant to** this definition. The version is in the HELD-AS form or in a defaulted form as stated in Remark 4. If version is omitted, a default value of 1 is assumed.

local-name is a name, conforming to the rules for member names stated in section 2.4 of the DATAMANAGER User's Guide. that can be used instead of the name or alias of the contained member, when SESAM source statements are generated from this data definition by the DATAMANAGER Source Language Generation facility. The local-name is not separately recorded in the data dictionary (that is, no dummy data entries record and no index record is created for local-name when the data definition in which it appears is encoded) so local-name cannot be interrogated and can be the same as another name, an alias or a catalog classification in the data dictionary. The local-name is the name by which the contained member is known only within the file defined by this data definition.

common clauses are any of the following clauses, as **defined** in section 4.3 of the DATAMANAGER User's Guide, in any order:

- ACCESS-AUTHORITY	- FREQUENCY
- ADMINISTRATIVE-DATA	- NOTE
- ALIAS	OBsolete-DATE
- CATA LOGUE	QUERY
- COMMENT	SECURITY-CLASSIFICATION
- DESCRIPTION	<u>SEE</u>
- EFFECTIVE-DATE	

Remarks

- 1 The SESAM-TABLE data definition statement permits you to **define** the content of a Siemens SESAM database to DATAMANAGER. In so doing, you must comply with the rules given in the Siemens **BS2000 SESAM** Datenbankverwaltung manual.
- 2 The KEY-VALUES clause is included when the database contains more than one relation, and an attribute defined as a secondary key has a name which is used in different contexts in the different relations. In the SESAM data structure, the commonly used attribute name is stored once in the attribute catalog and once in the secondary indices. This means that when the attribute is accessed via secondary indices, it would be selected from all the tables containing it instead of **just** the one being processed. To prevent this from happening, attributes declared as secondary keys are related to specific tables by means of the **prefixes** assigned to **them** in the KEY-VALUES clause of the DATAMANAGER definition.

For example, the attribute NAME is used in the CUSTOMER table and in the EMPLOYEE table.

```
KEY-VALUES FOR NAME IS 'C'
```

in the definition of the CUSTOMER SESAM-TABLE member **specifies** a prefix of C to be added to the attribute NAME when it is used in the CUSTOMER relation.

- 3 The SYMBOLIC-NAMES clause defines for specified data items their **three-**character attribute names. If this clause is omitted, then, when the PRODUCE command of the Source Language Generation facility is used to generate SESAM control cards, DATAMANAGER generates symbolic attribute names for the control cards, according to the rules of the SESAM Database System. The DATAMANAGER SESAM-TABLE member is not **updated** when this happens.
- 4 Any direct or indirect reference from the CONTAINS clause to an item is assumed to be the HELD-AS form of that item. If the item has no HELD-AS form, default assumptions are made as to the relevant form of the item, in the order DEFAULTED-AS, ENTERED-AS, REPORTED-AS. The form first encountered in this order is taken as the defaulted form, and version is applied within that form as stated under 'Format', above.
- 5 Common Clauses, listed under Format above, can be present in any type of **data** definition statement; they are therefore **defined** separately, in section 4.3 of the DATAMANAGER User's Guide. Not more than one of each of these clauses can be declared. If a common clause has a subordinate clause or keyword, the subordinate clause identifier or subordinate keyword must not be truncated to an extent where it becomes ambiguous with any other clause **identifier** or other keyword available in the data definition syntax for this member type.

- 6 Clauses can be declared in any order, provided that subordinate clauses are not separated from the **other** elements of the clause of which they form a **part**.
- 7 A record containing the SESAM-TABLE data definition statement can be inserted into **the** dictionary's source data set by a suitable command (see Chapter 3 of the DATAMANAGER User's Guide or Chapter 5 of the CONTROLMANAGER User's Guide) and an encoded record can subsequently be generated and inserted into the **data** entries data set. If, when the encoded record is generated, any member whose name appears in a **SEE clause** has no data entries record, DATAMANAGER creates a dummy data entries record for that member. The dummy record is created as a dummy ITEM.

Example

An example is given in section 2.2.

3.4

THE SESAM-VIEW DATA DEFINITION STATEMENT

The SESAM-VIEW data definition statement allows you to define a SESAM database processing view to DATAMANAGER

Format

SESAM-VIEW

```
[SELECT { ALL
MEMBERS { item } [, { item } ]... } FROM table-name
[AND { ALL
MEMBERS { item } [, { item } ]... } FROM table-name]
[WHERE { JOIN 'string'
SELECTION 'string'
JOIN 'string' SELECTION 'string' } ] ]
[common clauses]
{ ; }
```

where

item is the name of a member that is an ITEM

group is the name of a member which is a GROUP

table-name is the name of a member that is a SESAM-TABLE

string is a character string with up to 256 printable characters

common clauses are any of the following clauses, as defined in section 4.3 of the DATAMANAGER User's Guide, in any order:

- <u>ACCESS-AUTHORITY</u>	- <u>FREQUENCY</u>
- <u>ADMINISTRATIVE-DATA</u>	- <u>NOTE</u>
- <u>ALIAS</u>	- <u>OBSOLETE-DATE</u>
- <u>CATALOGUE</u>	- <u>QUERY</u>
- <u>COMMENT</u>	- <u>SECURITY-CLASSIFICATION</u>
- <u>DESCRIPTION</u>	- <u>SEE</u>
- <u>EFFECTIVE-DATE</u>	

Remarks

- 1 The SESAM-VIEW data definition statement permits you to define a processing view of a Siemens SESAM database to DATAMANAGER. In so doing, you must comply with the rules given in the Siemens Datenbankverwaltung manual.
- 2 The SELECT clause specifies the data items of that particular processing view of a database. The keyword ALL indicates that all data items of the referenced SESAM-TABLE are selected. The content sub-clause defines specific data items for selection from the referenced SESAM-TABLE. According to the restrictions of the SESAM Database System, a selection can only be made from two SESAM-TABLES.
- 3 The WHERE clause describes under which relational operations the selection was made. This clause is for documentation purposes only.
- 4 Common clauses, listed under Format above, can be present in any type of **data** definition statement; they are therefore defined separately, in section 4.3 of the DATAMANAGER User's Guide. Not more than one of each of these clauses can be declared. If a common clause has a subordinate clause or keyword, the subordinate clause identifier or subordinate keyword must not be truncated to an extent where it becomes ambiguous with any other clause identifier or other keyword available in the data definition syntax for this member type.
- 5 Clauses can be declared in any order, provided that subordinate clauses are not separated from the other elements of the clause of which they form a part.
- 6 A record containing the SESAM-TABLE data definition statement can be inserted into the **dictionary's** source data set by a suitable command (see Chapter 3 of the DATAMANAGER User's Guide or Chapter 5 of the CONTROLMANAGER User's Guide) and an encoded record can subsequently be generated and inserted into the data entries data set. If, when the encoded record is generated, any member whose name appears in a SEE clause has no data entries record, DATAMANAGER creates a dummy data entries record for that member. The dummy record is created as a dummy ITEM.

Example

An example is given in section 2.2

3.5

SYSTEM, PROGRAM AND MODULE DATA DEFINITION STATEMENTS FOR A SESAM ENVIRONMENT

3.5.1

Introduction

The data definition statements for DATAMANAGER SYSTEM, PROGRAM and MODULE members acting on conventional files are described in the DATAMANAGER User's Guide. For the SESAM Interface, a further clause, the PROCESSES clause, is included in the format of these statements, to specify which processing views of the database are relevant to the member. The PROCESSES clause is defined in section 3.5.2. For a full specification of the SYSTEM, PROGRAM and MODULE data definition statements in a SESAM environment, therefore, section 3.5.2 must be read in conjunction with section 4.2 of the DATAMANAGER User's Guide.

3.5.2

Specification of the PROCESSES Clause

Format

```
PROCESSES SESAM view-name TUPLES k  
[,view-name TUPLES k | . . .
```

where

view-name is the name of a member that is a SESAM-VIEW

k is an integer from 1 to 999, indicating the total number of records (lines) to be read from or written to any one database represented in the PROCESSES clause by a view-name.

Remarks

- 1 The PROCESSES clause is used to specify the names of the SESAM-VIEW members to which this SYSTEM, PROGRAM or MODULE relates.
- 2 A record containing the data definition of the SYSTEM, PROGRAM or MODULE that includes the PROCESSES clause can be inserted into the dictionary's source data set by a suitable command (see Chapter 3 of the DATAMANAGER User's Guide or Chapter 5 of the CONTROLMANAGER User's Guide) and an encoded record can subsequently be generated and inserted into the data entries data set. If, when the encoded record is generated, any member whose name appears in the data definition statement has no data entries record, DATAMANAGER creates a dummy data entries record for that member. The dummy record is created as a dummy SESAM-VIEW.

CHAPTER 4 SESAM SOURCE LANGUAGE GENERATION FROM DATAMANAGER

This chapter will be issued by Amendment List

CHAPTER 5 **SESAM-DATAMANAGER CORRESPONDENCE TABLES**

5.1 INTRODUCTION

This chapter contains tables that relate the SESAM **M** device assignment statements, Database definition statements, Storage Structure statements and Secondary **Index** definitions to the corresponding DATAMANAGER data definition statement specifications.

Correspondence Between SESAM Device Assignment, Database Definition, Storage Structure Statement and Creation of Secondary Indices, and the DATAMANAGER SESAM-STORAGE Statement	
SESAM Statements	DATAMANAGER Syntax
(Device Assignment JCL) FILE file-name, SPACE=(p,s) FILE file-name, DEVICE=device, VOLUME=vsn, SPACE=(p,s) FILE file-name, SPACE=(p,s) FILE file-name, DEVICE=device, VOLUME=vsn, SPACE=(p,s)	ZD-FILE file-name DEVICE PUBLIC PRIMARY n SECONDARY o ZD-FILE file-name DEVICE PRDISC device VOLUME yyyyyy PRIMARY n SECONDARY o ORC-FILE fi Le-name DEVICE PUBLIC PRIMARY n SECONDARY o ORG-FILE file-name DEVICE PRDISC device VOLUME YYYYYY PRIMARY n SECONDARY o
(Database Definition) database name database number primary key definition	STORAGE-NAME storage-name IDENTIFIER id-name { ACCESS-IS KEY item-name ACCESS-IS COMPOUND-KEY item-name, item-name.... }
(Password Assignment) codeword	PASSYORDYES CODE 'string'
(Storage Structure) KWK=size of password catalog PARZGR=parcel size SNR=YES SNR=NO record re-numbering is done by one of the facilities RENUM, UPDATE, REORG, of the SESBDA utility. SI=YES SI DENSITY=Secondary Indexing Density Factor SI REORG=Secondary Indexing Reorganization Criterion SI SE=Size of Sort Unit AK=size of Attribute Catalog CK=YES CK=NO	CATALOG-SIZE q PARCEL-SIZE j RECORD-NUMBERING YES RECORD-NUMBERING NO RECORD-NUMBERING NEU SECONDARY INDEXING DENSITY k REORGANIZATION l SORTUNIT m ATTRIBUTE-CATALOG r CHECKPOINT YES CHECKPOINTNO

5.2 (continued)

Correspondence Between SESAM Device Assignment, Conceptual Schema Definitions, Global Structure Statements and Creation of Secondary Indices, and the DATAMANAGER SESAM-STORAGE Statement	
SESAM Statements	DATAMANAGER Syntax
<p>LD=YES LD=NO</p> <p>ZDR DENSITY=ZD File Density Factor ZDR REORG=ZD File Reorganization Criterion</p> <p>ORG ARB=Size of Master DB Work Area ORG DENSITY=ORG File Density Factor ORG REORG=ORG File Reorganization Criterion</p>	<p>AFTER-IMAGE YES AFTER-IMAGE NO</p> <p>ZD-FILE file-name</p> <p>DENSITY k REORGANIZATION l</p> <p>ORG-FILE file-name</p> <p>WORK-AREA p DENSITY k REORGANIZATION l</p>
<p>(Creation of Secondary indices)</p> <p>Secondary Keys are indicated by including S in their definition as an attribute.</p>	<p>SECONDARY-KEYS item-name, item-name,...</p>

5.3

SESAM-TABLE CORRESPONDENCE TABLE

Correspondence Between SESAM Table and Attribute Descriptions and DATAMANAGER Data Definition Statements	
SESAM Statements	DATAMANAGER Syntax
(Table Description) symbolic attribute name verbal attribute name	SYMBOLIC-NAMES sesam-name FOR item-name
(Attribute Definition) ATTRIBUTNAHE attribute-name Data Type (Attribute Length) (Number of Decimal Places) (Left-justified) (Right-justified)	item-name ITEM HELD-AS item-type form (LEFT-JUSTIFIED) (RIGHT-JUSTIFIED)

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