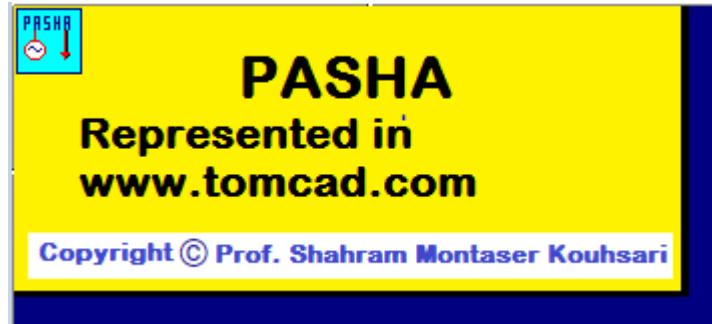




Chapter 9

The data base section (CAN NOT BE CHANGED IN POUYA)

The data base section of PASHA provides special facilities for the entry and storage of typical, or specific, plant data and allows these to be used in setting-up the system data for any number of networks. The data base section uses 'data entry boxes', like the edit section, and uses the table section 3 pages of the edit section to transfer data base entries to a network. Before describing how to use the database, it is useful to gain an insight into how it functions.

9.1 The organisation of the data base

The data base section is structured in a very similar way to the edit section and uses the same basic plant groupings, i.e. it has separate sections for lines, transformers, generators, AVRs, governors/turbines, induction motors, fuses, overcurrent and distance relays, circuit breakers and reliability. These sections are composed of sets of data entry pages, as described in chapter 4.

As in the edit section the pages are accessed from a main menu, which is shown in figure 9.1.

It should be noted, however, that this menu is skipped over when accessing the data base from the edit pages (see section 9.2) when the individual plant data bases can be entered directly. In this way a direct transfer to a plant data base can be accessed from its edit page.

9.1.1 SELECT TO CHANGE DATA BASE DIRECTORY

There is an option [SELECT TO CHANGE DATA BASE DIRECTORY] in the top of the option box of data base access menu. When this option is selected, the user is invited to change the directory by showing the tree of the sub-directories in the current directory. The menu, however, depends to the operating system you are using. The user can select his desired subdirectory where the PASHA data base files (designated with DBA*.92) are allocated. The highlighted bar can be located on the DBASE1.92 or DBASE2.92 or DBASE3.92 and any key may be pressed to choose the present subdirectory as the current directory. In Microsoft Windows environment, a familiar Windows folder selection will be appeared.

Whenever a workspace as described in chapter 5 is selected by the user, the data base directory will also be changed. To open a data base workspace, you may use the above option or click Open workspace from the File Menu on the menu bar. Whenever, a workspace is your current directory, the data base files also belongs to that workspace. The difference of using the above option or changing workspace, is that: when you change workspace all PASHA files including network files and UDEM files will be redirected to the new workspace for reading and writing. But when you use the above option, just data base files will be redirected to the selected folder.

You may also use change directory to go through computer networks. You may access other users data base files through a computer network including those that can be accessed through Internet.

9.1.2 The page structure

The data columns for each kind of plant, in the DATA BASE, are also very similar to those for the edit section, but with some differences, which are important. To illustrate this a sample database page is shown in figure 9.2. This shows the line database before any data has been entered.

On all data base pages the RAT-MVA (Rated MVA) entry is mandatory for every item of plant, because the p.u. values of impedances etc. are based on this rating. When a data base entry is introduced into a system via the edit section, the appropriate section of the database is 'read' automatically and the p.u. values are converted from the 'on rating' to the chosen 'system' base MVA. The RAT-MVA entries are also used to set the branch ratings, for the automatic overload checks. The KV rating RAT-KV is however optional. If V-NOM-KV (see 4.5.1) exists for a busbar, then it will be used in the base conversion otherwise the same KV rating will be assumed.

Each entry in the database is identified by a TYPE number, which is used to address that item, from the edit section (see 9.5). An additional DESCRIPTION column provides spaces for a short, conventional specification of that item of plant up to 8 keyboard characters.

USE THE CURSOR TO SELECT ONE OF THE OPTIONS, OR TYPE 'H' FOR HELP

PRESENT DIRECTORY : C:\PASHA

SELECT TO CHANGE DATA BASE DIRECTORY

DATA BASE OPTIONS:

LINE DATA BASE

TRANSFORMER DATA BASE 1,2

GENERATOR DATA BASE 1,2

AVR DATA BASE 1,2

GOVERNOR AND TURBINE DATA BASE

INDUCTION MOTOR DATA BASE 1,2

PROTECTION DATA BASE -RELAYS 1,2,3,4,5

PROTECTION DATA BASE -FUSES 1,2,3,4

PROTECTION DATA BASE -DISTANCE RELAYS

CIRCUIT BREAKER DATA BASE

RELIABILITY DATA BASE

RETURN TO MAIN OPTIONS

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Figure 9.1

LINE DATA BASE PAGE 1 OF 1

TYPE	RESIS-PU/KM	REAC-PU/KM	SUS-PU/KM	ZSQR-PU/KM	ZSQX-PU/KM	RAT-MVA	RAT-KV	PASSWORD	COMMENT
OPTIONS: REDISPLAY HELP RETURN									

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Figure 9.2

A further obvious difference between the edit section and DB section is that no plant needs to be drawn before an entry can be made to the database. The entry of data to the DB does not depend, in any way, on a network diagram.

9.1.3 The file structure

All completed plant data entries in the database are stored so that they can be recovered whenever required for use in a network

Two unformatted (binary) files (DBASE1.92, DBASE2.92 as described in chapter 2) are used for this purpose, arranged in a 'father-son' update scheme. A further data base file (DBASE3.92) is used to have the trace of PASHA database files version. As described in chapter 2 the files may also be placed in many folders. In this way many groups of plants data may exist in computer subdirectory structure. They may be accessed using [SELECT TO CHANGE DATA BASE DIRECTORY] as described in section 9.1.1.

When a new entry is made to the database and the DB section is exited, the database files are updated. The updating method is the same as that used for network files, except that in this case the process of filing is automatic and there is no questionnaire. For further details, see 5.1.

In order to protect the entries in the database an optional password is provided. This is entered upon initial entry to the DB section, and remains the same throughout the particular session with PASHA. In order to change or delete an entry the password must be specified correctly, otherwise the entry remains unchanged. Further details of the use of passwords are given in 9.2.1.

9.1.4 Copy facilities

Pressing key <C> in any data base field will store that field in a temporary memory. You may store a field or a number of fields from databases by pressing <C> on the desired field. In order to copy the selected fields in a new directory it is just required to change the data base directory to the desired directory or workspace by using the option: SELECT TO CHANGE DATA BASE DIRECTORY as described in section 9.1.1. This will paste all the fields selected to the data base files in the new directory or workspace.

In this way, you may collect a number of fields to your new database folder created, from the already existing fields.

9.1.5 The interface to the edit section

The data base files can be read directly from the Edit section of PASHA using section 3 of the edit pages. Whenever a type code is entered on one of these pages, the database files are searched to find this code, and the required data is read, converted and automatically entered on sections 1 and 2 of the required data pages. This data movement is discussed in section 9.3.

It is also possible to transfer to and from the DB section from the edit section. This transfer is from an edit page to the corresponding data base page, and vice-versa. It is accomplished by selecting the [REDISPLAY] option, in either section, by pressing the <T> key or clicking over the option on green menu box. Figure 9.3 shows the interfaces available in a diagrammatic form.

9.2 Accessing the data base for data entry

The data base section can be entered in two ways, by either:

- (i) selecting the [ACCESS THE DATA BASE] option in the main PASHA menu.
- (ii) selecting the [REDISPLAY] option on an edit page using the <T> key or clicking on the corresponding green menu box.

The first of these can always be used whether a network exists or not, whereas access from the edit section requires that a network diagram exists.

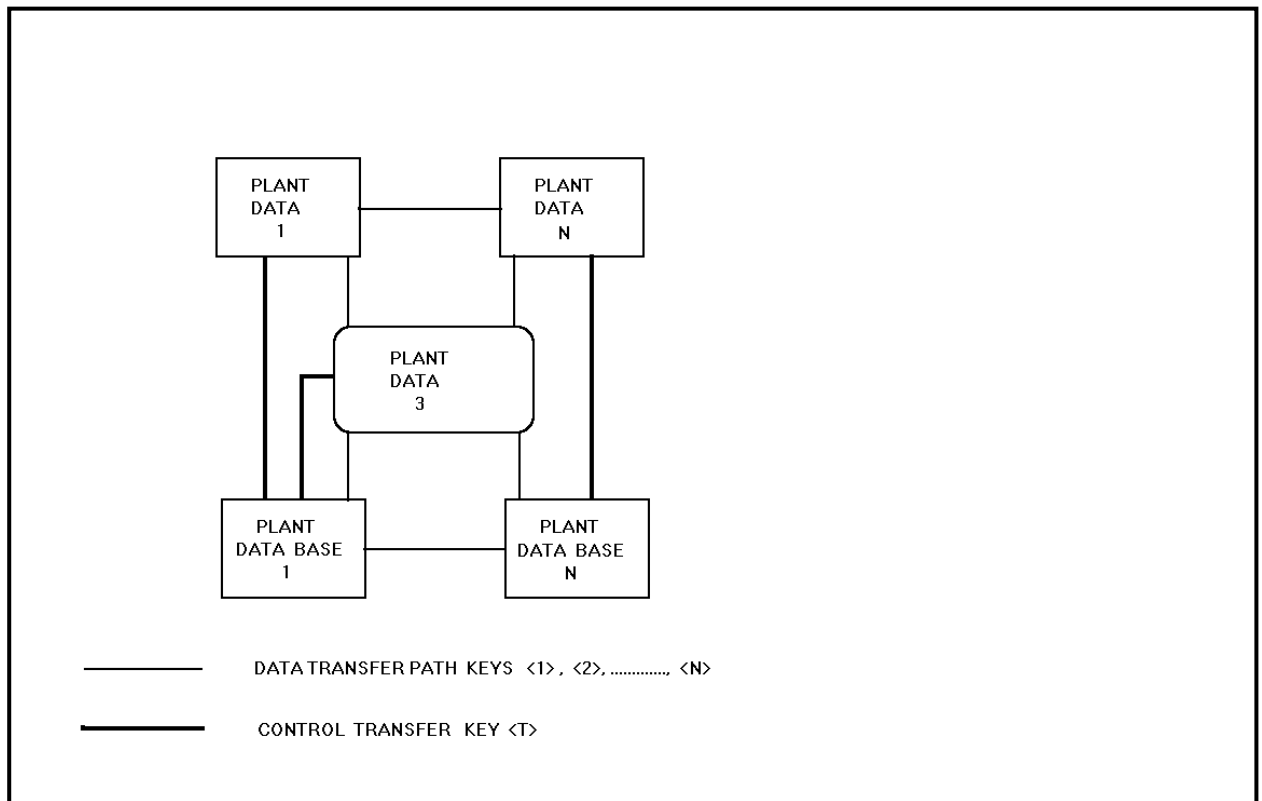


Figure 9.3

LINE DATA BASE								PAGE 1 OF 2	
TYPE	RESIS-PU/KM	REAC-PU/KM	SUS-PU/KM	ZSQR-PU/KM	ZSQX-PU/KM	RAT-MVA	RAT-KV	PASSWORD	COMMENT
1		0.00010			0.00030	250.00	400.00		
4021	0.00027	0.00269	0.00041	0.00235	0.00726	1330.00	400.00		TIRAN
10161	0.05574	0.00385	0.00213	0.16722	0.01155	1.03	6.60		RGH51R/6
16161	0.04575	0.00473	0.00174	0.13725	0.01419	1.34	6.60		RGH51R/6
25161	0.04762	0.00722	0.00125	0.14286	0.02165	2.18	6.60		RGH51R/6
35161	0.03344	0.00669	0.00135	0.10031	0.02006	2.13	6.60		RGH51R/6
50161	0.02926	0.00767	0.00123	0.08778	0.02300	2.55	6.60		RGH51R/6
70161	0.02533	0.00908	0.00116	0.07600	0.02724	3.19	6.60		RGH51R/6
95161	0.02231	0.01053	0.00106	0.06692	0.03159	3.89	6.60		RGH51R/6
120161	0.02032	0.01176	0.00101	0.06095	0.03527	4.49	6.60		RGH51R/6
150161	0.01880	0.01285	0.00097	0.05641	0.03854	5.09	6.60		RGH51R/6
185161	0.01727	0.01432	0.00092	0.05180	0.04296	5.83	6.60		RGH51R/6
240161	0.01559	0.01606	0.00086	0.04677	0.04818	6.86	6.60		RGH51R/6
300161	0.01453	0.01780	0.00081	0.04358	0.05339	7.91	6.60		RGH51R/6
400161	0.01344	0.01994	0.00078	0.04031	0.05983	9.14	6.60		RGH51R/6
500161	0.01266	0.02197	0.00075	0.03797	0.06591	10.40	6.60		RGH51R/6
600		0.07870			0.23600	6.86	6.60		REACTOR
120632	0.00218	0.00172	0.00368	0.00653	0.00516	44.08	63.00		RGH51R/9
120631	0.00233	0.00239	0.00364	0.00700	0.00717	44.52	63.00		RGH51R/9
150632	0.00201	0.00187	0.00352	0.00603	0.00562	49.54	63.00		RGH51R/9
150631	0.00217	0.00272	0.00349	0.00650	0.00786	49.98	63.00		RGH51R/9
185632	0.00183	0.00206	0.00332	0.00549	0.00617	56.30	63.00		RGH51R/9
185631	0.00200	0.00288	0.00330	0.00599	0.00865	56.63	63.00		RGH51R/9
240632	0.00165	0.00227	0.00321	0.00495	0.00680	66.13	63.00		RGH51R/9
240631	0.00182	0.00320	0.00322	0.00547	0.00960	65.80	63.00		RGH51R/9
300632	0.00152	0.00247	0.00300	0.00454	0.00742	74.96	63.00		RGH51R/9
300631	0.00172	0.00348	0.00300	0.00515	0.01040	74.96	63.00		RGH51R/9
4001632	0.00138	0.00274	0.00291	0.00414	0.00822	85.66	63.00		RGH51R/9
400631	0.00160	0.00395	0.00293	0.00480	0.01185	85.22	63.00		RGH51R/9
500632	0.00127	0.00299	0.00285	0.00381	0.00896	96.35	63.00		RGH51R/9

OPTIONS: PLEASE ENTER YOUR DATA BASE PASSWORD: |

REDISPLAY

NEXT PAGE

HELP

RETURN

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Figure 9.4

9.2.1 Data base passwords

When the user first accesses the database, he is prompted to enter a database password. Figure 9.4 shows a password of 'USERS' being entered, the password can be up to 8 characters in length. Once this password has been typed, all data base entries that are made during this particular session with PASHA will be stored with this password associated with them, except when you change the directory of the data base. Any previous entries made using the same password can be modified without the need to repeatedly enter the password.

The data base password may be left blank but this is certainly not advisable in multi-user situations, where people may inadvertently change their colleagues' base entries.

Identification of each user's data can be made easier by agreeing to a convention on the data TYPES used e.g. user A enters types in the range 0-99, user B in the range 100-199 etc., with each user sticking to a single 'memorable' password of his choice. All such users can 'read' any of the data base entries i.e. can specify any of the stored TYPES in their networks. However, it is a better process that each user places a database of his own in a subdirectory. In this regard a standard numbering system of data bases type may be constructed and to be used in each company.

9.2.2 Entering plant data

Figure 9.2 shows a typical data base page, and shows the data entry 'box' which is drawn around any existing entries, which in this case, is empty as no entries have been made.

A new entry is initiated by positioning the cursor in the TYPE column, just below the 'box' and pressing any key. When the alphanumeric cursor appears, the required data can be input in free format i.e. numbers are keyed-in, in the sequence indicated by the page column headings (TYPE, rating etc.), with each number separated from the next by one or more spaces. The procedure for entering a string of numbers is exactly the same as that in the edit section. For more details see section 4.4.

When an entry is made checks are carried out to ensure that TYPE numbers are not duplicated, within each kind of plant and, also, to ensure that sufficient data have been entered to permit a satisfactory modeling of the plant in PASHA calculations. If these checks fail appropriate error messages are displayed.

Three error messages are possible:

(i) A syntax error, when an indeterminate number has been entered. Figure 9.5 shows this message being displayed as a result of entering a letter rather than a number.

(ii) A duplicate type message is displayed when a TYPE code is entered that already exists; each type code must be unique for the same data page and in the same directory of databases. Figure 9.6 shows an example of this.

LINE DATA BASE
PAGE 2 OF 2

TYPE	RESIS-PU/KM	REAC-PU/KM	SUS-PU/KM	ZSQR-PU/KM	ZSQX-PU/KM	RAT-MVA	RAT-KV	PASSWORD	COMMENT
500631	0.00150	0.00433	0.00287	0.00450	0.01300	95.59	63.00		RGH51R/9
630632	0.00118	0.00326	0.00262	0.00353	0.00977	109.56	63.00		RGH51R/9
630631	0.00143	0.00477	0.00265	0.00430	0.01430	108.14	63.00		RGH51R/9
2		-1.44500				17.96	30.50		SVC 2ND
3		-1.21650				44.90	30.50		SVC 3TH
4		- .98600				11.30	30.50		SVC 4TH
5		-1.12600				14.32	30.50		SVC 5TH
54		1.85200				100.00	30.50		SVC REAC
14	0.00100	0.00100	0.00100	0.00300	0.00300	1.00	0.40		
250	0.43400	0.04550		1.30200	0.13650	0.09	0.38		NYX PVC
350	0.38400	0.05370		1.15200	0.16110	0.11	0.38		NYX PVC
500	0.33400	0.06250		1.00200	0.18750	0.13	0.38		NYX PVC
700	0.28500	0.07400		0.85500	0.22200	0.16	0.38		NYX PVC
950	0.24700	0.08930		0.74100	0.26790	0.20	0.38		NYX PVC
1200	0.22300	0.09890		0.66900	0.29670	0.22	0.38		NYX PVC
1500	0.20330	0.11160		0.60990	0.33480	0.24	0.38		NYX PVC
1850	0.18500	0.12640		0.55500	0.37920	0.28	0.38		NYX PVC
2400	0.16550	0.14650		0.49650	0.43950	0.33	0.38		NYX PVC
3000	0.15210	0.16900		0.45630	0.50700	0.38	0.38		NYX PVC
800631	0.00141	0.00557	0.00248	0.00283	0.01115	129.47	63.00		RGH51R/3
63	0.00396	0.00550	0.00021	0.00792	0.01100	120.00	63.00		AIRLIN63
21	0.00377	0.37200				17.96	30.50		SVC 2ND
31	0.00147	0.13850				44.90	30.50		SVC 3TH
41	0.00200	0.06160				11.30	30.50		SVC 4TH
51	0.00110	0.04670				14.32	30.50		SVC 5TH
71	0.00077	0.02385				12.68	30.50		SVC 7TH
325		-1.00000				0.33	0.40		CAP BANK

2 A

OPTIONS:

REDISPLAY

PREVIOUS PAGE

HELP

RETURN

SYNTAX ERROR

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Figure 9.5

LINE DATA BASE
PAGE 2 OF 2

TYPE	RESIS-PU/KM	REAC-PU/KM	SUS-PU/KM	ZSQR-PU/KM	ZSQX-PU/KM	RAT-MVA	RAT-KV	PASSWORD	COMMENT
500631	0.00150	0.00433	0.00287	0.00450	0.01300	95.59	63.00		RGH51R/9
630632	0.00118	0.00326	0.00262	0.00353	0.00977	109.56	63.00		RGH51R/9
630631	0.00143	0.00477	0.00265	0.00430	0.01430	108.14	63.00		RGH51R/9
2		-1.44500				17.96	30.50		SVC 2ND
3		-1.21650				44.90	30.50		SVC 3TH
4		- .98600				11.30	30.50		SVC 4TH
5		-1.12600				14.32	30.50		SVC 5TH
54		1.85200				100.00	30.50		SVC REAC
14	0.00100	0.00100	0.00100	0.00300	0.00300	1.00	0.40		
250	0.43400	0.04550		1.30200	0.13650	0.09	0.38		NYX PVC
350	0.38400	0.05370		1.15200	0.16110	0.11	0.38		NYX PVC
500	0.33400	0.06250		1.00200	0.18750	0.13	0.38		NYX PVC
700	0.28500	0.07400		0.85500	0.22200	0.16	0.38		NYX PVC
950	0.24700	0.08930		0.74100	0.26790	0.20	0.38		NYX PVC
1200	0.22300	0.09890		0.66900	0.29670	0.22	0.38		NYX PVC
1500	0.20330	0.11160		0.60990	0.33480	0.24	0.38		NYX PVC
1850	0.18500	0.12640		0.55500	0.37920	0.28	0.38		NYX PVC
2400	0.16550	0.14650		0.49650	0.43950	0.33	0.38		NYX PVC
3000	0.15210	0.16900		0.45630	0.50700	0.38	0.38		NYX PVC
800631	0.00141	0.00557	0.00248	0.00283	0.01115	129.47	63.00		RGH51R/3
63	0.00396	0.00550	0.00021	0.00792	0.01100	120.00	63.00		AIRLIN63
21	0.00377	0.37200				17.96	30.50		SVC 2ND
31	0.00147	0.13850				44.90	30.50		SVC 3TH
41	0.00200	0.06160				11.30	30.50		SVC 4TH
51	0.00110	0.04670				14.32	30.50		SVC 5TH
71	0.00077	0.02385				12.68	30.50		SVC 7TH
325		-1.00000				0.33	0.40		CAP BANK

50

THIS TYPE ALREADY EXISTS

OPTIONS:

REDISPLAY

PREVIOUS PAGE

HELP

RETURN

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Figure 9.6

(iii) An essential data message is displayed when insufficient data is entered for a particular plant type. The amount of data required varies with plant types, and so different messages are displayed for each. Figure 9.7 shows an example of this.

If an entry is rejected because of SYNTAX, DUPLICATE TYPE or ESSENTIAL DATA omission errors, the whole string must be input again, or <CR> pressed to cancel the entry.

9.2.3 Deleting data base entries

Any redundant data base entries can be deleted by simply entering a zero in the TYPE column, provided this entry was originally made by the user who is now attempting to delete it, or by somebody else, who knows the password of the originator of the entry. It is in the latter case only, that the password will need to be entered explicitly in the PASSWORD 'box'.

Figure 9.8 shows an example of deleting an entry by entering a <0>. The user has then entered a password of 'AHMAD', which is incorrect. The user gets three attempts to get the password right, after this the data base entry is retained automatically.

There is a master password that overrides the user password and allows deletion, even if the user password has been forgotten. Your computer manager will know this master password.

9.2.4 Changing data base entries

Any redundant data base entries can be changed by selecting the column of that number is selected, provided this entry was originally made by the user who is now attempting to delete it, or by somebody else, who knows the password of the originator of the entry. It is in the latter case only, that the password will need to be entered explicitly in the PASSWORD 'box' on request.

When a particular type of the data base entries has been changed, the user is responsible for entering the TYPE of this entry in the previously filed networks, if these networks were using this particular type of the data base. However, the program takes care of the network diagram, which already exists.

LINE DATA BASE
PAGE 2 OF 2

TYPE	RESIS-PU/KM	REAC-PU/KM	SUS-PU/KM	ZSQR-PU/KM	ZSQX-PU/KM	RAT-MVA	RAT-KV	PASSWORD	COMMENT
500631	0.00150	0.00433	0.00287	0.00450	0.01300	95.59	63.00		RGH51R/9
630632	0.00118	0.00326	0.00262	0.00353	0.00977	109.56	63.00		RGH51R/9
630631	0.00143	0.00477	0.00265	0.00430	0.01430	108.14	63.00		RGH51R/9
2		-1.44500				17.96	30.50		SVC 2ND
3		-1.21650				44.90	30.50		SVC 3TH
4		-.98600				11.30	30.50		SVC 4TH
5		-1.12600				14.32	30.50		SVC 5TH
54		1.85200			5.55600	100.00	30.50		SVC REAC
14	0.00100	0.00100	0.00100	0.00300	0.00300	1.00	0.40		
250	0.43400	0.04550		1.30200	0.13650	0.09	0.38		NYX PVC
350	0.38400	0.05370		1.15200	0.16110	0.11	0.38		NYX PVC
500	0.33400	0.06250		1.00200	0.18750	0.13	0.38		NYX PVC
700	0.28500	0.07400		0.85500	0.22200	0.16	0.38		NYX PVC
950	0.24700	0.08930		0.74100	0.26790	0.20	0.38		NYX PVC
1200	0.22300	0.09890		0.66900	0.29670	0.22	0.38		NYX PVC
1500	0.20330	0.11160		0.60990	0.33480	0.24	0.38		NYX PVC
1850	0.18500	0.12640		0.55500	0.37920	0.28	0.38		NYX PVC
2400	0.16550	0.14650		0.49650	0.43950	0.33	0.38		NYX PVC
3000	0.15210	0.16900		0.45630	0.50700	0.38	0.38		NYX PVC
800631	0.00141	0.00557	0.00248	0.00283	0.01115	129.47	63.00		RGH51R/3
63	0.00396	0.00550	0.00021	0.00792	0.01100	120.00	63.00		ATRLING63
21	0.00377	0.37200				17.96	30.50		SVC 2ND
31	0.00147	0.13850				44.90	30.50		SVC 3TH
41	0.00200	0.06160				11.30	30.50		SVC 4TH
51	0.00110	0.04670				14.32	30.50		SVC 5TH
71	0.00077	0.02385				12.68	30.50		SVC 7TH
325		-1.00000				0.33	0.40		CAP BANK

234 1 2 3 4
** MINIMUM DATA REQUIRED: REACTANCE AND RATING-MVA **

OPTIONS:
 REDISPLAY

 PREVIOUS PAGE
 HELP
 RETURN

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Figure 9.7

GENERATOR DATA BASE 1												PAGE 1 OF 2
TYPE	RAT-KV	RAT-MVA	RES-PU	REAC-PU	ZSQR-PU	ZSQX-PU	INERT-C	DAMPFAC	POTIERX	SATFAC	PASSWORD	COMMENT
4001	20.000	400.000	0.00405	2.07000	0.00405	0.11400	3.3200					AA
101	13.800	101.000	0.00150	1.84000	0.00150	0.08500	6.6000					BB
150	13.800	150.000	0.00236	1.79000	0.00236	0.11000	2.2000					CC
400	20.000	400.000	0.00330	2.00000	0.00330	0.13000	3.6200					DD
250	15.750	250.000	0.00242	2.01000	0.00242	0.09000	3.0000					EE
69	15.000	69.000	0.00935	1.17500	0.00625	0.12500	1.7000					FF
159	10.500	159.200	0.00081	2.25000	0.00081	0.09500	2.6000					GG
152	10.500	150.000	0.00102	1.66000	0.00102	0.09500	2.2000					HH
177	15.000	176.500	0.00100	1.76000	0.00100	0.09000	2.5400					LALAL
517	21.000	517.600	0.00149	2.29600	0.00149	0.13300	4.2400					MONT
371	20.000	371.000	0.00269	1.78000	0.00269	0.09200	2.9540					TO
312	19.000	312.500	0.00120	1.94000	0.00120	0.10000	2.4000					TOM
445	20.000	445.200	0.00267	1.83000	0.00267	0.18000	3.5700					TOM
188	15.000	187.500	0.00108	1.94500	0.00108	0.10000	1.8000					TOM
287	18.000	287.500	0.00240	1.02000	0.00240	0.10000	3.7000	2.0000				TOM
72	13.800	72.222	0.00523	1.00000	0.00523	0.10000	2.8000					TOM
45	13.800	45.800	0.00204	0.99380	0.00204	0.03900	2.8000					TOM
22	10.600	22.000	0.00372	1.30000	0.00372	0.12000	2.5000					TOM
80	10.500	80.000	0.00109	1.75000	0.00109	0.07000	1.5000					TOM
148	13.800	147.800	0.00130	2.26000	0.00130	0.09500	5.5000					TOM
44	11.000	43.950	0.00218	2.55000	0.00218	0.10200	1.8000					TOM
102	11.000	102.353	0.00110	1.95000	0.00110	0.10000	3.2000					TOM
30	11.500	30.313	0.00229	2.16000	0.00229	0.10000	2.4000					TOM
32	10.500	32.000	0.00165	2.10000	0.00165	0.10000	2.6000					TOM
37	11.000	37.218	0.00175	2.64000	0.00175	0.08500	3.1000					TOM
38	11.000	37.218	0.00181	2.64000	0.00181	0.08500	2.9000					TOM
107	63.000	130.000	0.00925	1.32000	0.00625	0.12500	5.0000					TOM
35	63.000	30.000	0.00925	1.32000	0.00625	0.12500	5.0000					TOM
147	13.800	147.800	0.00130	2.26000	0.00130	0.09500	2.4000					TOM
801	10.500	80.000	0.00230	1.57000	0.00230	0.07000	2.5000					TOM

OPTIONS:

REDISPLAY

NEXT PAGE

HELP

RETURN

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Figure 9.8

9.2.5 Data base menu options

The following options are available to all the data base pages, however two of them will only be displayed when more than one data base page exists on a particular table section. These are the [NEXT PAGE] and [PREVIOUS PAGE] options, which only appear when there is a next and/or previous page in the data base page set.

[HELP]

Displays the on-line HELP information on the terminal screen.

[NEXT PAGE]

When the data base entries exceed the number which can be accommodated on the screen they are subdivided into a number of pages. The NEXT PAGE option is displayed only when a further page of data exists, and is blocked when the last page is reached. The standard selection of this option (using the graphic cursor and <SP> or a click displays the page immediately following the current one. If, however, a digit is typed (instead of the space bar), then that number of pages are skipped. PAGE UP and PAGE DOWN keys on your keyboard also work.

[PREVIOUS PAGE]

As with [NEXT PAGE], but paging is backwards.

[REDISPLAY]

This option can be used to update the current display of a page of data after editing or entering data on that page, or to transfer from one table section to another and also from any data base page to the associated edit page. Position the cursor on REDISPLAY and press:

- <1> to transfer from the DATA 2 to the DATA 1 page.
- <2> to transfer from the DATA 1 to the DATA 2 page.
- <F> to transfer to the next data table in the sequence: line, transformer, generator, AVR, governor, induction motor, line, etc.
- to transfer to the previous group of data i.e. in reverse order to <F>
- <T> to transfer from the database pages to the corresponding plant group data 3 page in the edit section, and vice-versa.

ANY KEY OTHER THAN THOSE ABOVE to display the current page.

NOTE : When a DATA 2, section does not exist, pressing <2> redisplay the current page. If there are more than two pages for a database as for relays, you can type the number of your requested page to go to that page.

You may also use the green menu boxes, which provides all the above functions in a tabular form.

[RETURN]

When this option is selected the user returns to the main DB menu. The data base entries are stored automatically when [RETURN] is selected in conjunction with key <X>. Key procedure is useful where machine failures are a problem, as well as for a quick exit from the data base section.

9.3 The data base pages

This section describes each data base page that can be found in the DB section. Some sample data base entries have been included for each page.

The information in this section is reproduced from the on-line help file.

The corresponding edit pages can be found in section 4.5.

9.3.1 Line data base

This data base page is shown in figure 9.9.

TYPE : An integer number identifying each data base entry.

RESIST-PU/KM : Positive sequence resistance of circuit in pu, on rating.

REAC-PU/KM : Positive sequence reactance of circuit in pu, on rating.

SUS-PU/KM : Positive sequence shunt susceptance of line circuit in pu, on rating.

ZSQR-PU/KM : Zero sequence resistance of circuit in pu, on rating.

ZSQX-PU/KM : Zero sequence reactance of circuit in pu, on rating.

RAT-MVA : The line or cable rating in MVA.

RAT-KV : The line or cable voltage in Kv.

PASSWORD : Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

NOTES:

- 1 Per-unit values must be based on the line MVA rating.
- 2 Negative sequence values are assumed to be equal to the positive sequence values.
- 3 Zero sequence values are needed in earth fault calculations.
- 4 The P.U. values of impedances etc. must be based on RAT-KV rating. The P.U. values are converted from this rating to the busbar NOM-KV (see chapter 4) rating, if and only if the NOM-KV rating of the busbar was entered when the data are transferring.
- 5 The minimum data required is : RESIS-PU/KM, REAC-PU/KM and RAT-MVA.

LINE DATA BASE								PAGE 1 OF 2	
TYPE	RESIS-PU/KM	REAC-PU/KM	SUS-PU/KM	ZSQR-PU/KM	ZSQX-PU/KM	RAT-MVA	RAT-KV	PASSWORD	COMMENT
1		0.00010			0.00030	250.00	400.00		
4021	0.00027	0.00269	0.00041	0.00235	0.00726	1330.00	400.00		TIRAN
10161	0.05574	0.00385	0.00213	0.16722	0.01155	1.03	6.60		RGH51R/6
16161	0.04575	0.00473	0.00174	0.13725	0.01419	1.34	6.60		RGH51R/6
25161	0.04762	0.00722	0.00125	0.14286	0.02165	2.18	6.60		RGH51R/6
35161	0.03344	0.00669	0.00135	0.10031	0.02006	2.13	6.60		RGH51R/6
50161	0.02926	0.00767	0.00123	0.08778	0.02300	2.55	6.60		RGH51R/6
70161	0.02533	0.00908	0.00116	0.07600	0.02724	3.19	6.60		RGH51R/6
95161	0.02231	0.01053	0.00106	0.06692	0.03159	3.89	6.60		RGH51R/6
120161	0.02032	0.01176	0.00101	0.06095	0.03527	4.49	6.60		RGH51R/6
150161	0.01880	0.01285	0.00097	0.05641	0.03854	5.09	6.60		RGH51R/6
185161	0.01727	0.01432	0.00092	0.05180	0.04296	5.83	6.60		RGH51R/6
240161	0.01559	0.01606	0.00086	0.04677	0.04818	6.86	6.60		RGH51R/6
300161	0.01453	0.01780	0.00081	0.04358	0.05339	7.91	6.60		RGH51R/6
400161	0.01344	0.01994	0.00078	0.04031	0.05983	9.14	6.60		RGH51R/6
500161	0.01266	0.02197	0.00075	0.03797	0.06591	10.40	6.60		RGH51R/6
600		0.07870			0.23600	6.86	6.60		REACTOR
120632	0.00218	0.00172	0.00368	0.00653	0.00516	44.08	63.00		RGH51R/9
120631	0.00233	0.00239	0.00364	0.00700	0.00717	44.52	63.00		RGH51R/9
150632	0.00201	0.00187	0.00352	0.00603	0.00562	49.54	63.00		RGH51R/9
150631	0.00217	0.00272	0.00349	0.00650	0.00786	49.98	63.00		RGH51R/9
185632	0.00183	0.00206	0.00332	0.00549	0.00617	56.30	63.00		RGH51R/9
185631	0.00200	0.00288	0.00330	0.00599	0.00865	56.63	63.00		RGH51R/9
240632	0.00165	0.00227	0.00321	0.00495	0.00680	66.13	63.00		RGH51R/9
240631	0.00182	0.00320	0.00322	0.00547	0.00960	65.80	63.00		RGH51R/9
300632	0.00152	0.00247	0.00300	0.00454	0.00742	74.96	63.00		RGH51R/9
300631	0.00172	0.00348	0.00300	0.00515	0.01040	74.96	63.00		RGH51R/9
4001632	0.00138	0.00274	0.00291	0.00414	0.00822	85.66	63.00		RGH51R/9
400631	0.00160	0.00395	0.00293	0.00480	0.01185	85.22	63.00		RGH51R/9
500632	0.00127	0.00299	0.00285	0.00381	0.00896	96.35	63.00		RGH51R/9

OPTIONS:

REDISPLAY

NEXT PAGE

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RETURN

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Figure 9.9

9.3.2 Transformer data base 1

This data base page is shown in figure 9.10.

TYPE : An integer number identifying each data base entry.

RESIS-PU : Transformer Positive sequence resistance in pu, on rating.

REAC-PU : Transformer Positive sequence reactance in pu, on rating.

ZSQR-PU : Transformer Zero sequence resistance in pu, on rating.

ZSQX-PU : Transformer Zero sequence reactance in pu, on rating.

TAP-START : Normal tap position, in percent off nominal. Value can be positive, negative or zero (blank).

MIN-TAP : Minimum tap position in percent off nominal. Will normally have a negative value (or zero if left blank).

TAP-STEP : Tap changer increments in percent of nominal. Will be assigned the minimum value of 0.01 percent if left blank.

MAX-TAP : Maximum tap position in percent off nominal. Will normally have a positive value (or zero if left blank).

RAT-MVA : The transformer rating in MVA.

PASSWORD : Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

Notes:

- 1 For fixed tap operation specify TAP-START only.
- 2 For voltage control, by automatic tap changing, specify TA-STEP, MAX-TAP and MIN-TAP values. The TAP-START value is optional, but if a value is entered which is outside the tapping range specified the TAP-START entry is used as the limit.
- 3 When the zero sequence data is omitted it is assumed that no path exists.

TRANSFORMER DATA BASE 1											PAGE 1 OF 2
TYPE	RESIS-PU	REAC-PU	ZSQ-R-PU	ZSQ-X-PU	TAPSTART	MIN-TAP	TAP-STEP	MAX-TAP	RAT-MVA	PASSWORD	COMMENT
63701	0.01100	0.10000				-7.50	2.50	5.00	9.30		ITALTRAF
63702	0.01100	0.10000				-7.50	2.50	5.00	7.80		ITALTRAF
63703	0.01100	0.10000				-7.50	2.50	5.00	6.20		ITALTRAF
63504	0.01100	0.10000				-7.50	2.50	5.00	1.54		ITALTRAF
63705	0.01100	0.10000				-7.50	2.50	5.00	3.09		ITALTRAF
6406	0.00670	0.06000				-7.50	2.50	5.00	1.00		MARELLI
6407	0.00560	0.05000	0.00560	0.05000		-7.50	2.50	7.50	0.25		COLOMBIN
6408	0.00670	0.06000	0.00670	0.06000		-7.50	2.50	5.00	1.50		MARELLI
6409	0.00690	0.06200	0.00690	0.06200		-7.50	2.50	7.50	2.00		VERBANO
6410	0.00670	0.06000	0.00670	0.06000		-5.00	2.50	5.00	2.00		TRANTRAN
6411	0.00670	0.06000				-7.50	2.50	5.00	1.00		MARELLI
6412	0.00670	0.06000				-7.50	2.50	5.00	1.50		MARELLI
6413	0.00560	0.05000	0.00560	0.05000		-7.50	2.50	7.50	0.25		SALANO
6614	0.00670	0.06000				-7.50	2.50	5.00	1.40		MARELLI
6415	0.00670	0.06000				-7.50	2.50	5.00	0.50		MARELLI
6416	0.00670	0.06000				-7.50	2.50	5.00	0.85		MARELLI
6417	0.00670	0.06000				-7.50	2.50	5.00	0.85		MARELLI
6418	0.00670	0.06000				-7.50	2.50	5.00	0.50		MARELLI
6419	0.00560	0.05000	0.00560	0.05000		-7.50	2.50	7.50	0.25		*
6620	0.00730	0.06580				-7.50	2.50	5.00	1.40		ABB
6621	0.00639	0.05750				-7.50	2.50	5.00	1.50		WESTINGH
6322	0.00632	0.05690				-7.50	2.50	5.00	1.00		ABB
6423	0.00633	0.05700				-7.50	2.50	5.00	0.85		WESTINGH
6324	0.00662	0.05960				-7.50	2.50	5.00	2.00		WESTINGH
6625	0.00647	0.05820				-7.50	2.50	5.00	3.00		WESTINGH
6426	0.00444	0.04000	0.00444	0.04000		-5.00	2.50	5.00	0.63		BBC
6427	0.00644	0.05800				-5.00	2.50	5.00	1.00		BBC
6428	0.00444	0.04000	0.00444	0.04000		-7.50	2.50	7.50	0.63		BBC
6429	0.00444	0.04000	0.00444	0.04000		-7.50	2.50	7.50	0.63		SALANO
6430	0.00670	0.06000				-5.00	2.50	5.00	1.00		*

OPTIONS:

REDISPLAY

NEXT PAGE

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RETURN

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Figure 9.10

9.3.3 Transformer data base 2

This data base page is shown in figure 9.11.

TYPE : An integer number identifying each data base entry.

WNDG-CON: Transformer winding connections are entered by specifying: winding sending - receiving winding connection - phase shift. Enter D for a delta, Y for a star or X for an earthed star winding and 0-11 to specify the phase shift. The following combinations are acceptable: XX0,YY0, DD0, XY0, YX0, DX1, DY1, XD1, YD1, DX11, DY11, XD11, YD11

RLY-BW : Bandwidth of voltage sensing relay, in percent. Defaults to the tap-step, if no entry is made, or if a value lower than the tap-step is entered.

COMP-R : Resistance value of line drop compensations, in percent, on rating.

COMP-X : Reactance value of line drop compensation, in percent, on rating. Enter a negative value if negative reactance compounding is required.

VRATIO : Ratio of change of the voltage of transformer to the base voltage selected for the terminals of that transformer.

DX/DTAP: Ratio of change in transformer reactance, to change in tap e.g. if the transformer reactance decreases by 1 percent for each 2 percent increase in tap value then **DX/DTAP** = -0.5.

PASSWORD: Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

NOTES :

1. The winding connections are used in the fault level calculations to determine the phase values of the fault currents.
2. If no winding connection is entered, a star-star connected transformer is assumed with the question of earthing determined by the presence or absence of a zero sequence impedance value in TRANSFORMER DATA BASE 1.
- 3 The phase angle is specified in terms of the clock position, i.e. 0=no shift, 1=30°, 2=60° etc. i.e: for YD11 voltage on D side leads voltage on Y side 30° for positive sequence networks.

TRANSFORMER DATA BASE 2

PAGE 1 OF 2

TYPE	WNDG-CON	RLY-BW	COMP-R	COMP-X	VARTIO	DX/DTAP	PASSWORD	COMMENT
63701	DY11							ITALTRAF
63702	DY11							ITALTRAF
63703	DY11							ITALTRAF
63504	DY11							ITALTRAF
63705	DY11							ITALTRAF
6406	YD11							MARELLI
6407	DX11							COLOMBINI
6408	DD0							MARELLI
6409	DX11							VERBANO
6410	DX11							IRANTRAN
6411	DD0							MARELLI
6412	YD11							MARELLI
6413	DX11							SALANO
6614	DD0							MARELLI
6415	YD11							MARELLI
6416	DD0							MARELLI
6417	YD11							MARELLI
6418	DD0							MARELLI
6419	DX11							MARELLI
6620	YD11							*
6621	DD0							ABB
6322	DD0							WESTINGH
6423	DD0							ABB
6324	YD11							WESTINGH
6625	YD11							WESTINGH
6426	DX11							WESTINGH
6427	DD0							BBC
6428	DX11							BBC
6429	DX11							BBC
6430	DD0							SALANO
								*

OPTIONS:

REDISPLAY

NEXT PAGE

HELP

RETURN

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Figure.9.11

9.3.4 Generator data base 1

This data base page is shown in figure 9.12.

TYPE : An integer number identifying each data base entry.

RAT-KV : The generator voltage in KV.

RAT-MVA : The generator rating in MVA.

RES-PU : Positive sequence or armature resistance in pu, on rating.

REAC-PU : Positive sequence or d-axis synchronous reactance in pu, on the machine rating.

ZSQ-R-PU: Zero sequence resistance in pu, on rating.

ZSQ-X-PU: Zero sequence reactance in pu, on rating.

INERT-C : Inertia constant in kW/s/kVA. Defaults to infinity

DAMP-FAC: Damping factor in pu.

POTIER-X: Potier reactance in pu. Required only if SAT-FAC is entered. Defaults to 0.8 x transient reactance value.

SAT-FAC : Saturation factor (the pu value of field current required to generate 1.2 pu V on OC). Defaults to no saturation.

PASSWORD: Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

NOTES:

1 Per-unit impedances must be based on the Generator MVA rating.

2 To calculate time varying fault currents and for transient stability enter armature resistance and synchronous reactance in RES-PU and REAC-PU and additional data in GENERATOR DATA BASE 2.

3 For RAT-KV see note on section 9.3.1.

GENERATOR DATA BASE 1											PAGE 1 OF 2	
TYPE	RAT-KV	RAT-MVA	RES-PU	REAC-PU	ZSQR-PU	ZSQX-PU	INERT-C	DAMPFAC	POTIERX	SATFAC	PASSWORD	COMMENT
4001	20.000	400.000	0.00405	2.07000	0.00405	0.11400	3.3200					AA
101	13.800	101.000	0.00150	1.84000	0.00150	0.08500	6.6000					BB
150	13.800	150.000	0.00236	1.79000	0.00236	0.11000	2.2000					CC
400	20.000	400.000	0.00330	2.00000	0.00330	0.13000	3.6200					DD
250	15.750	250.000	0.00242	2.01000	0.00242	0.09000	3.0000					EE
69	15.000	69.000	0.00935	1.17500	0.00625	0.12500	1.7000					FF
159	10.500	159.200	0.00081	2.25000	0.00081	0.09500	2.6000					GG
152	10.500	150.000	0.00102	1.66000	0.00102	0.09500	2.2000					HH
177	15.000	176.500	0.00100	1.76000	0.00100	0.09000	2.5400					LALAL
517	21.000	517.600	0.00149	2.29600	0.00149	0.13300	4.2400					MONT
371	20.000	371.000	0.00269	1.78000	0.00269	0.09200	2.9540					TO
312	19.000	312.500	0.00120	1.94000	0.00120	0.10000	2.4000					TOM
445	20.000	445.200	0.00267	1.83000	0.00267	0.18000	3.5700					TOM
188	15.000	187.500	0.00108	1.94500	0.00108	0.10000	1.8000					TOM
287	18.000	287.500	0.00240	1.02000	0.00240	0.10000	3.7000	2.0000				TOM
72	13.800	72.222	0.00523	1.00000	0.00523	0.10000	2.8000					TOM
45	13.800	45.800	0.00204	0.99380	0.00204	0.03900	2.8000					TOM
22	10.600	22.000	0.00372	1.30000	0.00372	0.12000	2.5000					TOM
80	10.500	80.000	0.00109	1.75000	0.00109	0.07000	1.5000					TOM
148	13.800	147.800	0.00130	2.26000	0.00130	0.09500	5.5000					TOM
44	11.000	43.950	0.00218	2.55000	0.00218	0.10200	1.8000					TOM
102	11.000	102.353	0.00110	1.95000	0.00110	0.10000	3.2000					TOM
30	11.500	30.313		2.16000	0.00229	0.10000	2.4000					TOM
32	10.500	32.000	0.00165	2.10000	0.00165	0.10000	2.6000					TOM
37	11.000	37.218	0.00175	2.64000	0.00175	0.08500	3.1000					TOM
38	11.000	37.218	0.00181	2.64000	0.00181	0.08500	2.9000					TOM
107	63.000	130.000	0.00925	1.32000	0.00625	0.12500	5.0000					TOM
35	63.000	30.000	0.00925	1.32000	0.00625	0.12500	5.0000					TOM
147	13.800	147.800	0.00130	2.26000	0.00130	0.09500	2.4000					TOM
801	10.500	80.000	0.00230	1.57000	0.00230	0.07000	2.5000					TOM

OPTIONS:

REDISPLAY

NEXT PAGE

HELP

RETURN

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Figure 9.12

9.3.5 Generator data base 2

This data base page is shown in figure 9.13.

TYPE : An integer number identifying each data base entry.

DA-TR-X : d-axis transient reactance in pu.

DA-TR-TC: d-axis transient open-circuit time constant in sec.

DA-ST-X : d-axis subtransient reactance in pu.

DA-ST-TC: d-axis subtransient open-circuit time constant in sec.

QA-SYN-X: q-axis synchronous reactance in pu.

QA-TR-X : q-axis transient reactance in pu.

QA-TR-TC: q-axis transient open-circuit time constant in sec.

QA-ST-X : q-axis subtransient reactance in pu.

QA-ST-TC: q-axis subtransient open-circuit time constant in sec.

PASSWORD: Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

NOTES:

1 Per-unit impedances must be based on the Generator MVA rating.

2 All four d-axis parameters and the q-axis subtransient reactance values are required to permit fault currents to be calculated using component. If the q-axis parameter is omitted it is assumed to be equal to the d-axis value. A single exponential ac decay is used if subtransient values are omitted.

3 Users are responsible to take care of p.u. values of voltage, if they change the base values.

GENERATOR DATA BASE 2										PAGE 1 OF 2	
TYPE	DA-TR-X	DA-TR-TC	DA-ST-X	DA-ST-TC	QA-SYN-X	QA-TR-X	QA-TR-TC	QA-ST-X	QA-ST-TC	PASSWORD	COMMENT
4001	0.3280	7.3600	0.2660	0.0412	2.0100	0.1110	0.3200	0.2640	0.1410		AA
101	0.2150	6.1000	0.1650	0.0252	1.7300	0.2900	0.8600	0.1650	0.0500		BB
150	0.2700	5.9700	0.2000	0.0470	1.6800	0.3600	0.6900	0.2000	0.0940		CC
400	0.2550	5.7800	0.2000	0.0380	1.8400	0.3440	0.7900	0.2000	0.0760		DD
250	0.3380	6.4500	0.2220	0.0200	1.8900	0.4560	0.6300	0.2220	0.0400		EE
69	0.3100										FF
159	0.2880	8.0000	0.2070	0.0298	2.1100	0.3890	0.8010	0.1890	0.0595		GG
152	0.2500	8.2000	0.1800	0.0420	1.5600	0.3300	0.6900	0.1800	0.0840		HH
177	0.2400	6.8000	0.1600	0.0350	1.7100	0.3500	0.5000	0.1600	0.0710		LALAL
517	0.3080	7.4000	0.2170	0.0250	2.1600	0.4160	0.7670	0.2000	0.0500		MONT
371	0.2700	5.9000	0.1800	0.0160	1.6700	0.3600	0.6900	0.1800	0.0320		TO
312	0.2400	8.7800	0.2000	0.0180	1.8200	0.3240	0.8200	0.2000	0.0360		TOM
445	0.3100	6.7000	0.2600	0.0400	1.8300	0.4200	1.0000	0.2600	0.0800		TOM
188	0.2400	6.2700	0.1700	0.0200	1.8300	0.3200	0.8300	0.1000	0.0400		TOM
287	0.3000	4.1000	0.2100	0.0570	0.6300	0.4000	0.3000	0.2100	0.1140		TOM
72	0.2200	5.1000	0.1600	0.0550	0.6100	0.2970	0.3600	0.1700	0.1100		TOM
45	0.2000	7.9000	0.1250	0.0560	0.9300	0.2700	0.5400	0.1250	0.1100		TOM
22	0.2800	6.1000	0.2000	0.0550	0.7300	0.3800	0.3500	0.2000	0.1100		TOM
80	0.2100	8.0000	0.2000	0.0360	1.4800	0.2800	0.7500	0.2000	0.0720		TOM
148	0.2880	8.0000	0.2070	0.0298	2.1200	0.3890	0.8010	0.1890	0.0595		TOM
44	0.2970	6.7900	0.2240	0.0450	2.4600	0.4000	0.8900	0.2240	0.0900		TOM
102	0.2510	9.0000	0.1630	0.0540	1.8300	0.3400	0.7900	0.1630	0.1000		TOM
30	0.2800	8.9400	0.1800	0.0500	2.0300	0.3800	0.7900	0.1400	0.1000		TOM
32	0.1900	7.0000	0.1420	0.0690	1.9700	0.2600	1.0800	0.2070	0.1300		TOM
37	0.2500	10.5000	0.2000	0.0380	2.4800	0.3400	1.0400	0.2000	0.0700		TOM
38	0.2500	10.5000	0.2000	0.0380	2.4800	0.3400	1.0400	0.2000	0.0700		TOM
107	0.3000										TOM
35	0.3000										TOM
147	0.2880	8.0000	0.2070	0.0298	2.1200	0.3890	0.8010	0.1890	0.0595		TOM
801	0.2100	8.0000	0.2000	0.0360	1.4800	0.2800	0.7500	0.2000	0.0720		TOM

OPTIONS:

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Figure 9.13

9.3.6 AVR data base 1

TYPE : An integer number identifying each data base entry.

FW-GAIN : Forward gain K_a in pu.

FW-TC : Forward time constant T_a in sec.

FB-GAIN : Feedback gain K_f in pu.

FB-TC : Feedback time constant T_f in sec.

V-MAX : Maximum regulator voltage limit V_{max} in pu.

V-MIN : Minimum regulator voltage limit V_{min} in pu.

V-RATE : Rate of change of regulator voltage in puV/sec.

IP-F-TC : Input filter time constant T_r in sec.

NOTES:

1 The gains, forward and feedback time constants, and voltage limits in the AVR DATA 1 pages refer to the regulator amplifier and stabilizing loop of the full model. However, if no data is entered in AVR DATA 2 the model reduces to a single loop and values entered must represent the combined regulator/exciter characteristics.

2 Entries of AVR DATA 1 parameters only, result in a simplified IEEE type 1 model with a combined regulator/exciter and no saturation. Please see also figures 4.20 and 4.21.

AVR DATA BASE 1

PAGE 1 OF 1

TYPE	FW-GAIN	FW-TC	FB-GAIN	FB-TC	V-MAX	V-MIN	V-RATE	IP-F-TC	PASSWORD	COMMENT
1800	400.0000	0.0200	0.0300	1.0000	8.2000	-8.2000				1800 RPM
3600	400.0000	0.0200	0.0300	1.0000	7.3000	-7.3000				
250	200.0000	0.0200	0.0100	1.0000	4.8000	-4.8000				
75	180.0000	1.0000	0.1500	1.0000	3.0000	-3.0000				
25	0.0500	20.0000			4.3900					
231	50.0000	0.0600	0.0648	1.0000	1.0071	-1.0071				

OPTIONS:

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Figure 9.14

9.3.7 AVR data base 2

This data base page is shown in figure 9.15.

TYPE : An integer number identifying each data base entry.

IEEE-MOD : IEEE model. Enter a blank, 1.or 2.

EX-GAIN : Exciter gain K_e in pu.

EX-TC : Exciter time constant T_e in sec.

EX-E-MAX : Exciter ceiling voltage E_{max} in pu.

EX-E-MIN : Exciter minimum voltage E_{min} in pu.

REG-TC : Regulator amplifier time constant T_b in sec.

FB-AMP=TC : Feedback amplifier time constant T_d in sec.

EX-SAT1 : Exciter saturation function S_e at 75% of ceiling voltage.

EX-SAT2 : Exciter saturation function S_e at ceiling voltage.

PASSWORD : Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

NOTES:

1 The 'DATA BASE 1' set of parameters must be complete before model can be improved further by making DATA BASE 2 entries. Please see also figures 4.20 and 4.21.

2 Enter 1 for the model TYPE and the six exciter parameters to obtain the full IEEE TYPE 1 mode.

3 To change from the IEEE TYPE 1 to the type 2 model, change the type number to 2 and enter the feedback amplifier time constant.

4 Enter the final time constant T_b to obtain the full model.

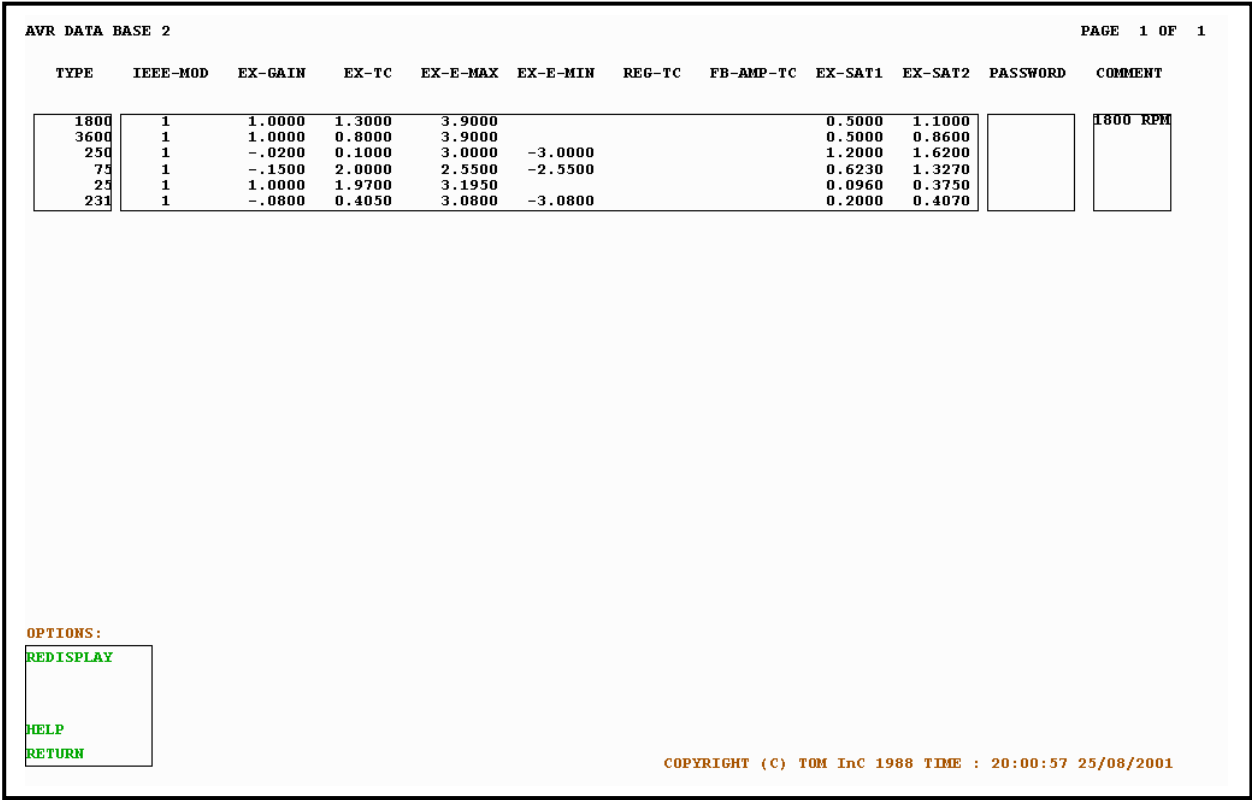


Figure 9.15

9.3.8 Governor and turbine data base

This data base page is shown in figure 9.16.

TYPE : An integer number identifying each data base entry.

G-REG : Governor regulation R. Enter as a positive number in per-unit or per-cent.

G-FLY-TC : Governor flyball time constant T_b in sec.

G-TC1 : Governor control system time constant T_1 in sec

G-TC2 : Governor control system time constant T_2 in sec

G-TC3 : Governor control system time constant T_3 in sec

T-TC1 : Turbine time constant T_4 in sec.

T-TC2 : Turbine time constant T_5 in sec.

MAX-T-POW: Maximum turbine power in MW.

RAT-MVA : The turbine rating in MW.

PASSWORD : Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

NOTES:

1 Minimum data required: G-REG, G-TC1 or G-TC2 and RAT-MVA.

2 The speed governor control model accepts zero time constants without causing malfunctions and, therefore, data entries can be used to adapt the model to suit requirements. The model is shown in figure 4.22.

3 For a simple lag model of the governor enter a value for time constant T_3 .

4 Thermal turbine characteristics are obtained if no entry is made for the turbine time constant T_4 . Hydro turbine characteristics are modeled if a value is entered for the turbine time constant T_4 .

GOVERNOR AND TURBINE DATA BASE											PAGE 1 OF 2
TYPE	G-REG	G-FLY-TC	G-TC1	G-TC2	G-TC3	T-TC1	T-TC2	MAXT-POW	RAT-MVA	PASSWORD	COMMENT
250	4.0000		30.0000	3.5000	0.5200	0.9300	0.4150	250.00	287.50		AA SPOUR
46	3.0000				0.5000	0.8600	0.4300	46.00	48.40		BB RKABI
65	4.0000		20.0000	4.0000	0.5000	1.7000	0.8500	65.00	72.20		CC Z
23	5.0000		16.0000	2.4000	0.9200	0.6000	0.3000	23.00	28.10		DD YAN
39	4.0000				0.5000	0.8600	0.4300	39.00	45.00		EE AN
18	4.0000		16.0000	2.4000	0.9200	0.6000	0.3000	18.00	21.90		FF IDRUD
12	4.0000		16.0000	2.4000	0.9200	0.6000	0.3000	12.00	13.80		GG S-MAH
420	5.0000		0.1500	0.0500	0.3000		8.0000	420.00	517.60		HH A-S
134	5.0000		0.5000	1.2500	0.7000		0.7000	134.00	135.00		N KA-G
651	4.0000		0.0900		0.2000		0.6000	65.00	101.00		TOM I-S
52	4.0000		0.5000	1.2500	0.7000		0.7000	52.00	80.00		TOM I-G
300	4.5000		0.2200		0.2000		8.0000	300.00	371.00		TOM N
2501	4.0000		0.1000		0.4000		8.0000	250.00	312.50		TOM EE-S
3001	6.0000		0.2200		0.2000		8.0000	300.00	400.00		TOM AS-S
20	4.0000				0.1000		0.1000	20.00	33.00		TOM AS-G
120	5.0000		0.2000		0.3000		10.0000	120.00	150.00		TOM AN-S
55	5.0000		0.5000	1.2500	0.7000		0.7000	55.00	80.00		TOM AN-G
320	5.0000		0.1800		0.0400		8.0000	320.00	400.00		TOM JN
3201	7.0000		0.1800		0.0400		8.0000	320.00	400.00		TOM H-45
387	5.0000		0.1000		0.3000		10.0000	387.00	445.20		TOM IZ-S
200	4.5000		0.1500		0.1000		10.0000	200.00	250.00		TOM AZER
150	5.0000		0.0830		0.2000		8.0000	150.00	176.50		TOM EM-S
140	5.0000		0.0830		0.2000		8.0000	140.00	187.50		TOM AN-S
25	5.0000				0.1000		0.1000	25.00	44.00		TOM AN-G
35	7.0000		0.2000		0.3000		0.1000	35.00	45.00		TOM -12
1201	7.0000		0.2000		0.3000		10.0000	120.00	150.00		TOM H-3
95	5.0000		0.5000	1.2500	0.7000		0.7000	94.50	118.00		TOM -KAZ
1401	4.0000		0.5000	1.2500	0.7000		0.7000	140.00	160.00		TOM N-G
15	4.0000				0.1000		0.1000	15.00	33.00		TOM EHR
28	5.0000				0.1000		0.1000	28.00	44.10		TOM IZ-G

OPTIONS:

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Press:

E edit/view the memo

C copy the data

Any other to enter data

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Figure 9.16

9.3.9 Induction motor data base 1

This data base page is shown in figure 9.17.

TYPE : An integer number identifying each data base entry. Enter minus number to use induction motor parameter estimation. (see 9.3.11)

RAT-KV : The Induction Motor voltage in kv.

RAT-MVA : The Induction Motor rating in MVA.

MAG-X : Magnetizing reactance in pu, on rating.

ST-R-PU : Stator resistance in pu, on rating.

ST-X-PU : Stator reactance in pu, on rating.

ROT-R-PU: Inner cage or running rotor resistance in pu, on rating.

ROT-X-PU: Inner cage or running rotor reactance in pu, on rating.

PASSWORD: Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifiers

NOTES:

1 A single cage equivalent circuit is used for motors which have no entries for ST-RTT-R and X in INDUCTION MOTOR DATA 2.

2 When two sets of rotor impedances are entered these are treated either as running - standstill, or as inner-outer cage impedances, depending on the value of PAR-IDX, and a double cage model is used.

3 For RAT-KV see note on section 9.3.1.

INDUCTION MOTOR DATA BASE 1								PAGE 1 OF 2	
TYPE	RAT-KV	RAT-MVA	MAG-X	ST-R-PU	ST-X-PU	ROT-R-PU	ROT-X-PU	PASSWORD	COMMENT
8350	6.600	9.877	3.894	0.0005	0.1014	0.0178	0.1521		ASEA8.35
5500	6.600	6.527	3.903	0.0074	0.1137	0.0272	0.1705		ASEA
3400	6.600	3.903	3.411	0.0200	0.1085	0.0092	0.0723		ANSALDO*
2600	6.600	3.062	3.323	0.0222	0.1332	0.0089	0.0888		ANSALDO*
2400	6.600	2.772	3.630	0.0225	0.1191	0.0121	0.0794		ANSALDO*
2200	6.600	2.641	3.367	0.0116	0.0885	0.0278	0.1328		ASEA
2000	6.600	2.245	5.020	0.0081	0.0849	0.0146	0.1301		HITACHI
1800	6.600	2.131	2.862	0.0267	0.1078	0.0093	0.0719		ANSALDO*
18001	6.600	2.131	2.862	0.0267	0.1078	0.0093	0.0719		ANSALDO*
1600	6.600	1.894	2.862	0.0267	0.1078	0.0093	0.0719		ANSALDO*
1570	6.600	1.779	4.707	0.0087	0.0844	0.0168	0.1295		HITACHI
1400	6.600	1.574	4.411	0.0115	0.0962	0.0111	0.0975		HITACHI
1300	6.600	1.472	4.624	0.0096	0.0850	0.0147	0.1295		HITACHI
1250	6.600	1.489	2.838	0.0291	0.1071	0.0124	0.0714		ANSALDO*
12501	6.600	1.489	2.838	0.0291	0.1071	0.0124	0.0714		ANSALDO*
1120	6.600	1.351	2.654	0.0297	0.1071	0.0126	0.0714		ANSALDO*
11201	6.600	1.319	3.021	0.0347	0.1071	0.0067	0.0714		ANSALDO*
1100	6.600	1.187	3.149	0.0089	0.1111	0.0247	0.1111		SIEMENC*
950	6.600	1.079	5.573	0.0132	0.0915	0.0200	0.1408		HITACHI
850	6.600	1.137	1.943	0.0358	0.1327	0.0088	0.0885		ANSALDO*
820	6.600	0.928	5.531	0.0135	0.0912	0.0187	0.1384		HITACHI
800	6.600	0.971	2.765	0.0338	0.1178	0.0135	0.0785		ANSALDO*
630	6.600	0.754	2.813	0.0322	0.1065	0.0140	0.0710		ANSALDO*
6301	6.600	0.754	2.811	0.0327	0.1066	0.0124	0.0711		ANSALDO*
6302	6.600	0.754	2.811	0.0327	0.1066	0.0124	0.0711		ANSALDO*
6303	6.600	0.754	2.811	0.0327	0.1066	0.0124	0.0711		ANSALDO*
500	6.600	0.626	2.308	0.0389	0.1053	0.0153	0.0702		ANSALDO*
5001	6.600	0.609	2.749	0.0354	0.1173	0.0156	0.0782		ANSALDO*
5002	6.600	0.601	2.941	0.0372	0.1173	0.0121	0.0782		ANSALDO*
450	6.600	0.550	2.579	0.0403	0.1055	0.0125	0.0703		ANSALDO*

OPTIONS:

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Figure 9.17

9.3.10 Induction motor data base 2

This data base page is shown in figure 9.18.

TYPE : An integer number identifying each data base entry.

PAR-IDX : The parameter index sets the type of rotor impedances used, either: leave blank if running-standstill values are entered or enter 1 if inner-outer cage impedances are entered.

ST-ROT-R: Outer cage or standstill rotor resistance in pu, on rating.

ST-ROT-X: Outer cage or standstill rotor reactance in p.u., on rating.

TQ-SP-B : Load torque-speed coefficient B.

TQ-SP-C : Load torque-speed squared coefficient C.

INERT-C : Inertia constant in kW/s/kVA.

D-OFF-V : Motor contactor drop-off voltage in pu.

DO/PU-T : Contactor drop-off to pick-up time delay in sec.

L-OUT-T : Lock-out time in sec.

UN-SPED : Underspeed setting in pu.

PASSWORD: Enter the correct password, but only when required.

COMMENT : Spare column for entry of an alphanumeric identifier.

NOTES:

1 Motor(s) will be switched out when their speed drops below the value entered in UN-SPED.

2 Motors will be switched out when the voltage drops below D-OFF-V and, if the voltage recovers, will be switched back in, subject to a minimum delay of DO/PU-T and a maximum recovery period L-OUT-T. Pick-up is at 0.8 p.u. Voltage or at 2x(drop-off-voltage), if this is lower.

3 The load torque-speed (T-N) relationship is :

$$T=T_0.(A+B.N+C.N^{**2})$$

where A = 1.0 -B -C and, therefore, only B and C need to be specified.

INDUCTION MOTOR DATA BASE 2											PAGE 1 OF 2	
TYPE	PAR-IDX	ST-ROTR	ST-ROTX	TQ-SP-B	TC-SP-C	INERT-C	D-OFF-V	D0/PU-T	L-OUT-T	UN-SPED	PASSWORD	COMMENT
8350						11.29894						ASEA8.35
5500					1.0000	16.07077						ASEA
3400					1.0000	0.30412						ANSALDO*
2600					1.0000	0.28000						ANSALDO*
2400					1.0000	0.25023						ANSALDO*
2200						2.00331						ASEA
2000		0.0231	0.1246			0.45916						HITACHI
1800					1.0000	0.26044						ANSALDO*
18001					1.0000	0.26000						ANSALDO*
1600					1.0000	0.26044						ANSALDO*
1570		0.0262	0.1238			0.52826						HITACHI
1400		0.0201	0.0950		1.0000	0.47551						HITACHI
1300		0.0231	0.1254			0.41791						HITACHI
1250					1.0000	0.33127						ANSALDO*
12501					1.0000	0.33127						ANSALDO*
1120					1.0000	0.38796						ANSALDO*
11201					1.0000	0.59828						ANSALDO*
1100						3.93430						SIEMENC*
950		0.0278	0.1337		1.0000	0.50279						HITACHI
850					1.0000	0.50000						ANSALDO*
820		0.0273	0.1352			0.40518						HITACHI
800					1.0000	0.41273						ANSALDO*
630					1.0000	0.21795						ANSALDO*
6301					1.0000	0.25363						ANSALDO*
6302					1.0000	0.25363						ANSALDO*
6303					1.0000	0.25363						ANSALDO*
500					1.0000	0.18454						ANSALDO*
5001					1.0000	0.12140						ANSALDO*
5002					1.0000	0.14000						ANSALDO*
450					1.0000	0.25238						ANSALDO*

OPTIONS:

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Figure 9.18

9.3.11 Induction motor parameter estimation

The parameter estimation routines will manipulate and transfer the data defined in file MOTOR.FIL or DATAM.FIL. An iterative process will be used to estimate the parameters of motor from the manufacturer or the test data. The data will be transformed from file MOTOR.FIL uses the test results and is more accurate. The data must be entered to DATAM.FIL is that manufacturers releases in their catalogue. These files are self-explanatory and the user may open and edit the data on these files using any convenient text editor.

Whenever a negative TYPE is entered in induction motor database page 1, PASHA looks at file MOTOR.FIL and then at file DATAM.FIL to find the TYPE. If this exist, the exchange (calculation) of parameters is performed automatically and the same Type is used in PASHA database as used in these files. Please read these files with any text editor available to you. You may include your own motor data in these files.

9.3.12 Protection data base - Relays 1,2,3,4,5

Please refer to chapter 11.

9.3.13 Protection data base - Fuses 1,2,3,4

Please refer to chapter 11.

9.3.14 Protection data base - Distance relays

Please refer to chapter 11.

9.3.15 Circuit breakers data base

Please refer to chapter 15.

9.3.16 Reliability data base

Please refer to chapter 12.

9.3.17 DC compoents

Please refer to chapter 17.

9.4 Using memo in data base

If you would like to write any message as MEMO for an element of data base, you can press <E> and your favorite editor will be appeared on the diagram. The memo files are quite general and you may keep the trace of the design, repair or maintenance of an element. The memo files will be arranged in default writable directory, unless you specify another directory. Please refer to chapter 2 in order to find out how you can change the MEMO folder. Next time you press this key on an element that has a memo, all you have written about this element will be appear to you on your favorite editor. When you are doing this, please make sure that the memo folder is set correctly. Please also make sure that you have specified you preferred editor in PASHASYM.FIL file, otherwise the default editor will be used.

9.5 Transferring data from the data base

Data for each element in a network can be entered from the edit section of PASHA, either by direct entries into the table section 1 and 2 pages, or by entries in the table section 3 pages. Some of the ordinary data pages, however, will accept TYPE for database. These are mostly related to the protection and reliability sections of PASHA. Please refer to the appropriate chapters (11, 12 and 15) to find out about using these element databases.

When the table section 3 facilities are used, the database data for each element, for which a TYPE is entered, are read from the data base, the appropriate parallel connection and base MVA and KV (see section 9.3.1) adjustments are made. The adjusted parameters are entered into the table section 1 and 2 pages, overwriting any data, which may have existed there. The table section 1 and 2 pages contain the actual 'working' data for PASHA, can be inspected and even edited, if required.

9.5.1 An example of entering data to a network

To illustrate how to use the database section, a simple network is shown in figure 9.19.

No data has been entered for the network and the edit section is accessed. To input data for the line, the user selects table section 3 of the line data. The line is type 300310 (see Fig. 9.9) and is 2 Km long. So on the line data 3 page he enters 300310 and a length of 2, as shown in figure 9.20. The database is read and the plant information is converted and written to line data 1, which is shown in figure 9.21.

The network should be filed after entry/edit of data, if the network is likely to be referred to again. There is no automatic filing procedure in the edit section as PASHA cannot quite read the user's mind and cannot determine whether the entries/edits are network updates or merely checks on particular trends.

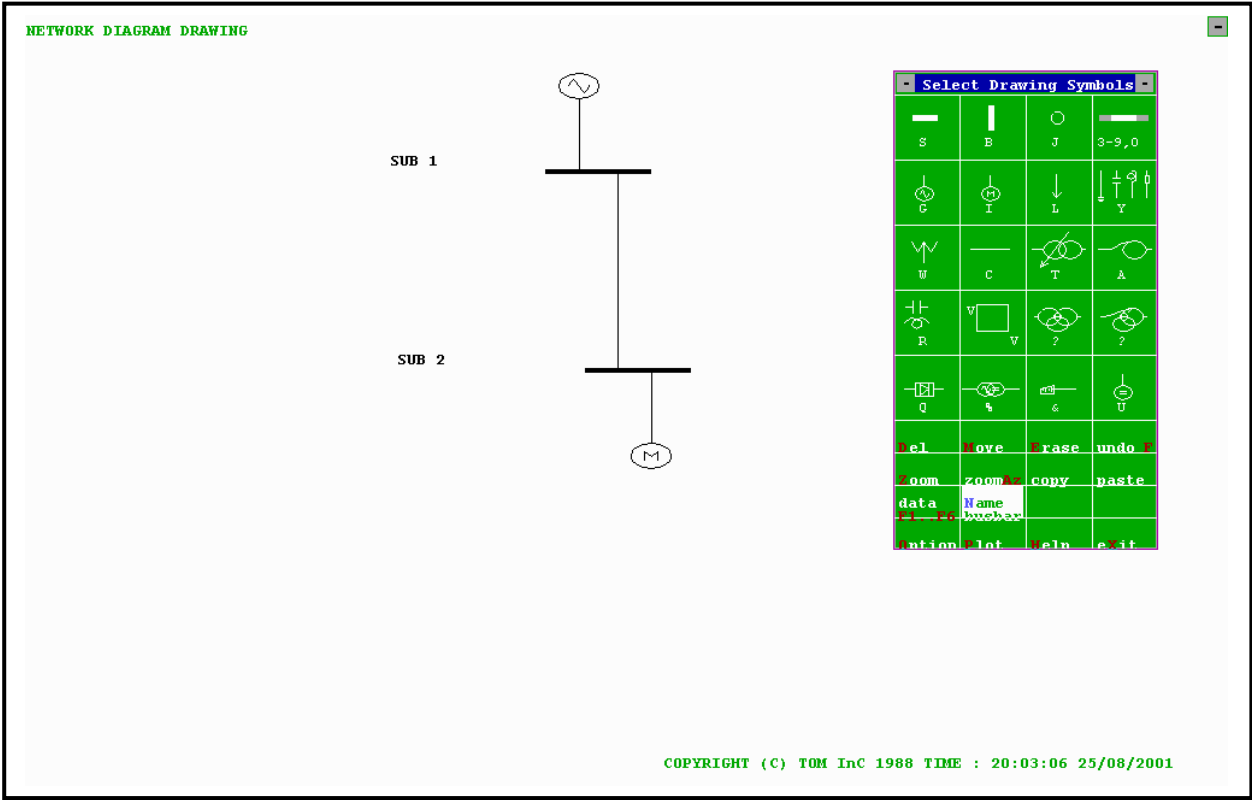


Figure 9.19



Figure 9.20



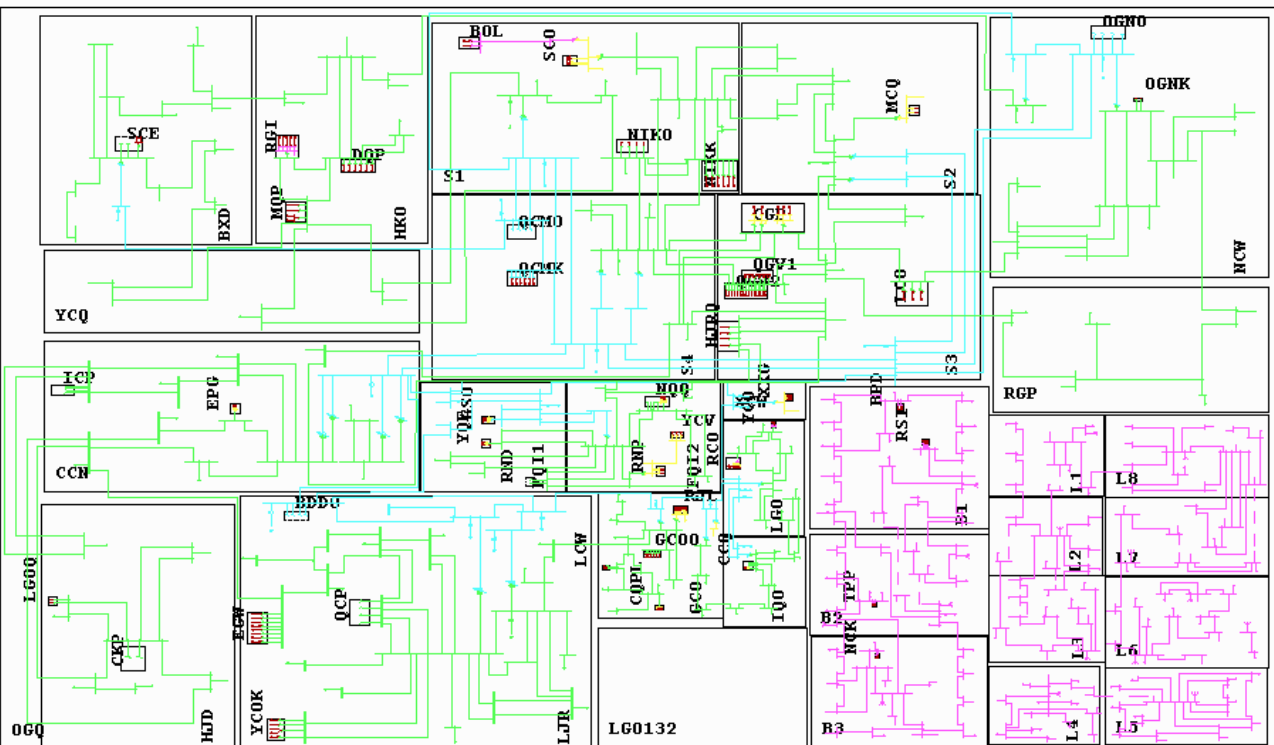
Figure 9.21

9.6 The edit section data page 3's

This section describes section 3 of the edit pages, which are used to read data from the DB section into a network. In the new PASHA some other pages (protective devices described in chapter 11, circuit breakers described in chapter 15, and reliability data described in chapter 12) use the database, however, these are not assigned in data pages 3.

This information is a copy of the on-line help file, with a few modifications.

NETWORK DIAGRAM DRAWING - CLICK ICON FOR TOOLS



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This picture just shows a large-scale system represented by PASHA. Do not forget to use database for large-scale systems.

9.6.1 Line data 3

This edit page is shown in figure 9.22.

I : Branch type identifier, showing that the branch is a simple connection 'C', or a transformer feeder 'T'. Transformer feeders may include up to one cable/line section, connected in series.

TR-TYPE : Enter an appropriate transformer TYPE number, from those previously entered and stored in the TRANSFORMER DATA BASE file.

N-PARALLEL: The number of transformers, in parallel, represented by a single transformer symbol in the network diagram. Defaults to 1 if it is left blank, or if a zero is entered.

L-TYPE : Enter an appropriate line TYPE number, from those previously entered and stored in the LINE DATA BASE files. May be left blank, if the feeder impedance is negligible.

N-PARALLEL: The number of lines, in parallel, represented by a single line symbol in the network diagram. Defaults to 1 if it is left blank, or if a zero is entered.

RAT-FAC : Rating factor for rating MVA of the parallel lines.

DESCRIPTION: Up to 32 characters may be entered here but are not stored.

NOTES:

- 1 The L-TYPE and LENGTH-KM entries may be left blank in a T branch, if appropriate.
- 2 The zero sequence impedance of the branch will be left blank i.e. it will be taken to be infinite, if any one of the components of the branch do not contain zero sequence data.
- 3 The transformer entries made here, will be duplicated automatically in the TRANSFORMER DATA 3 pages. This data can be edited from either of these two locations.
- 4 Checks are made to ensure that the TYPE's entered exist in the DATA BASE pages. The message TYPE DOES NOT EXIST is printed when this is not the case.

LINE DATA 3

PAGE 1 OF 1

BUS-SEND BUS-REC I TR-TYPE N.PARALLEL L-TYPE LENGTH-KM N.PARAL RATING-FAC.

DESCRIPTION

NETW	SUB 1	C		1321	40.000	1	1.000
SUB 1	SUB 2	T					
NETW	SUB 3	C		1322	90.000	1	1.000
SUB 3	EMERG-G	T					
SUB 3	EMERG-G	T					
EMERG-G	SUB 2	C		324010	1.000	15	1.000
NETEQU	NETW	C		1323	0.500	1	1.000
MOT1	SUB 2	C		324010	0.200	1	1.000
MOT2	SUB 2	C		324010	0.200	1	1.000
MOT3	SUB 2	C		324010	0.200	4	1.000
G1	EMERG-G	C		324010	0.200	15	1.000
G2	EMERG-G	C		324010	0.200	10	1.000

OPTIONS:

REDISPLAY

SYSTEM BASE MVA= 100.0

HELP

RETURN

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Figure 9.22

9.6.2 Transformer data 3

This edit page is shown in figure 9.23.

TYPE : Enter an appropriate transformer TYPE number, from those previously entered and stored in the TRANSFORMER DATA BASE file.

N-PARALLEL: The number of transformers, in parallel, represented by a single transformer symbol in the network diagram. Defaults to 1 if it is left blank, or if a zero is entered.

DESCRIPTION: Up to 32 characters may be entered here but are not stored.

NOTES:

1 The zero sequence impedance of the branch will be left blank i.e. it will be taken to be infinite, if any one of the components of the branch does not contain zero sequence data.

2 The transformer entries made here, will be duplicated automatically in the LINE DATA 3 pages. This data can be edited from either of these two locations.

3 Checks are made to ensure that the TYPE's entered exist in the DATA BASE pages. The message TYPE DOES NOT EXIST is printed when this is not the case.

TRANSFORMER DATA 3

PAGE 1 OF 1

BUS-SEND	BUS-REC	TYPE	N.PARALLEL	DESCRIPTION
SUB 1	SUB 2			
SUB 3	EMERG-G			
SUB 3	EMERG-G			

OPTIONS:

REDISPLAY

HELP

RETURN

SYSTEM BASE MVA= 100.0

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Figure 9.23

9.6.3 Generator data 3

This edit page is shown in figure 9.24.

ID : Machine identifier. Any keyboard character may be entered, when required, and is subsequently displayed on the diagrams.

UDEM-TYP : Enter the UDEM ID code for user defined model.

TYPE : Enter an appropriate generator TYPE number, from those previously entered and stored in the GENERATOR DATA BASE file.

N-PARALLEL: The number of generators, in parallel, represented by a single generator symbol in the network diagram. Defaults to 1 if it is left blank, or if a zero is entered.

GEN-MW : Generated MW. Use negative values for synchronous motors. For equivalent generators enter the total group MW.

GEN-MVAR : Generated MVAR. Use negative values for consumed MVAR. For equivalent generators enter the total group MVAR.

VOLT-PU : Machine busbar voltage magnitude in pu.

DESCRIPTION: Up to 32 characters may be entered here but are not stored.

NOTES:

1 The ID entries made here, will be duplicated automatically in the AVR and the GOVERNOR DATA 3 pages. This data can be edited from any of these three locations.

2 The N-PARALEL entries made here, are duplicated automatically in the GOVERNOR AND TURBINE DATA 3 pages. This data can be edited from either of these two locations.

3 Checks are made to ensure that the TYPE's entered exist in the DATA BASE pages. The message TYPE DOES NOT EXIST is printed when this is not the case.

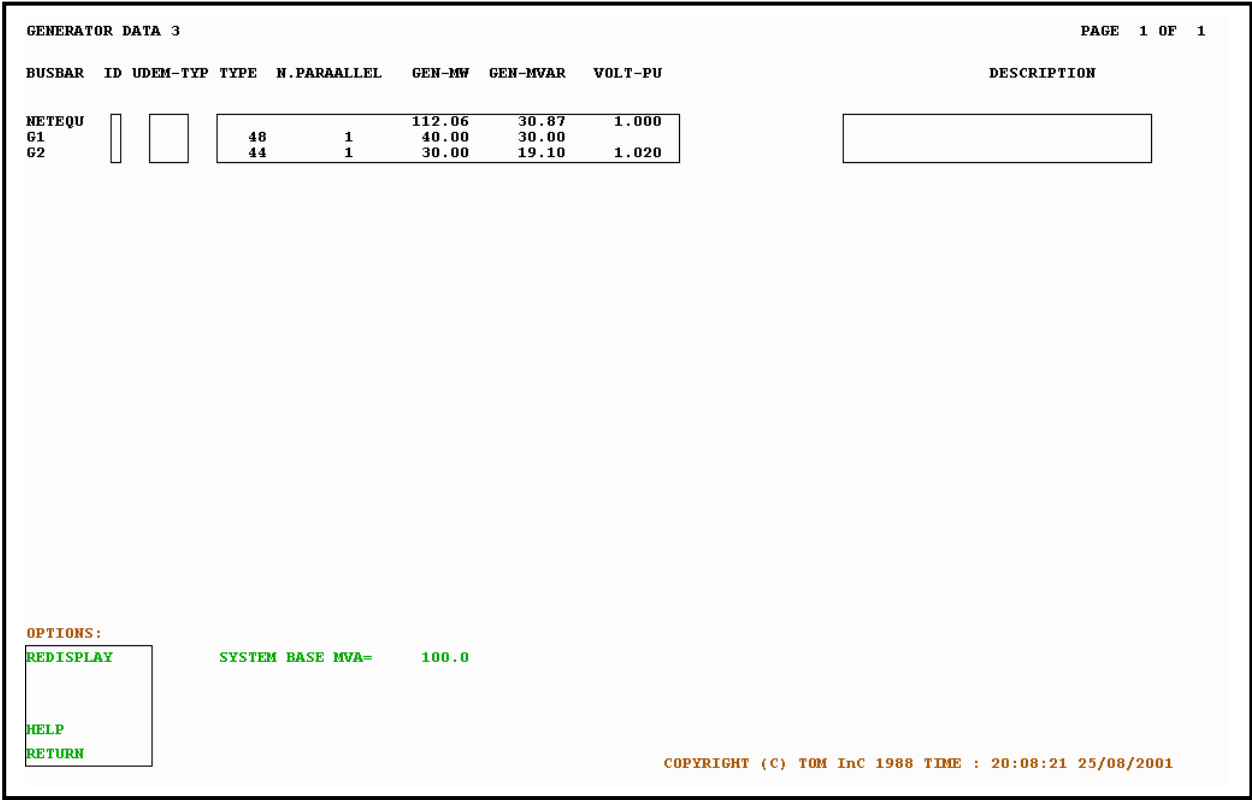


Figure 9.24

9.6.4 AVR data 3

This edit page is shown in figure 9.25.

ID : Machine identifier. Any keyboard character may be entered, when required, and is subsequently displayed on the diagrams.

CTRL-BAR : Name of busbar controlled by AVR.

TYPE : Enter an appropriate AVR TYPE number, from those previously entered and stored in the AVR DATA BASE file.

DESCRIPTION: Up to 32 characters may be entered here but not stored.

NOTES:

1 Any regulator IDs entered here, will be automatically duplicated in the AVR and the GOVERNOR DATA 3 pages. This data can be edited from any of these three locations.

2 Checks are made to ensure that the TYPE's entered exist in the DATA BASE pages. The message TYPE DOES NOT EXIST is printed when this is not the case.



Figure 9.25

9.6.5 Governor and turbine data 3

This edit page is shown in figure 9.26.

ID : Machine identifier. Any keyboard character may be entered, when required, and is subsequently displayed on the diagrams.

TYPE : Enter an appropriate governor TYPE number, from those previously entered and stored in the GOVERNOR DATA BASE file.

N-PARALLEL: The number of governor so for generators group, represented by a single generator symbol in the network diagram. Defaults to 1 if it is left blank, or if a zero is entered.

NOTES:

1 The N-PARALLEL entries made here, will be duplicated automatically in the GENERATOR DATA 3 pages. This data can be edited from either of these two locations.

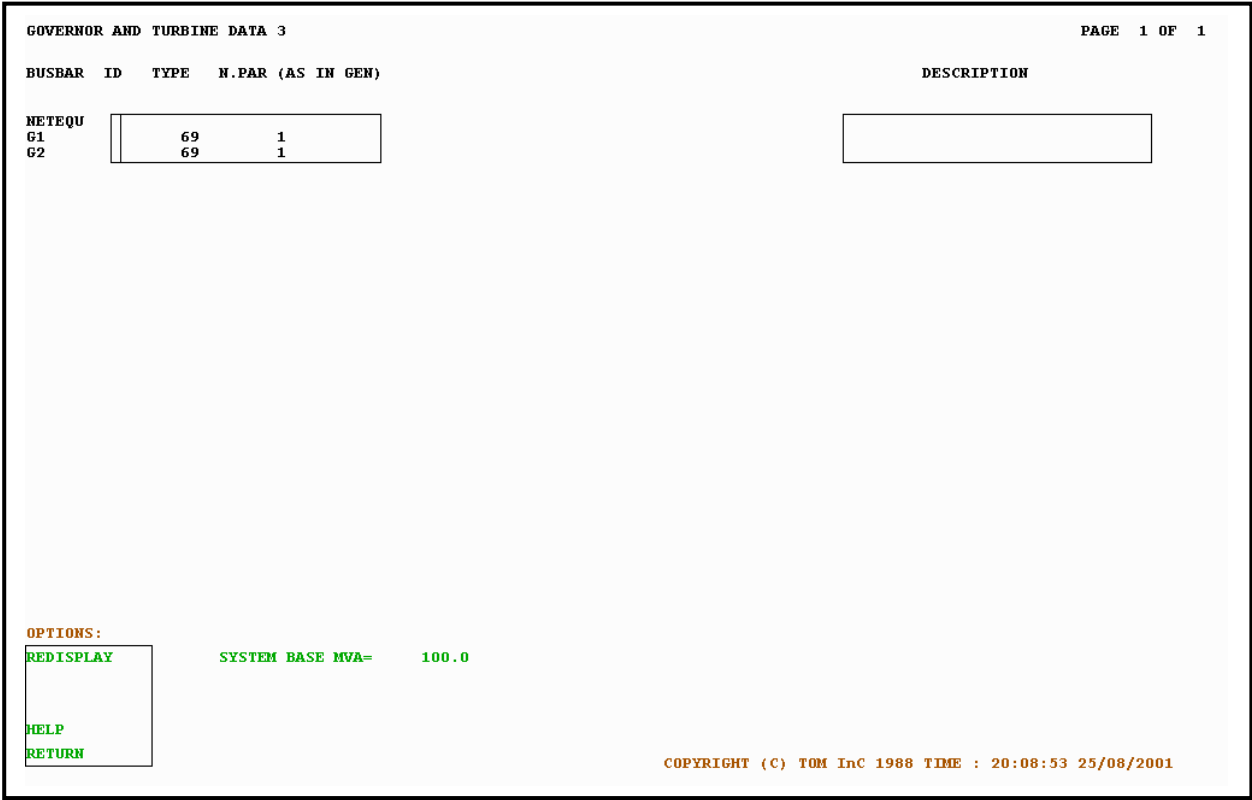


Figure 9.26

9.6.6 Induction motor data 3

This edit page is shown in figure 9.27.

ID : Machine identifier. Any keyboard character may be entered, when required, and is subsequently displayed on the diagrams.

UDEM-TYP : Enter the UDEM ID code for user defined model.

TYPE : Enter an appropriate Induction motor TYPE number, from those previously entered and stored in the INDUCTION MOTOR DATA BASE file.

N-PARALLEL: The number of induction motors, in parallel, represented by a single induction motor symbol in the network diagram. Defaults to 1 if it is left blank, or if a zero is entered.

PMECH-MW : Mechanical power output of motor in MW. For equivalent motors enter the total group power output, in MW.

DESCRIPTION: Up to 32 characters may be entered here but are not stored.

NOTES:

1 Checks are made to ensure that the TYPE's entered exists in the DATA BASE pages. The message TYPE DOES NOT EXIST is printed when this is not the case.

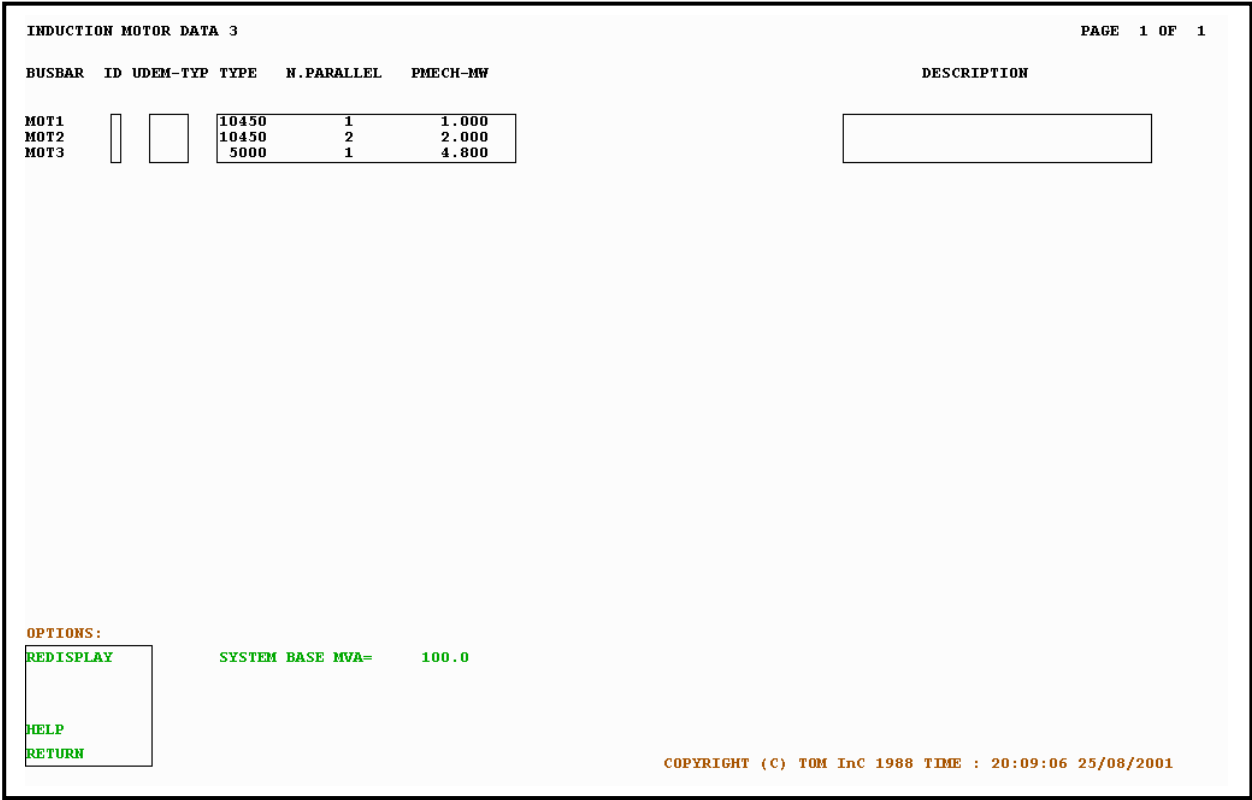


Figure 9.27

9.6.7 Other edit pages that use data bases

There are other pages which use database types of their owns. Most of them are related to protection and reliability facilities of PASHA. These are described in chapters 11,12, and 15.

9.7 DatabaseTYPE standard

With PASHA package usually 10 different database folders (DB1-DB10) will be dedicated to the users. Since our clients provide them the TYPE number might regarded in no standard in these databases, or may be our clients individually proceeded with their own standards.

TOM Industrial consultant suggest the following standard for the database TYPE to be considered for the sack of clarity:

LINES:

TRANSFORMERS:

GENERATORS:

AVRS:

GOVERNORS:

MOTORS:

O.V. RELAYS:

FUSES:

DISTANCE RELAYS:

UNIT PROTECTION:

CIRCUIT BREAKERS:

RELIABILITY:

9.8 Summary

The data base section provides a very powerful method of creating a set of typical or specific plant parameters that can be easily included in new networks, without the necessity of entering specific parameters one by one.

It is very flexible, and the links to the edit section of PASHA enable quick entry, and provide automatic scaling to the new system BASE.

The use of passwords enable a large group of people to access the same database without corrupting each others entries.