Appendix (A)

MINISTRY OF IRRIGATION AND WATER RESOURCES

MEROWE DAM PROJECT IMPLEMENTATION UNIT (MDPIU)

KHARTOUM ,SUDAN

NETWORK STUDY

TABLE A1 MAIN PHYSICAL CHARACTERISTICS OF LINE TYPES

LINES PARAMETER

TYPE	R(1)	X(1)	C(1)	R(0)	X(0)	C(0)	IMAX
	OHM	OHM/KM	NF/KM	OHM/KM	OHM/KM	NF/KM	A
ACSR4×325mm²	0.028	0.276	13.083	0.3445	0.9810	9.99	2890
ACSR2×240mm²-220kv	0.067	0.302	13.060	0.262	1.2	5.75	1250
ACSR2×240mm²-110kv	0.067	0.269	13.060	0.262	1.044	5.75	1250
ACSR1×480mm²	0.076	0.403	9.020	0.551	2.159	4.40	850
ACSR1×400mm²	0.076	0.403	9.020	0.551	2.159	4.40	850
ACSR1×350mm²	0.087	0.379	9.500	0.502	1.93	4.30	780
ACSR1×150mm²	0.105	0.289	9.650	0.315	0.867	5.40	500
ACSR1×120mm²	0.255	0.386	9.700	0.44	1.45	5.70	460
ACSR1×95mm²	0.348	0.421	8.600	0.546	1.38	5.30	324
ACSR1×95mm²-66kv	0.348	0.397	8.960	0.47	1.45	5.70	370
Al 1×185mm²	0.171	0413	9.400	0.31	1.48	5.60	426

APPENDIX (B)

TABLE B1 EXISTING LINE TAKEN INTO ACCOUNT IN PRESENT STUDY

LINE	CIRCUIT NUMBER	NOMINAL VOLTAGE(KV)	LENGTH(KM)	TYPE
KILOX-GIAD	1	220	43	400 MM²ACSR
KILOX –MERINGAN	1	220	184	400 MM²ACSR
GIAD-MERINGAN	1	220	141	400 MM²ACSR
MERINGAN-SENNAR	2	220	84	400 MM²ACSR
SENNAR-ROSEIRES	2	220	228	400 MM²ACSR
GAILI-EID BABIKER	2	220	60	2×240MM²ACSR
EID BABIKER-KILO X	2	220	14	2×240 MM²ACSR
KILO X-KUKU	2	110	14.6	350 MM²ACSR
KUKU-KHRTOUM NORTH	2	110	4.5	350 MM²ACSR
KHRTOUM NORTH-EID BABIKER	2	110	12	2×240 MM²ACSR
IZERGAB-EID BABIKER	2	110	32	2×240 MM²ACSR
IZERGAB-MAHADIA	2	110	8	2×240MM²ACSR
MAHADIA-OMDURMAN	2	110	9.3	2×240MM²ACSR
OMDURMAN-FOREST	2	110	9.7	2×240MM²ACSR
FOREST-MAGIRUS	2	110	11	2×240MM²ACSR
MAGIRUS-KILOX	2	110	10.8	2×240MM²ACSR
KILOX-ELBAGER	1	110	28	95 MM²ACSR
ELBAGER-GIAD	1	110	3	95 MM²ACSR
GIAD-HASSAHEISA	1	110	77	95 MM²ACSR
HASSAHEISA-MERNGAN	1	110	55	95 MM²ACSR
MERINGAN-HAG ABDALLAH	1	110	35	95 MM²ACSR

HAG ABDALLAH-SENNAR HYDRO	1	110	60	95 MM²ACSR
SENNAR HYDRO-MINA SHARIF	1	110	69	95 MM²ACSR
SENNAR-RABK	1	110	96	95 MM²ACSR
SENNAR-SENNAR HYDRO	1	110	10	95 MM²ACSR
MERINGAN-ELFAU	1	110	71	95 MM²ACSR
ELFAU-GEDAREF	1	110	153	95 MM²ACSR
GEDAREF-RAWESDA	1	66	38	95 MM²ACSR
RAWESDA-SHOWAK	1	66	32	95 MM²ACSR
SHOWAK-ELGIRBA	1	66	70	95 MM²ACSR
EL GIRBA-KASSALA	1	66	95	120 MM²ACSR
ELGIRBA-KILO 3	1	66	3	120 MM²ACSR
KILO 3-HALFA	1	66	55	120 MM²ACSR
KUKU-KHARTOUM NORTHS	2	33	4.5	185 MM²ACSR

APPENDIX (C)

This table showing the configuration of numerical type MICOMP442 .this table from user technical manual

Menu text	Default setting	Available settings
CONFIGURATION		
Restore Defaults	No Operation	No Operation
		All Settings
		Setting Group 1
		Setting Group 2
		Setting Group 3
		Setting Group 4
Setting Group	Select via Menu	Select via Menu
		Select via Optos
Active Settings	Group 1	Group1
		Group 2
		Group 3
		Group 4
Save Changes	No Operation	No Operation
		Save
		Abort
Copy From	Group 1	Group1,2,3 or 4
Copy To	No Operation	No Operation
		Group1,2,3 or 4
Setting Group 1	Enabled	Enabled or Disabled

APPENDIX (D)

Input parameter

This table showing the Input parameter of numerical type MICOMP442 .this table from user technical manual .

	Data Type	Description	
Z1	Internal Logic	Fault detected in zone 1	
Z1x	Internal Logic	Fault detected in zone 1 extended	
Z2	Internal Logic	Fault detected in zone 2	
Z3	Internal Logic	Fault detected in zone 3	
Zp	Internal Logic	Fault detected in zone p	
Z4	Internal Logic	Fault detected in zone 4	
Forward	Internal Logic	FWD Fault Detected	
Reverse	Internal Logic	REV Fault Detected	
Reversal Guard	Internal Logic	Reversal guard	
Unblock PS	Internal Logic	Unblocking Power Swing	
Power Swing	Internal Logic	Power Swing Detected	
INP_Distance_Timer _block	TS opto	Zones blocked by external input	(*)
Unblock Z1	Configuration	Unblocking Pswing with Z1	
Unblock Z2	Configuration	Unblocking Pswing with Z2	
Unblock Zp	Configuration	Unblocking Pswing with Zp	
Unblock Z3	Configuration	Unblocking Pswing with Z3	
Unblock Z4	Configuration	Unblocking Pswing with Z4	
Zp_Fwd	Configuration	Directional Zp set Forward	
Z1<ZL	Configuration	Internal Configuration which determine that Z1	
		is lower than the length of the line ZL	
Perm Z2	Configuration	Type of logical distance scheme	
		(PUP Z2– POP Z2)	(**)
Perm Fwd	Configuration	Type of logical distance scheme	