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Sr. No.	Document description	Drawing No.
1	FOTE Documents - GA, GTP, BOQ, Layout & Scheme drawings	19-0504

THIS DOCUMENT IS APPLICABLE FOR FOLLOWING SUB STATION OF WORLD BANK FUNDED PROJECT (PACKAGE 399 & 397)

Sr. No.	SUB STATION NAME
1	SILLI S/S
2	ANGADA S/S
3	JARMUNDI S/S
4	IRBA S/S
5	AMRAPARA S/S
6	SHIKARIPARA S/S
7	KANKE S/S
8	PAKUR S/S

L&T Construction
Power Transmission & Distribution
Chennai - 600 089.

The documents submitted are checked with respect to requirements of technical Specification. Deviations, if any, are highlighted with proper justification.

Checked: *[Signature]*

Subject to the condition that you are not absolved from responsibility for correctness of the materials supplied as per specification.

Indu 11.10.2020

30-Aug-19	A	Issued For Approval	AMARARAJA	AMARARAJA	AMARARAJA
DATE	REV. NO.	DESCRIPTION	Designed	Checked	Approved

L&T Construction
Power Transmission & Distribution

CLIENT:	CONSULTANT:
 JHARKHAND URJA SANCHARAN NIGAM LIMITED	

PROJECT:	WORLD BANK PACKAGE: 397 132/33KV SUBSTATIONS AT ANGADA, IRBA, SILLI AND ADDITIONAL BAYS AT KANKE LOA. No: 01/WB/JUSNL/2018-19, Dated: 24.10.2018. WORLD BANK PACKAGE: 399 132/33KV SUBSTATIONS AT SHIKARIPARA, JARMUNDI, AMRAPARA AND ADDITIONAL BAYS AT PAKUR. LOA. No: 03/WB/JUSNL/2018-19, Dated: 24.10.2018.
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SUPPLIER / CONTRACTOR:

JOB No. O18189, O18190

TOTAL NO. OF PAGES				TITLE:
	NAME	SIGN	DATE	
DSGN	AMARARAJA	AMARARAJA	21-08-19	FOTE Documents - GA, GTP, BOQ, Layout & Scheme drawings
CHKD	AMARARAJA	AMARARAJA	21-08-19	
APPD	AMARARAJA	AMARARAJA	21-08-19	

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RELEASED FOR	☐ PRELIMINARY	☐ TENDER	☐ INFORMATION	☒ APPROVAL	☐ CONSTRUCTION
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General Manager
(Contracts & Materials)
(Multilateral Funding Projects)
JUSNL HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA
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For	SENIOR MANAGER	DEPUTY GENERAL MANAGER
Feedback Infra Pvt. Ltd.	CONTRACTS & MATERIALS	CONTRACTS & MATERIALS
WB Funded Project JUSNL	MULTI-LATERAL FUNDING PROJECTS	MULTI-LATERAL FUNDING PROJECTS
Ranchi, Jharkhand	JUSNL, HQ, RANCHI	JUSNL, HQ, RANCHI

General Manager
Contracts & Materials
(Manufacturing Projects)
1001, 100, 1040
MANUFACTURER

[illegible]

132KV and 33KV Substation FOTE

G. NO :19-0504

SALE ORDER NO: PCHES/000017/19-20	REV : 0	THS A1
	LOC :	NEXT A2

[illegible]

PROJECT

JUSNL 132/33kV SS Pkg.-World Bank Funded

CLIENT

JHARKHAND URJA SANCHARAN NIGAM LTD

MANUFACTURER

AMARAJA
POWER SYSTEMS LTD
Registered Office & Works.
Karakumbadi-517520, Tirupati (AP)
Ph.(0877) 2285000

[illegible]

DRAWING TITLE

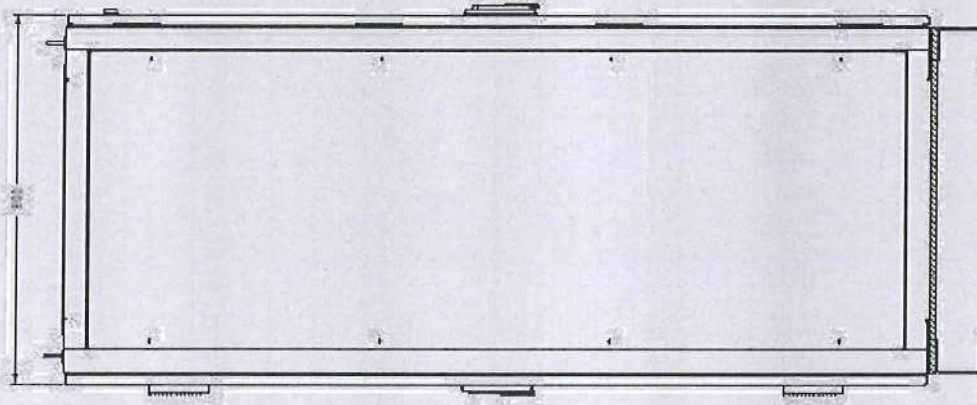
132KV and 33KV Substation FOTE

TITLE SHEET

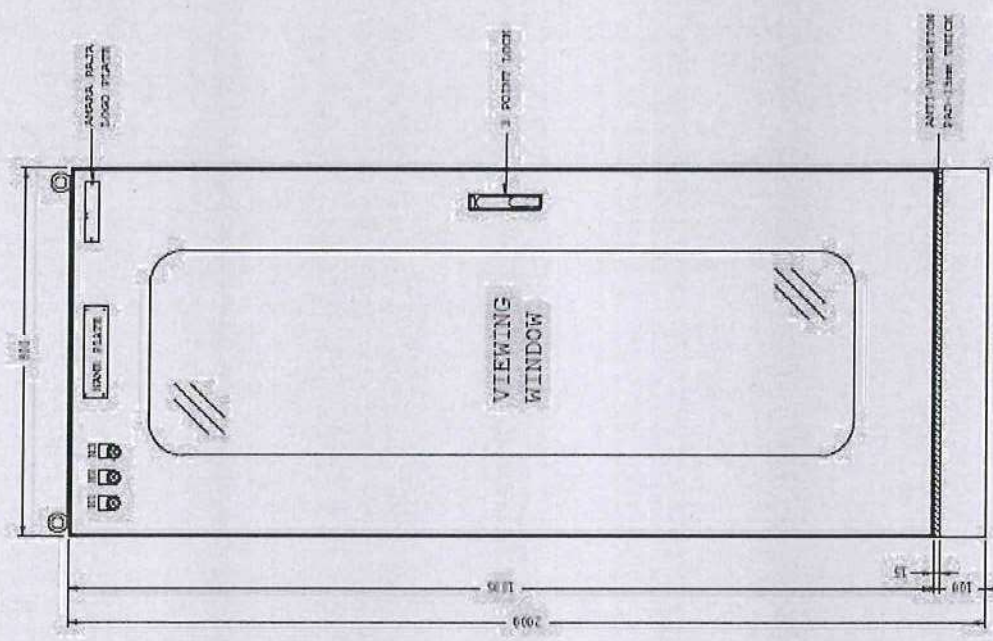
G. NO :19-0504

SALE ORDER NO: PCHES/000017/19-20	REV : 0	THS A1
	LOC :	NEXT A2

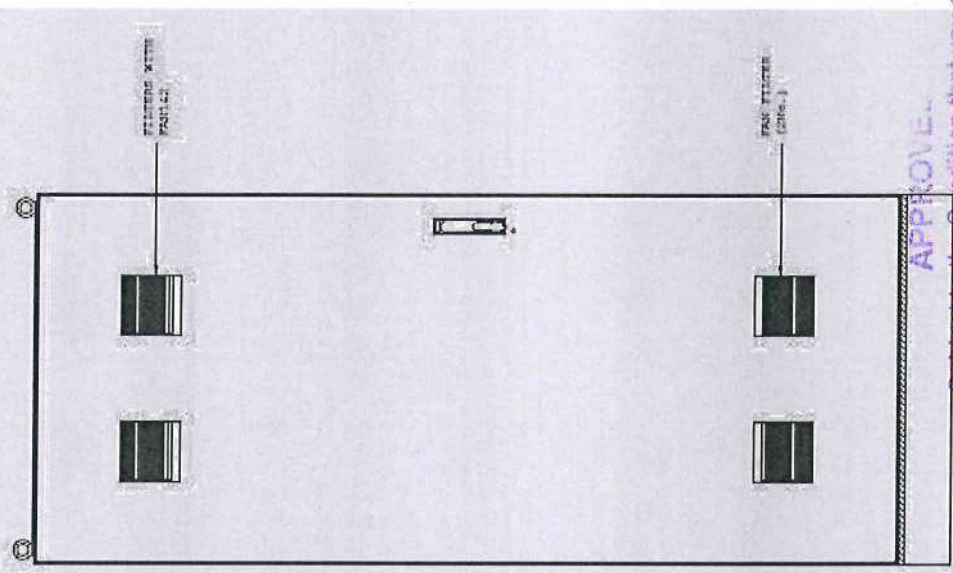
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REV	EOD	REMARKS	DATE	APPL	APPL	RAJ	P.O.NO.	Customer mail	3
WB		PROJECT NO. 132KV		SUBSTATION at Jharkhand		CUSTOMER : L&T Constructions		CONTRACTOR : A.M.A.R.A.R.A.J.A	
WB		PROJECT NO. 132KV		SUBSTATION at Jharkhand		CUSTOMER : L&T Constructions		CONTRACTOR : A.M.A.R.A.R.A.J.A	
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SIDE VIEW



FRONT VIEW
(DOOR CLOSED)



APPROVE

Subject to the Condition that you are
RELIEVED of responsibility for
(DOOR CLOSED)
as per specification

Recommended for Approval

For
Feedback/Infra Pvt. Ltd.
WB Funded Project JUSNL
Ranchi, Jharkhand



SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

[Signature]

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

[Signature]
General Manager
(Contracts & Materials)

132KV and 33KV Substation FOTE
DIMENSIONAL DRAWING OF FOTE
SALE ORDER NO. ECHS9000007/19-20
19-0504
Multi-lateral Funding Projects



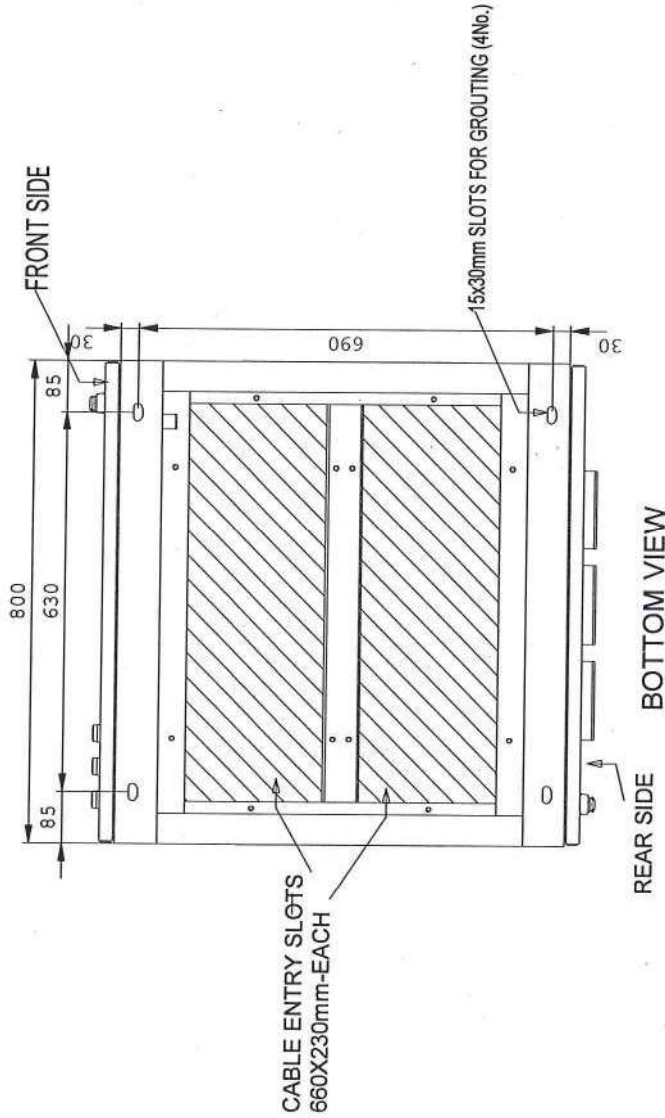
PROJECT : JUSNL 132/33KV SS Pkg-World Bank Funded
CUST : L&T Constructions
CONS. : Customer mail
P.O. NO. :
DATE : 25.05.19
DRAWN : KTV
CHKD : INSK
APPD : RAJ

REV	DATE	REMARKS
1	25.05.19	FOR APPROVAL

11

CONSTRUCTION DETAILS

1. TYPE OF CONSTRUCTION : FOLDED SHEET STEEL (MILD STEEL)
2. SHEET THICKNESS
FRAME : 2.5mm
DOORS & COVERS : 2mm
3. PAINT SHADE
FRAME : RAL7032 (BOTH EXTERIOR & INTERIOR)
DOORS & COVERS
EXTERIOR : RAL-7032 (TEXTURE)
INTERIOR : RAL-7032 (TEXTURE)
BOTTOM CHANNELS : RAL-9005 (TEXTURE)
COMPONENT MOUNTING PLATES : RAL-7032 (TEXTURE)
4. COMPONENT ACCESSIBILITY : FRONT & REAR
5. CUSTOMER CABLE ENTRY POSITION : FRONT & BACK AT BOTTOM



APPROVE
Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

General Manager
(Contracts & Materials)

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ. RANCHI

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ. RANCHI

Recommended for Approval

For
Feedback Infra Pvt. Ltd.
WB Funded Project JUSNL
Ranchi, Jharkhand



PROJECT : JUSNL 132KV SS Pkg-World Bank Funded
CUST : L&T Constructions
CONS/CONT : Customer mail
P.NO. :

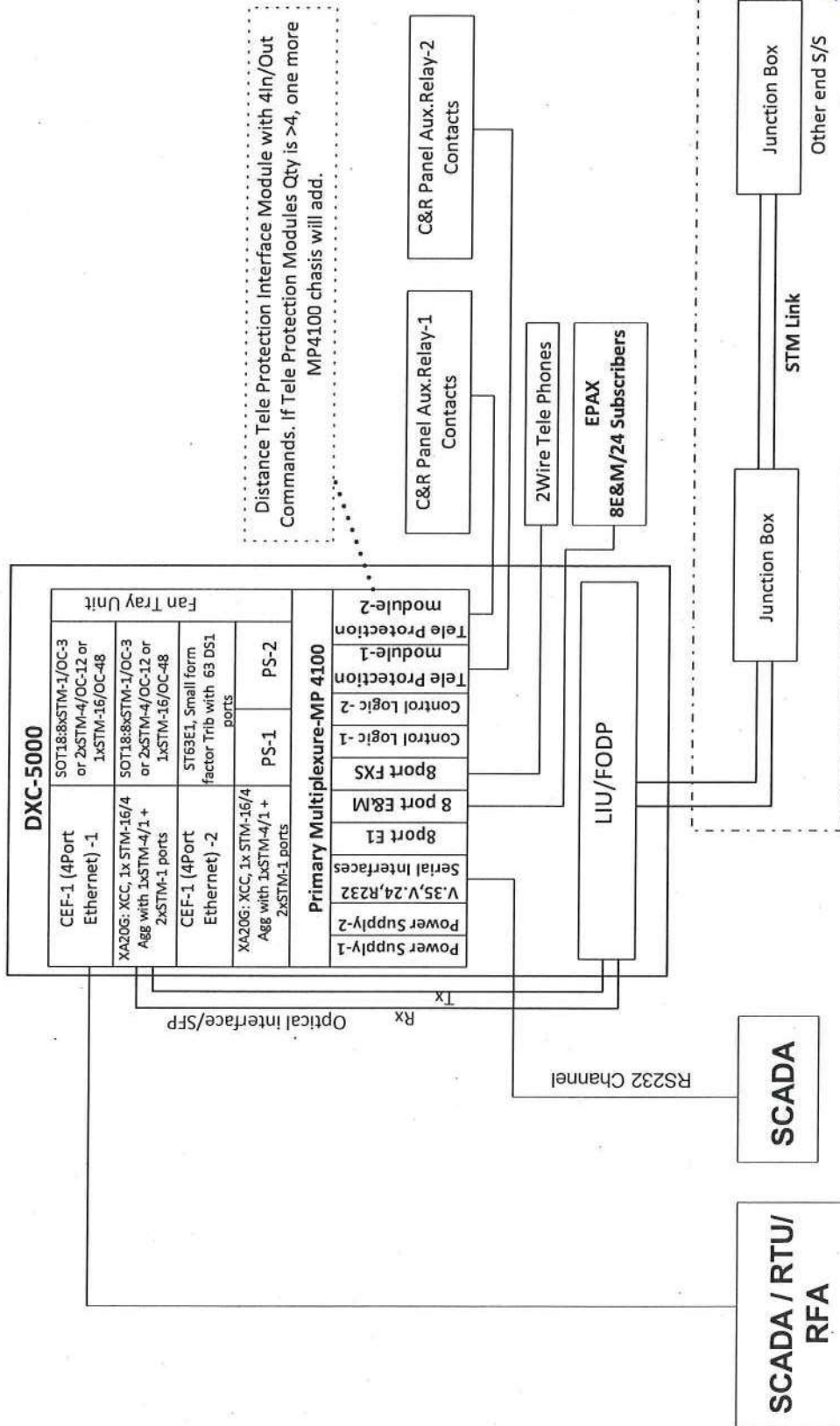
DATE	DATE	DATE	DATE	DATE	DATE
8/21/2019	8/21/2019	8/21/2019	8/21/2019	8/21/2019	8/21/2019
DRWN	CHKD	APVD	NSK	APVD	NSK

REV	LOC	DATE	REMARKS
1			

132KV and 33KV Substation FOTE
DIMENSIONAL DRAWING OF FOTE

132KV and 33KV Substation FOTE
DIMENSIONAL DRAWING OF FOTE

FOTE Panel Configuration For S/S of Packages 397 &399 (World bank funded)



Recommended for Approval

For Feedback Infra Pvt. Ltd.
WB Funded Project JUSNL
Ranchi, Jharkhand

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

General Manager
(Contracts & Materials)

APPROVE

Under Customer Scope

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

132KV and 33KV Substation FOTE (M) 15-0504
FOTE INTERCONNECTION BLOCK DIA SALE ORDER NO. PO-ES00001715-20

AMARA BABA LTD
POWER SYSTEMS LTD
Registered Office & Works
Ph: 0372 2255300

PROJECT : JUSNL 132/33KV SS Plug-World Bank Funded
CUST : L&T Construction
CONS/CONT :
P.O.NO. : Customer mail

REV	CD	DATE	APPD	DATE	APPD	DATE	APPD
1							

DATE: 02/02/2018
DWN: KTV
CHK: NSK
APPD: RAU

REMARKS:

Two directional Managed Synchronous Digital Hierarchy (SDH) type - MP4100 & DXC 5000 BOQ

Package - 399

Package - 397

S No.	Description	Make	Model	Shikaripara	Pakur	Jarmundi	Amrapara	Angada	Irba	Kanke	Silli	Total
A	MP4100											
1	4U chassis with Power Supply & Control Logic - CL2 common logic modules, redundant -48 VDC power supply, redundant DS0 cross connect	RAD	MP-4100-2/48R/DS0R	2	1	2	2	2	2	1	2	14
2	8 Port E&M Interface	RAD	MP-2100M-VC-8/E&M	1	1	1	1	1	1	1	1	8
3	12PortV.35/V.11/RS232 Data InterfaceUnit/2UTP(V.24,V.35,G.703)RAD		MP-4100M-VS/12S/2UTP	1	1	1	1	1	1	1	1	8
4	8 Port FXS Interface	RAD	MP-2100M-VC-8/FXS/RJ	1	1	1	1	1	1	1	1	8
5	8 port E1 interface	RAD	MP-4100M-8E1/3XUTP	2	1	2	2	2	2	1	2	14
6	CMD In/Out distance teleprotection interface	RAD	MP-4100M-TP/CV/EMR	8	0	8	8	8	12	0	12	56
B	DXC5000											
1	Base equipment sub-rack - DXC5000 R2 Packet Optical Transport System: Includes 7 slot chassis, Backplane, Airfilter	RAD	DXC-5000-MN/7SLOT	1	1	1	1	1	1	1	1	8
2	Power Supply - DPU18 : 325W DC PSU (G) with 12V O/P 48V I/P	RAD	DXC-5000M-PS/48VDC-12VDC/325W	2	2	2	2	2	2	2	2	16
3	Optical Base card - XA20G: XCC,1x STM-16/4 Agg with1xSTM-4/1 + 2xSTM-1 ports	RAD	DXC-5000M-AGG/XA20G	2	2	2	2	2	2	2	2	16
4	Optical Base card - SOT18, Small form factor optical Trib supporting 8xSTM-1/OC-3 or 2xSTM-4/OC-12 or 1xSTM-16/OC-48	RAD	DXC-5000M-IO/SOT18	1	1	1	1	1	1	1	1	8
5	63 port E1 Interface	RAD	DXC-5000M-IO/ST63E1T1	1	1	1	1	1	1	1	1	8
6	4port Ethernet Interface CEF1: 2 x GE (Optical, 1000Mbps) + 2 x GE/FE (Electrical, 10/100/1000Mbps) + 2 x FE (Electrical, 10/100Mbps) Ports for T11400	RAD	DXC-5000M-IO/CEF1	2	2	2	2	2	2	2	2	16
7	Fan unit- FTU & OAM for DXC5000 7 slot chassis with ToD support	RAD	DXC-5000M-IO/FTU20	1	1	1	1	1	1	1	1	8
8	Optical interface/SFP - L4.1, SFP for <40km Line	RAD	DXC-5000-SFP12	2	2	2	2	2	2	2	2	16
9	Optical interface/SFP - OC12/OC-12 1xL4.2-SFP for <80km Line	RAD	DXC-5000-SFP13	2	2	2	2	2	2	2	2	16
10	Cable - control unit sync interface	Reputed		2	2	2	2	2	2	2	2	16
C	EPAX											
1	EPABX											
	Spare set for EPABX											

Recommended for Approval

For Feedback Infra Pvt. Ltd.
Spare set for EPABX
Ranchi, Jharkhand

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI LATERAL FUNCTION PROJECTS
JUSNL, H.D. RANCHI

APPROVAL
Subject to the condition that you are not absolved from responsibility for correctness of the materials supplied as per specification



A.M.A.B.A.R.A.J.A.
POWER SYSTEMS LTD.
Registered Office & Vm.
Ph: 08271 225003

PROJECT : JUSNL 132/33KV SS Pkg-World Bank Funded
CUST : LAT Constructions
P.O.NO. :
CONSCONT :
Customer mail

DATE: 25.05.19
TIME: 12:00
BY: [Signature]
REMARKS: [Signature]
DATE: [Signature]
TIME: [Signature]

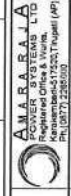
132KV and 33KV Substation FOTE
BILL OF MATERIAL

DRG. NO. : 19-0504
SALE ORDER NO./PCHES00001719-20
REV. 0 / TMS 02
LOC. : NOT 03

Cabinet & accessories

Package - 399 Package - 397

S No.	Description	Make	Model	Shikaripara	Pakur	Jarmundi	Amrapara	Angada	Irba	Kanke	Silli	Total
D	Cabinet & other Accessories											
1	Cabinet	AMARA RAJA	Cab-2000(H)x800(W)x800(D)	1	1	1	1	1	1	1	1	8
2	24Port, RJ45 patch panel	D-Link/Eq	5E1BLK241	2	2	2	2	2	2	2	2	16
3	48Port, RJ45 patch panel	D-Link/Eq	5E1BLK481	1	1	1	1	1	1	1	1	8
4	COUNTER	SELEC	LXC900A	8	0	8	8	8	12	0	12	56
5	Door lamp-DL1	Havells	5W Lumeno CDL 6500K	1	1	1	1	1	1	1	1	8
6	Door lamp Switch-DS1	Reputed	PB-door-lamp-NC-(Refrig switch)	1	1	1	1	1	1	1	1	8
7	Heater-100W-230VAC -HS1	GIRISHEGO	100W-230V AC	1	1	1	1	1	1	1	1	8
8	Fan-240VAC-20W	SUNON	DP201A-2123HBT.GN	2	2	2	2	2	2	2	2	16
9	FUSE LINK	BUSMANN	Neutral Links, 32A	5	5	5	5	5	5	5	5	40
10	Indication lamp-Red 22.5mm-H1,H2	SECO	48V	2	2	2	2	2	2	2	2	16
11	Indication lamp-Amber 22.5mm-H3	SECO	48V DC-22.5mm -Amber	1	1	1	1	1	1	1	1	8
12	Heater ON/OFF Switch-HS	SWITRON	10A	1	1	1	1	1	1	1	1	8
13	LINK BASE	BUSMANN	32A-415/500V AC	5	5	5	5	5	5	5	5	40
14	Aux.relay-48V-DC-3C/O	PLA	48V DC-3C/O-Panel mount	3	3	3	3	3	3	3	3	24
15	PLA BASE	PLA	PNL-11pin-3C/O	3	3	3	3	3	3	3	3	24
16	Power Socket with Switch	ANCHOR	3 Pinplug-15A,240VAC	1	1	1	1	1	1	1	1	8
17	MCB-16A-2P-AC-Q1	REPUTED	CB-60	1	1	1	1	1	1	1	1	8
18	MCB-1P-6A-AC-Q2,Q3,Q4,Q5,Q6	REPUTED	CB-60	5	5	5	5	5	5	5	5	40
19	MCB-2P-32A-DC-Q7,Q8	REPUTED	5SL5232	2	2	2	2	2	2	2	2	16
20	EOW phone	REPUTED	SENIOR/MANAGER CONTRACTS & MATERIALS MULTI-LATERAL FUNDING PROJECTS	1	1	1	1	1	1	1	1	8
21	Fiber Patch Chords (LC-SC), Single mode with 3m cable length	REPUTED	SENIOR/MANAGER CONTRACTS & MATERIALS MULTI-LATERAL FUNDING PROJECTS	1	1	1	1	1	1	1	1	8



JUSNI 13233AV SS Pkg-World Bank Funded
LAT Construction
Customer mail

PROJECT
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DRWA
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132KV and 33KV Substation FOTE

BILL OF MATERIAL

AMARA RAJA LTD

POWER & WATER

JUSNI 13233AV SS Pkg-World Bank Funded

LAT Construction

PROJECT

CUST

DRWA

KTV

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KTV

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KTV

132KV and 33KV Substation FOTE

BILL OF MATERIAL

AMARA RAJA LTD

POWER & WATER

JUSNI 13233AV SS Pkg-World Bank Funded

LAT Construction

PROJECT

CUST

DRWA

KTV

DRWA

KTV

DRWA

KTV

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KTV

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DRWA

KTV

DRWA

KTV

DRWA

KTV

DRWA

KTV

Communication Equipment (Spare set)

Basic card (of each type), Optical Interface/SFP's (of each type), Interface Cards (of each type) & Digital Protection Coupler

Package - 399

Package - 397

S No.	Description	Make	Model	Shikaripara	Pakur	Jarmundi	Anrapara	Angada	Irba	Kanke	Silli	Total
A	MP4100											
1	Power supply module for MP-4100, -48 VDC	RAD		1	1	1	1	1	1	1	1	8
2	MP-4100 Common Logic 2, DS0 cross connect only	RAD		1	1	1	1	1	1	1	1	8
3	8 Port E&M Interface	RAD		1	1	1	1	1	1	1	1	8
4	12 Port V.35/V.11/RS232 Data Interface Unit/2UTP	RAD		1	1	1	1	1	1	1	1	8
5	8 Port FXS Interface	RAD		1	1	1	1	1	1	1	1	8
6	8 Port E1 Interface	RAD		1	1	1	1	1	1	1	1	8
7	CMD In/Out distance teleprotection Interface	RAD		1	0	1	1	1	1	0	1	6
B	DXC5000											
1	DPU18 : 325W DC PSU (G) with 12V O/P 48V I/P for DXC5000 R2	RAD		1	1	1	1	1	1	1	1	8
2	Optical Base card -XA20G: XCC, 1x STM-16/4 Agg with 1xSTM-4/1 + 2xSTM-1 ports	RAD		1	1	1	1	1	1	1	1	8
3	Optical base card - SOT18, Small form factor optical Trib supporting 8xSTM-1/OC-3 or 2xSTM-4/OC-12 or 1xSTM-16/OC-48 for DXC5000	RAD		1	1	1	1	1	1	1	1	8
4	Optical interface/SFP - L4.1, SFP for <40km Line	RAD		1	1	1	1	1	1	1	1	8
5	Optical interface/SFP - OC12/OC-12 1xL4.2-SFP for <80km Line	RAD		1	1	1	1	1	1	1	1	8
6	63 port E1 Interface	RAD		1	1	1	1	1	1	1	1	8
7	4port Ethernet Interface CEF1: 2 x GE (Optical, 1000Mbps) + 2 x GE/FE (Electrical, 10/100/1000Mbps) + 2 x FE (Electrical, 10/100Mbps) Ports for TJ1400	RAD		1	1	1	1	1	1	1	1	8

Other interfacing accessories

S No.	Description	UOM	Make	Shikaripara	Pakur	Jarmundi	Anrapara	Angada	Irba	Kanke	Silli
1	5 pair PVC unarmoured telephone cable	Lot	200 mtrs	Reputed	1	1	1	1	1	1	1
2	2 pair PVC unarmoured telephone cable	Lot	200 mtrs	Reputed	1	1	1	1	1	1	1
3	CAT5 cable	Lot	200 mtrs	Reputed	1	1	1	1	1	1	1
4	Approach cable, 24 Fiber with HDPE pipe	Lot	200 mtrs	Reputed	1	1	1	1	1	1	1
5	FODP/LIU, 24 Fiber	Nos	1	Reputed	1	1	1	1	1	1	1
6	EMS installed on laptop	Nos	1	Reputed	1	1	1	1	1	1	1
7	2 wire telephones	Nos	1	Reputed	1	1	1	1	1	1	1

Feedback Infra Pvt Ltd

WS Funded Project

Branch, Jharkhand

REV: 100

DATE: 10/05/18

BY: 10/05/18

10/05/18

10/05/18

10/05/18

SENIORE MANAGER

CONTRACTS & MATERIALS

MULTI LATERAL FUNDING PROJECTS

DEPUTY GENERAL MANAGER

CONTRACTS & MATERIALS

SENIORE MANAGER

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MULTI LATERAL FUNDING PROJECTS

DEPUTY GENERAL MANAGER

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MULTI LATERAL FUNDING PROJECTS

DEPUTY GENERAL MANAGER

CONTRACTS & MATERIALS

SENIORE MANAGER

CONTRACTS & MATERIALS

MULTI LATERAL FUNDING PROJECTS

DEPUTY GENERAL MANAGER

CONTRACTS & MATERIALS

Standard Module Placement in MP-4100

PS	PS	10-1	10-2	10-3	10-4	10-5	10-6	10-7	10-8	10-9	10-10
PS1	PS1	VS/12S/UTP	8E1 Module	VC-8/E&M	VC-8/FXS	CL.2	TP	Blank Module	Blank Module	Blank Module	Blank Module

MP-4100 Chassis,
Typical Rear View

VS/12S/UTP VC-8/FXS/RJ

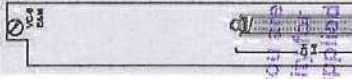
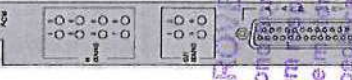
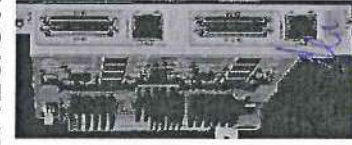
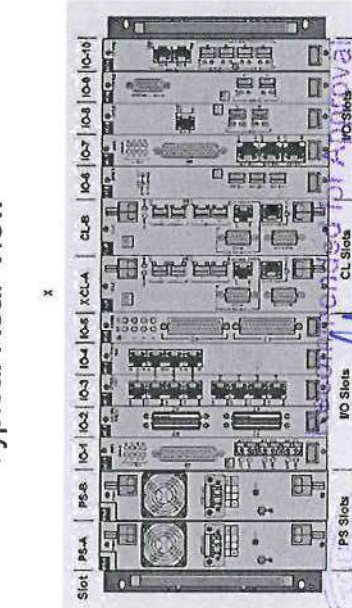
CL.2

TP

8E1/3UTP ACM

VC-8/E&M

MP4100		TELECOMMUNICATION PLATFORM	
SLOT	MODULE	UNIT	
PS	PS1	48VDC POWER SUPPLY	
PS	PS2	48VDC POWER SUPPLY	
1	VS/12S/UTP	12 SERIAL INTERFACE, 2 UTP ETHERNET PORT	
2	8E1 Module	8 Port E1 Interface	
3	VC-8/FXS	8 PORT FXS INTERFACE	
4	VC-8/E&M	8 PORT E&M INTERFACE	
CL-A	CL.2	CONTROL LOGIC UNIT (STM-4, 2UTP, SFP based GbE ports)	
CL-B	CL.2	CONTROL LOGIC UNIT (STM-4, 2UTP, SFP based GbE ports)	
5	TP	Teleprotection Module	
6	TP	Teleprotection Module	
7	Blank Module	X	
8	Blank Module	X	
9	Blank Module	X	
10	Blank Module	X	



For Feedback Infra Pvt. Ltd.
WB Funded Project JUSN
Ranchi, Jharkhand

RECOMMENDED APPROVAL

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS

APPROVED
Subject: The Confirmation that you are not absolved from responsibility of correctness of the materials supplied per specification

General Manager
(Contracts & Materials)

PG. NO. 19-0504
SALE ORDER NO. PC-E90001719-001
REV. 0 THE CD LOC. INT. CD

AM & SONS LTD.
POWER SYSTEMS LTD.
Registered Office & Name:
Ph. 0872 2205555

PROJECT: JUSN-173213M \$5 Phd-World Bank Funded
CUST: KTV
NSK
CON/CONT
P.O.NO.

Customer mail

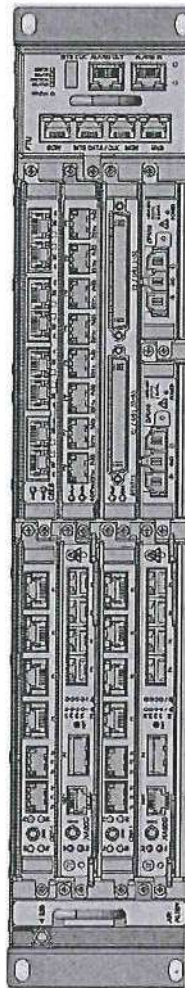
132KV and 33KV Substation FOTE
MP4100 LAYOUT

REV. 0 THE CD LOC. INT. CD

Standard Slot Allotment in DXC5000

Slot 1 XA20G	Slot 5 ST63E1	FTU
Slot 2 XA20G	Slot 6 Tributary	
Slot 3 SOT18	Slot 7 Tributary	
Slot 4 SOT18	Slot 8 PSU	
	Slot 9 PSU	

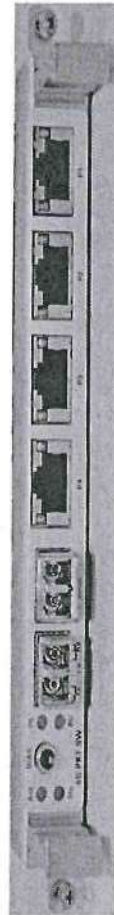
Front View, DXC5000



Tributary Card ST63E1



CEF-1

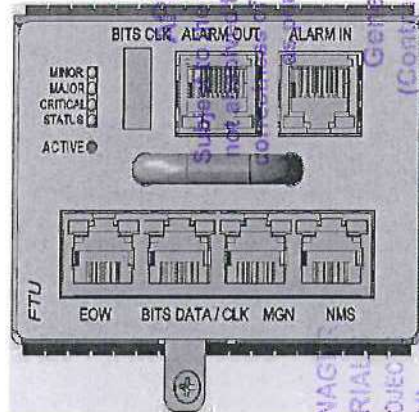


XA20G



DXC5000		High Capacity Equipment
No.	Slot	Unit
1	AX20G	XCC, 1x STM-16/4 Agg with 1xSTM-4/1 + 2xSTM-1 ports
2	AX20G	XCC, 1x STM-16/4 Agg with 1xSTM-4/1 + 2xSTM-1 ports
3	SOT18	8XSTM-1/OC-3, or 2XSTM-4/C-12, or 1XSTM-16/OC-48 Line Interfaces
4	SOT18	8XSTM-1/OC-3, or 2XSTM-4/C-12, or 1XSTM-16/OC-48 Line Interfaces
5	ST63E1	Sixty three E1 Interfaces
6	CEF-1	Carrier Ethernet Fabric
7	CEF-1	Carrier Ethernet Fabric
8	PSU	48VDC POWER SUPPLY
9	PSU	48VDC POWER SUPPLY
10	FTU	Fan Tray Unit

FTU



PROVED
Condition that you are
not responsible for
the materials supplied
for specification

General Manager
(Contracts & Materials)
(Material Funding Projects)

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

RECOMMENDED FOR APPROVAL
FOR
FEEDBACK
WBS Funded Project
JUSNL, Jharkhand
JUSNL, Jharkhand

AMARA BABA LTD Power Systems Ltd Registered Office & Works Plot 107/1, 2nd Floor Pin 837011, Jharkhand	PROJECT: JUSNL, 132KV and 33KV Substation FOTE CUST: LAT Construction CONSCONT: P.O.NO. DATE: 25.05.18 BY: [Signature]	132KV and 33KV Substation FOTE DXC5000 LAYOUT	DRG NO: JUSNL-0504, Rev. 1 SALE ORDER NO: PO-ES00017119-20
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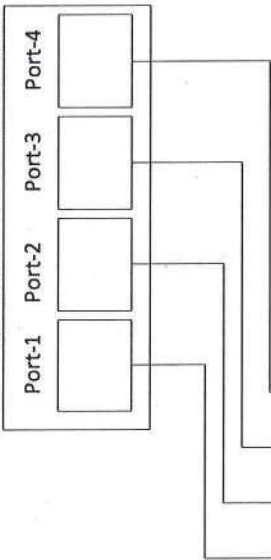
EQUIPMENT INTERFACE CABLING										
EQUIPMENT	MODULE		TERMINATION IN CABINET		REMARKS					
	TYPE	SLOT	CONNECTOR							
MP4100	CL-A	CL.2	P1	ACM	Termination to DB-25 Pin Connector					
			P2	STM-4\OC-12	Terminations for FODP Interface					
			P3	SFP based GbE Port	Terminations for Mangement Interface					
			P1	DB-34-Port 1 to 3	Terminations V.35 Data Interface					
	VS/12S/UTP	10-1	P2	DB-15-Port 4 to 6	Terminations V.11 Data Interface					
			P3	DB-25--Port 7 to 9	Terminations RS232 Data Interface					
			P4	Port 10 to 12	Terminations (V.35+V.11+RS232) Data Interface					
			P1 P2	TB 1\Krone1\Port 1,2	Terminations FXS Interface					
	VC-8 FXS	10-3	P3 P4	TB 1\Krone1\Port 3,4	Terminations FXS Interface					
			P5 P6	TB 1\Krone2\Port 5,6	Terminations FXS Interface					
			P7 P8	TB 1\Krone1\Port 7,8	Terminations FXS Interface					
			P1 P2	TB 2\Krone1\Port 1,2	Terminations E&M Interface					
	VC-4 E&M	10-5	P3 P4	TB 2\Krone2\Port 3,4	Terminations E&M Interface					
			P5 P6	TB 2\Krone3\Port 5,6	Terminations E&M Interface					
P7 P8			TB 2\Krone4\Port 7,8	Terminations E&M Interface						
-			-	Terminations Eight E1 Interface						
DXC5000	8E1/UTP	10-6	-	-	Terminations Eight E1 Interface					
	Tele protection	10-7	-	-	Terminations Teleprotection Relay Interface					
	SOT18	-	-	-	1xSTM-16/OC-48 lineinterfaces in both transmit and receive directions					
	ST63E1	-	-	-	Terminations Sixty Three E1 Interface					
	CEF-1	-	-	-	Terminations Ethernet Interface					
	FTU	-	-	-	Supported for Six Fans					
	XA20G	-	-	-	Terminations for FODP Interface					
ELECTRICAL INTERCONNECTION										
SUBJECT TO THE CONDITION THAT YOU ARE NOT ABSOLVED FROM RESPONSIBILITY FOR THE MATERIALS SUPPLIED AS PER SPECIFICATION										
APPROVED										
DEPUTY GENERAL MANAGER CONTRACTS & MATERIALS MULTI-LATERAL FUNDING PROJECTS JUSNL, HQ, RANCHI										
SENIOR MANAGER CONTRACTS & MATERIALS MULTI-LATERAL FUNDING PROJECTS JUSNL, HQ, RANCHI										
RECOMMENDED FOR APPROVAL										
FOR FEEDBACK INFRA PVT. LTD. WB FUNDED PROJECT JUSNL RANCHI, JHARKHAND										
132KV and 33KV Substation FOTE EQUIPMENT INTERFACE CHART										
General Manager (Contracts & Materials)										
General Manager (Contracts & Materials)										
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DXC5000

CEF-1 (Carrier Ethernet Fabric)



CEF-1 (Carrier Ethernet Fabric)



To RJ45 Patch Panel -1
1 to 4 ports

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

RJ45 Patch Panel - 1

Recommended for Approval

For

Feedback Infra Pvt Ltd.

WB Fulltel Project JUSNL

Ranchi, Jharkhand

SENIOR MANAGER

CONTRACTS & MATERIALS

MULTI-LATERAL FUNDING PROJECTS

JUSNL, HQ, RAJAHMUNDRAM

DEPUTY GENERAL MANAGER

CONTRACTS & MATERIALS

MULTI-LATERAL FUNDING PROJECTS

JUSNL, HQ, RAJAHMUNDRAM

General Manager

(Contracts & Materials)

(Multi-lateral Funding Projects)

Tributary Card ST63E1



To RJ45 Patch Panel -2
1 to 32 ports

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48

RJ45 Patch Panel - 2

- 1 - Rx Ring
- 2 - Rx Tip
- 4 - Tx Tip
- 5 - Tx Ring

APPROVE

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

General Manager

(Contracts & Materials)

(Multi-lateral Funding Projects)

JUSNL, HQ, RAJAHMUNDRAM

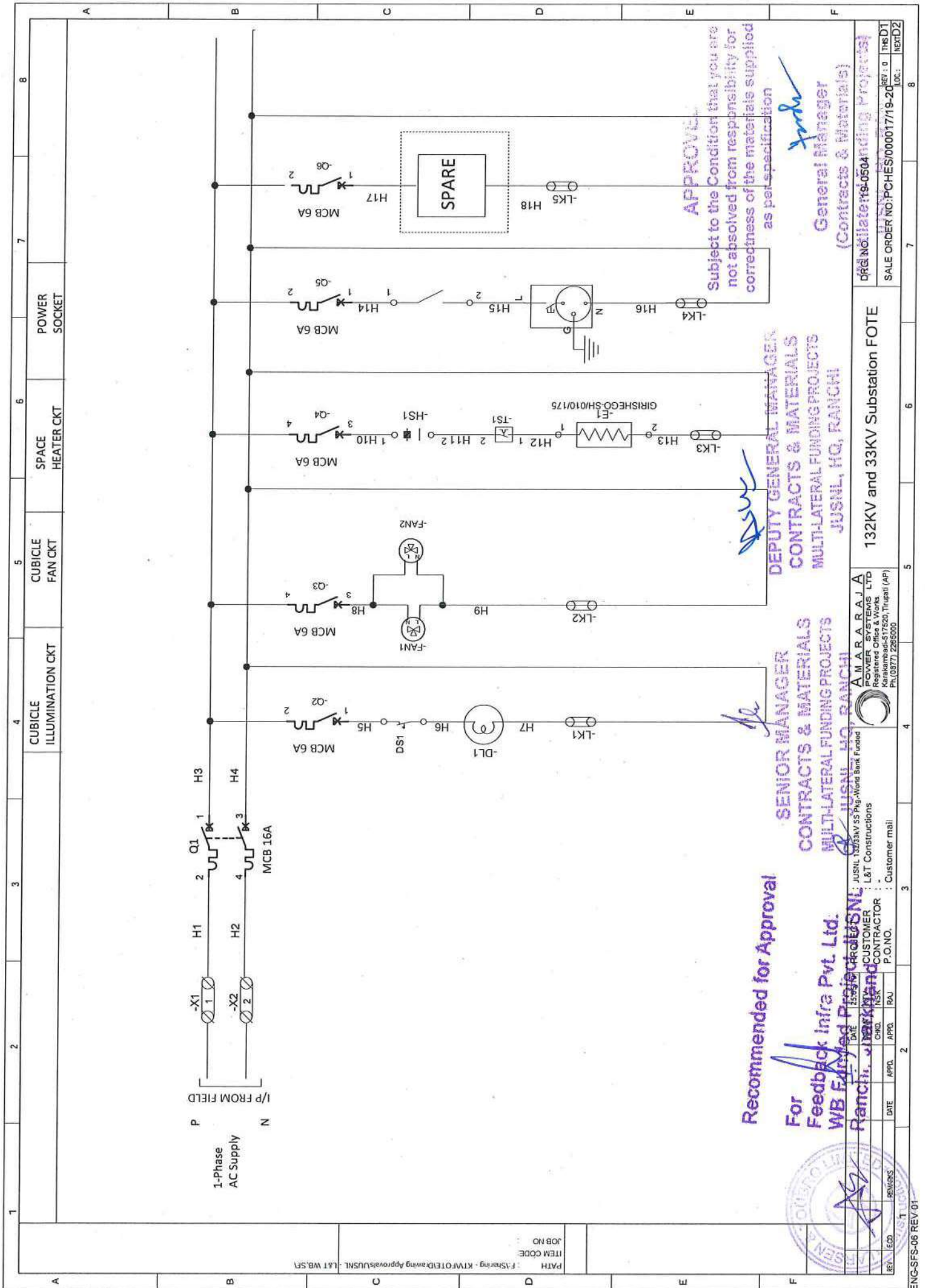
132KV and 33KV Substation FOTE

DXC5000 ST63E1, CEF-1 Connectivity

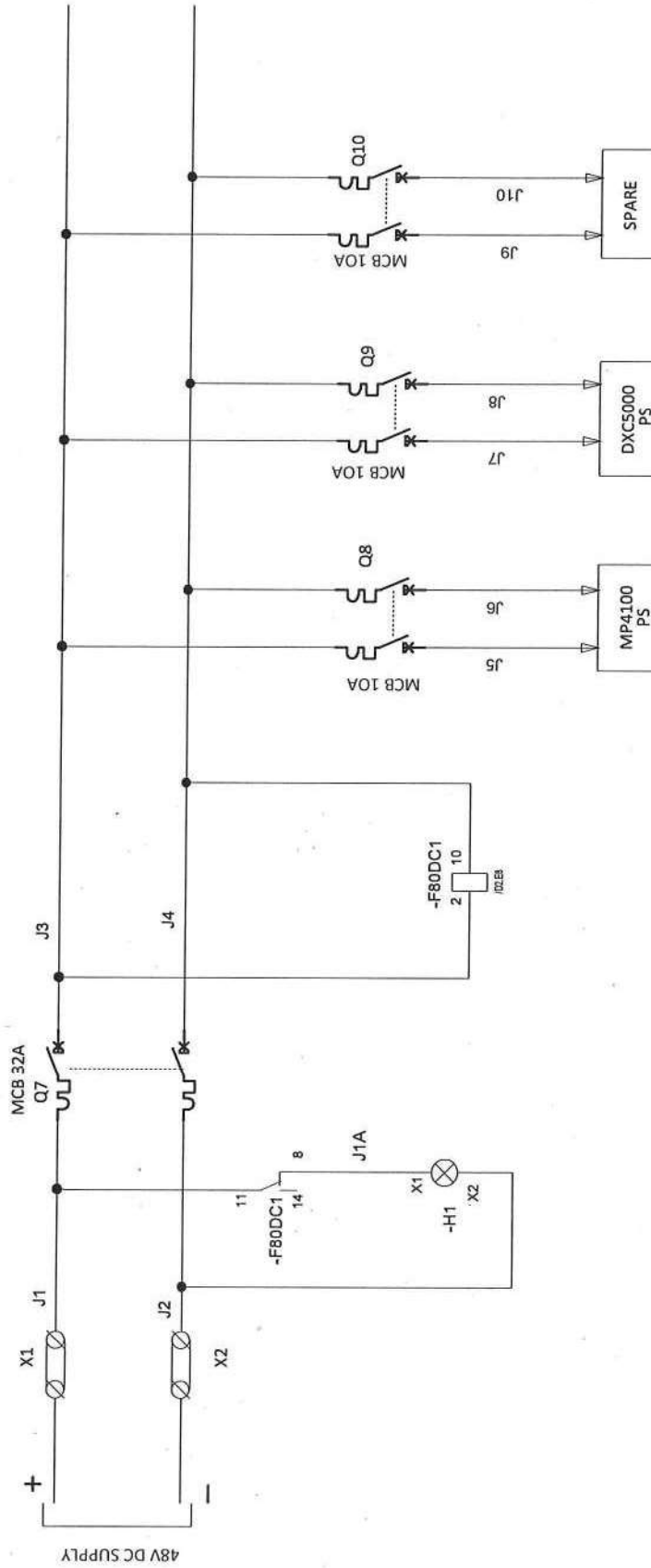
SALE ORDER NO: PCHES000017175-20

REV: 1 TMS 01

REV: 1 TMS 01



From Source 1



APPROVED
Subject to the Contract Documents, the Contractor shall be responsible for the correctness of the materials supplied as per specification.

General Manager
(Contracts & Materials)

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

Recommended for Approval

For Feedback Infra Pvt. Ltd.
WB Fund Infra Pvt. Ltd.
Ranchi, Jharkhand

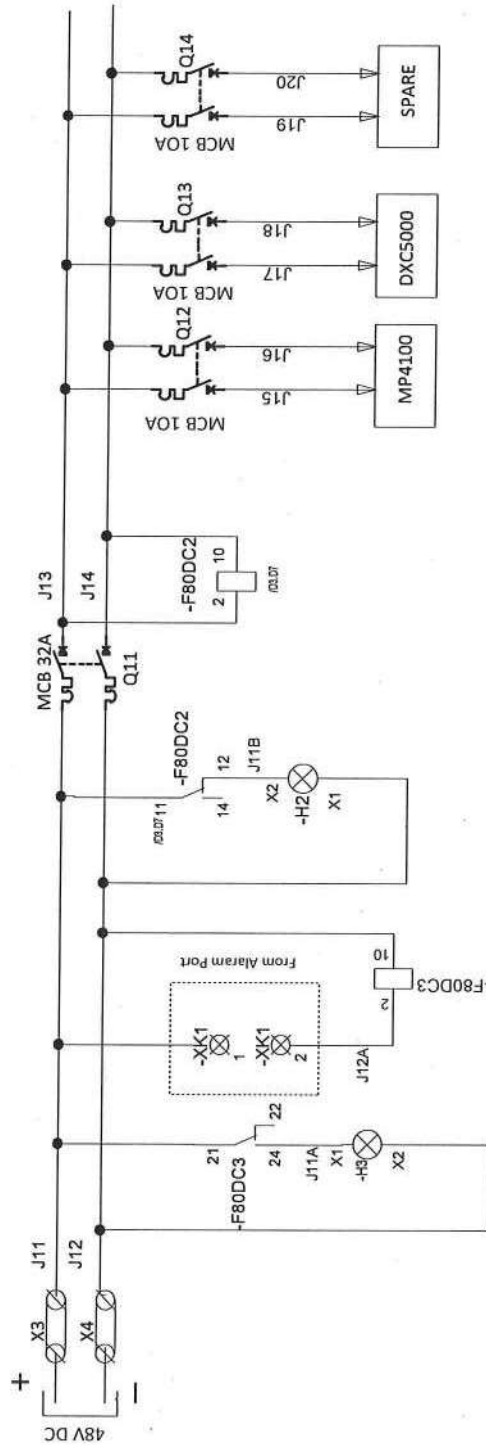
PROJECT : WB Fund Infra Pvt. Ltd.
CUSTOMER : WB Fund Infra Pvt. Ltd.
CONTRACTOR : WB Fund Infra Pvt. Ltd.

POWER SYSTEMS LTD
Registered Office & Works
Karakumbad-517520, Thrupat (AP)
Ph: (0877) 2265000

132KV and 33KV Substation FOTE
DC DISTRIBUTION CIRCUIT

SALE ORDER NO: PCHES/00001719-20
REV: 0
LOC: NCD3

From Source 2



F80DC3		COIL SUPPLY	
2	10/03/03	2	10/03/03
1	12/03/03	1	12/03/03
2	22/03/03	2	22/03/03
3	32/03/03	3	32/03/03
4	42/03/03	4	42/03/03

Link Failure Check

F80DC2		COIL SUPPLY	
2	10/03/03	2	10/03/03
1	12/03/03	1	12/03/03
2	22/03/03	2	22/03/03
3	32/03/03	3	32/03/03
4	42/03/03	4	42/03/03

DC Failure Check

APPROVED

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

Recommended for Approval



For Feedback Infra Pvt. Ltd.
WB Funded Project JUSNL
Tanchi, Jharkhand

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

General Manager
(Contracts & Materials)
(Multilateral Funding Projects)
JUSNL, HQ, RANCHI

REV	EQ	REMARKS	DATE	APPD.	APPD.	BAU	CHD.	NSK	DATE	23.05.19	PROJECT	JUSNL 132KV SS Pig-World Bank Funded	REGISTERED OFFICE & WORKS	Kankarbad-57520, Tirupiti (AP)	Ph: (0877) 2265000
132KV and 33KV Substation FOTE DC DISTRIBUTION CIRCUIT															
DRG. NO : 19-0504 SALE ORDER NO: PCHES/000017/19-20 REV : 1.0 LOC : NEDD4															

12 Serial Port

Port 1-3
V.35

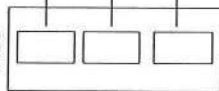
Port 4-6
V.11

Port 7-9
RS232

Port 10-12
V.35, V.11, RS232

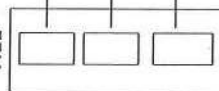
Card Side
V.35

Termination Side



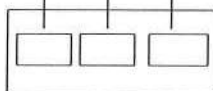
DB-25 Pin counter
DB-25 Pin counter
DB-25 Pin counter

V.11



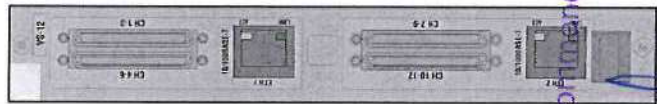
DB-15 Pin counter
DB-15 Pin counter
DB-15 Pin counter

RS232



DB-25 Pin counter
DB-25 Pin counter
DB-25 Pin counter

VS-12



APPROVED
Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

Recommended for Approval

VS-12

General Manager
(Contracts & Materials)
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI



Feedback Infra Pvt. Ltd.
Funded Project Jusnl
Ranchi, Jharkhand

PROJECT : JUSNL 1323KV SS Pkg.-World Bank Funded
CUST : LAT Constructions
CONCOMT : Customer mail
P.O.NO. : 1007/225000

AMARA BAJAJ
POWER SYSTEMS LTD
Rajendra Park, Ranchi
Ph: 0657 225000

132KV and 33KV Substation FOTE
VS/12S/UTP INTERFACE

DRG. NO : 19-0504
SALE ORDER NO: PCHES000077/19-20

REV. 0 THE 01
REV. 1 THE 01

CBL-SCS68/3N/35/M, Cable Wiring, Port 1

SCSI Connector	Function	25-Pin Connector	SCSI Connector	Function	25-Pin Connector
1 F.G.	Not Used		35 S.G.	Not Used	
2 RD(A)	Receive Data A	3	36 RD(B)	Receive Data B	16
3 TC(A)	Transmit Clock A	15	37 TC(B)	Transmit Clock B	12
4 RC(A)	Receive Clock A	17	38 RC(B)	Receive Clock B	9
5 ERC(A)	External Receive Clock A	20	39 ERC(B)	External Receive Clock B	23
6 ETC(A)	External Transmit Clock A	24	40 ETC(B)	External Transmit Clock B	11

APPROVAL

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

General Manager
(Contracts & Materials)
(Multilateral Funding Projects)

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL HQ, RANCHI

Recommended for Approval

For
Feedback Infra Pvt. Ltd.
WB Funded Project

25.05.19

25.05.19

25.05.19

25.05.19

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25.05.19

25.05.19

25.05.19



PROJECT : JUSNL 1323KV SS Pkg-World Bank Funded
CUST : LAT Construction
CONS/CONT : Customer mail
P.O.NO. : 10273/220203

DATE : 25.05.19
TIME : 10:00 AM
BY : JUSNL
FOR : JUSNL

REMARKS :
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REV. 01 10/01/2019
REV. 02 10/01/2019
REV. 03 10/01/2019
REV. 04 10/01/2019
REV. 05 10/01/2019
REV. 06 10/01/2019
REV. 07 10/01/2019
REV. 08 10/01/2019
REV. 09 10/01/2019
REV. 10 10/01/2019
REV. 11 10/01/2019

SALE ORDER NO: PCHES00001719-20
JUSNL, Hqs-0504
JUSNL, Hqs-0504

CBL-SCS68/3V.11/M Cable Wiring, Port 1

SCSI Connector	Function	15-Pin Connector	SCSI Connector	Function	15-Pin Connector
1	Not Used		35 S.G.	Not Used	
2 RD(A)	Receive Data A	4	36 RD(B)	Receive Data B	11
3 TC(A)	Transmit Clock A	6	37 TC(B)	Transmit Clock B	13
4	Not Used		38 RC(B)	Not Used	
5 ETC(A)	External Transmit Clock A	7	39 ETC(B)	External Transmit Clock B	14
6 ETC(A)	External Transmit Clock A	7	40 ETC(B)	External Transmit Clock B	14
7 TD(A)	Transmit Data A	2	41 TD(B)	Transmit Data B	9
8	Not Used		42 -	Not Used	
9	Not Used		43 -	Not Used	
10 DCD(A)	Data Carrier Detect A	5	44 DCD(B)	Data Carrier Detect B	12

APPROVED

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

Recommended for Approval

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

General Manager
(Contracts & Materials)
(Multiateral Funding Projects)
JUSNL, HQ, RANCHI

For Feedback Infra Pvt. Ltd.

WB Funded Project

Ranchi, Jharkhand

132KV and 33KV Substation FOTE

V.11 CONNECTOR WIRING

DRG. NO. 19-0504

SALE ORDER NO. PCHES00001718-20

REV. 0 THE B1

DATE: 11/01/20

11

CBL-SCS68/3/RS232/M Cable Wiring, Port 1

SCSI Connector	Function	25-Pin Connector	SCSI Connector	Function	25-Pin Connector
1 F.G.	Not Used		35 S.G.	Not Used	
2 RD(A)	Receive Data A	3	36 RD(B)	Receive Data B	16
3 TC(A)	Transmit Clock A	15	37 TC(B)	Transmit Clock B	12
4 RC(A)	Receive Clock A	17	38 RC(B)	Receive Clock B	9
5 ERC(A)	External Receive Clock A	20	39 ERC(B)	External Receive Clock B	23
6 ETC(A)	External Transmit Clock A	24	40 ETC(B)	External Transmit Clock B	11

APPROVE

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

General Manager

(Contracts & Materials)
(Multilateral Funding Projects)
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER

CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

SENIOR MANAGER

CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

Recommended for Approval

For Feedback Infra Pvt. Ltd.
WB Funded Project JUSNL
Ranchi, Jharkhand



PROJECT : JUSNL 132KV SS Pkg. World Bank Funded
CUST : L&T Construction
CONS/CONT :
P.O.NO. : Customer mail

DATE : 25.05.19
TIME : 12:45 PM
BY : [Signature]
FOR : [Signature]

SKY : [Signature]
CO : [Signature]
2 : [Signature]
3 : [Signature]
4 : [Signature]
5 : [Signature]
6 : [Signature]
7 : [Signature]
8 : [Signature]
9 : [Signature]
10 : [Signature]
11 : [Signature]

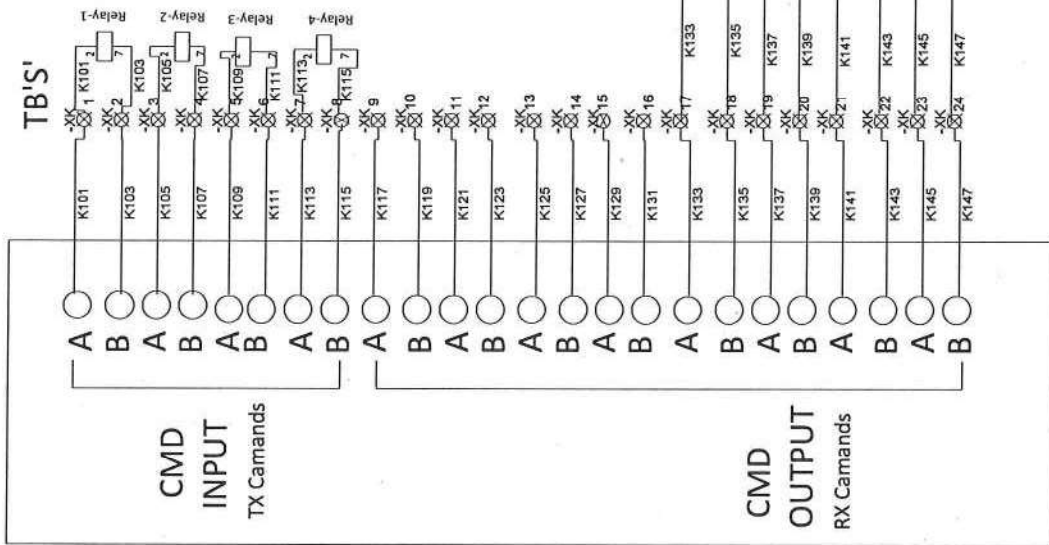
AMARA BAJAJ
POWER & WATER LTD
Registered Office & Viro
Ph: 0672 225500

132KV and 33KV Substation FOTE
RS232 CONNECTOR WIRING

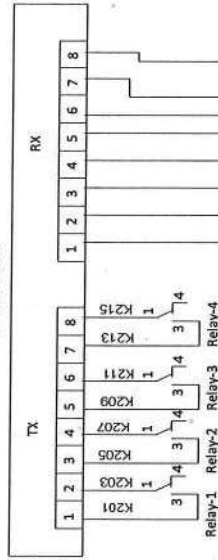
DRG. NO : 15-0504
SALE ORDER NO: POES00001719-20

REV. D THE DR
LOC. HCD03

Tele Protection Module



Counters



APPROVED

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification



Recommended for Approval

For Feedback Infra Pvt. Ltd.
WB/E-landed Project JUSNL

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

General Manager
(Contracts & Materials)
(Multilateral Funding Projects)



AMARA RAJA LTD
POWER SYSTEMS LTD
Approved by JUSNL Project (AP)
Ph: 0377 225005

PROJECT: JUSNL 132/33KV SS Pkg.-World Bank Funded
CUST: LAT Constructions
P.O. NO. Customer mail

REV: 002 DATE: 23.05.19 BY: JUSNL
REV: 001 DATE: 23.05.19 BY: JUSNL

132KV and 33KV Substation FOTE
TELE PROTECTION SCHEME

DRG. NO: 18-0504
SALE ORDER NO: PCHES00001778-20

REV: 0 TMS/01
LOC: MDD/13

Distance protection interface for 132kV Shikaripara - Dumka D/C Line

132kV ShikariparaS/S

4I/P Commands

Distance Tele protection
Interface Module 1

40/P Commands

Distance Tele protection
Interface Module 1

4I/P Commands

Distance Tele protection
Interface Module 2

40/P Commands

Distance Tele protection
Interface Module 2

Distance Tele protection
Interface Module 3 to 6
for Spare Bays

SCOPE@ DumkaS/S

Since, FOTE panel not in Amara Raja Scope only
loose Teleprotection modules will supply.

SCOPE@ShikariparaS/S

Complete FOTE Panel

And Teleprotection modules inserting
in MP4100 chassis as per layout
(Sheet numberC1).

Recommended for Approval

For Feedback Infra Pvt. Ltd.

WB Funded Project JUSNL

Ranchi, Jharkhand

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTILATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

PROJECT : JUSNL 132/33kV SS Pkg-World Bank Funded
CUST : L&T Construction
CONS/CONT :
P.O.NO. : Customer mail

DATE : 8/26/2019 3:00 PM
BY : KTV
CHK : NSK
APP : RAU

REMARKS

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CHK :
APP :

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Distance protection interface for LULO of 132kV Dumka - Deoghar D/C Line

132kV DumkaS/S

4I/P Commands

Distance Tele protection
Interface Module 3

40/P Commands

Distance Tele protection
Interface Module 1

4I/P Commands

Distance Tele protection
Interface Module 4

40/P Commands

Distance Tele protection
Interface Module 2

SCOPE@ Deoghar S/S

Since, FOTE panel not in Amara
Raja Scope only loose
Teleprotection modules will
supply.

132kV Jarmundis/S

Distance Tele protection
Interface Module 1&2

Distance Tele protection
Interface Module 3&4

SCOPE@ShikariparaS/S

Complete FOTE Panel

And Teleprotection modules
inserting in MP4100 chassis as per
layout (Sheet numberC1).

General Manager
(Contracts & Materials)

Multilateral Funding Projects

PRG. NO. : 18-0504

SALE ORDER NO: PO-E90001715-20

DATE : 18/05/2019

BY : JUSNL

CHK : JUSNL

APP : JUSNL

DATE : 18/05/2019

BY : JUSNL

CHK : JUSNL

APP : JUSNL

DATE : 18/05/2019

BY : JUSNL

CHK : JUSNL

APP : JUSNL

DATE : 18/05/2019

BY : JUSNL

CHK : JUSNL

APP : JUSNL

DATE : 18/05/2019

BY : JUSNL

CHK : JUSNL

APP : JUSNL

DATE : 18/05/2019

BY : JUSNL

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DATE : 18/05/2019

BY : JUSNL

CHK : JUSNL

APP : JUSNL

DATE : 18/05/2019

BY : JUSNL

CHK : JUSNL

APP : JUSNL

DATE : 18/05/2019

BY : JUSNL

Distance protection interface for 132kV Amarapara - Godda D/C Line

132kV Amarapara S/S

132kV Godda S/S

Distance Tele protection
Interface Module 1

Distance Tele protection
Interface Module 1

Distance Tele protection
Interface Module 2

Distance Tele protection
Interface Module 2

Distance protection interface for 132kV Amarapara - Pakur D/C Line 132kV Pakur S/S

Distance Tele protection
Interface Module 3

Distance Tele protection
Interface Module 1

Distance Tele protection
Interface Module 4

Distance Tele protection
Interface Module 2

4I/P Commands

4O/P Commands

4I/P Commands

4O/P Commands

4I/P Commands

4O/P Commands

4I/P Commands

4O/P Commands

SCOPE@Amarapara S/S
Complete FOTE Panel
And Teleprotection modules inserting
in MP4100 chassis as per layout
(Sheet number C1).

SCOPE@ Godda S/S
Since, FOTE panel not in
Amara Raja Scope only
loose Teleprotection
modules will supply.

SCOPE@Amarapara S/S
Complete FOTE Panel
And Teleprotection modules inserting
in MP4100 chassis as per layout
(Sheet number C1).

SCOPE@Pakur S/S
Complete FOTE Panel
And Teleprotection modules
inserting in MP4100 chassis as
per layout (Sheet number C1).
Subject per layout not absolved from responsibility for
correctness of the materials supplied
as per specification

Recommended for Approval

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

General Manager
(Contracts & Materials)



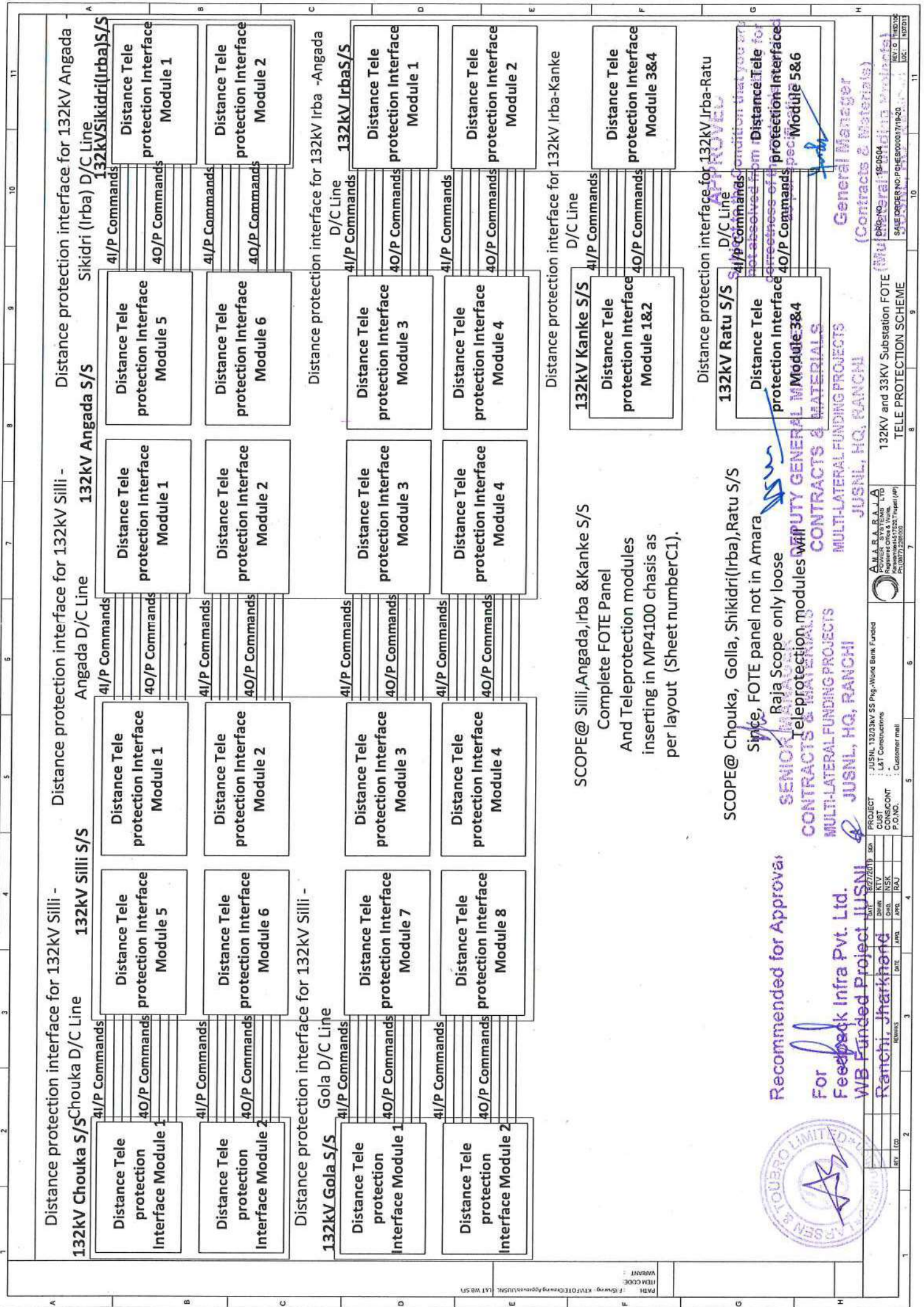
For
WB Funded Project
Ranchi, Jharkhand

PROJECT : 132/33KV SS Plug-World Bank Funded
CUST : L&T Construction
CONSCONT :
P.O.NO. :
Customer mail

AMARA RAO LTD
POWER & TELECOM LTD
Registered Office & Works
Plot No. 1, Phase I, Industrial Area
P.O. 837222, Ranchi (Jharkhand)

132KV and 33KV Substation FOTE
TELE PROTECTION SCHEME

DRG. NO. : 15-0504
SALE ORDER NO. : PCHES000017/15-20
REV. 01 IND035



Recommended for Approval

For
Feedback Infra Pvt. Ltd.
WB Funded Project - IJS
Ranchi, Jharkhand

SCOPE@ Chouka, Golla, Shikidri(Irba),Ratu S/S

Since, FOTE panel not in Amara
Raja Scope only loose

Teleprotection mo
CONTRACTS & PARTIALS
MULTILATERAL FUNDING PROJECTS

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PROJECT : JUSNL 132/33kV SS Pkg.-World Bank Funded

: L&I Constructions
 : -
 : Customer mail

5	5
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EPAX (24 subscribers and 8 E&M trunks)



APPROVAL
Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

For
Feedback Infra Pvt. Ltd.

WB Funded Project	US\$ LAC	EMW	Comp.
Ranchi, Jharkhand			

**✓ SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
HO RANCH**

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTILATERAL FUNDING PROJECTS
JUSAL, HQ, BANGKOK

AMARA JALA
POWER SYSTEMS LTD
Registered Office & Works
Keralambadi-517620, Tirupatt (AP)
Ph: (0877) 2265900

132KV and 33KV Substation FOTE
EPAX Connectivity

DRG. NO :19-0504

SALE ORDER NO: PCHES0000017/19-20

REV :	THIS D1
LOC :	NEED 12

S. No.	Parameters	Description
1	Technology (type)	PCM/TDM with 32 bit microprocessor based digital technology Electronic Private Automatic Telephone Exchange (EPAX) on E & M signaling and DC loop signaling to work with PLC Communication System
2	Control	Stored Programme Control (SPC)
3	Back-up memory	Flash ROM Based
4	System capacity Full capacity of trunks Initially required capacity Required capacity of E & m trunks / subscribers	128 UNIVERSAL PORTS PROGRAMMABLE TO E & M, LOOP INTERRUPT TRUNKS AND SUBSCRIBERS. :24
5	Configuration	Universal Slots for Extension/ Trunk Interface
6	Communication links	100% Non-Blocking
7	Architectural design	Architectural design
8	System modularity	Easy Expansion by adding Module
9	Approvals required	TEC with ISDN, BRI and PRI
10	Trunk interface with led indication for all trunks	

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSHLI MO PANGCHI

Recommended for Approval
For 
Feed Back Infra Pvt. Ltd.
WR- Funded Project JUSNL

AMARAJA
POWER SYSTEMS LTD
Registered Office & Works.
Karakumbad-617520, Tirupatti (AP)
Ph: (0877) 2285000

132KV and 33KV Substation FOTE
GTP for EPAX

DRG. NO : 19-0504

SALE ORDER NO: PCHES00001719-20

REV : 1

DATE :

REV :	THIS D12
LDC	NETTO 15

GTP for EPAX

12	Alarm on indication	Self-diagnostics with alarm on fault condition shall be provided.
13	Protection	All the Trunk Lines and Subscriber lines shall be provided with Surge Arresters on the MDF
14	Extension interface	Station Interface for normal analog PBT Digital Extension Interface for Key Phones Hybrid Station Interface for PBT / Key Phones
15	Redundancy	System should have redundancy for PSU & CPU
16	System voltage	-48V DC (positive ground) +15%, - 10%
17	Power consumption	Less than 300W
18	Emi / emc	EMI/EMC
20	The EPAX shall be compatible to the following codes for pulses in various signaling circuits.	
	(i) engage pulse	Complied
	(ii) priority pulse	Complied
	(iii) digit pulse	Complied
	(iv) inter digit pulse	Complied
	(v) release pulse	Complied

Recommended for Approval

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

APPROVED



For Feedback Infra Pvt. Ltd.
WB Funded Project JUSNL
Ranchi, Jharkhand

SENIOR MANAGER
CONTRACTS & MATERIAL
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

General Manager
(Contracts & Materials)

PROJECT : JUSNL 132/33KV SS Pkg-World Bank Funded
CUST : L&T Construction
CONSCONT :
P.O.NO. : Customer mail

AMARA BAJAJ LTD
POWER SYSTEMS LTD
Registered Office & Works
Plot No. 12, Industrial Area, Phase II
Ranchi - 834 001 (Jharkhand)

132KV and 33KV Substation FOTE
GTP for EPAX

19-05-04
JUSNL order NO PCHS0001719-20

REV : THEOIT
LOC : NFO/24

Item no.	Description	Data
(a)	Manufacturer's name & address / supplier's name & address	Branded
(b)	Type	Electronic Push button Telephones (Decadic) supporting both pulse and DTMF signaling and ring LED
(c)	Dial speed	10 PPS + _5%
(d)	Break-make ratio (pps with +/-)	2:01
(e)	Inter digit pause(msec.)	800 ms
(f)	Reliability	The performance of the instrument should be very reliable and accurate with large MTBF as per TEC requirements.
(g)	Operating temperature (deg. C)	45
(h)	Tone/pulse switchable	Yes
(i)	Last no. Redial facility	15
(j)	Ringer off-low-hi facility	Yes
(k)	Hold on music	Yes
(l)	Pause facility	Yes
(m)	Ring led (yes/no)	Yes
(n)	Display	Yes

APPROVED
Subject to the Condition that you are
not absolved from responsibility for
correctness of the materials supplied
as per specification

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FINDING PROJECTS
JUSNL HQ, PRATCHI

**SENIOR MANAGER
CONTRACTS & MATERIALS
MULTILATERAL FUNDING PROJECTS**
JUSUF, HQ, RAVENH

For Feedback Infra Pvt. Ltd.
WE Pledge to Protect JUSNL

General Electric (Co.)

ANARAJA
POWER SYSTEMS LTD
Registered Office & Works
Karasambad-5 17520, Tirupatt (AP)
Ph: (0877) 2355000

PROJECT : JUSNL 132/33kV SS Pkg.-World Bank Funded
 JUST :
 CONS/CONT : L&T Constructions
 O.NO. :
 : Customer mail

PROJECT	
CUST	
CONS/COM	
P.O.NO.	

REMARKS	DATE	APPO	CARD	EXAMIN	DATE
					8/7/20
					NS

[illegible]

Construction

100

GTP for Telephone Cable

5 Pair/ 2 Pair

1	Manufacturer's name & address	Branded
2	supplier's name & address	Self
3	Governing standards	IS Standard
4	Voltage Grade	300V
5	No. of pairs	5 Pair/ 2 Pair
6	Conductor	Copper
	a) material	Annealed Tin Copper
	b) size	0.5mm +/- 0.1mm
	c) resistance	57 Ohms/Km
	d) elongation	20.0 (Min.)
7	Insulation	
	a) material	Solid Medium density polythene
	b) thickness	0.25 mm Nominal
	c) Max. dia of core	1.2mm
	d) resistance	.95 Ohms / Km
8	Overall Sheath	
	a) material	Extruded PVC ST-1
	b) thickness	1.4mm Nominal/ 1.0mm Nominal
	c) colour	
9	Overall dia of cable	8.0mm / 5.5mm
10	High Recommended for Approval	Subject to the Condition that you are correctmess of the materials supplied for 1 Min
11	Packing length	2kv rms for 1 Min

APPROVAL

Subject to the Condition that you are correctmess of the materials supplied for 1 Min

2kv rms for 1 Min

General Manager

(Contracts & Materials)

19-0504

SALE ORDER NO: PO-ES000017/19-20

132KV and 33KV Substation FOTEMULTI-LATERAL FUNDING PROJECTS

GTP for Telephone Cable

AMAR SATELLITE LTD

POWER SYSTEMS LTD

Registered Office & Name

Ph: 0872 220503

PROJECT : 132KV and 33KV Substation FOTEMULTI-LATERAL FUNDING PROJECTS

CUST : JUSNL 13203KV SS Pkg-World Bank Funded

CONS: L&T Constructions

P.O.NO. : Customer mail

WB Funded Project JUSNL

Ranchi, Jharkhand

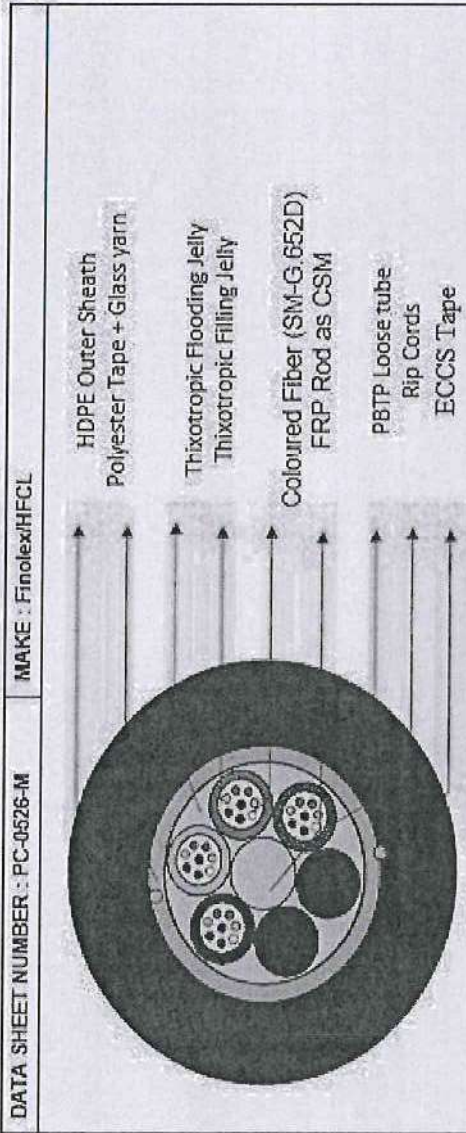
REMARKS

REV : 02

11

11

GTP for 24F SM MULTITUBE SINGLE SHEATH ARMoured O.F. CABLE



DATA SHEET NUMBER : PC-0526-M	MAKE : Finolex/HFCL
Fiber Type+B1:C29	Single Mode (ITU-T G.652D)
Fiber Size	09/125/250
Fiber Identifications	Blue, Orange, Green, Brown, Slate & Natural
Number Of Fiber In A Tube	06F
Loose Tube & Filler	
Material	PBTP
Colour	Blue, Orange, Green, & Brown
Loose Tube Diameter(Mm)	2.0 Nominal
Loose Tube Gel	Thixotropic Filling Gel
Number Of Loose Tube Gel	04 LT
Number Of Fillers	02 FL
Colour	Black
SZ Core	
Sequence Of Elements In Core	Blue, Orange, Green, Brown Loose Tube & BK1 & BK2 Filler
Water Blocking Compound	Thixotropic Flooding Gel
Core Wrapping	Single Layer Of Polyester Tape Applied Longitudinally Over SZ Core
Peripheral Strength Member Armouring	Glass Yarn Applied Below Armouring
Type	ECCS Tape
Rip Cord	2 Rip Cords Provided Below Armouring
Outer Sheath	

APPROVAL
Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

General Manager

(Contract & Materials)

DRG. NO. J9-0504

SALE ORDER NO. PC-0526-M/171920

REV. 1

REV. 2

REV. 3

REV. 4

REV. 5

AMBA BAJA

POWER SYSTEMS LTD

Registered Office & Works

Ph: (087) 2285500

PROJECT : JUSNL 132/33KV SS Pkg-Ward Bank Funder

CUST : L&T Construction

CONSCONT : Customer mail

P.O.NO.

DATE : 8/28/2018

TIME : 10:00 AM

DATE : 8/28/2018

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TIME : 10:00 AM

GTP for 24F SM MULTITUBE SINGLE SHEATH ARMoured O.F. CABLE

Material	HDPE
Colour	Black
Thickness(Mm)	1.5 Nominal
Overall Diameter(Mm)	11.5 Nominal
Strength Member	
Type	FRP ROD
Diameter(Mm)	2.0 Nominal
Max.Tensile Strength	2000N @ 0.25% Fiber Strain
Crush Resistance	3000N/100 X100 Mm
Min.Bend Radius	20D(Diameter Of Cable)
Cable Weight(Kg/Km)	130 Nominal
Standard Length(Meters)	2000 ±10%

OPTICAL PARAMETERS	
Attenuation	Dispersion
1310 nm (dB/Km) : ≤ 0.38	1285 - 1330 nm : ≤ 3.5 ps/nm.km
1550 nm (dB/Km) : ≤ 0.25	1550 nm : ≤ 18 ps/nm.km
Fiber cut-off wavelength : ≤ 1320 nm	1625 nm : ≤ 22 ps/nm.km
Cable cut-off wavelength : ≤ 1260 nm	Zero Dispersion wavelength : 1300-1324 nm
Mode Field Diameter : 9.2 ± 0.4 μm	Zero Dispersion Slope : ≤ 0.092ps/nm ² .km
Fiber Geometry	
Cladding Diameter : 125 ± 1 μm	Cladding Non-Circularity : ≤ 1 %
Coating Diameter : 245 ± 10 μm	Mode Field Concentricity error : ≤ 0.8 μm
Coating/Cladding : ≤ 12 μm	Operating Temperature : -20° C to +70° C
Fiber curl : ≥ 4m radius	not absolved from responsibility for as per specification

APPROVAL
Subject to the Condition that you are not absolved from responsibility for as per specification

Recommended for Approval

For Feedback Infra Pvt. Ltd.

WB Funded Project JUSNL

Ranchi, Jharkhand



SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

PROJECT : JUSNL 132KV SS Pip-World Bank Funded
CUST : L&T Construction
CONS/CONT :
P.O.NO. :
Customer mail

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

AMARABALLA
POWER SYSTEMS LTD
Ranchi-834001
Ph:0977-2285509

General Manager
(Contracts & Materials)
DRG No: 19-0504
SALE ORDER NO: POES/00001919020

132KV and 33KV Substation FOTE
GTP for 24 Fiber Approach cable

AMARABALLA
POWER SYSTEMS LTD
Ranchi-834001
Ph:0977-2285509

PROJECT : JUSNL 132KV SS Pip-World Bank Funded
CUST : L&T Construction
CONS/CONT :
P.O.NO. :
Customer mail

WB Funded Project JUSNL
Ranchi, Jharkhand



GTP for Fiber Optic Distribution Panel

Fiber Optic Distribution Panel			
S. No	Parameters	Unit	Particulars
1	Manufacturer		Raychem RPG Limited
2	Dimensions(H*W*D)	mm	44* 444/484* 280 for 48F
3	Color		Power coating treatment
4	Method of mounting		Front mounting in 19" Rack
5	construction Material & Gauge		<u>Shelf</u> CRCA(Cold Rolled cold Annealed) Sheet approx. 1.2mm Thick
6	Front Access		Available
7	Type of Adapters	PC	SC/PC
8	No. of Adapters		24 for 24F
9	Provision of pass through Splicing		Yes
10	Cable Entry		From back side
11	Maximum NO of Splices	Nos	24 for 24F
12	No. of Splice Trays	Nos	1 for 24F
13	Maximum NO of Splice per Tray	Nos	24

Recommended for Approval

For
Feedback Infra Pvt. Ltd.
WB Project Project JUSNL
Ranchi, Jharkhand

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

Subject to the Condition that you are
not absolved from responsibility for
correctness of the materials supplied
as per Specification

General Manager
(Contracts & Materials)

General Manager
(Contracts & Materials)

132KV and 33KV Substation FOTE
GTP for FODP

APRIL 2019
POWER SYSTEMS LTD
Corporate Office & Works
Plot 08/71, Sector 03
P.O. 0871 220103

PROJECT : JUSNL 132/33KV SS Pkg-World Bank Funded
CUST : LAT Constructions
CONS/CONT :
P.O.NO. : Customer mail

DATE : 08/28/2019
BY :
CHKD :
APPD :
REVISED :
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APPD :
REVISED :

GTP for Primary Multiplexer/Access Equipment

1. PS Module (MP-4100M-PS/48)

Parameters	Units	Particulars
Operating Range	Volts	-48VDC (-36 to -56VDC)
Total Output	Watts	250W

2. CL2 Module (MP-4100M-CL2/DS0)

Parameters	Units	Particulars
Interfaces/Connectors		Console-DB9-RS-232 9-pin D-type female connector
Alarm Relay		9-pin D-type female connector
Management		Control Ethernet 10/100BaseTx Ethernet UTP Port

3. Data Channels (MP-4100M-VS/12S/2UTP)

Parameters	Units	Particulars
No. of data channels		12 Ports on each module
Ports		Each Port is configurable for either V.35 or RS232 or V.11 and additional two 10/100BaseTx Ethernet UTP Port
Interface		Four 68-pin SCSI, female (One per 3 Data Channels)
Data rates	Kbps	High speed sync: nx56 or nx64 kbps rates (encapsulation-mode=none): n = 1 to 31 Low speed async/sync (encapsulation-mode=v110): 2.4, 4.8, 9.6, 19.2, 38.4 kbps

Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

Recommended for Approval



For Feedback Infra Pvt. Ltd.
WB Funded Project JUSNL
Ranchi, Jharkhand

SENIOR MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

General Manager
(Contracts & Materials)

REV	ITD	DATE	REMARKS
1			

DATE	TIME	DATE	TIME
18/08/2019	09:00	18/08/2019	09:00

PROJECT	CUST	CONS	P.O.NO.
JUSNL 13203KV/55 Pkg-Ward Bank Filled	LAT Construction		



132KV and 33KV Substation FOTE
GTP for Primary Multiplexer

DRG. NO. 19-0504
SALE ORDER NO. PO-ES000017/1920

REV	ITD	DATE	REMARKS
1			

4. Voice Modules (MP-2100M-VC-8/E&M, MP-2100M-VC-8/FXS/RJ, MP-2100M-VC-8/FXO/RJ)

Parameters	Units	Particulars
INPUT		
Connector		Terminal Block 8-pin
Number of Command Inputs		4
Nominal Input Control Voltage	Volts	Soft-selectable: ± 24 , ± 48 , ± 110 , ± 125 , ± 220 or ± 250 VDC
OUTPUT		
Connector		2 Terminal Block 8-pins each
Number of Command Outputs		4In/4Out
Switching	Volts & Amps	up to 250 VDC, 0.25A on inductive load

APPROVAL
Subject to the Condition that you are
not relieved from responsibility for
panel fitness of the materials supplied
as per specification

Recommended for Anterior Vaginal

For command (input/output)

WB-Funded Project JUSL - Franchi, Jarknand	DATE month	8/28/20
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Divided SENIOR Mgr. of FOTE
CONTRACTS & MATERIAL
MULTI-LATERAL FUNDING PROJECTS

PROJECT : JUSNL 132733IV SS Prg., World Bank Funded

AMARAJA
POWER SYSTEMS LTD
Registered Office & Works
Karakoram Road-517520, Thirupalli (AP)
KARAKORAM POWER SYSTEMS LTD

AMARAJA
POWER SYSTEMS LTD
Registered Office & Works,
Karakoram Road-517520, T. Puppall (AP)
Dist. Anaparthi, Nellore Dist. 522 202

132KV and 33KV Substation FOTE
GTP for Primary Multiplexer

Genealogical Society of Utah
 150 West 100 South
 Salt Lake City, Utah 84143
 DRG No. 190504

DRG NO: C19-19-0504
SALE ORDER NO: PCHES0000171920

6. E1 Channels (MP-4100M-8E1/3XUTP)

Recommended for Approval

For
Feedback Infra Pvt. Ltd.
WB-Funded Project JUSNL
Ranchi, Jharkhand



**SENIOR MANAGER
CONTRACTS & MATERIALS
MULTILATERAL FUNDING PROJECTS
JUSNL HQ RAMEN**

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTILATERAL FUNDING PROJECTS
JUSAL, NO. 15/2004

Approval
Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

100
 90
 80
 70
 60
 50
 40
 30
 20
 10
 0

AMARA RAJA
POWER SYSTEMS LTD
Registered Office & Works,
Karaikumbal-617530, Tirupatt (AP)
Ph. (0877) 2285000

PROJECT	: JUSNL 132/33kV SS Pkg.-World Bank Funded
CUST	: L&T Constructions
CONSICONT	: -
P.O.NO.	: Customer mail

132KV and 33KV Substation FOTE
GTP for Primary Multiplexer

ORG. NO 19-0504
SALE ORDER NO: PCHES000017/19-20

GTP for SDH Multiplexer/Aggregator Equipment

1. PS Module (DXC-5000M-PS/48VDC-12VDC/325W)	
Parameters	Units
Input Voltage Range	Volts
Output voltage	Volts
Output power	Watts
Fuse	Amps
2. STM-1/4/16 Aggregation Module (DXC-5000M-AGG/AX20G)	
Parameters	Units
Interfaces	2xSTM-1/OC-3 + 1xSTM-1/4/OC-3/OC-12 + 1xSTM-1/4/16/OC-3/12/48 interfaces
Connector	SFP
Cross Connect Capacity	Gbps
P1	STM-1/4/16
P2	STM-1/4
P3	STM-1
P4	STM-1
3. STM-1/4/16E1 Optical Tributary Module (DXC-5000M-IO/SOT18)	
Parameters	Units
Interfaces	8xSTM-1/OC-3 or 2xSTM-4/OC-12 or 1xSTM-16/OC-48 or 4xSTM-1/OC-3+1xSTM-4/OC-12 line interfaces
Connector	SFP
P1	STM-16
P1 & P4	STM-4
P1 to P8	STM-1
P4	STM-1

APPROVAL
Subject to the Condition that you are not absolved from responsibility for correctness of the materials supplied as per specification

General Manager
(Contracts & Materials)

DEPUTY GENERAL MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS

Recommended for Approval

For Feedback/Infra Pvt. Ltd.
WB Funded Project JUSNL
Ranchi, Jharkhand

AMARA BHASKAR
POWER SYSTEMS LTD
Registered Office & Vengal
Ph: 0831 2225103

PROJECT JUSNL 13234W SS Pkg-WB Funded
CUST JUSNL
CONSIGNED JUSNL
P.O.NO. JUSNL

DATE 02/08/2019
BY JUSNL
CHKD JUSNL
APPD JUSNL

SALE ORDER NO PCHES00001719-20
REV 1
LOC NAT225

GTP for SDH Multiplexer/Aggregator Equipment

4. E1 Tributary Module(DXC-5000M-IO/ST63E1T1)		
Parameters	Units	Particulars
Ports		63 E1s
Interface		LFH Connector
Data rates	Mbps	2.048Mbps for each E1
Line Code – E1		HDB3
Compliance – E1		ITU-T G.703, G.704, G.706, G.732 (including CRC-4 and E-bit) & G.823
Impedance	Ohms	Balanced 4-wire: 120Ω
Signal Level	dBm & Volts	Receive: Without LTU: 0 to -10 dBm With LTU: 0 to -33 dBm Transmit: Balanced: ±3V (±10%) Unbalanced: ±2.37V (±10%)
5. Ethernet Tributary Module(DXC-5000M-IO/CEFL)		
Parameters	Units	Particulars
Ports		2x100Mbps Cu-Ports + 2x1Gbps Cu-Ports + 2x1Gbps Optical-Ports
Switching Capacity	Gbps	5G
Interface		2x 10/100BaseTx Ethernet UTP port + 2x 10/100/1000BaseT Ethernet UTP Port + 2x1000BaseX SFP Optical Ports
Max Frame Size	Bytes	Jumbo Frames up to 9216 bytes
6. SFP		
Parameters	Units	Particulars
STM-4 – <40 Km, <80KM		
Wavelength	nm	1310nm
Power range/Tx Power	dBm	-3dBm to +2dBm

APPROVAL

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General Manager
(Contracts & Materials)

DRG No: 19.0504
SALE ORDER NO: PCHES000017/19-20

132KV and 33KV Substation FOTE
GTP for SDH Multiplexer

AMARA BABA LTD
Registered Office & Works
Plot 10/11, 2nd Floor, (4th)
P.O. Box 123456

SEHORI MANAGER
CONTRACTS & MATERIALS
MULTI-LATERAL FUNDING PROJECTS
JUSNL, HQ, RANCHI

For
Feedback Infra Pvt. Ltd.
WB Funded Project JUSNL,
Ranchi, Jharkhand



RECOMMENDED FOR APPROVAL