LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21

Type of Panel	AMF CONTROL PANEL
DG Rating	40kVA
AC Voltage System	3PH.,400VAC,50Hz
Control Voltage	12VDC
Engine Make	Mahindra & Mahindra
Genset Controller Used	DSE-4520-R1
Project	EXPORT

L1-PROTO DEVELOPMENT
DRAWING DATE: 24/11/2021
DESIGNER: SHITAL SURWASE
CHECKER : RAJI BABU NAIDU
APPROVED BY: RAJESH KALE

TABLE OF CONTENTS

COVER SHEET

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.
UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

		OVER	0.5	3	6	30	120	400	1000	2000
LINEAR IN mm.		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)	±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
	OVER	-	10	50	120	400
	UPTO	10	50	120	400	-
f	FINE (X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m	MEDIUM (X.XX)					
c	COARSE (X.X)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v	VERY COARSE (X)	±3°	±2°	±1°	±0°30'	±0°20'

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY
IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC
PART NO. : REFER SHEET NO.2
PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1
MATERIAL : ——
HEAT TREATMENT : ——

2021	NAME	SIGN	DATE
CAD ENGG.	SSS		20/10/21
DESIGNER	SSS		20/10/21
CHECKER	RBN		20/10/21
APPR.BY	RAK		20/10/21

FIRST USED TRCR. MODEL
SCALE N.T.S
SHEET 1 OF 11
UNIT QTY. : ——
WEIGHT : kg.
ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21

TABLE (3Ø SWITCHGEAR COMPONENT SELECTION CHART)

SR.NO.	RATING KVA	PHASE	MCCB	CONTACTOR	CT RATIO	POWER CABLE (UNINYVIN)	CONTROL PANEL M&M PART NO.											
1	40.0	3	3P,80A	4P,80A	75/5A	U-8	0	0	7	7	1	0	0	2	3	H	9	1

TABLE B:

KVA RATING	PHASE	CONTACTOR	M&M PART NO	MCCB	M&M PART NO	MECHANICAL INTERLOCK	M&M PART NO	SURGE SUPPRESSOR	M&M PART NO	ADD ON BLOCK 1NO+1NC	M&M PART NO
40	3	4P,80A (LC1E65004)	007709395H91	3P,80A 10KA (DY125U)	006029687H91	LAEM1	007709400H91	LAERCU	007709398H91	LAEN11	007709397H91

TABLE C:

RATING KVA	CT RATIO	M&M PART NO.
40	75/5A, CL-1, 2.5VA	006032995H91

CURRENT RATINGS			
SR NO.	RATING KVA	FULL-LOAD CURRENT	OVERLOAD CURRENT
1	40	57.7A	63.5A

SWITCHGEAR COMPONENT SELECTION CHART

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.

UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

LINEAR IN mm.		OVER	0.5	3	6	30	120	400	1000	2000
		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)	±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
	OVER	-	10	50	120	400
	UPTO	10	50	120	400	-
f	FINE (X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m	MEDIUM (X.XX)					
c	COARSE (X.X)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v	VERY COARSE (X)	±3°	±2°	±1°	±0°30'	±0°20'

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY

IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC

PART NO. : REFER SHEET NO.2

PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1

MATERIAL : ——

HEAT TREATMENT : ——

2021	NAME	SIGN	DATE
CAD ENGG.	SSS		20/10/21
DESIGNER	SSS		20/10/21
CHECKER	RBN		20/10/21
APPR.BY	RAK		20/10/21

FIRST USED TRCR. MODEL

SCALE N.T.S

SHEET 2 OF 11

UNIT QTY. : ——

WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

SR NO.	DESCRIPTION OF COMPONENT	MODEL	MAKE	QTY	M&M PART NO
1	DC RELAY CARD FOR R1/R2/R3/R4, 4-CH. WITH C/O 12VDC-70A-2 NOS, 5A-2 NO. RELAY Ⓐ	UL5302NO-C-DP-72	UL AUTOMATION OEN	1	006029269H91
2	BATTERY CHARGER 12VDC; 5A	CB1205A	SEDEMAC	1	007709451H91
3	CURRENT TRANSFORMER	(Refer Table A)	NEWTEK	3	-
4	DOOR LOCK	-	DARSHANA	1	-
5	ENCLOSURE-MADE OF CRCA SHEET	(Refer sheet no. 6)	-	1	-
6	ELECTRONIC BUZZER-BASE MOUNTING	12VDC	IOTA	1	006025640H91
7	FUSE TERMINAL BLOCK	4Sq.mm	CONNECTWELL	8	-
8	GLASS FUSE	2A	PROTECTRON	1	
9	GLASS FUSE	6A	PROTECTRON	7	
10	GENERATOR CONTROL UNIT	DSE-4520-R1	DEEPSEA	1	006040370H91
11	TOGGLE SWITCH 15A 28V DC	KT 1521BY	KAYCEE	1	-
12	MCB 1 POLE-32A."C" CURVE WITH 10kA BREAKING	32A	L&T	1	006024461H91
13	MCB 1 POLE-6A."C" CURVE WITH 10kA BREAKING	6A	L&T	2	006029656H91
14	MCCB FOR DG INCOMING/EB INCOMING	Refer Sheet 2	L&T	2	-
15	POWER CONTACTOR, 4POLE WITH 220VAC COIL SUPPLY	Refer Sheet 2	SCHNEIDER	2	-
16	12V DC, 5A RELAY CARD, 2 CH, 2C/O	UL02-2C	UL AUTOMATION	1	006029707H91
17	CONNECTOR 6PIN 250 SERIES	250 SERIES	MSSL	1	-
18	CONNECTOR 8PIN,250 SERIES	250 SERIES	MSSL	1	-
19	CONNECTOR 10PIN,250 SERIES	250 SERIES	MSSL	1	-
20	TERMINAL BLOCK.4P,63A	-	POWERMATE	2	-
21	MICROSWITCH	2A, 250V	SURDHI	1	006019613H91
22	LED LAMP 61.2(L)x46.5(W)	12VDC-1W(OVP)	SAM INTEGRATIONS	1	006025268H91
23	PVC GLAND FOR HARNESS CONN.	25 MM	-	1	-
24	PVC POWER CABLE GLAND WITH CAP FOR MAINS & LOAD	PG29	JIGO	2	-
25	ADD ON BLOCK (1NO+1NC)	Refer Sheet 2	SCHNEIDER	2	Refer Table 2
26	MECHANICAL INTERLOCK	Refer Sheet 2	SCHNEIDER	1	Refer Table 2
27	SURGE SUPPRESSOR	Refer Sheet 2	SCHNEIDER	2	Refer Table 2
28	RESISTOR	240Ω±0.5%	-	1	-
29	AUTOMOTIVE RELAY 1NO	741-12-1A-2SA	OEN	1	007710327H91
30	TERMINAL BLOCK	6 SQ.MM	CONNECTWELL	3	
31	ELECTRONIC TIMER	150DT4(R8)	GIC	1	
32	EARTHING CABLE	Refer Sheet 11	-	3	

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21

TAG	DESCRIPTION
BUZ	ELECTRONIC BUZZER
CT	CURRENT TRANSFORMER
GCU	GENERATOR CONTROL UNIT (DSE-4520-R1)
TS	TOGGLE SWITCH
Q1,Q2	MINIATURE CIRCUIT BREAKER
R1/R2	RELAY FOR START OUT/SOLENOID
CONN.	CONNECTORS FOR ENGINE HARNESS
F	FUSE (CONTROL)
R3	FAILURE RELAY FOR BUZZER
R4/R5	AMF RELAYS
MC	MAINS CONTACTOR
AC	ALTERNATOR CONTACTOR
BCR	BATTERY CHARGER
F1-8	FUSED TERMINAL BLOCK
RM	RELAY MODULE

CABLE SIZE TABLE		CABLE SIZE & Specification
BATTERY +VE BATTERY-VE	4 Sq.mm	FINOLEX/POLYCAB/BONTON /RR CABLE/LAPP/HAVELS PVC INSULATED SINGLE CORE MULTISTAND FR CABLE
CURRENT TRANSFORMER	1.5 Sq.mm	
CONTROL SIGNAL	0.75 Sq.mm	
START,STOP SIGNAL	4 Sq.mm	
BATT. +VE BATT.-VE FOR BATT. CHARGER & PANEL HEATER & TIMER CONN.	2.5 Sq.mm	
POWER CABLE	Refer Sheet 2 (Table A)	MIRACLE MAKE UNINYVIN CABLE AS PER BSG177 STD.

*** NOTE: ALL PANELS MUST BE SUPPLIED WITH TEST CERTIFICATE AND HARD COPY OF DRAWING

BILL OF MATERIAL

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.

UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

LINEAR IN mm.		OVER	0.5	3	6	30	120	400	1000	2000
		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)	±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
OVER		-	10	50	120	400
UPTO		10	50	120	400	-
f FINE	(X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m MEDIUM	(X.XX)					
c COARSE	(X.X)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v VERY COARSE	(X)	±3°	±2°	±1°	±0°30'	±0°20'

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY

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MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC

PART NO. : REFER SHEET NO.2

PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1

MATERIAL : ——

HEAT TREATMENT : ——

2021	NAME	SIGN	DATE	FIRST USED TRCR. MODEL
CAD ENGG.	SSS		20/10/21	
DESIGNER	SSS		20/10/21	SCALE N.T.S
CHECKER	RBN		20/10/21	SHEET 3OF 11
APPR.BY	RAK		20/10/21	UNIT QTY. : ——
				WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21

1	METERING FACILITY AVAILABLE IN THE GENSET CONTROLLER DSE-4520-R1	
		Voltage (Phase to Neutral)
		Current
		Frequency
		kW
		kVA
		kVAR
		PF
		kWh
		kVARh
		kVAh
		RPM
		Hours
		Battery Voltage
		Pressure - Bar/PSI/kPa
		TEMPERATURE: °C/°F
		Fuel - %
		Clock Time
2	Genset Controller Key Features	
	Dimension Details	Overall : 140 (w) x 113 (h) x 43 (d)
		Cutout : 118 (w) x 92 (h)
	Degrees of Protection	BS EN60529
		IP 42
	Shock	BS EN 60068-2-27
		Three Shocks in each of three major axes 15 gn in 11 mS
	Humidity	BS EN 60068-2-30
		DB DAMP HEAT CYCLIC: 20/55 °C
		@ 95% RH 48 Hours

		BS EN 60068-2-78
		Cab Damp Heat Static 40 ^{0}C
		@93% RH 48 Hours
	Vibration	BS EN 60068-2-6
		Ten Sweeps in each of three major axes
		5 Hz to 8Hz @ +/-7.5mm
		8 Hz to 500 Hz @ 2 gn
	Temperature	BS EN 60068-2-1
		Ab/Ae Cold Test -30 ^{0}C
		BS EN 60068-2-2
		Bb/Be Dry Heat +70 ^{0}C
	Electrical Safety	BS EN 60950
		Safety for Information Technology Equipment,
		including Electrical Business Equipment.
	Electro Magnetic Compatibility	BS EN 61000-6-2
		EMC Generic immunity standard fot the Industrial Environment
		BS EN 61000-6-4
		EMC Generic Emission standard fot the Industrial Environment

3	Engine Type	Conventional		
4	Analog Input Assignment		Sensor Type	Trip Setting
	Input-A	Lube Oil Pressure	M&M	1.5 bar
	Input-B	Coolant temp. sensor	M&M	108 °C
	Input-C	Fuel Level Sensor	Resistive LR 45	10%
5	Digital Input Assignment			
	Input-A	Not used		
	Input-B	COOLANT TEMP. SWITCH		
	Input-C	Not used		
	Input-D	Emergency Stop		

DSE-4520-R1 CONTROLLER CONFIGURATION DETAILS

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.

UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

LINEAR IN mm.		OVER	0.5	3	6	30	120	400	1000	2000
		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)	±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.		OVER	-	10	50	120	400
		UPTO	10	50	120	400	-
f	FINE	(X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m	MEDIUM	(X.XX)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
c	COARSE	(X.X)	±3°	±2°	±1°	±0°30'	±0°20'
v	VERY COARSE	(X)					

LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY

IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC

PART NO. : REFER SHEET NO.2

PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1

MATERIAL : ——

HEAT TREATMENT : ——

2021	NAME	SIGN	DATE	FIRST USED TRCR. MODEL
CAD ENGG.	SSS		20/10/21	
DESIGNER	SSS		20/10/21	SCALE N.T.S
CHECKER	RBN		20/10/21	SHEET 4 OF 11
APPR.BY	RAK		20/10/21	UNIT QTY. : ——
				WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

6	Digital Output Assignment		
	OUTPUT-A	Fuel Relay	
	OUTPUT-B	Start Relay	
	OUTPUT-C	Energise to Stop	
	OUTPUT-D	De-Energize Mains Contactor (Close)	
	OUTPUT-E	Energize Alternator Contactor (Close)	
	OUTPUT-F	AUDIBLE ALARM RELAY	
7	Timer Setting made on the controller		
a)	Start Timer	Mains Transient Delay	5.0 Sec
		Start Delay	5.0 Sec
		Delay in Crank	2.0 Min
		Pre-Heat	0 Sec
		Cranking Time	45.0 Sec
		Crank Rest Time	10.0 Sec
		Smoke Limit	0 Sec
		Smoke Limit Off	0 Sec
		Safety ON Delay	10.0 Sec
		Warming Up Time	1.0 Sec
b)	Load/Stopping Timers	Load Control Timers	
		Transfer Time	2.0 Sec
		Breaker Trip Pulse	0.5 Sec
		Breaker Close Pulse	0.5 Sec
		Stopping Timers	
		Return Delay	30.0 Sec
		Cooling Time	1.0 Min
		ETS Solenoid Hold	10.0 Sec
		Fail to Stop Delay	30.0 Sec
		Generator Transient Delay	5.0 Sec
8	Generator Options	No. of Pole Selection	4 Pole
		AC System	3Ph.,4Wire

9	Generator Voltage	Under Voltage Shutdown	320V
		Loading Voltage	380V
		Nominal Voltage	400V
		Over Voltage Shutdown	440V
10	Generator Frequency	Under Frequency Shutdown	45 Hz
		Loading Frequency	48 Hz
		Nominal Frequency	50 Hz
		Over Frequency Shutdown	55 Hz
11	Generator Current	CT Primary	(Refer Sheet 2)
		Full Load Rating	(Refer Sheet 2)
		Over Current Alarm - 110%	(Refer Sheet 2)
12	Start-up Options	Start Attempt	3
13	Crank Disconnect	Crank Disconnect on Oil Pressure	Yes
14	Crank Disconnect Freq.		21Hz
15	Plat Battery (VDC)	Under Voltage Warning	8.5VDC
		Under Voltage Return	9.0VDC
		Under Voltage Delay	5.0 Sec
		Over Voltage Return	15.0VDC
		Over Voltage Warning	15.5VDC
		Over Voltage Delay	5.0 Sec
16	Mains Options	AC System	3Ph.,4Wire
17	Mains Voltage	Under Voltage Shutdown	320V
		Loading Voltage	380V
		Over Voltage Shutdown	440V
18	Mains Frequency	Under Frequency Shutdown	45 Hz
		Loading Frequency	48 Hz
		Nominal Frequency	50 Hz
		Over Frequency Shutdown	55 Hz

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21

DSE-4520-R1 CONTROLLER CONFIGURATION DETAILS

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

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DIMENSIONS

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		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)	±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
OVER		-	10	50	120	400
UPTO		10	50	120	400	-
f	FINE (X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m	MEDIUM (X.XX)					
c	COARSE (X.X)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v	VERY COARSE (X)	±3°	±2°	±1°	±0°30'	±0°20'

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KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC

PART NO. : REFER SHEET NO.2

PART NAME : 40kVA, 3PH., AMF PANEL
COLD START WITH DSE-4520-R1

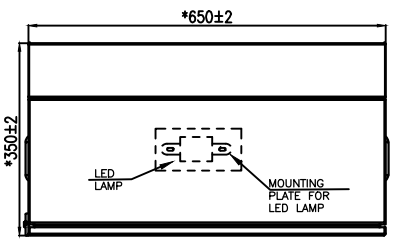
MATERIAL : ——

HEAT TREATMENT : ——

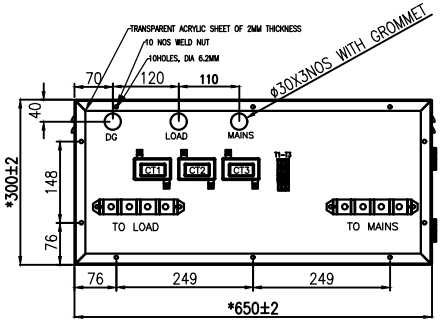
2021	NAME	SIGN	DATE	FIRST USED TRCR. MODEL
CAD ENGG.	SSS		20/10/21	
DESIGNER	SSS		20/10/21	SCALE N.T.S
CHECKER	RBN		20/10/21	SHEET 5 OF 11
APPR.BY	RAK		20/10/21	UNIT QTY. : ——
				WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
	A	RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
	B	TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21



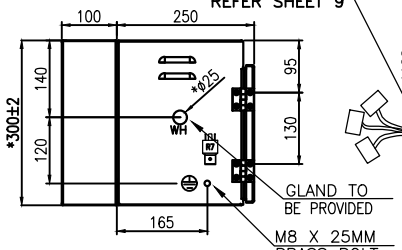
TOP VIEW



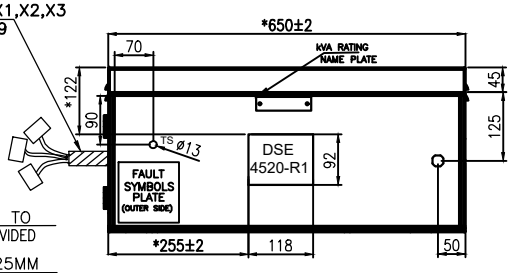
BACK VIEW

NOTE:LENGTH OF THE GLAND WIRE, OUT OF PANEL SHOULD BE 400MM

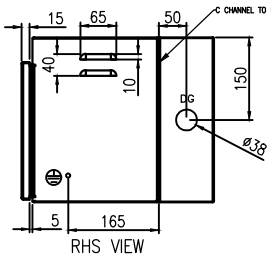
CONNECTORS X1,X2,X3 REFER SHEET 9



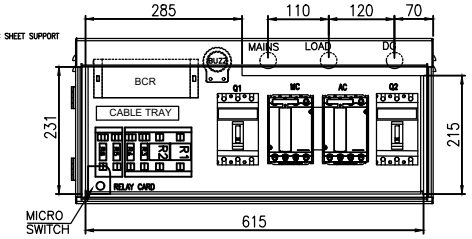
LHS VIEW



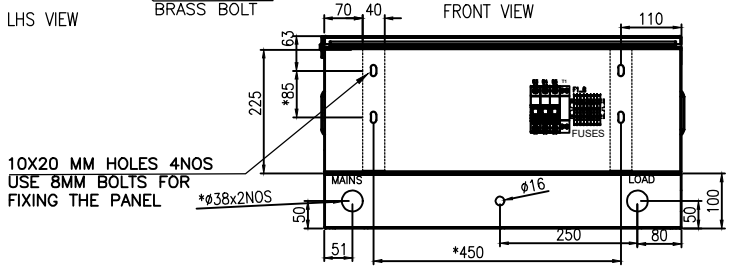
FRONT VIEW



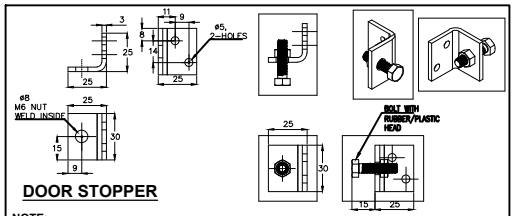
RHS VIEW



COMPONENT MOUNTING ARRANGEMENT



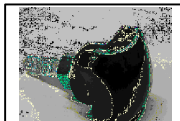
BOTTOM VIEW



DOOR STOPPER

NOTE:
1) M4x12mm OF SIZE HEX NUT-BOLT, PLANE WASHER & SPRING WASHER MUST BE USED FOR DOOR STOPPER MOUNTING
2) M6x25mm SIZE HEX BOLT WITH RUBBER / PLASTIC HEAD MUST BE USED FOR DOOR OPENING ADJUSTMENT.

NOTE:
DOOR STOPPER TO BE PROVIDED FOR CONTROL PANEL FRONT DOOR. ALSO, FRONT DOOR OPENING MUST BE 80-90° ONLY.


M6x25mm SIZE HEX BOLT WITH RUBBER / PLASTIC HEAD

CUBICLE DATA

TAG	FREE STANDING VERTICAL
SIZE	650(W)X300(H)X250+100(D)
MATERIAL THICKNESS	CRCA SHEET 1.6MM FOR ENCLOSURE & DOOR 1.6MM MOUNTING PLATE 2.0MM GLAND PLATE WELD 4MM THICK CRCA SHEET OVER THE MOUNTING HOLE OF PANEL BOTTOM
PAINT SHADE	MAT BLACK-301736 FOR ENCLOSURE WITH MAT FINISH
FINISH	RAL 2000 FOR MOUNTING PLATE WITH SEMI GLASSY FINISH
CABLE ENTRY	FROM BACK SIDE OF PANEL GLAND HOLE SHOULD MATCH THE POSITION OF POWER TERMINAL
Door Hinge	DHFM-40 Darshana Make with nut weld
FASTENERS	ALL FASTENERS SHOULD BE MS WITH GREEN PASSIVATION (REFER TABLE 1)
WASHERS	ALL BOLT HARDWARE SHOULD BE WITH SPRING WASHER AND PLAIN WASHER

TABLE 1

BOLT SIZE	M3	M4	M5	M6	M8	M10	M12
GRADE OF BOLT	8.8	8.8	8.8	8.8	8.8	8.8	8.8
GRADE OF NUT	8	8	8	8	8	8	8
TORQUE	1.4+/0.2	3.1+/0.6	6.2+/1.2	10.4+/0.2	25+/5	72+/13	126+/24

NOTE:
1. LENGTH OF THE GLAND WIRE, OUT OF PANEL SHOULD BE 400+50mm
2. NO SHARP EDGES TO BE PRESENT
3. TOLERANCE FOR ALL DIMENSION SHOULD BE CONSIDERED AS ±1mm.
4. DOOR LOCK OPENING AND CLOSING IS TO BE ENSURED AT VENDOR END BEFORE DISPATCH.
5. PANEL ENCLOSURE IS PROVIDED WITH VERTICAL 'C' BEND [TOP, BACK & BOTTOM] & SIDE PLANES ARE WELDED TO IT.
6. ALL FASTENER USED SHOULD BE GREEN PASSIVATED
7. FAULT SYMBOL MUST BE ON REVITED BLACK ANODIZED PLATE, FIXED ON THE OUTER SIDE OF DOOR.
8. GLAND HOLES SHOULD MATCH THE POSITION OF POWER TERMINALS
9. DOOR HINGE TYPE DHFM40 DARSHANA MAKE. NUT WELD PANEL INSIDE FOR HINGE.
10. ADD DOOR STOPPER ON SIDE VIEW-1NO.
11. THE DIMENSIONS MARKED WITH (*) ARE CRITICAL TO QUALITY.
12. ONLY YELLOW-GREEN WIRES MUST BE USED FOR BODY EARTHING .
13. AT ONE NODE/JUCNTION POINT CONNECT TWO EARTHING CABLES ONLY.
14. MOUNTING PLATE ARRANGEMENT IS TENTATIVE THIS MAY OR MAY NOT CHANGES.

CABLE ENTRY DETAILS FOR LOAD & MAINS

Sr.No	kVA	Gland Hole Details	Gland Details
1	40	Ø 38MM	PG29 (2nos)

1) ENGINE & CANOPY WIRING HARNESS – 25Ø

GENERAL ARRANGEMENT DRAWING

<SC> :SIGNIFICANT CHARACTERISTICS ▽:CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.
UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS									
LINEAR IN mm.	OVER	0.5	3	6	30	120	400	1000	2000
	UPTO	3	6	30	120	400	1000	2000	4000
f FINE (X.XXX)		±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m MEDIUM (X.XX)		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c COARSE (X.X)		±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v VERY COARSE (X)		-	±0.5	±1	±1.5	±2.5	±4	±6	±8
ANGULAR IN deg.		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.							
	OVER	-	10	50	120	400			
	UPTO	10	50	120	400	-			
f FINE (X.XXX)		±1'	±0°30'	±0°20'	±0°10'	±0°5'			
m MEDIUM (X.XX)									
c COARSE (X.X)		±1°30'	±1°	±0°30'	±0°15'	±0°10'			
v VERY COARSE (X)		±3°	±2°	±1°	±0°30'	±0°20'			

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY
IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

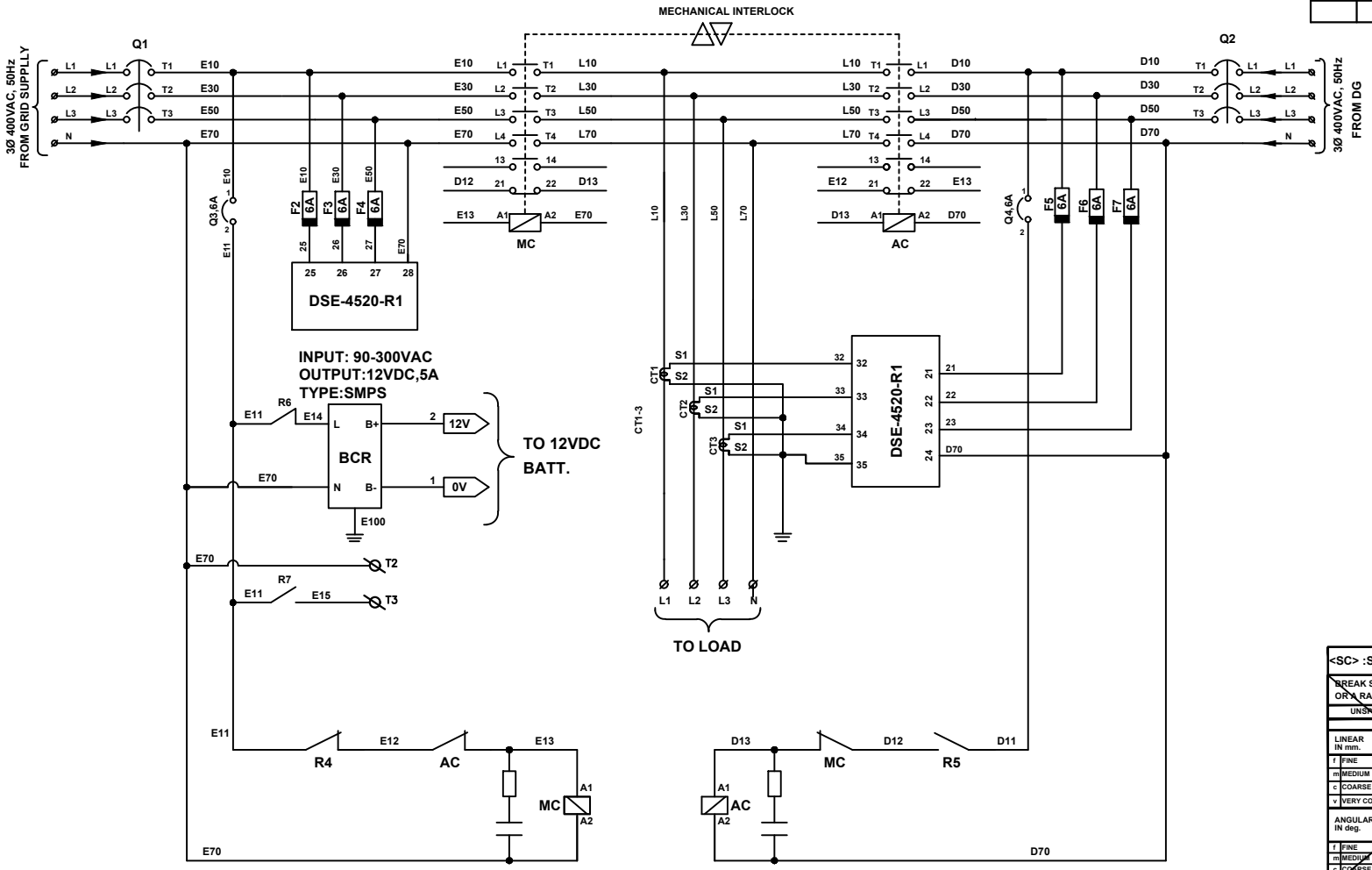
MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : ER/PROC.REQ.NO
PART NO. : REFER SHEET NO.2
PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1
MATERIAL : ——
HEAT TREATMENT : ——

2021	NAME	SIGN	DATE	FIRST USED TRCR. MODEL
CAD ENGG.	SSS		20/10/21	
DESIGNER	SSS		20/10/21	SCALE N.T.S
CHECKER	RBN		20/10/21	SHEET 6 OF 11
APPR.BY	RAK		20/10/21	UNIT QTY. : ——
				WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21



Note: Use Heat Shrink Sleeve on Power Cable as per below colour coding:
R Phase: Brown
Y Phase: Black
B Phase: Gray
Neutral: Blue
Earthing: Yellow/Green

POWER CIRCUIT DRAWING

***** Note: USE PVC WHITE PRINTED FERRULE OF SIZE 3.5 MM**

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.
UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

		OVER	0.5	3	6	30	120	400	1000	2000
LINEAR IN mm.		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)	±0.01	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
ANGULAR IN deg.	OVER	-	10	50	120	400
	UPTO	10	50	120	400	-
f FINE (X.XXX)		±1°	±0°30'	±0°20'	±0°10'	±0°5'
m MEDIUM (X.XX)		±1°30'	±1°	±0°30'	±0°15'	±0°10'
c COARSE (X.X)		±3°	±2°	±1°	±0°30'	±0°20'
v VERY COARSE (X)						

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COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY
IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

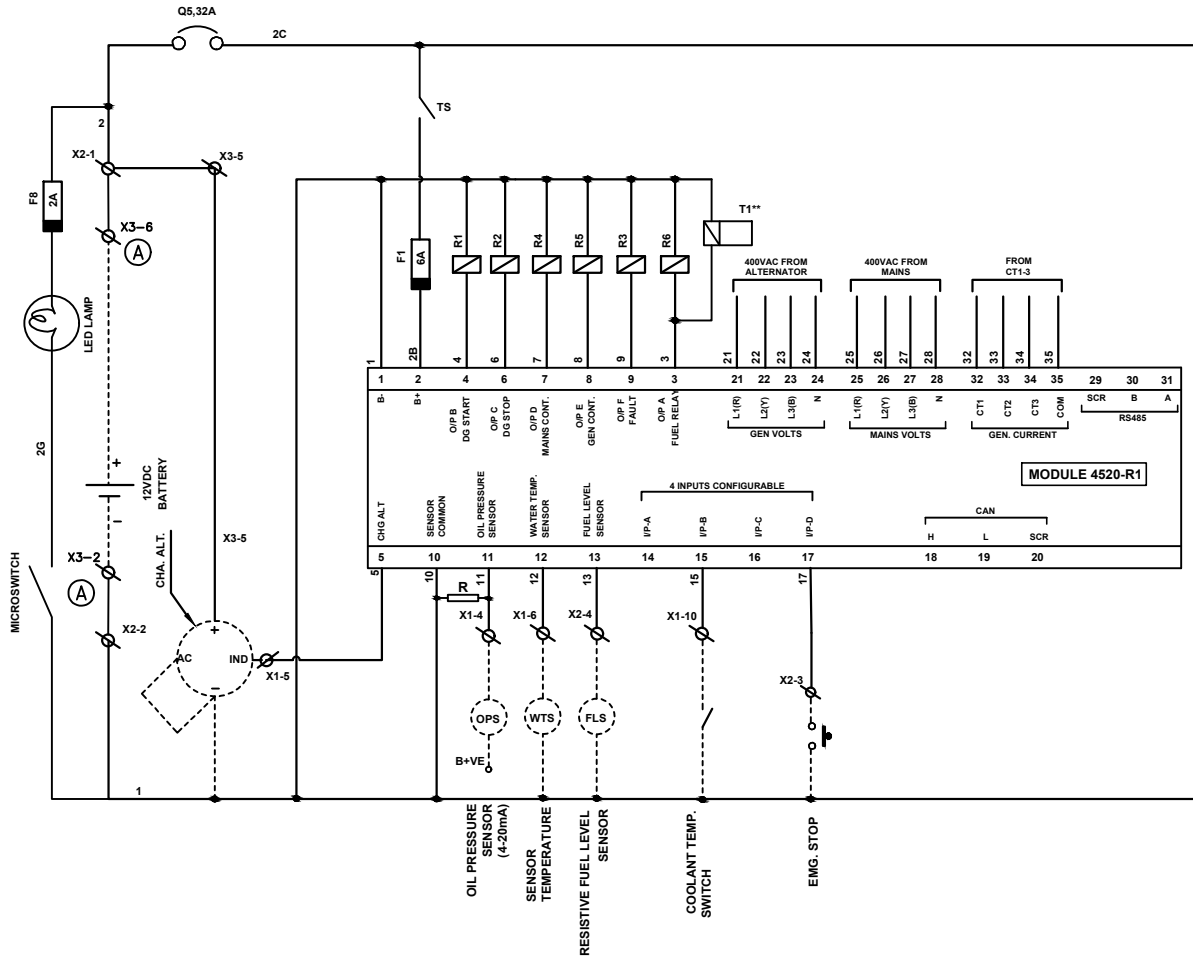
MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC
PART NO. : REFER SHEET NO.2
PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1
MATERIAL : ——
HEAT TREATMENT : ——

2021	NAME	SIGN	DATE	FIRST USED TRCR. MODEL
CAD ENGG.	SSS		20/10/21	
DESIGNER	SSS		20/10/21	SCALE N.T.S
CHECKER	RBN		20/10/21	SHEET 7 OF 11
APPR.BY	RAK		20/10/21	UNIT QTY. : ——
				WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21



B

** Note: T1 TIMER SET AS 3 MIN.

*** Note: USE PVC WHITE PRINTED FERRULE OF SIZE 3.5 MM

CONTROL CIRCUIT DRAWING

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.

UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS									
LINEAR IN mm.	OVER	0.5	3	6	30	120	400	1000	2000
	UPTO	3	6	30	120	400	1000	2000	4000
f FINE	(X.XXX)	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c COARSE	(X.X)	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	±4
v VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
	OVER	-	10	50	120	400
	UPTO	10	50	120	400	-
f FINE	(X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m MEDIUM	(X.XX)					
c COARSE	(X.X)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v VERY COARSE	(X)	±3°	±2°	±1°	±0°30'	±0°20'

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IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC

PART NO. : REFER SHEET NO.2

PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1

MATERIAL : ——

HEAT TREATMENT : ——

2021	NAME	SIGN	DATE
CAD ENGG.	SSS		20/10/21
DESIGNER	SSS		20/10/21
CHECKER	RBN		20/10/21
APPR.BY	RAK		20/10/21

FIRST USED TRCR. MODEL

SCALE N.T.S

SHEET OF 11 8

UNIT QTY. : ——

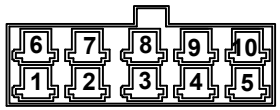
WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21

CONNECTOR DETAILS

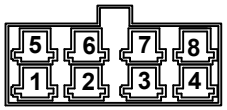
PANEL SIDE 10-PIN (MALE) CONNECTOR 250 SERIES MSSL FROM BACK VIEW (CABLE INSERTION VIEW)



CONNECTOR SEQUENCE	
PINS No	FERRULE No
1	SPARE
2	SPARE
3	SPARE
4	LOP SEN.
5	IND
6	WT SEN
7	SPARE
8	SPARE
9	SPARE
10	WT SW.

X1

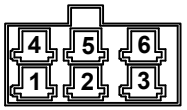
PANEL SIDE 8-PIN (MALE) CONNECTOR 250 SERIES MSSL FROM BACK VIEW (CABLE INSERTION VIEW)



CONNECTOR SEQUENCE	
PINS No	FERRULE No
1	BATT. +VE
2	BATT. -VE
3	E STOP
4	FLS
5	SPARE
6	SPARE
7	SPARE
8	SPARE

X2

PANEL SIDE 6-PIN (MALE) CONNECTOR 250 SERIES MSSL FROM BACK VIEW (CABLE INSERTION VIEW)



CONNECTOR SEQUENCE	
PINS No	FERRULE No
1	SPARE
2	BATT. -VE
3	SOLENOID
4	START OUT
5	ALT. +VE
6	BATT. +VE

X3

SYMBOLS & NOMENCLATURE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
SHUTDOWN ALARMS			Under Frequency Shutdown		Gen. Low Volt. Warning
	CAN ECU Data Fail		Under Speed Shutdown		High Coolant Temp. Warning
	CAN ECU Shutdown		Temp. Sensor Open Circuit		Low Oil Pressure Warning
	Digital Input A-D		Oil Pressure Sensor Open Circuit		Low Fuel Level
	Analogue Input A-C		Flexible Sensor		Over Frequency Warning
	Emergency Stop/RWL		Magnetic Pickup Open Circuit		Over Speed Warning
	Fail To Start	WARNING			Under Frequency Warning
	Gen. High Volt. Shutdown		Battery High Voltage		Under Speed Warning
	Gen. Low Volt. Shutdown		Battery Low Voltage		Flexible Sensor
	High Coolant Temp Shutdown		CAN ECU Warning	USER CONFIGURED SHUT DOWN	
	Loss of Mag. Pickup Signal		Charge Alternator Failure		Digital Input A-D
	Low Oil Pressure Shutdown		Digital Input A-D		Fuel Level Sensor
	Low Fuel Level		Analogue Input A-C		Analogue Input A-C
	Over Frequency Shutdown		Fail To Stop		Low Fuel Level Shut Down Switch
	Over Speed Shutdown		Gen. High Volt. Warning		RWL /EmergencyPB

***** Note: USE PVC WHITE PRINTED FERRULE OF SIZE 3.5 MM**

CONNECTOR DETAIL, SYMBOLS & NOMENCLATURE

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.

UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

LINEAR IN mm.		OVER	0.5	3	6	30	120	400	1000	2000
		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)	±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.			LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
		OVER	-	10	50	120	400
		UPTO	10	50	120	400	-
f	FINE	(X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m	MEDIUM	(X.XX)					
c	COARSE	(X.X)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v	VERY COARSE	(X)	±3°	±2°	±1°	±0°30'	±0°20'

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY

IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC

PART NO. : REFER SHEET NO.2

PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1

MATERIAL : ——

HEAT TREATMENT : ——

2021	NAME	SIGN	DATE
CAD ENGG.	SSS		20/10/21
DESIGNER	SSS		20/10/21
CHECKER	RBN		20/10/21
APPR.BY	RAK		20/10/21

FIRST USED TRCR. MODEL

SCALE N.T.S

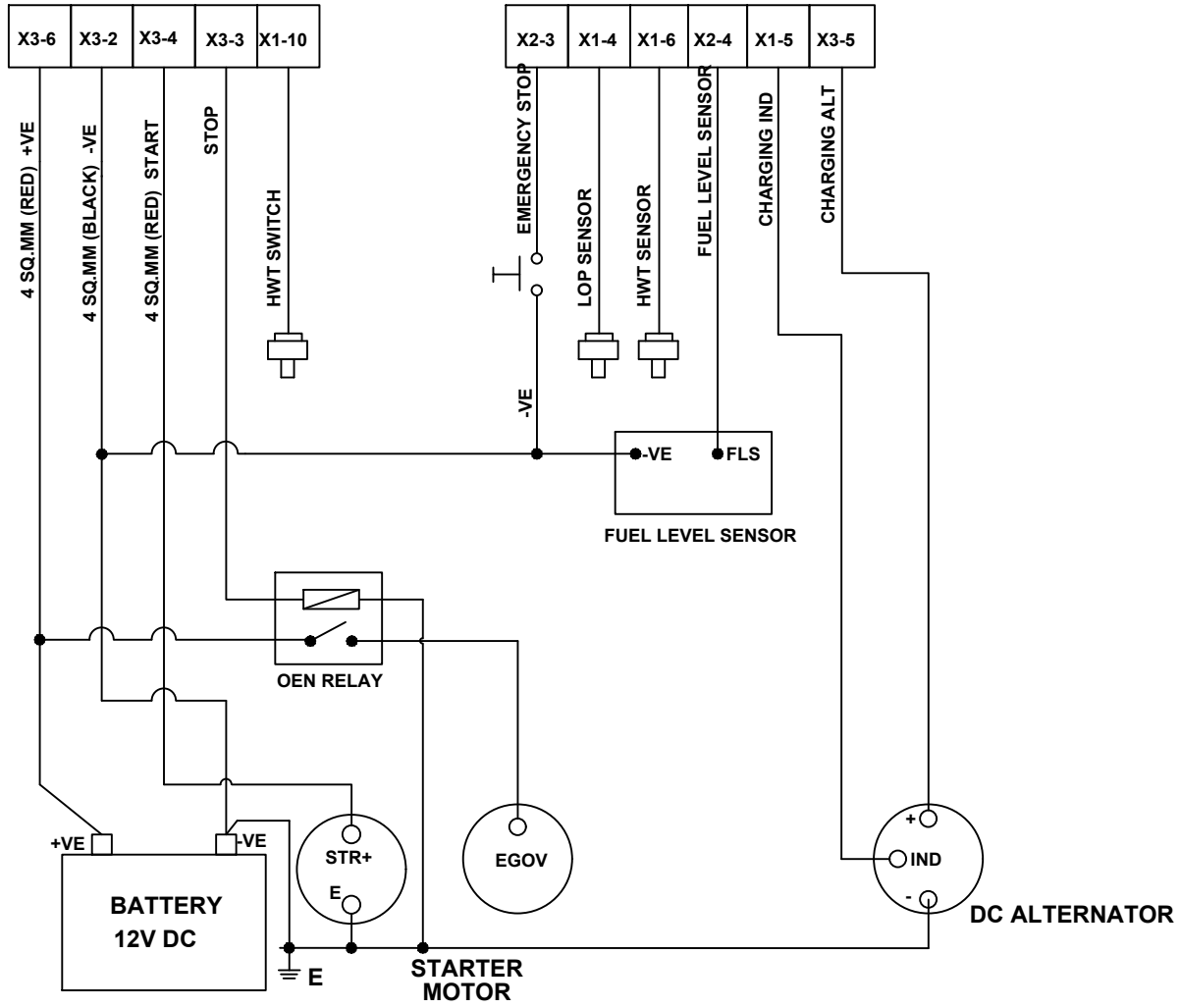
SHEET 9 OF 11

UNIT QTY. : ——

WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21



***Note: USE PVC WHITE PRINTED FERRULE OF SIZE 3.5 MM

ENGINE WIRING DIAGRAM

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.

UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

			OVER	0.5	3	6	30	120	400	1000	2000
LINEAR IN mm.			UPTO	3	6	30	120	400	1000	2000	4000
f	FINE	(X.XXX)		±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM	(X.XX)		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE	(X.X)		±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE	(X)		-	±0.5	±1	±1.5	±2.5	±4	±6	±8

ANGULAR IN deg.			LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
		OVER	-	10	50	120	400
		UPTO	10	50	120	400	-
f	FINE	(X.XXX)	±1°	±0°30'	±0°20'	±0°10'	±0°5'
m	MEDIUM	(X.XX)					
c	COARSE	(X.X)	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v	VERY COARSE	(X)	±3°	±2°	±1°	±0°30'	±0°20'

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY

IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

E.R. / PROC.REQ.NO : SDC

PART NO. : REFER SHEET NO.2

PART NAME : 40kVA, 3PH., AMF PANEL COLD START WITH DSE-4520-R1

MATERIAL : ——

HEAT TREATMENT : ——

2021	NAME	SIGN	DATE
CAD ENGG.	SSS		20/10/21
DESIGNER	SSS		20/10/21
CHECKER	RBN		20/10/21
APPR.BY	RAK		20/10/21

FIRST USED TRCR. MODEL

SCALE N.T.S

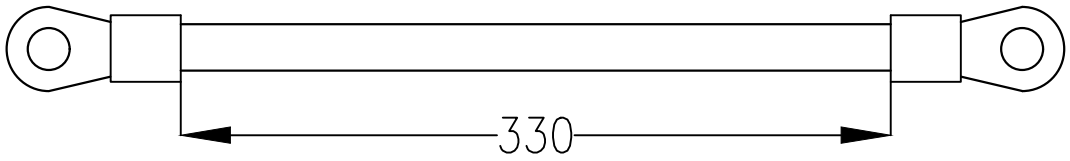
SHEET 1 OF 11

UNIT QTY. : ——

WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE

LET	LOC	REVISION	DSNR	CKR	APPR	DATE
A		RELAY CARD CHANGE FROM 3CH TO 4CH, X3 CONNECTOR CONNECTION ADDED IN CIRCUIT	PBK	RBN	RAK	29/10/21
B		TIMER T1 SETTING UPDATE AS 3 MIN.	SSS	RBN	RAK	24/11/21



NOTE:

1)SIZE OF CABLE 10SQ.MM.
2) ALL CABLES SHOULD BE FINOLEX/POLYCAB/BONTON/LAPP/HAVELLS MAKE HRFR TYPE
3) ALL LUGS SHOULD BE DOWELLS MAKE.
4) ALL LUGS SHOULD BE CRIMPED PROPERLY.
5) SHRINKING SLEEVE YELLOW/GREEN
6) CABLE TO BE IN YELLOW/GREEN COLOR
7) LUG ID SHOULD OF 10MM

EARTHING CABLE

<SC> :SIGNIFICANT CHARACTERISTICS ▽ :CRITICAL CHARACTERISTICS

BREAK SHARP CORNERS MAY BE EITHER A CHAMFER OR A RADIUS FROM 0.2 mm MIN. TO 1.0 mm MAX.

UNSPECIFIED TOLERANCES AS PER ISO-2768-1:1989

DIMENSIONS

	LINEAR IN mm.	OVER	0.5	3	6	30	120	400	1000	2000
		UPTO	3	6	30	120	400	1000	2000	4000
f	FINE (X.XXX)		±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	MEDIUM (X.XX)		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	COARSE (X.X)		±0.2	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
v	VERY COARSE (X)		-	±0.5	±1	±1.5	±2.5	±4	±6	±8

	ANGULAR IN deg.		LENGTH OF SHORTER SIDE OF THE ANGLE IN mm.				
		OVER	-	10	50	120	400
		UPTO	10	50	120	400	-
f	FINE (X.XXX)		±1°	±0°30'	±0°20'	±0°10'	±0°5'
m	MEDIUM (X.XX)						
c	COARSE (X.X)		±1°30'	±1°	±0°30'	±0°15'	±0°10'
v	VERY COARSE (X)		±3°	±2°	±1°	±0°30'	±0°20'

COMPUTER GENERATED DRAWING | DO NOT CHANGE MANUALLY

IF IN DOUBT, ASK | DO NOT SCALE | DRG SIZE :

MAHINDRA & MAHINDRA LIMITED
TRACTOR DIVISION
KANDIVLI(EAST), MUMBAI-400 101, INDIA.

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FIRST USED TRCR. MODEL

SCALE N.T.S

SHEET 11 OF 11

UNIT QTY. : ——

WEIGHT : kg.

ALL DIMENSIONS ARE IN mm. | CHECK DRG WITH LATEST CHANGE