

## ELECTRICAL TYPICAL SCHEMATIC DIAGRAMS FOR LV PANEL

NOTES	
LEGEND	
REFERENCE DRAWING	DWG. No.
LV SWITCHGEAR/MCC SINGLE LINE DIAGRAM	BK-009-FBD00-180-BL-SI-006
CONTROL LOGIC DIAGRAM FOR LV DISCONNECT & BUS TIE	BK-009-FBD00-180-BL-LD-006
ELECTRICAL OVERALL SINGLE LINE DIAGRAM	BK-009-FBD00-180-BL-SL-006
KEY PLAN	

[illegible]

## INDEX SHEET

SHEET No.	DESCRIPTION	D00	D01	D02	D03	D04
01	COVER SHEET	✓	✓	✓	✓	✓
02	INDEX SHEET	✓	✓	✓	✓	✓
03	ABBREVIATION & NOTES	✓	✓	✓	✓	✓
04	SYMBOL & LEGEND (1/2)	✓	✓	✓	✓	
05	SYMBOL & LEGEND (2/2)	✓	✓	✓	✓	✓
06	F1: SIMPLE 4-POLE MCCB FEEDER WITH THERMAL/MAGNETIC TRIPS, FOR 1<63A FEEDERS.	✓	✓	✓	✓	
07	F2: SIMPLE 4-POLE MCCB FEEDER WITH THERMAL/MAGNETIC TRIPS, FOR 63A<= <100A FEEDERS.	✓	✓	✓	✓	
08	F3: SIMPLE 4-POLE MCCB FEEDER WITH THERMAL/MAGNETIC TRIPS, FOR 100A<= < FEEDERS.	✓	✓	✓	✓	
09	F4: SIMPLE 3-POLE MCCB FEEDER WITH THERMAL/MAGNETIC TRIPS, FOR 1<63A FEEDERS.	✓	✓	✓	✓	
10	F5: SIMPLE 3-POLE MCCB FEEDER WITH THERMAL/MAGNETIC TRIPS, FOR 63A<= <100A FEEDERS.	✓	✓	✓	✓	
11	F6: SIMPLE 3-POLE MCCB FEEDER WITH THERMAL/MAGNETIC TRIPS, FOR 100A<= < FEEDERS.	✓	✓	✓	✓	
12	F7: SIMPLE 2-POLE MCCB FEEDER FOR FEEDING SINGLE PHASE LOADS (PH+N OR 2-PH)	✓	✓	✓	✓	
13	M1: DIRECT ON LINE MOTOR STARTER FEEDERS FOR $0.4kW \leq P < 4kW$	✓	✓	✓	✓	✓
14	M2: DIRECT ON LINE MOTOR STARTER FEEDERS FOR $4kW \leq P < 18.5kW$	✓	✓	✓	✓	✓
15	M3: DIRECT ON LINE MOTOR STARTER FEEDERS FOR $18.5kW \leq P < 30kW$	✓	✓	✓	✓	✓
16	M4: DIRECT ON LINE MOTOR STARTER FEEDERS FOR $30kW \leq P$ & AND HAZARDOUS AREA	✓	✓	✓	✓	✓
17	IN1: INCOMING 1 FROM DISTRIBUTION TRANSFORMER	✓	✓	✓	✓	
18	C01: COUPLING 1	✓	✓	✓	✓	
19	IN2: INCOMING 2 FROM DISTRIBUTION TRANSFORMER	✓	✓	✓	✓	
20	C02: COUPLING 2	✓	✓	✓	✓	
21	IN3: INCOMING FROM DIESEL GENERATOR	✓	✓	✓	✓	
22	INCOMING 1 (CB1)	✓	✓	✓	✓	
23	INCOMING 2 (CB2)	✓	✓	✓	✓	
24	COUPLING 1 (BT1)	✓	✓	✓	✓	
25	COUPLING 1 (BT1)	✓	✓	✓	✓	
26	COUPLING 1 (BT1)	✓	✓	✓	✓	
27	COUPLING 1 (BT1)	✓	✓	✓	✓	
28	COUPLING 2 (BT2)	✓	✓	✓	✓	
29	COUPLING 2 (BT2)	✓	✓	✓	✓	
30	INCOMING 3 (CB3)			✓	✓	

NOTES	
LEGEND	
REFERENCE DRAWING	DWG. No.
LV SWITCHGEAR/MCC SINGLE LINE DIAGRAM	BK-03-FE030-180-BL-RJ-0694
CONTROL LOGIC DIAGRAM FOR LV INCOMERS & BUS TIE	BK-03-FE030-180-BL-LJ-0001
ELECTRICAL OVERALL SINGLE LINE DIAGRAM	BK-03-FE030-180-BL-JL-0001
KEY PLAN	

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# 1 – ABBREVIATIONS

Q:	MAIN SWITCHING DEVICE	PE:	PROTECTING EARTH
K1:	MAIN CONTACTOR	SP:	SPRING CHARGED CONTACT
MPCB:	MOTOR PROTECTION CIRCUIT BREAKER	SP:	STOP P/B
MCCB:	MOULDED CASE CIRCUIT BREAKER	ST:	START P/B
MCB:	MINIATURE CIRCUIT BREAKER	CBT:	COMMON CIRCUIT BREAKER TRIP
KA:	AUXILIARY RELAY NO.#	CBR:	COMMON CIRCUIT READY
TC:	TRIP COIL OF CIRCUIT BREAKER (SHUNT TRIP)	CBF:	COMMON CIRCUIT FAULT
CB:	CIRCUIT BREAKER	CCB:	CIRCUIT BREAKER CLOSING COIL
CC:	CLOSE COMMAND	OCB:	CIRCUIT BREAKER OPENING COIL
OC:	OPEN COMMAND	DG:	DIESEL GENERATOR
P/B:	PUSH BUTTON	BT:	BUS TIE
PBC:	PUSH BUTTON CLOSE	CF:	CIRCUIT BREAKER FAULT
MST:	MANUAL SYNCHRON TRANSFER	CBR:	CIRCUIT BREAKER READY
AT:	ATOUMATIC TRANSFER	MAT:	MANUAL ASYNCHRON TRANSFER
DGCB:	DIESEL GENERATOR CIRCUIT BREAKER	MT:	MANUAL TRANSFER
ESD:	EMERGENCY SHUT DOWN	DGCP:	DIESEL GENERATOR CONTROL PANEL
MOF:	MAKE ON FAULT	LCS:	LOCAL CONTROL STATION
BOF:	BREAK ON FAULT	IRP:	INTERPOSING RELAY PANEL

## 2 – CATEGORY DESCRIPTION

- ALL SWITCH FUSES SHALL BE EQUIPPED WITH STRIKER PIN.
- LV NON MOTOR TYPE FEEDERS INCLUDE 400A & ABOVE SHALL BE ACB INSTEAD OF MCCB.
- START COMMAND FROM DCS & STOP COMMAND FROM ESD & DCS HAVE BEEN CONSIDERED FOR MOTOR TYPE FEEDER. IF THERE ARE NOT, THESE FACILITIES SHALL BE DELETED.
- CONTROL CIRCUIT VOLTAGE FOR INCOMINGS & COUPLERS IS 110 VDC WHICH WILL BE SUPPLIED BY NEW CHARGER SYSTEM INSTALLED IN SWITCHGEAR ROOM.
- CONTROL CIRCUIT VOLTAGE FOR OUTGOING IS 230 VAC WHICH WILL BE SUPPLIED FOR EACH LV CUBICLE. IN OTHER WORDS FOR EACH LV CUBICLE ONE ISOLATED DRY TYPE TRANSFORMER SHALL BE CONSIDERED BY VENDOR.
- EMERGENCY STOP & START PUSH BUTTON SHALL BE CONSIDERED ON INCOMINGS & BUS–TIES.
- HEATER/S IN EACH CUBICLE WILL BE PROTECTED BY A MINIATURE CIRCUIT BREAKER AND AN EARTH LEAKAGE PROTECTION DEVICE OR RESIDUAL CIRCUIT BREAKER OF 30MA SENSITIVITY,THE HEATERS WILL BE FED BY INTERNAL SUPPLY WITH REDUNDANCY CIRCUIT THAT FEEDING THE HEATERS IN ONE SECTION OF THE SWITCHGEAR WILL BE FED FROM THE OPPOSITE SECTION OF THE BUS BAR.
- SWITCH–FUSE COMBINATION UNITS SHALL COMPLY WITH SUITABLE FOR UNINTERRUPTED DUTY, UTILIZATION CATEGORY AC–23
- FOR FEEDER WITH TYPE M3&M4, CURRENT AND VOLTAGE FAULT SHALL BE CONSIDERED SEPARATELY BY VENDOR.
- MICROPROCESSOR TYPE PROTECTIVE RELAYS SHALL BE EQUIPPED WITH RS 485 TO SEND SIGNALS BY SERIAL LINK

## 3– VENDOR SHALL CONSIDER "CONTROL LOGIC DIAGRAM FOR LV INCOMERS AND BUS TIE"

(BK–GCS–PEDCO–120–EL–LD–0001)" & "LV SWITCHGEAR/MCC SINGLE LINE DIAGRAM

(BK–GCS–PEDCO–120–EL–SL–0002)" AS REFERENCES FOR METERING & SCHEMATIC DIAGRAM OF INCOMINGS.



D04		NOV.2002	IFT	A.BAKHSH	A.FARHANI	A.MOHAMMAD	REV.							
D05		JUL.2002	IFT	A.BAKHSH	A.FARHANI	A.MOHAMMAD	REV.							
D06		MAY.2002	IFT	A.BAKHSH	A.FARHANI	A.MOHAMMAD	REV.							
D01		APR.2002	IFT	A.BAKHSH	A.FARHANI	A.MOHAMMAD	REV.							
DDO		DIST.0001	IFT	A.BAKHSH	A.FARHANI	A.MOHAMMAD	REV.							
REV.	DATE	P.O.L.I.F.	PREP.	CHK.	APP.	AUT.								
PROJECT NAME: BINAK OILFIELD DEVELOPMENT/SURFACE FACILITIES GAS COMPRESSOR STATION														
PROJECT NO.: 971020														
EPC CONTRACTOR:							EPD/EPC CONTRACTOR (GO):							
 HIRAGAN ENERGY – DESIGN & INSPECTION COMPANIES							 PETROIRAN DEVELOPMENT COMPANY							
THE ORIGINAL AND ALL COPIES OF THIS DRAWING TOGETHER WITH THE COPYRIGHT THEREON ARE THE SOLE PROPERTY OF N.I.S.O.C./ FIELDS														
BINAK OILFIELD DEVELOPMENT SURFACE FACILITIES GAS COMPRESSOR STATION														
DATE		SCALE		DRAWING BY		CHECKED BY		PROJECT ENG.						
NO CONSTRUCTION PERMITTED UNLESS DRAWING APPROVED														
APPROVED FOR CONSTRUCTION BY: DATE:														
BUDGET REF.		LOCATION		SIZE		CLASS		SERIAL NO.		SHEET		REVISION		
NWB		AS		BK-GCS-PEDCO-120-EL-DG-0002		03 OF 16		D04		003-073-0104		P 2 P 700041 03 OF 16 D04		

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NOTES






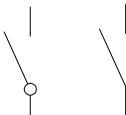

















LEGEND

KEY PLAN

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	MOULDED CASE CIRCUIT BREAKER(3 POLE) WITH OVERLOAD /OVER CURRENT RELAY(MCCB)		UNDER VOLTAGE RELAY		INVERSE TIME EARTH FAULT RELAY
	MOULDED CASE CIRCUIT BREAKER(4 POLE) WITH OVERLOAD /OVER CURRENT RELAY(MCCB)		PHASE SEQUENCE RELAY		MOTOR PROTECTION RELAY
	MOTORIZED AIR CIRCUIT BREAKER(4 POLE) WITHOUT OVERLOAD /OVER CURRENT RELAY(ACB)		MOTOR		
	MOTORIZED AIR CIRCUIT BREAKER(3 POLE) WITH OVERLOAD /OVER CURRENT & INSTANTANEOUS EARTH FAULT CURRENT RELAY TIME DELAY EARTH FAULT CURRENT RELAY		THERMAL OVER LOAD RELAY		
	MOTORIZED AIR CIRCUIT BREAKER(3 POLE) WITH OVERLOAD /OVER CURRENT & INSTANTANEOUS EARTH FAULT CURRENT RELAY TIME DELAY EARTH FAULT CURRENT RELAY		INSTANTANEOUS OVER CURRENT RELAY		
	MOTORIZED AIR CIRCUIT BREAKER(3 POLE) WITH OVERLOAD /OVER CURRENT & INSTANTANEOUS EARTH FAULT CURRENT RELAY TIME DELAY EARTH FAULT CURRENT RELAY		INVERSE TIME OVER CURRENT RELAY		
	ELECTROMAGNETIC ACTUATOR RELEASE TIMED RELAY (ACTUATE INSTANTLY, RESETS AFTER # SECONDS)		UNDER VOLTAGE RELAY		
	ELECTROMAGNETIC ACTUATOR PICK-UP TIMED RELAY (ACTUATE AFTER #SECONDS, RESETS INSTANTLY)		SYNCHRON CHECK RELAY		
	NO & NC CONTACT ON DELAY		RESTRICTED EARTH FAULT RELAY		
	EMERGENCY STOP		LOCKOUT RELAY		
	DELAY ON BY # SECOND		SIGNAL LAMP (R.RED, G.GREEN, W.WHITE, Y.YELLOW)		
	DELAY OFF BY # SECOND		PROTECTION LOGIC SIGNAL MECHANICAL INTERCONNECTION		
	OPERATING COIL OF ELECTROMAGNETIC ACTUATOR		NORMALLY OPEN CONTACT		
	GLAND		BIMETAL		
	WITHDRAW		PHASE CONTROL RELAY		

NOTES	
LEGEND	
REFERENCE DRAWING	DOC. No.
LV SWITCHGEAR/MCO SINGLE LINE DIAGRAM	BK-009-FB200-100-BL-35-00
CONTROL LOGIC DIAGRAM FOR LV DISCONNECTS & BUS TIES	BK-009-FB200-100-BL-12-00
ELECTRICAL OVERALL SINGLE LINE DIAGRAM	BK-009-FB200-100-BL-01-00
KEY PLAN	

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SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	PUSH BUTTON, NORMALLY OPEN CONTACT		VOLTAGE SELECTOR SWITCH
	PUSH BUTTON, NORMALLY CLOSE CONTACT		AMMETER SELECTOR SWITCH
	NORMALLY CLOSE CONTACT		SWITCHING DEVICE (GENERAL SYMBOL)
	LAMP (FOR LIGHTING)		
	SOCKET		CONTACTOR (CONTACT OPEN IN THE UNOPERATED POSITION)
	SPACE HEATER		AND LOGIC
	TRANSFORMER		OR LOGIC
			NOT LOGIC
	INDUCTOR, REACTOR, SPRING		FUSE GENERAL SYMBOL
	CURRENT TRANSFORMER		MINIATURE CIRCUIT BREAKER (MCB)
	TRANSDUCER 4-20mA I: CURRENT V: VOLTAGE P: ACTIVE POWER Q: REACTIVE POWER		TERMINALS OF SWITCHGEAR
			VOLTMETER
	EARTH		AMMETER

NOTES	
LEGEND	
REFERENCE DRAWING	DWG. No.
LV SWITCHGEAR/MCC SINGLE LINE DIAGRAM	BK-009-FBD00-18D-BL-SL-06
CONTROL LOGIC DIAGRAM FOR LV INCOMERS & BUS TIE	BK-009-FBD00-18D-BL-LG-00
ELECTRICAL OVERALL SINGLE LINE DIAGRAM	BK-009-FBD00-18D-BL-SL-00
KEY PLAN	

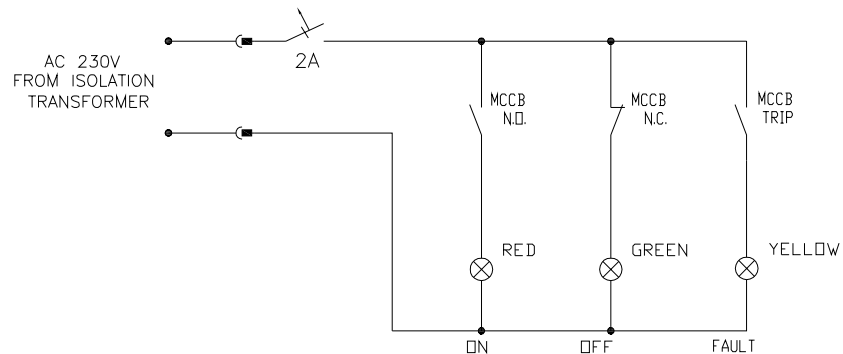
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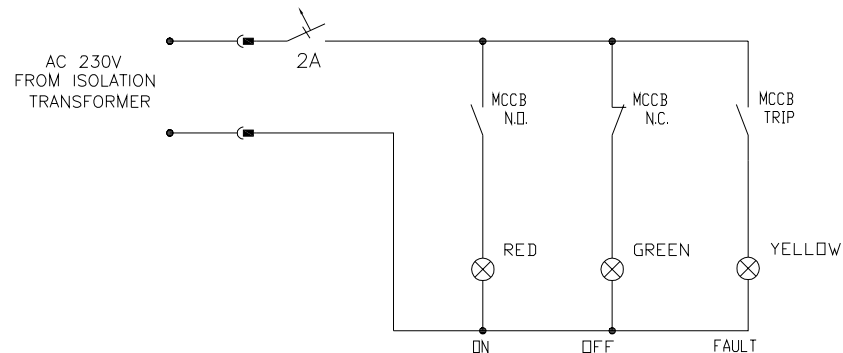






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F5: SIMPLE 3-POLE MCCB FEEDER WITH THERMAL/MAGNETIC TRIPS, FOR 63A=<I<100A FEEDERS.

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**NOTES**

LEGEND

REFERENCE DRAWING	DRG. No.
LV SWITCHGEAR/MCO SINGLE LINE DIAGRAM	SK-OCS-PSCCO-120-EL-SL-01
CONTROL LOGIC DIAGRAM FOR LV INCOMERS & BUS TIE	SK-OCS-PSCCO-120-EL-LD-01
ELECTRICAL OVERALL SINGLE LINE DIAGRAM	SK-OCS-PSCCO-120-EL-SL-02

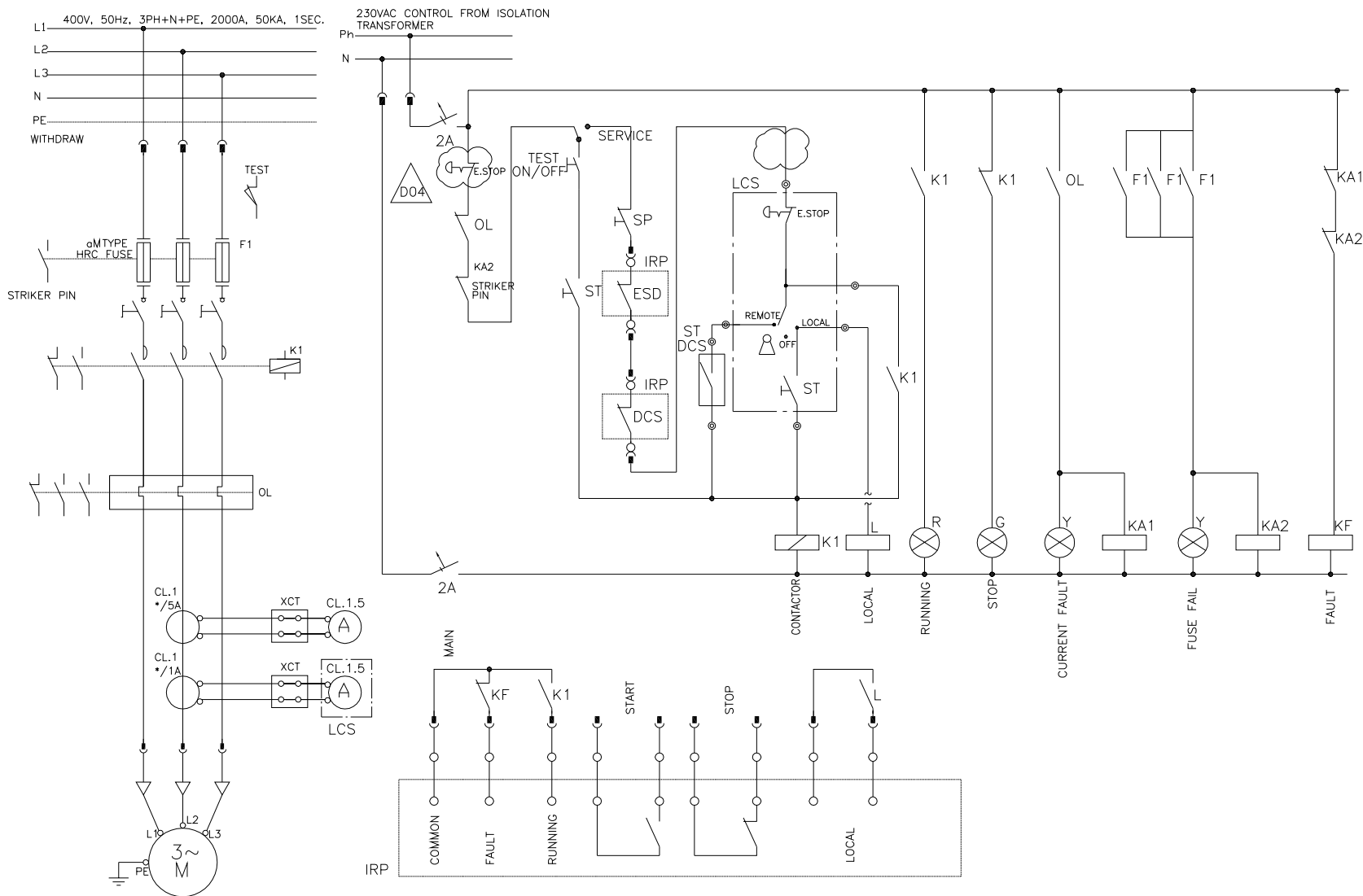
### KEY PL

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M2: DIRECT ON LINE MOTOR STARTER FEEDERS FOR  $4kW \leq P < 18.5kW$   
 (SWITCH FUSE + CONTACTOR + BIMETAL + R/L SIGNALING + R/L AMMETER)

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