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TABLE OF CONTENTS

1. INTRODUCTION	3
1.1. Glossary of Terms & Acronyms Used In This Manual.....	3
1.2. Tie-In Location	3
1.3. Tools Required	3
2. DISMANTLE EXISTING SLC.....	4
2.1. Backup program and configuration.....	4
2.2. SLC Module Removal Procedure	4
2.3. Replacement 1492 terminal block module	6
2.3.1. TBM1 replacement to TBM2.....	6
2.3.2. TBM2 replacement to TBM3.....	8
2.3.3. TBM3 replacement to TBM4.....	10
2.3.4. TBM4 replacement to TBM5.....	12
2.3.5. TBM5 replacement to TBM6.....	14
2.4. Install new 1492 terminal block module for Analog input module	16
2.4.1. <u>Install new TBM7</u>	16
3. CLX INSTALLATION AND WIRING.....	17
3.1. CLX Chassis & installation procedure	17
3.2. CLX module installation procedure.....	18
4. ENGINEERING WORK STATION AND REDUNDANCY NETWORKING	21
4.1. Engineering Workstation.....	21
4.2. Redundancy networking	21
5. PROGRAM CONFIGURATION AND IO TEST	22
5.1. Program configuration	22
5.2. IO test and function test.....	22

1. INTRODUCTION

This document details the system tie-in procedure for migration existing SLC to ControlLogix PLC of TBL Lorry.

1.1. Glossary of Terms & Acronyms Used In This Manual

Term or Acronym	Context	Meaning
N/A	Not application	The test or check that not applicable to specify items
PLC	Control system	Programmable Logic Control
HMI	Control system	Human Machine Interface
PSU	Control system	Power Supply Unit
TAS	Control system	Terminal Automation System
OPC	Communication protocol	Open Platform Communications
CLX	Control system	ControlLogix system

1.2. Tie-In Location

The Location will be at : Thai Lube Base Public Company Limited. Chonburi plant, Thailand
LORRY PLC & Accuload Cabinet

1.3. Tools Required

When dismantle or installing the chassis, power supplies and terminal wiring, the following items are required

No.	Name	Qty	Unit
1	Cable ID printer	1	Set
2	Fluke Multimeter	2	Set
3	Screw driver	3	Set
4	Crimper	2	Set
5	Needle-nose pliers	2	Set
6	Wire stripper	2	Set
7	Document list for FAT	1	Set
	- System Architecture		
	- Electrical Wiring diagram		
	- IO Assignment		
8	Drill	2	Set
9	Vacuum cleaner	1	Set

2. DISMANTLE EXISTING SLC

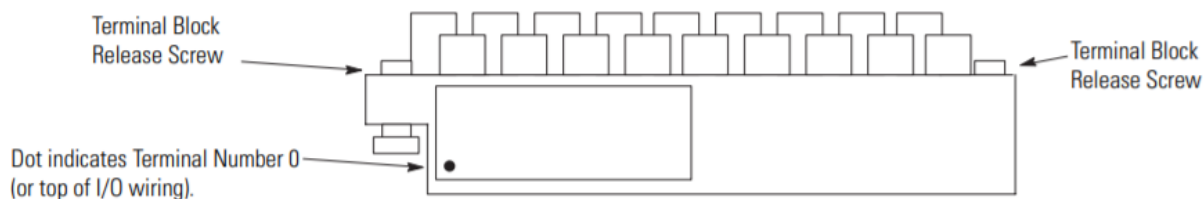
2.1. Backup program and configuration

1. RA provide storage(thumb drive) for keep all files that related with project: R1420004.
2. Create Folder name "10 PLC Backup" for keep file SLC program backup.
3. Backup latest SLC ladder program and save as file name "TLB_LORRY_ BK_DDMMYY"
4. Create Folder name "16 Network Backup" for keep file OPC configuration backup.
5. Backup KEPLWARE configuration and save file as "OPC_CONFIG_PLC-ATG-BK_DDMMYY"

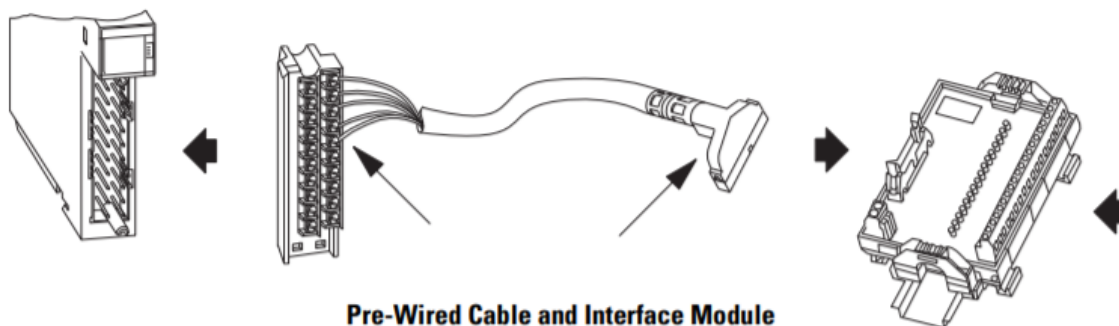
No.	Backup file name	Backup folder path	Pass/Fail or Data
1	SLC :		
2	OPC :		

2.2. SLC Module Removal Procedure

1. Turn off MCB1 and MCB2 and make sure that the electrical discharged. Then LOTO.
2. Remove power from the SLC 500 power supply.
3. Remove the I/O wiring terminal blocks from SLC™ I/O modules (Bulletin 1746) by removing screws or pulling out the connector.
4. Removable Terminal Block by unscrew the upper right and lower left terminal block release screws.



5. Grasp the RTB with your thumb and forefinger and pull straight out.
6. Label the RTB with appropriate slot, chassis, and module identification.



TLB Project No.: R1420004
TLB Document No. : R1420004-3600L-IC-PRO-0003
Project Name : TLB Lorry PLC Upgrading Project
RA Project No. : 800469957
RA Document No. : 800469957-TLB-013
System Location : Thai Lube Base



7. Removal the 1492 cable from the 1492 IFM Module follow table below

TB name		Module type	CAT number	Module Name	Slot number	Pass/Fail or Data
TB MODULE 1	CABLE CROSSOVER SECTION	DI	1764-IB32	PLC INPUT (DI) SLOT1	1	
TB MODULE 2		DI	1764-IB32	PLC INPUT (DI) SLOT2	2	
TB MODULE 3		DI	1764-IB32	PLC INPUT (DI) SLOT3	3	
TB MODULE 4		DO	1764-OV32	PLC OUTPUT (DO) SLOT1	4	
TB MODULE 5		DO	1764-OV32	PLC OUTPUT (DO) SLOT2	5	

8. Take off SLC chassis.

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 Project Name : TLB Lorry PLC Upgrading Project
 RA Project No. : 800469957
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2.3. Replacement 1492 terminal block module

1. Remove the existing TB2 Module from DIN rail,
2. The assembler removes the Bulletin 1492 Interface Module (IFM) from its box and applies the supplied preprinted labels to mark the terminals.
3. Snaps the new 1492 module to the DIN rail.
4. Disconnected the cable from the existing terminal.
5. Replace the cable marker and rewiring to new TB module that we install on step3, one be one.

2.3.1. TBM1 replacement to TBM2

No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
1	GND-0		0 VDC	TBM1	1	L2-0VDC	TBM2	A1	L2-0VDC	
2	GND-1		0 VDC	TBM1	1	L2-0VDC	TBM2	B1	L2-0VDC	
3	Local:2:I.Data.0	f_360L_HZ090	Fire Detect S/D	TBM1	5	5R16-5TBM1	TBM2	A3	5R16-A3TBM2	
4	Local:2:I.Data.1	f_360L_HZ091	ESD Control room	TBM1	7	5R17-7TBM1	TBM2	A4	5R17-A4TBM2	
5	Local:2:I.Data.2	f_360L_HZ092	ESD Gatehouse S/D	TBM1	9	5R18-9TBM1	TBM2	A5	5R18-A5TBM2	
6	Local:2:I.Data.3	f_360L_HZ093	ESD (BAY1)	TBM1	11	3-8-11TBM1	TBM2	A6	3-8-A6TBM2	
7	Local:2:I.Data.4	f_360L_HZ094	ESD (BAY2)	TBM1	13	3-10-13TBM1	TBM2	A7	3-10-A7TBM2	
8	Local:2:I.Data.5	f_360L_HZ051	ESD (BAY3)	TBM1	15	3-12-15TBM1	TBM2	A8	3-12-A8TBM2	
9	Local:2:I.Data.6	f_360L_HZ061	ESD (BAY4)	TBM1	17	3-14-17TBM1	TBM2	A9	3-14-A9TBM2	
10	Local:2:I.Data.7	f_360L_GZS091	Earth (Bay1)	TBM1	19	3-16-19TBM1	TBM2	A10	3-16-A10TBM2	
11	Local:2:I.Data.8	f_360L_GZS092	Earth (Bay2)	TBM1	21	3-18-21TBM1	TBM2	A11	3-18-A11TBM2	
12	Local:2:I.Data.9	f_360L_GZS057	Earth (Bay3)	TBM1	23	3-20-23TBM1	TBM2	A12	3-20-A12TBM2	
13	Local:2:I.Data.10	f_360L_GZS067	Earth (Bay4)	TBM1	25	3-22-25TBM1	TBM2	A13	3-22-A13TBM2	
14	Local:2:I.Data.11	f_LZS051_M101A	Overspill "A" (LZS051,M-101A)	TBM1	27	3-24-27TBM1	TBM2	A14	3-24-A14TBM2	

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Project Name : TLB Lorry PLC Upgrading Project

RA Project No. : 800469957

RA Document No. : 800469957-TLB-013

System Location : Thai Lube Base



No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
15	Local:2:I.Data.12	f_LZS052_M101B	Overspill "B" (LZS052,M-101B)	TBM1	29	4-2-29TBM1	TBM2	A15	4-2-A15TBM2	
16	Local:2:I.Data.13	f_GZS051_M101A	Arm Side "A"(GZS051,M-101A)	TBM1	31	8-AP1-31TBM1	TBM2	A16	8-AP1-A16TBM2	
17	Local:2:I.Data.14	f_GZS053_M101B	Arm Side "B"(GZS053,M-101B)	TBM1	33	11-AP1-33TBM1	TBM2	A17	11-AP1-A17TBM2	
18	Local:2:I.Data.15	f_GZS052_M101A	Arm Down "A"(GZS052,M-101A)	TBM1	35	8-AP2-35TBM1	TBM2	A18	8-AP2-A18TBM2	
19	Local:2:I.Data.16	f_GZS054_M101B	Arm Down "B"(GZS054,M-101B)	TBM1	6	11-AP2-6TBM1	TBM2	B3	11-AP2-B3TBM2	
20	Local:2:I.Data.17	f_GZS055_M101A	Ball Valve Open Side"A"(101A)	TBM1	8	8-AP3-8TBM1	TBM2	B4	8-AP3-B4TBM2	
21	Local:2:I.Data.18	f_GZS056_M101B	Ball Valve Open Side"B"(101B)	TBM1	10	11-AP3-10TBM1	TBM2	B5	11-AP3-B5TBM2	
22	Local:2:I.Data.19	f_LZS061_M102A	Overspill "A" (LZS061,M-102A)	TBM1	12	4-16-12TBM1	TBM2	B6	4-16-B6TBM2	
23	Local:2:I.Data.20	f_LZS062_M102B	Overspill "B" (LZS062,M-102B)	TBM1	14	4-18-14TBM1	TBM2	B7	4-18-B7TBM2	
24	Local:2:I.Data.21	f_GZS061_M102A	Arm Side "A"(GZS061,M-102A)	TBM1	16	8-AP4-16TBM1	TBM2	B8	8-AP4-B8TBM2	
25	Local:2:I.Data.22	f_GZS063_M102B	Arm Side "B"(GZS063,M-102B)	TBM1	18	11-AP4-18TBM1	TBM2	B9	11-AP4-B9TBM2	
26	Local:2:I.Data.23	f_GZS062_M102A	Arm Down "A"(GZS062,M-102A)	TBM1	20	8-AP5-20TBM1	TBM2	B10	8-AP5-B10TBM2	
27	Local:2:I.Data.24	f_GZS064_M102B	Arm Down "B"(GZS064,M-102B)	TBM1	22	11-AP5-22TBM1	TBM2	B11	11-AP5-B11TBM2	
28	Local:2:I.Data.25	f_GZS065_102A	Ball Valve Open Side"A"(102A)	TBM1	24	8-AP6-24TBM1	TBM2	B12	8-AP6-B12TBM2	
29	Local:2:I.Data.26	f_GZS066_102B	Ball Valve Open Side"A"(102B)	TBM1	26	11-AP6-26TBM1	TBM2	B13	11-AP6-B13TBM2	
30	Local:2:I.Data.27	f_LZS071_M103A	Overspill "A" (LZS071,M-103A)	TBM1	28	5-8-28TBM1	TBM2	B14	5-8-B14TBM2	
31	Local:2:I.Data.28	f_LZS072_M103B	Overspill "B" (LZS072,M-103B)	TBM1	30	5-10-30TBM1	TBM2	B15	5-10-B15TBM2	
32	Local:2:I.Data.29	f_GZS071_M103A	Arm Side "A"(GZS071,M-103A)	TBM1	32	8-AP7-32TBM1	TBM2	B16	8-AP7-B16TBM2	
33	Local:2:I.Data.30	f_GZS073_M103B	Arm Side "B"(GZS073,M-103B)	TBM1	34	11-AP7-34TBM1	TBM2	B17	11-AP7-B17TBM2	
34	Local:2:I.Data.31	f_GZS072_M103A	Arm Down "A"(GZS072,M-103A)	TBM1	36	8-AP8-36TBM1	TBM2	B18	8-AP8-B18TBM2	

TLB Project No.: R1420004
 TLB Document No. : R1420004-3600L-IC-PRO-0003
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 System Location : Thai Lube Base



2.3.2. TBM2 replacement to TBM3

No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
1	GND-0		0 VDC	TBM2	1	L3-0VDC	TBM3	A1	L3-0VDC	
2	GND-1		0 VDC	TBM2	1	L3-0VDC	TBM3	B1	L3-0VDC	
3	Local:3:I.Data.0	f_GZS074_M103B	Arm Down "B"(GZS074,M-103B)	TBM2	5	5R16-5TBM1	TBM3	A3	11AP8-A3TBM3	
4	Local:3:I.Data.1	f_GZS075_M103A	Ball Valve Open Side"A"(103A)	TBM2	7	5R17-7TBM1	TBM3	A4	8AP9-A4TBM3	
5	Local:3:I.Data.2	f_GZS076_M103B	Ball Valve Open Side"B"(103B)	TBM2	9	5R18-9TBM1	TBM3	A5	11AP9-A5TBM3	
6	Local:3:I.Data.3	f_LZS081_M104A	Overspill "A" (LZS081,M-104A)	TBM2	11	5-24-11TBM2	TBM3	A6	5-24-A6TBM3	
7	Local:3:I.Data.4	f_LZS082_M104B	Overspill "B" (LZS082,M-104B)	TBM2	13	6-2-13TBM2	TBM3	A7	6-2-A7TBM3	
8	Local:3:I.Data.5	f_GZS081_M104A	Arm Side "A"(GZS081,M-104A)	TBM2	15	8-AP10-15TBM2	TBM3	A8	8-AP10-A8TBM3	
9	Local:3:I.Data.6	f_GZS083_M104B	Arm Side "B"(GZS083,M-104B)	TBM2	17	11-AP10-17TBM2	TBM3	A9	11-AP10-A9TBM3	
10	Local:3:I.Data.7	f_GZS082_M104A	Arm Down "A"(GZS082,M-104A)	TBM2	19	8-AP11-19TBM2	TBM3	A10	8-AP11-A10TBM3	
11	Local:3:I.Data.8	f_GZS084_M104B	Arm Down "B"(GZS084,M-104B)	TBM2	21	11-AP11-21TBM2	TBM3	A11	11-AP11-A11TBM3	
12	Local:3:I.Data.9	f_GZS085_M104A	Ball Valve Open Side"A"(104A)	TBM2	23	8-AP12-23TBM2	TBM3	A12	8-AP12-A12TBM3	
13	Local:3:I.Data.10	f_GZS086_M104B	Ball Valve Open Side"B"(104B)	TBM2	25	11-AP12-25TBM2	TBM3	A13	11-AP12-A13TBM3	
14	Local:3:I.Data.11	f_LZS031_M104	Overspill (LZS031,M-104)	TBM2	27	6-16-27TBM2	TBM3	A14	6-16-A14TBM3	
15	Local:3:I.Data.12	f_GZS056_M104	Arm Side (GZS056,M- 104)	TBM2	29	8-AP13-29TBM2	TBM3	A15	8-AP13-A15TBM3	
16	Local:3:I.Data.13	f_GZS058_M104	Arm Down (GZS058,M -104)	TBM2	31	11-AP13-31TBM2	TBM3	A16	11-AP13-A16TBM3	
17	Local:3:I.Data.14	f_UY121_M104	FCV Limit Switch I/O (UY121,M-104)	TBM2	33	8-AP14-33TBM2	TBM3	A17	8-AP14-A17TBM3	
18	Local:3:I.Data.15	f_LZS041_M105	Overspill (LZS041,M-105)	TBM2	35	6-24-35TBM2	TBM3	A18	6-24-A18TBM3	
19	Local:3:I.Data.16	f_GZS066_M105	Arm Side (GZS066,M- 105)	TBM2	6	8-AP15-6TBM2	TBM3	B3	8-AP15-B3TBM3	

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				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
20	Local:3:I.Data.17	f_GZS068_M105	Arm Down (GZS068,M -105)	TBM2	8	11-AP15-8TBM2	TBM3	B4	11-AP15-B4TBM3	
21	Local:3:I.Data.18	f_UY131_M105	FCV Limit Switch I/O (UY131,M-105)	TBM2	10	8-AP16-10TBM2	TBM3	B5	8-AP16-B5TBM3	
22	Local:3:I.Data.19	f_Card_Boxinput	Card Box input	TBM2	12	7-8-12TBM2	TBM3	B6	7-8-B6TBM3	
23	Local:3:I.Data.20	f_UPS_Failinput	UPS Fail input	TBM2	14	7-10-14TBM2	TBM3	B7	7-10-B7TBM3	
24	Local:3:I.Data.21	f_080L_GB023_P108	Slop Pump Status input (P108)(Run)	TBM2	16	7-12-16TBM2	TBM3	B8	7-12-B8TBM3	
25	Local:3:I.Data.22	f_360L_GB_010_P103	Drain Oil Status Running(P103)	TBM2	18	7-14-18TBM2	TBM3	B9	7-14-B9TBM3	
26	Local:3:I.Data.23		~Spare Slot 3 Chn 23	TBM2	20	5-RI4-20TBM2	TBM3	B10	5-RI4-B10TBM3	
27	Local:3:I.Data.24		~Spare Slot 3 Chn 24	TBM2	22	5-RI5-22TBM2	TBM3	B11	5-RI5-B11TBM3	
28	Local:3:I.Data.25	f_GBS061_1	Infra Red1 (Weight Bridge)	TBM2	24	5-RI1-24TBM2	TBM3	B12	5-RI1-B12TBM3	
29	Local:3:I.Data.26	f_GBS061_2	Infra Red2 (Weight Bridge)	TBM2	26	5-RI2-26TBM2	TBM3	B13	5-RI2-B13TBM3	
30	Local:3:I.Data.27	f_GBS061_3	Infra Red3 (Weight Bridge)	TBM2	28	5-RI3-28TBM2	TBM3	B14	5-RI3-B14TBM3	
31	Local:3:I.Data.28	f_24Vdc_PS1_Fail	24 VDC Power1 fail	TBM2	30	24-PS1-30TBM2	TBM3	B15	24-PS1-B15TBM3	
32	Local:3:I.Data.29	f_24Vdc_PS2_Fail	24 VDC Power2 fail	TBM2	32	24-PS2-32TBM2	TBM3	B16	24-PS2-B16TBM3	
33	Local:3:I.Data.30		~Spare Slot 3 Chn 30	TBM2	34		TBM3	B17		
34	Local:3:I.Data.31		~Spare Slot 3 Chn 31	TBM2	36		TBM3	B18		

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2.3.3. TBM3 replacement to TBM4

No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
1	GND-0		0 VDC	TBM3	1	L4-1TBM3	TBM4	A1	L4-0VDC	
2	GND-1		0 VDC	TBM3	1	L4-1TBM3	TBM4	B1	L4-0VDC	
3	Local:4:I.Data.0	f_360L_P101A	Pump P101A (Running)	TBM3	5	8-12-5TBM3	TBM4	A3	812-A3TBM4	
4	Local:4:I.Data.1	f_360L_P101B	Pump P101B (Running)	TBM3	7	8-14-7TBM3	TBM4	A4	814-A4TBM4	
5	Local:4:I.Data.2	f_360L_P101C	Pump P101C (Running)	TBM3	9	8-16-9TBM3	TBM4	A5	816-A5TBM4	
6	Local:4:I.Data.3	f_360L_P102A	Pump P102A (Running)	TBM3	11	8-18-11TBM3	TBM4	A6	8-18-A6TBM4	
7	Local:4:I.Data.4	f_360L_P102B	Pump P102B (Running)	TBM3	13	8-20-13TBM3	TBM4	A7	8-20-A7TBM4	
8	Local:4:I.Data.5	f_360L_P102C	Pump P102C (Running)	TBM3	15	8-22-15TBM3	TBM4	A8	8-22-A8TBM4	
9	Local:4:I.Data.6		~Spare Slot 4 Chn 6	TBM3	17		TBM4	A9		
10	Local:4:I.Data.7		~Spare Slot 4 Chn 7	TBM3	19		TBM4	A10		
11	Local:4:I.Data.8		~Spare Slot 4 Chn 8	TBM3	21		TBM4	A11		
12	Local:4:I.Data.9		~Spare Slot 4 Chn 9	TBM3	23		TBM4	A12		
13	Local:4:I.Data.10		~Spare Slot 4 Chn 10	TBM3	25		TBM4	A13		
14	Local:4:I.Data.11		~Spare Slot 4 Chn 11	TBM3	27		TBM4	A14		
15	Local:4:I.Data.12		~Spare Slot 4 Chn 12	TBM3	29		TBM4	A15		
16	Local:4:I.Data.13		~Spare Slot 4 Chn 13	TBM3	31		TBM4	A16		
17	Local:4:I.Data.14		~Spare Slot 4 Chn 14	TBM3	33		TBM4	A17		
18	Local:4:I.Data.15		~Spare Slot 4 Chn 15	TBM3	35		TBM4	A18		
19	Local:4:I.Data.16	f_SL_P101AC	Selector Pump P101A/C	TBM3	6	P101A/C--6TBM3	TBM4	B3	P101A/C--B3TBM4	

TLB Project No.: R1420004

TLB Document No. : R1420004-3600L-IC-PRO-0003

Project Name : TLB Lorry PLC Upgrading Project

RA Project No. : 800469957

RA Document No. : 800469957-TLB-013

System Location : Thai Lube Base



No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
20	Local:4:I.Data.17	f_SL_P101BC	Selector Pump P101B/C	TBM3	8	P101B/C--8TBM3	TBM4	B4	P101B/C--B4TBM4	
21	Local:4:I.Data.18	f_SL_P102AC	Selector Pump P102A/C	TBM3	10	P102A/C--10TBM3	TBM4	B5	P102A/C--B5TBM4	
22	Local:4:I.Data.19	f_SL_P102BC	Selector Pump P102B/C	TBM3	12	P102B/C--12TBM3	TBM4	B6	P102B/C--B6TBM4	
23	Local:4:I.Data.20	f_ACL11_Pump_Demand	ACL11 (Pump Demand)	TBM3	14	1-6-14TBM3	TBM4	B7	1-6-B7TBM4	
24	Local:4:I.Data.21	f_ACL12_Pump_Demand	ACL12 (Pump Demand)	TBM3	16	1-12-16TBM3	TBM4	B8	1-12-B8TBM4	
25	Local:4:I.Data.22	f_ACL13_Pump_Demand	ACL13 (Pump Demand)	TBM3	18	1-18-18TBM3	TBM4	B9	1-18-B9TBM4	
26	Local:4:I.Data.23	f_ACL14_Pump_Demand	ACL14 (Pump Demand)	TBM3	20	1-24-20TBM3	TBM4	B10	1-24-B10TBM4	
27	Local:4:I.Data.24	f_ACL21_Pump_Demand	ACL21 (Pump Demand)	TBM3	22	2-6-22TBM3	TBM4	B11	2-6-B11TBM4	
28	Local:4:I.Data.25	f_ACL22_Pump_Demand	ACL22 (Pump Demand)	TBM3	24	2-16-24TBM3	TBM4	B12	2-16-B12TBM4	
29	Local:4:I.Data.26		~Spare Slot 4 Chn 26	TBM3	26	8-24-26TBM3	TBM4	B13	8-24-B13TBM4	
30	Local:4:I.Data.27		~Spare Slot 4 Chn 27	TBM3	28	9-2-28TBM3	TBM4	B14	9-2-B14TBM4	
31	Local:4:I.Data.28		~Spare Slot 4 Chn 28	TBM3	30	9-4-30TBM3	TBM4	B15	9-4-B15TBM4	
32	Local:4:I.Data.29		~Spare Slot 4 Chn 29	TBM3	32	9-6-32TBM3	TBM4	B16	9-6-B16TBM4	
33	Local:4:I.Data.30		~Spare Slot 4 Chn 30	TBM3	34	9-8-34TBM3	TBM4	B17	9-8-B17TBM4	
34	Local:4:I.Data.31		~Spare Slot 4 Chn 31	TBM3	36	9-10-36TBM3	TBM4	B18	9-10-B18TBM4	

TLB Project No.: R1420004
 TLB Document No. : R1420004-3600L-IC-PRO-0003
 Project Name : TLB Lorry PLC Upgrading Project
 RA Project No. : 800469957
 RA Document No. : 800469957-TLB-013
 System Location : Thai Lube Base



2.3.4. TBM4 replacement to TBM5

No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
1	DC-0		24 VDC	TBM4	1	F5-1TBM4	TBM4	A1	F5-24VDC	
2	DC-1		24 VDC	TBM4	1	F5-1TBM4	TBM4	B1	F5-24VDC	
3	RTN OUT-0		0 VDC	TBM4	39	L5-1TBM4	TBM4	A19	L5-0VDC	
4	RTN OUT-1		0 VDC	TBM4	39	L5-1TBM4	TBM4	B19	L5-0VDC	
5	Local:5:O.Data.0	f_Card_Reader_BAY1	Change communication Card reader BAY1	TBM4	5	R1--5TBM4	TBM4	A3	R1-A3TBM4	
6	Local:5:O.Data.1		~Spare Slot 5 Chn 1	TBM4	7		TBM4	A4		
7	Local:5:O.Data.2	f_Card_Reader_EntryGate	Change communication Card Reader Entry Gate	TBM4	9	R3--9TBM4	TBM4	A5	R3-A5TBM4	
8	Local:5:O.Data.3	f_Card_Reader_ExitGate	Change communication Card Reader Exit Gate	TBM4	11	R4--11TBM4	TBM4	A6	R4--A6TBM4	
9	Local:5:O.Data.4	f_Card_Reader_WeighBridge	Change communication Card Reader Weigh Bridge	TBM4	13	R5--13TBM4	TBM4	A7	R5--A7TBM4	
10	Local:5:O.Data.5	f_Card_Reader_Bay3	Change communication Card Reader Bay3	TBM4	15	R6--15TBM4	TBM4	A8	R6--A8TBM4	
11	Local:5:O.Data.6	f_Card_Reader_Bay4	Change communication Card Reader Bay4	TBM4	17	R7--17TBM4	TBM4	A9	R7--A9TBM4	
12	Local:5:O.Data.7	f_Card_Reader_Bay2	Change communication Card Reader Bay2	TBM4	19	R2--19TBM4	TBM4	A10	R2--A10TBM4	
13	Local:5:O.Data.8		~Spare Slot 5 Chn 8	TBM4	21	R9--21TBM4	TBM4	A11	R9--A11TBM4	
14	Local:5:O.Data.9		~Spare Slot 5 Chn 9	TBM4	23	R10--23TBM4	TBM4	A12	R10--A12TBM4	
15	Local:5:O.Data.10	f_P101A_Start	Pump P101A (Start)	TBM4	25	R11--25TBM4	TBM4	A13	R11--A13TBM4	
16	Local:5:O.Data.11	f_P101A_Stop	Pump P101A (Stop)	TBM4	27	R12--27TBM4	TBM4	A14	R12--A14TBM4	
17	Local:5:O.Data.12	f_P101B_Start	Pump P101B (Start)	TBM4	29	R13--29TBM4	TBM4	A15	R13--A15TBM4	
18	Local:5:O.Data.13	f_P101B_Stop	Pump P101B (Stop)	TBM4	31	R14--31TBM4	TBM4	A16	R14--A16TBM4	
19	Local:5:O.Data.14	f_P101C_Start	Pump P101C (Start)	TBM4	33	R15--33TBM4	TBM4	A17	R15--A17TBM4	

TLB Project No.: R1420004
 TLB Document No. : R1420004-3600L-IC-PRO-0003
 Project Name : TLB Lorry PLC Upgrading Project
 RA Project No. : 800469957
 RA Document No. : 800469957-TLB-013
 System Location : Thai Lube Base



No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
20	Local:5:O.Data.15	f_P101C_Stop	Pump P101C (Stop)	TBM4	35	R16--35TBM4	TBM4	A18	R16--A18TBM4	
21	Local:5:O.Data.16	f_P102A_Start	Pump P102A (Start)	TBM4	6	R17--6TBM4	TBM4	B3	R17--B3TBM4	
22	Local:5:O.Data.17	f_P102A_Stop	Pump P102A (Stop)	TBM4	8	R18--8TBM4	TBM4	B4	R18--B4TBM4	
23	Local:5:O.Data.18	f_P102B_Start	Pump P102B (Start)	TBM4	10	R19--10TBM4	TBM4	B5	R19--B5TBM4	
24	Local:5:O.Data.19	f_P102B_Stop	Pump P102B (Stop)	TBM4	12	R20--12TBM4	TBM4	B6	R20--B6TBM4	
25	Local:5:O.Data.20	f_P102C_Start	Pump P102C (Start)	TBM4	14	R21--14TBM4	TBM4	B7	R21--B7TBM4	
26	Local:5:O.Data.21	f_P102C_Stop	Pump P102C (Stop)	TBM4	16	R22--16TBM4	TBM4	B8	R22--B8TBM4	
27	Local:5:O.Data.22	f_360L_XA_019A	Process Alarm ESD & Fire detect Alarm (Alarm light at CCR) 360L-XA-019A	TBM4	18	R23--18TBM4	TBM4	B9	R23--B9TBM4	
28	Local:5:O.Data.23		~Spare Slot 5 Chn 23	TBM4	20	R24--20TBM4	TBM4	B10	R24--B10TBM4	
29	Local:5:O.Data.24	f_Entry_Gate_Control	Entrance Gate Control(O/P)	TBM4	22	R25--22TBM4	TBM4	B11	R25--B11TBM4	
30	Local:5:O.Data.25	f_Exit_Gate_Control	Exit Gate Control (O/P)	TBM4	24	R26--24TBM4	TBM4	B12	R26--B12TBM4	
31	Local:5:O.Data.26	f_VFC_UY_120	Solenoid O/P (VFC UY 120)	TBM4	26	R27--26TBM4	TBM4	B13	R27--B13TBM4	
32	Local:5:O.Data.27	f_VFC_UY_130	Solenoid O/P (VFC UY 130)	TBM4	28	R28--28TBM4	TBM4	B14	R28--B14TBM4	
33	Local:5:O.Data.28	f_ACL11_Permissive	Permissive(to ACL11)	TBM4	30	R29--30TBM4	TBM4	B15	R29--B15TBM4	
34	Local:5:O.Data.29	f_ACL12_Permissive	Permissive(to ACL12)	TBM4	32	R30--32TBM4	TBM4	B16	R30--B16TBM4	
35	Local:5:O.Data.30	f_ACL13_Permissive	Permissive(to ACL13)	TBM4	34	R31--34TBM4	TBM4	B17	R31--B17TBM4	
36	Local:5:O.Data.31	f_ACL14_Permissive	Permissive(to ACL14)	TBM4	36	R32--36TBM4	TBM4	B18	R32--B18TBM4	

TLB Project No.: R1420004
 TLB Document No. : R1420004-3600L-IC-PRO-0003
 Project Name : TLB Lorry PLC Upgrading Project
 RA Project No. : 800469957
 RA Document No. : 800469957-TLB-013
 System Location : Thai Lube Base



2.3.5. TBM5 replacement to TBM6

No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
1	DC-0		24 VDC	TBM5	1	F6-1TBM4	TBM6	A1	F6-24VDC	
2	DC-1		24 VDC	TBM5	1	F6-1TBM4	TBM6	B1	F6-24VDC	
3	RTN OUT-0		0 VDC	TBM5	39	L6-1TBM4	TBM6	A19	L6-0VDC	
4	RTN OUT-1		0 VDC	TBM5	39	L6-1TBM4	TBM6	B19	L6-0VDC	
5	Local:6:O.Data.0	f_ACL21_Permissive	Permissive(to ACL21)	TBM5	5	R33--5TBM5	TBM6	A3	R33-A3TBM6	
6	Local:6:O.Data.1	f_ACL22_Permissive	Permissive(to ACL22)	TBM5	7	R34--7TBM5	TBM6	A4	R34-A4TBM6	
7	Local:6:O.Data.2	f_ACL11_Alarm	ACL11 (Alarm)	TBM5	9	R35--9TBM5	TBM6	A5	R35-A5TBM6	
8	Local:6:O.Data.3	f_ACL12_Alarm	ACL12 (Alarm)	TBM5	11	R36--11TBM5	TBM6	A6	R36--A6TBM6	
9	Local:6:O.Data.4	f_ACL13_Alarm	ACL13 (Alarm)	TBM5	13	R37--13TBM5	TBM6	A7	R37--A7TBM6	
10	Local:6:O.Data.5	f_ACL14_Alarm	ACL14 (Alarm)	TBM5	15	R38--15TBM5	TBM6	A8	R38--A8TBM6	
11	Local:6:O.Data.6	f_ACL21_Alarm	ACL21 (Alarm)	TBM5	17	R39--17TBM5	TBM6	A9	R39--A9TBM6	
12	Local:6:O.Data.7	f_ACL22_Alarm	ACL22 (Alarm)	TBM5	19	R40--19TBM5	TBM6	A10	R40--A10TBM6	
13	Local:6:O.Data.8	f_ACL11_Rem_Start	Remote Start ACL11	TBM5	21	R41--21TBM5	TBM6	A11	R41--A11TBM6	
14	Local:6:O.Data.9	f_ACL12_Rem_Start	Remote Start ACL12	TBM5	23	R42--23TBM5	TBM6	A12	R42--A12TBM6	
15	Local:6:O.Data.10	f_ACL13_Rem_Start	Remote Start ACL13	TBM5	25	R43--25TBM5	TBM6	A13	R43--A13TBM6	
16	Local:6:O.Data.11	f_ACL14_Rem_Start	Remote Start ACL14	TBM5	27	R44--27TBM5	TBM6	A14	R44--A14TBM6	
17	Local:6:O.Data.12	f_ACL21_Rem_Start	Remote Start ACL21	TBM5	29	R45--29TBM5	TBM6	A15	R45--A15TBM6	
18	Local:6:O.Data.13	f_ACL22_Rem_Start	Remote Start ACL22	TBM5	31	R46--31TBM5	TBM6	A16	R46--A16TBM6	
19	Local:6:O.Data.14	f_360L_US_100_2_Stop	360L-US-100-2 Slop Pump Stop(P103)	TBM5	33	R47--33TBM5	TBM6	A17	R47--A17TBM6	

TLB Project No.: R1420004

TLB Document No. : R1420004-3600L-IC-PRO-0003

Project Name : TLB Lorry PLC Upgrading Project

RA Project No. : 800469957

RA Document No. : 800469957-TLB-013

System Location : Thai Lube Base



No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
20	Local:6:O.Data.15	f_360L_US_100_2_Start	360L-US-100-2 Slop Pump Start(P103)	TBM5	35	R48--35TBM5	TBM6	A18	R48--A18TBM6	
21	Local:6:O.Data.16		~Spare Slot 6 Chn 16	TBM5	6	R49--6TBM5	TBM6	B3	R49--B3TBM6	
22	Local:6:O.Data.17	f_Weight_Bridge_Comm	From Weight Bridge Communication	TBM5	8	R50--8TBM5	TBM6	B4	R50--B4TBM6	
23	Local:6:O.Data.18	f_From_ATG_Comm	From ATG Communication	TBM5	10	R51--10TBM5	TBM6	B5	R51--B5TBM6	
24	Local:6:O.Data.19	f_WeighBridgeLamp2On	Weigh Bridge2 Lamp On	TBM5	12	R52--12TBM5	TBM6	B6	R52--B6TBM6	
25	Local:6:O.Data.20	f_WeighBridgeLamp1On	Weigh Bridge1 Lamp On	TBM5	14	R53--14TBM5	TBM6	B7	R53--B7TBM6	
26	Local:6:O.Data.21		~Spare Slot 6 Chn 21	TBM5	16	R54--16TBM5	TBM6	B8	R54--B8TBM6	
27	Local:6:O.Data.22		~Spare Slot 6 Chn 22	TBM5	18	R55--18TBM5	TBM6	B9	R55--B9TBM6	
28	Local:6:O.Data.23		~Spare Slot 6 Chn 23	TBM5	20	R56--20TBM5	TBM6	B10	R56--B10TBM6	
29	Local:6:O.Data.24		~Spare Slot 6 Chn 24	TBM5	22	R57--22TBM5	TBM6	B11	R57--B11TBM6	
30	Local:6:O.Data.25		~Spare Slot 6 Chn 25	TBM5	24	R58--24TBM5	TBM6	B12	R58--B12TBM6	
31	Local:6:O.Data.26		~Spare Slot 6 Chn 26	TBM5	26	R59--26TBM5	TBM6	B13	R59--B13TBM6	
32	Local:6:O.Data.27		~Spare Slot 6 Chn 27	TBM5	28	R60--28TBM5	TBM6	B14	R60--B14TBM6	
33	Local:6:O.Data.28		~Spare Slot 6 Chn 28	TBM5	30	R61--30TBM5	TBM6	B15	R61--B15TBM6	
34	Local:6:O.Data.29		~Spare Slot 6 Chn 29	TBM5	32	R62--32TBM5	TBM6	B16	R62--B16TBM6	
35	Local:6:O.Data.30		~Spare Slot 6 Chn 30	TBM5	34	R63--34TBM5	TBM6	B17	R63--B17TBM6	
36	Local:6:O.Data.31		~Spare Slot 6 Chn 31	TBM5	36	R64--36TBM5	TBM6	B18	R64--B18TBM6	

TLB Project No.: R1420004
 TLB Document No. : R1420004-3600L-IC-PRO-0003
 Project Name : TLB Lorry PLC Upgrading Project
 RA Project No. : 800469957
 RA Document No. : 800469957-TLB-013
 System Location : Thai Lube Base



2.4. Install new 1492 terminal block module for Analog input module

1. The assembler removes the Bulletin 1492 Interface Module (IFM) from its box and applies the supplied preprinted labels to mark the terminals.
2. Snaps the new 1492 module to the DIN rail.
3. Disconnected the cable from the wiring arm of 1746-NI8.
4. Replace the cable marker and rewiring to new TB module that we install on step2, one be one.

2.4.1. Install new TBM7

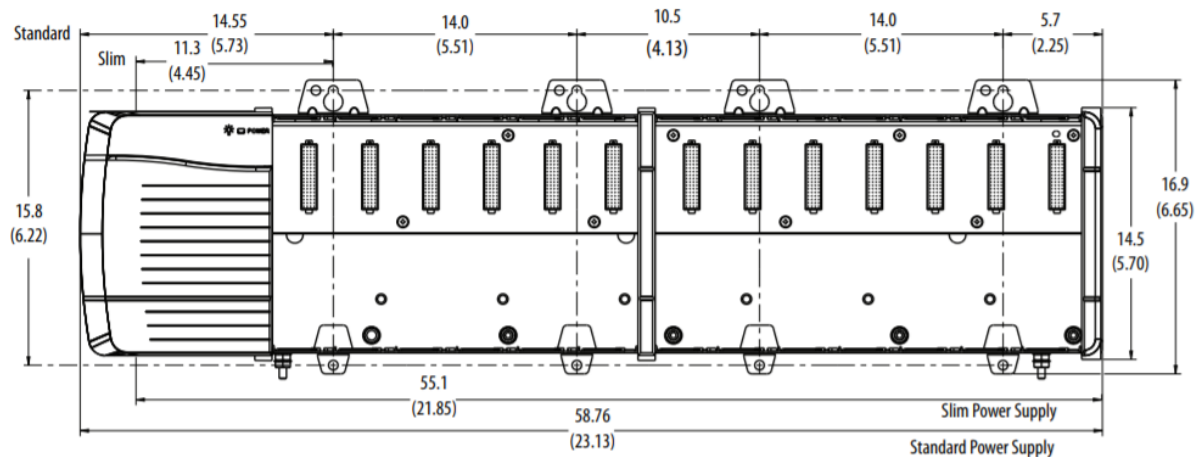
No.	Terminal assignment	PLC Tag Assignment	Description	Existing Terminal block module			New Terminal block module			Pass/Fail or Data
				TB assignment	TB No.	Wire tag	TB assignment	TB No.	Wire tag	
1	DC-0		24 VDC		1	F6-1TBM4	TBM7	A1	F6-24VDC	
2	DC-1		24 VDC		1	F6-1TBM4	TBM7	B1	F6-24VDC	
3	RTN OUT-0		0 VDC		39	L6-1TBM4	TBM7	A19	L6-0VDC	
4	RTN OUT-1		0 VDC		39	L6-1TBM4	TBM7	B19	L6-0VDC	
5	Local:7:I.Ch[0].Data	f_360L_LT001.PV	Drain Oil Alarm input (360L-LT-001)		0(+)	12IS01-0(+)	TBM7	B1	12IS01-B1TBM7	
6					0(-)	11IS01-0(-)	TBM7	B2	11IS01-B2TBM7	
7	Local:7:I.Ch[1].Data	f_360L_TT055.PV	Bitument Temperature (360L-TT-055)		1(+)	12IS02-1(+)	TBM7	B3	12IS02-B3TBM7	
8					1(-)	11IS02-1(-)	TBM7	B4	11-IS02-B4TBM7	
9	Local:7:I.Ch[2].Data	f_360L_TT056.PV	Bitument Slop Temp (360L-TT -056)		2(+)	12IS03-2(+)	TBM7	B5	12-IS03-B5TBM7	
10					2(-)	11IS03-2(-)	TBM7	B6	11-IS03-B6TBM7	

3. CLX INSTALLATION AND WIRING

3.1. CLX Chassis & installation procedure

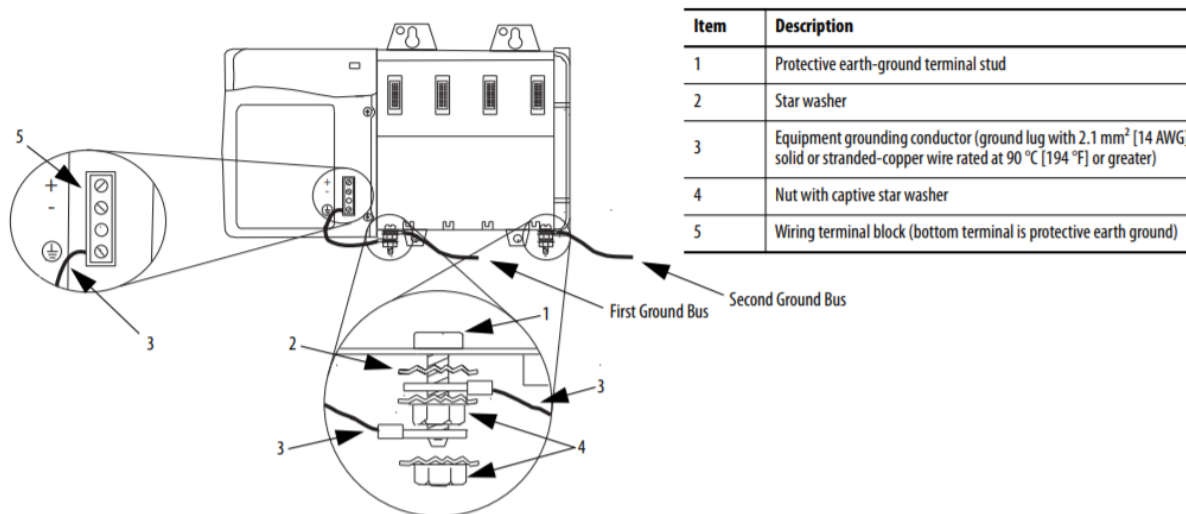
The ControlLogix® system is a modular system that requires a 1756 ControlLogix chassis. The chassis are designed for only horizontal back-panel mounting. Place any module into any slot. The backplane provides a high-speed communication path between modules.

Spacing Requirements for a 1756-A13 Chassis and Power Supply



After planning your system, use these instructions to install the chassis.

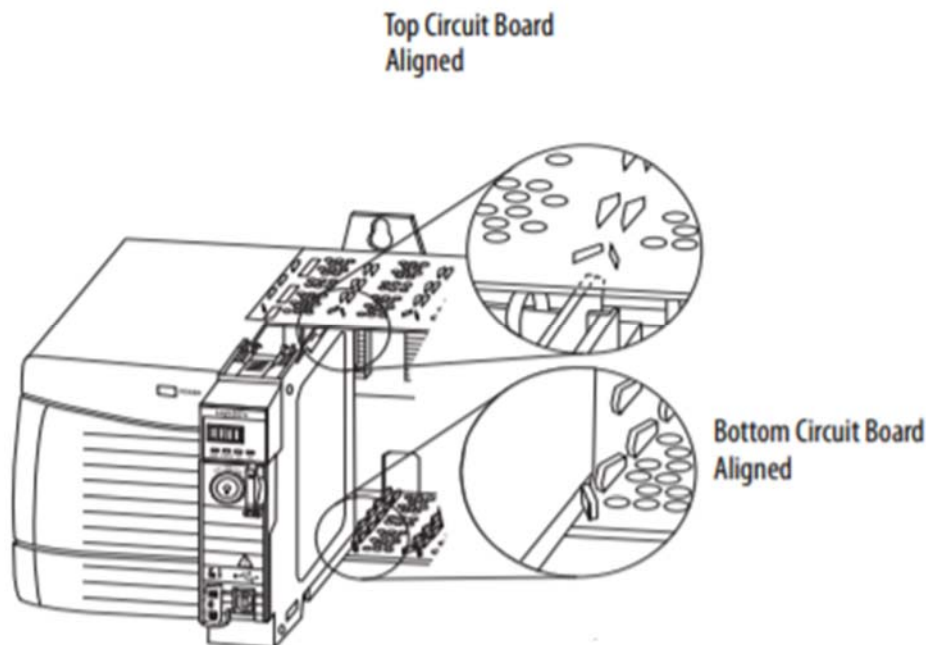
1. The contractor wear PPE with safety glasses before drill holes.
2. Stick the bag under drill point for prevent dust fall to equipment in control cabinet.
3. During drill always used vacuum cleaner for prevent dust exhale to other equipment.
4. Drill holes in the back panel of the enclosure for the chassis mounting tabs.
5. Scrape paint off the back panel for an electrical connection between the chassis and back panel.
6. Hold the chassis in place against the holes.
7. Install the hardware for the top mounting tabs and tighten.
8. Install the remaining tab screws, but leave the leftmost bottom tab open for the functional ground.
9. Connect the Protective Earth Ground Use 2.1 mm² (14 AWG) solid or stranded-copper wire that is rated at 90 °C (194 °F) or greater to connect the protective earth ground. Tighten the nuts on the protective earth ground terminal stud to a torque of 16.27 N•m (12 lb•in). Connect the functional earth ground as shown in the following figure.



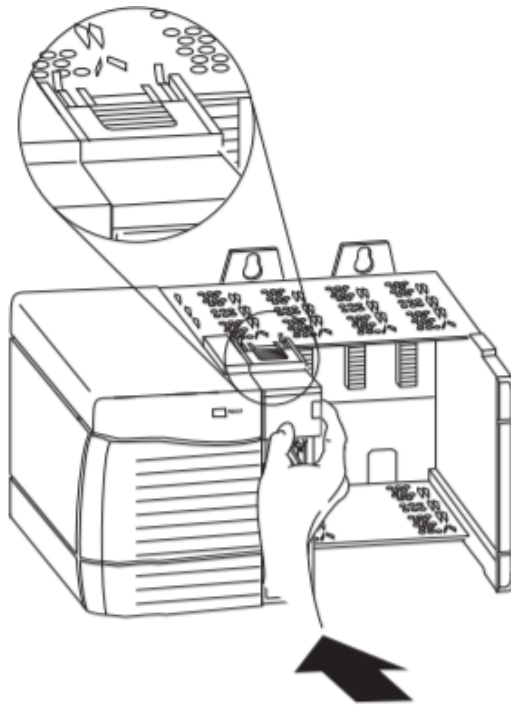
10. Connect power to the CLX power supply.

3.2. CLX module installation procedure

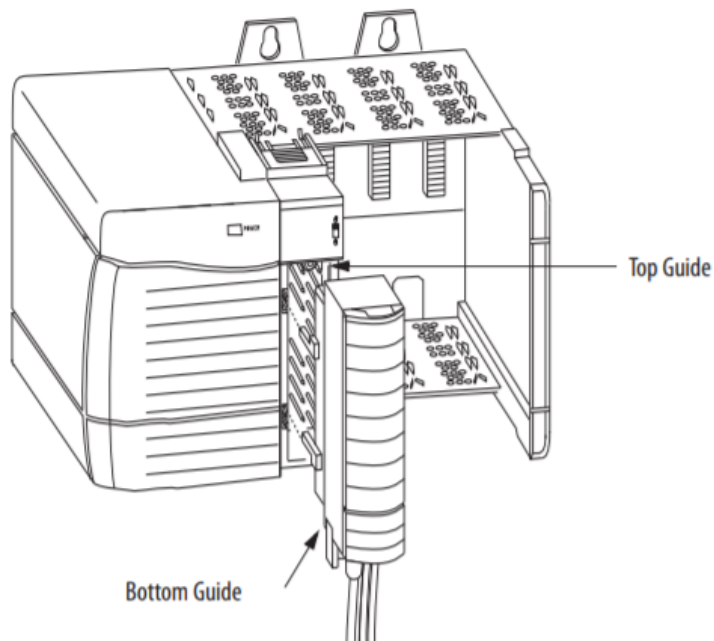
1. Align the circuit board with the top and bottom guides in the chassis.



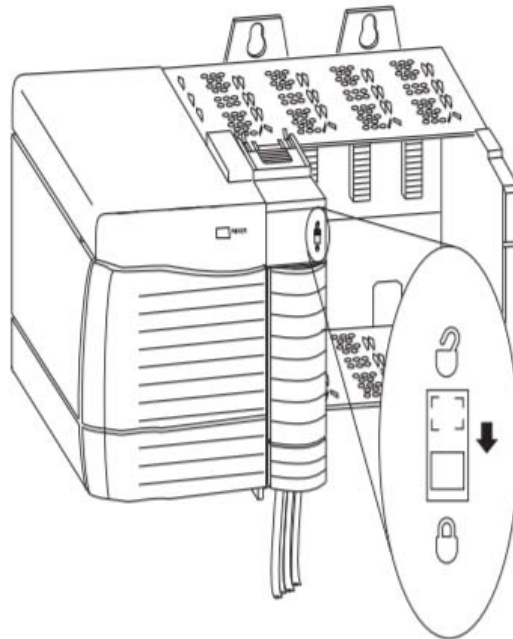
2. Slide the module into the chassis until it snaps into place.
3. Verify that the controller is flush with the power supply or other installed modules.
4. Slide the module into the chassis until the locking tabs click.



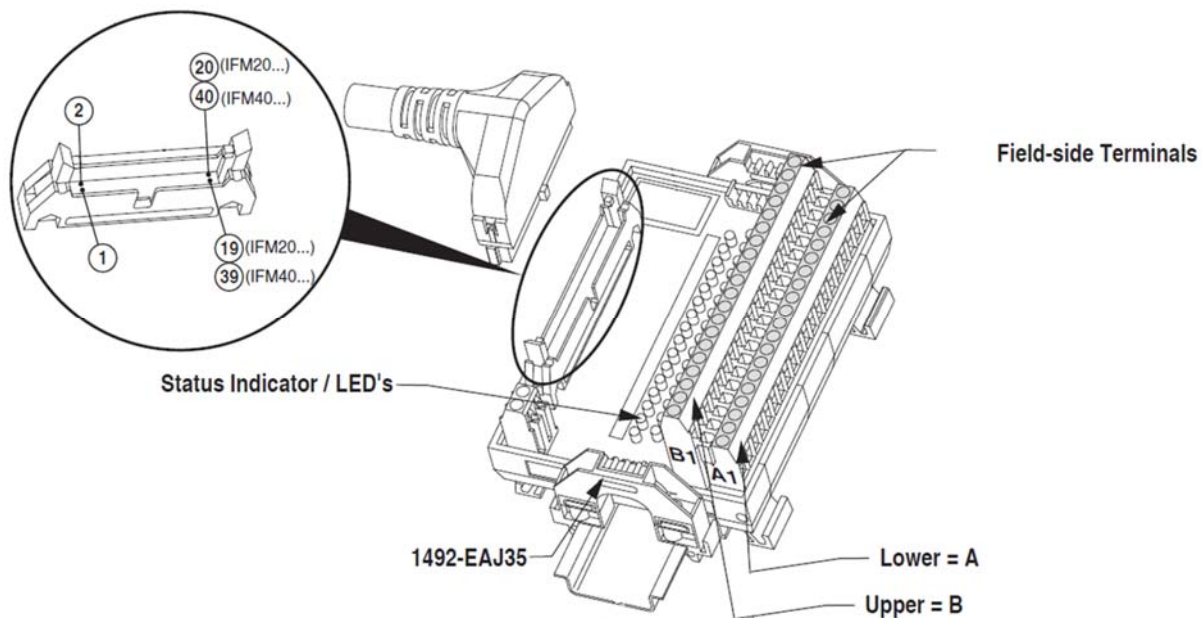
5. Repeat steps 8 through 11 for all remaining module assemblies until all are complete.
6. Align the top, bottom and left side guides of the RTB with the guides on the module



7. Attach the 1492 Cables with 1756 Swing-Arms to the Appropriate 1756 I/O Module.
8. Press quickly and evenly to seat the RTB on the module until the latches snap into place.
9. Slide the locking tab down to lock the RTB onto the module



10. Then routes the cable through the wire duct and snaps the other end of cable to the 1492 IFM Module.



11. Unlock LOTO and turn on MCB1 and MCB2.

4. ENGINEERING WORK STATION AND REDUNDANCY NETWORKING

4.1. Engineering Workstation

1. Lay LAN cable for Engineering workstation from Server cabinet(switch hub2) to Engineering workstation and mark cable with tag SWH2-P xx. / PLC-EWS-01.
2. Assignment IP address for Engineering workstation(provide by Thailube)
3. Unpack the workstation(Dell Precision T3630) and placing to desk that Thailube provided. Then apply power to work station.
4. Connect RJ45 connector to Switch hub2 and Engineering workstation.

4.2. Redundancy networking

1. Lay LAN cable from server cabinet(switch hub1) to PLC cabinet for 1756-EN2T slot8 and mark cable with tag SWH1-P xx. / ETH-S08(ethernet module).
2. Assignment IP address for Engineering workstation 1.1.21.42 subnet 255.255.0.0 (provide by Thailube)
3. Connect RJ45 connector to Switch hub2 and Engineering workstation

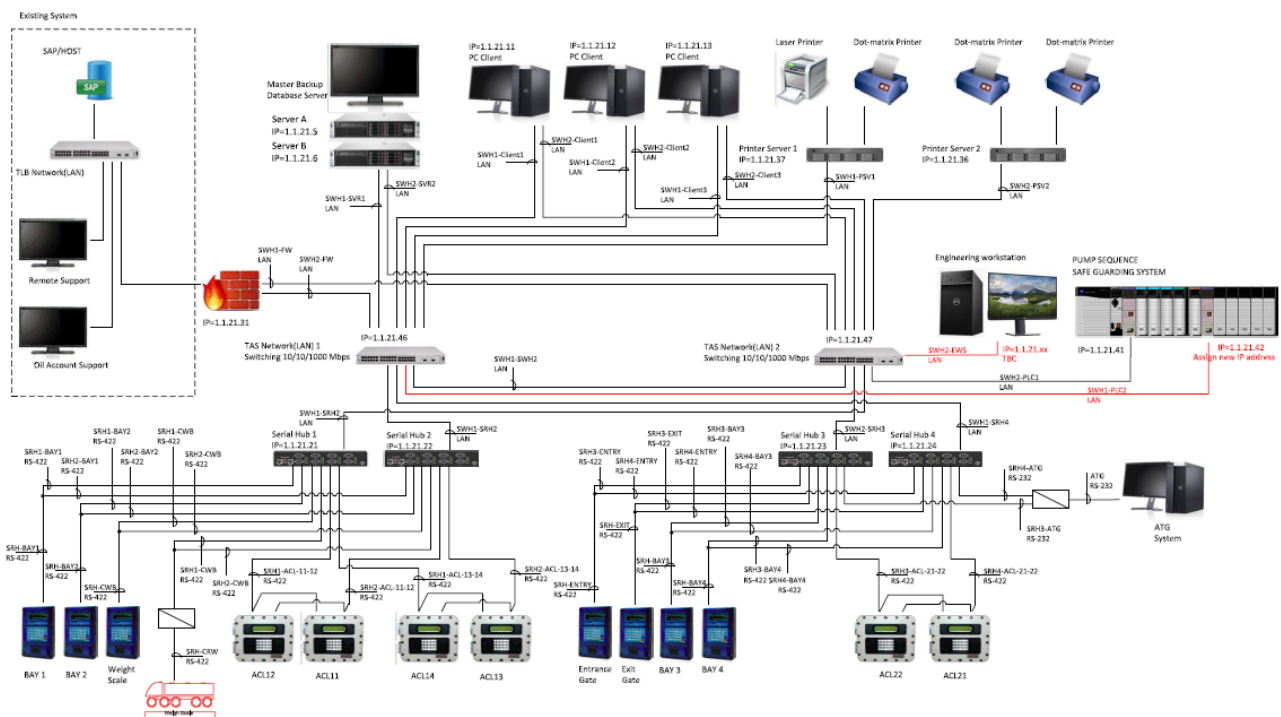


Figure 1 : New LAN cable routing.

5. PROGRAM CONFIGURATION AND IO TEST

5.1. Program configuration

1. Prepare software KEPLWARE_EX server version 5 for backup plan incase failed to migrate software and need to reconfiguration.
2. Upgrade KEPLWARE EX server from version 5 to V6 restore configuration from backup file name : OPC_CONFIG_PLC-ATG-BK_DDMMYY that we backup from chapter 2.1 Backup program and configuration
3. Reconfiguration OPC address mapping from CLX refer to document : 800469957-TLB-005 OPC address mapping list.
4. Connect ethernet cable to TAS server and monitor OPC Tag to verify that the both system can communicated.

5.2. IO test and function test

Refer to document : 800469957-TLB-012 SAT and ISAT Procedure