LISTING PROGRAM

LAMPIRAN SATU

PROYEK TUGAS AKHIR
LIFT BARANG 3 LANTAI DENGAN PENGONTROL MOTOR LIFT DAN MOTOR PINTU

Operands of alocation list

Absolute	Symbolic	Comment	
O.0.0	OPEN	O.0.0	*Motor Pintu Membuka*
O.0.1	CLOSE	O.0.1	*Motor Pintu Menutup*
O.0.2	UP	O.0.2	*Motor Lift Naik*
O.0.3	DOWN	O.0.3	*Motor Lift Turun*
O.0.4	INUP	O.0.4	*Indikator Lift Naik*
O.0.5	INDN	O.0.5	*Indikator Lift Turun*
O.0.6	LRRN	O.0.6	*Lift Siap Bergerak*
I.0.0	LT1	I.0.0	*Tombol untuk ke Lantai 1*
I.0.1	LT2	I.0.1	*Tombol untuk ke Lantai 2*
I.0.2	LT3	I.0.2	*Tombol untuk ke Lantai 3*
I.0.3	UP1	I.0.3	*Tombol naik di Lantai 1*
I.0.4	UP2	I.0.4	*Tombol naik di Lantai 2*
I.0.5	DN2	I.0.5	*Tombol turun di Lantai 2*
I.0.6	DN3	I.0.6	*Tombol turun di Lamtai 3*
I.0.7	OPSF	I.0.7	*Buka Manual*
I.1.0	DOCL	I.1.0	*Sensor Pintu Tertutup*
I.1.1	PS3_DOP	I.1.1	*Sensor Lantai 3*
I.1.2	PS2_MCL	I.1.2	*Sensor Lantai 2*

I.1.3	POS1	I.1.3	*Sensor Lantai 1*
F.0.0	HLT1	F.0.0	*Holder tombol Lantai 1*
F.0.1	HLT2	F.0.1	*Holder tombol Lantai 2*
F.0.2	HLT3	F.0.2	*Holder tombol Lantai 3*
F.0.3	HUP1	F.0.3	*Holder tombol naik di Lantai 1*
F.0.4	HUP2	F.0.4	*Holder tombol naik di Lantai 2*
F.0.5	HDN2	F.0.5	*Holder tombol turun di Lantai 2*
F.0.6	HDN3	F.0.6	*Holder tombol turun di Lantai 3*
F.0.7	INPOS	F.0.7	*Lift Berhenti Diposisi*
F.1.1	INPO1	F.1.1	*Memory Posisi Lantai 1*
F.1.2	INPO2	F.1.2	*Memory Posisi Lantai 2*
F.1.3	INPO3	F.1.3	*Memory Posisi Lantai 3*
P0	INCO	P0	*Control Perangkat Input*
P1	DOCO	P1	*Control Pintu*
P2	LICO	P2	*Control Lift*
T1	OPDL	T1	*Penunda Waktu Siap Terbuka*
T2	DOTM	T2	*Tenggang Pintu Terbuka*
T3	CLDL	T3	*Tenggang Pintu Tertutup*
T4	SFDL	T4	*Penunda Tutup sbg Pengaman*
TP1	TMOP	TP1	*Waktu Tunda Membuka Pintu*
TP2	TMDO	TP2	*Waktu Pintu Terbuka*
TP3	TMCL	TP3	*Waktu Pintu Tertutup*
TP4	TMSF	TP4	*Waktu Pengaman Pintu*

CONTROL INPUT DAN OUTPUT

STEP	AKPRO1		(1)
IF		N	DOCO
THEN	SET		DOCO
OTHRWS			NOP
STEP	AKPRO2		(2)
IF		N	LICO
THEN	SET		LICO
OTHRWS			NOP
STEP	INDET		(3)
IF			LT1
	OR		LT2
	OR		LT3
	OR		UP1
	OR		UP2
	OR		DN2
	OR		DN3
THEN			NOP
STEP	DET0		(4)
IF			LT1
	AND	N	INPO1
	AND	N	HLT1
THEN	SET		HLT1

```
OTHRWS                  NOP
STEP     DET1           (5)
IF                      LT2
         AND      N     INPO2
         AND      N     HLT2
THEN     SET            HLT2
OTHRWS                  NOP
STEP     DET2           (6)
IF                      LT3
         AND      N     INPO3
         AND      N     HLT3
THEN     SET            HLT3
OTHRWS                  NOP
STEP     DET3           (7)
IF                      UP1
         AND      N     HUP1
THEN     SET            HUP1
OTHRWS                  NOP
STEP     DET4           (8)
IF                      UP2
         AND      N     HUP2
THEN     SET            HUP2
OTHRWS                  NOP
```

STEP	DET5		(9)
IF			DN2
	AND	N	HDN2
THEN	SET		HDN2
OTHRWS			NOP
STEP	DET6		(10)
IF			DN3
	AND	N	HDN3
THEN	SET		HDN3
OTHRWS			JMP TO AKPRO1

CONTROL MOTOR PINTU

STEP	00		(1)
IF			NOP
THEN	LOAD		V30
	TO		TMOP
	LOAD		V400
	TO		TMDO
	LOAD		V200
	TO		TMSF
STEP	01		(2)
IF		N	DOCL
THEN	RESET		LRRN

	SET		CLOSE
OTHRWS			JMP TO 03
STEP	02		(3)
IF			DOCL
	OR	N	OPSF
THEN	RESET		CLOSE
STEP	03		(4)
IF			DOCL
THEN	SET		LRRN
OTHRWS			NOP
STEP	04		(5)
IF		N	UP
	AND	N	DOWN
	AND	N	OPSF
	OR		INPOS
THEN	SET		OPDL
	RESET		LRRN
STEP	05		(6)
IF		N	OPDL
THEN	SET		OPEN
	RESET		INPOS

STEP	06		(7)
IF		N	OPSF
THEN			NOP
OTHRWS	JMP TO		11
STEP	07		(8)
IF			OPSF
THEN	SET		SFDL
	SET		OPEN
STEP	08		(9)
IF			PS2_MCL
	OR	N	DOTM
THEN	SET		CLOSE
	JMP TO		02

CONTROL MOTOR LIFT

STEP	000		(1)
IF			LRRN
THEN	LOAD		V40
	TO		TMCL

```
STEP    001          (2)
IF                   UP1
THEN    SET          INPOS
        SET          INPO1
        SET          HUP1
OTHRW   JMP TO       101
STEP    002          (3)
IF      N            POS1
 THEN   SET          DOWN
OTHRW   JMP TO       003
STEP    003          (4)
IF                   DOCL
THEN    SET          TMOP
        SET          OPEN
OTHRW   JMP TO       004
STEP    004          (5)
        RESET        INPOS
        RESET        INPO1
        RESET        HUP1
STEP    005          (6)
IF                   LT2
        OR      N    LT3
```

THEN	SET		INPOS
	SET		INPO2
	SET		HLT2
	SET		TMCL
	SET		CLOSE
	JMP TO		008
OTHRW	JMP TO		006
STEP	006		(7)
IF		N	LT2
	OR		LT3
THEN	SET		INPOS
	SET		INPO3
	SET		HLT3
	SET		TMCL
	SET		CLOSE
	JMP TO		008
OTHRW	JMP TO		007
STEP	007		(8)
IF			LT2
	AND		LT3
THEN	SET		INPOS
	SET		INPO2
	SET		INPO3

	SET	HLT2
	SET	HLT3
	SET	TMCL
	SET	CLOSE
	JMP TO	009
STEP	008	(9)
IF		UP1
	OR	OPSF
THEN	RESET	DOCL
	RESET	INPOS
	RESET	INPO2
	RESET	INPO3
	RESET	HLT2
	RESET	HLT3
	SET	SFDL
	SET	OPEN
	JMP TO	004
OTHRW	JMP TO	009
STEP	009	(10)
	SET	LRRN
	SET	UP
	SET	INUP

STEP	010	(11)
IF		INPOS
THEN	RESET	INUP
	RESET	UP
	RESET	LRRN
	RESET	INPOS
	RESET	INPO2
	RESET	INPO3
	SET	OPEN
OTHRW	JMP TO	009
STEP	101	(12)
IF		UP2
THEN	SET	INPOS
	SET	INPO2
	SET	HUP2
OTHRW	JMP TO	200

STEP	102	(13)
IF		PS2_MCL
THEN	JMP TO	105
OTHRW	JMP TO	103
STEP	103	(14)
IF		POS1
THEN	SET	UP
OTHRW	JMP TO	104
STEP	104	(15)
IF		PS3_DOP
	SET	DOWN
STEP	105	(16)
IF		DOCL
THEN	SET	TMOP
	SET	OPEN
OTHRW	JMP TO	106
STEP	106	(17)
RESET		INPOS
RESET		INPO2
RESET		HUP2
RESET		UP2

```
STEP    107              (18)
IF                       LT1
        OR        N      LT3
THEN    SET              INPOS
        SET              INPO1
        SET              HLT1
        SET              TMCL
        SET              CLOSE
        JMP TO           110
OTHRW   JMP TO           108
STEP    108              (19)
IF                N      LT1
        OR               LT3
THEN    SET              INPOS
        SET              INPO3
        SET              HLT3
        SET              TMCL
        SET              CLOSE
        JMP TO           110
OTHRW   JMP TO           109
```

```
STEP    109          (20)
IF                   LT1
        AND          LT3
THEN    SET          INPOS
        SET          INPO3
        SET          INPO1
        SET          HLT3
        SET          HLT1
        SET          TMCL
        SET          CLOSE
        JMP TO       110
STEP    110          (21)
IF                   UP2
        OR           OPSF
THEN    RESET        DOCL
        RESET        INPOS
        RESET        INPO3
        RESET        INPO1
        RESET        HLT3
        RESET        HLT1
        SET          SFDL
        SET          OPEN
        JMP TO       106
```

```
OTHRW   JMP TO    111
STEP    111       (22)
        SET       LRRN
        SET       UP
        SET       INUP
STEP    112       (23)
IF                INPOS
THEN    RESET     INUP
        RESET     UP
        RESET     LRRN
        RESET     INPOS
        RESET     INPO3
        RESET     INPO1
        SET       OPEN
OTHRW   JMP TO    111
STEP    201       (24)
IF                DN2
THEN    SET       INPOS
        SET       INPO2
        SET       HDN2
OTHRW   JMP TO    301
```

STEP	202	(25)
IF		PS2_MCL
THEN	JMP TO	105
OTHRW	JMP TO	103
STEP	203	(26)
IF		POS1
THEN	SET	UP
OTHRW	JMP TO	104
STEP	204	(27)
IF		PS3_DOP
	SET	DOWN
STEP	205	(28)
IF		DOCL
THEN	SET	TMOP
	SET	OPEN
OTHRW	JMP TO	206
STEP	206	(29)
RESET		INPOS
RESET		INPO2
RESET		HDN2
RESET		DN2

```
STEP    207              (30)
IF                       LT1
        OR        N      LT3
THEN    SET              INPOS
        SET              INPO1
        SET              HLT1
        SET              TMCL
        SET              CLOSE
        JMP TO           210
OTHRW   JMP TO           208
STEP    208              (31)
IF                N      LT1
        OR               LT3
THEN    SET              INPOS
        SET              INPO3
        SET              HLT3
        SET              TMCL
        SET              CLOSE
        JMP TO           210
OTHRW   JMP TO           209
```

STEP	209	(32)
IF		LT1
	AND	LT3
THEN	SET	INPOS
	SET	INPO3
	SET	INPO1
	SET	HLT3
	SET	HLT1
	SET	TMCL
	SET	CLOSE
	JMP TO	210
STEP	210	(33)
IF		DN2
	OR	OPSF
THEN	RESET	DOCL
	RESET	INPOS
	RESET	INPO3
	RESET	INPO1
	RESET	HLT3
	RESET	HLT1
	SET	SFDL
	SET	OPEN
	JMP TO	206

```
OTHRW   JMP TO    211
STEP    211       (34)
        SET       LRRN
        SET       DN
        SET       INDN
STEP    212       (35)
IF                INPOS
THEN    RESET     INDN
        RESET     DN
        RESET     LRRN
        RESET     INPOS
        RESET     INPO3
        RESET     INPO1
        SET       OPEN
OTHRW   JMP TO    211
STEP    301       (36)
IF                DN3
THEN    SET       INPOS
        SET       INPO3
        SET       HDN3
OTHRW   NOP
```

STEP	302		(37)
IF	N		PS3_DOP
THEN	SET		UP
OTHRW	JMP TO		303
STEP	303		(38)
IF			DOCL
THEN	SET		TMOP
	SET		OPEN
OTHRW	JMP TO		304
STEP	304		(39)
	RESET		INPOS
	RESET		INPO3
	RESET		HUP3
STEP	305		(40)
IF			LT2
	OR	N	LT1
THEN	SET		INPOS
	SET		INPO2
	SET		HLT2
	SET		TMCL
	SET		CLOSE
	JMP TO		308
OTHRW	JMP TO		306

STEP	306		(41)
IF		N	LT2
	OR		LT1
THEN	SET		INPOS
	SET		INPO1
	SET		HLT1
	SET		TMCL
	SET		CLOSE
	JMP TO		308
OTHRW	JMP TO		307
STEP	307		(42)
IF			LT2
	AND		LT1
THEN	SET		INPOS
	SET		INPO2
	SET		INPO1
	SET		HLT2
	SET		HLT1
	SET		TMCL
	SET		CLOSE
	JMP TO		308
STEP	308		(43)
IF			DN3

	OR	OPSF
THEN	RESET	DOCL
	RESET	INPOS
	RESET	INPO2
	RESET	INPO1
	RESET	HLT2
	RESET	HLT1
	SET	SFDL
	SET	OPEN
	JMP TO	304
OTHRW	JMP TO	309
STEP	309	(44)
	SET	LRRN
	SET	DN
	SET	INDN
STEP	310	(45)
IF		INPOS
THEN	RESET	INDN
	RESET	DN
	RESET	LRRN
	RESET	INPOS
	RESET	INPO2
	RESET	INPO1

OTHRW JMP TO 309

SPESIFIKASI FESTO PLC

LAMPIRAN DUA

OPERANDS DALAM FESTO PLC

Input words	IW0 to IW1 with I0.0 to I0.7, I1.0 to I1.3
Output words	OW0 with O0.0 to O0.7
Error words	EW, also as E
Initial exe flags	FI, per program
Flags words	FW0 to FW9999 with Fx.0 to Fx.15
Registers	R0 to R255
Function units	FU0 to FU255, FU32 to FU38 per program
Timers	T0 to T255 (also TP and TW for every timer)
	TON, TOFF
Counters	C0 to C255 (also CP and CW for every counter)
Programs	P0 to P63
Program status	PS0 to PS63
Func. Modules	CFM0 to CFM99 (predefined by Festo)
Prog. Modules	CMP0 to CMP99 (defined by user)

KONFIGURASI DARI FESTO PLC

- ***General features***

Type	E.FEC-20-DC	E.FEC-20-AC
Dimension	130 x 80 x 60 mm	
Operating Ambient Temp.	0 – 55 degree C	
Humidity	0 – 85 % Relative humidity non condensing	
Supply Voltage	24 VDC	Voltage auto detection 100 – 230 VAC 50/60 Hz
Power Consumtion	10 W	15 VA
Mounting	DIN 46277 rail stand or direct screw mounting (M4)	
Communication Interface	RS 232 C, 3 Wire 9600	
I/O Connection	Screw Terminal	

- ***Input Specification***

Total Input	12 Input, in group of 8/4, PNP or NPN autodetection
Input Voltage	24 V DC, upto isolated
Input Current	7 mA
Delay Time	5 msec
Voltage On	15 VDC max
Voltage Off	5 VDC min
Signal Indication	LED for every input

- ***Output Specification***

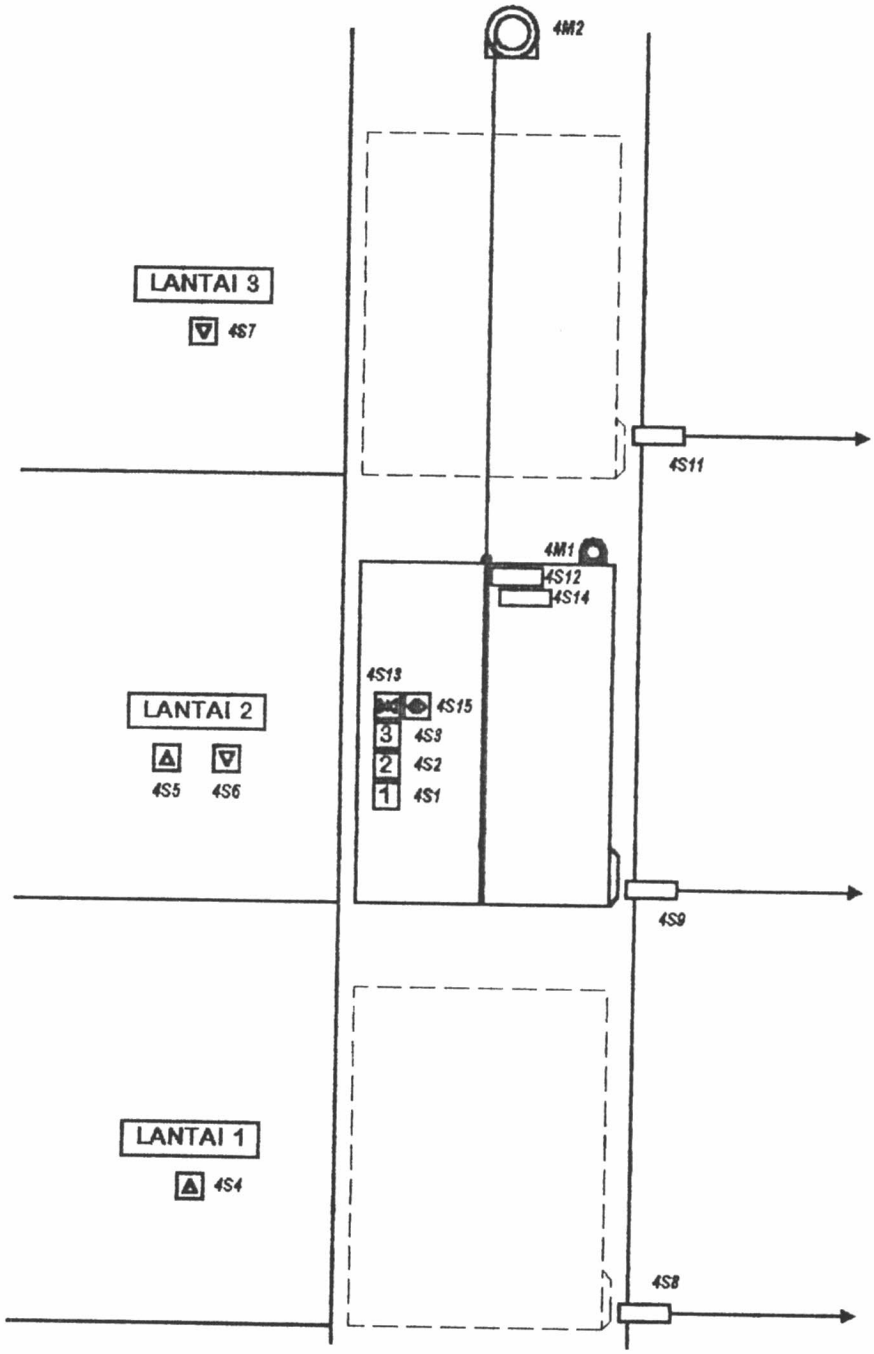
Total Input	8 Relay Output, in group of 4/2/2
Input Voltage	2 A max
Input Current	Max 30 VDC or 250 VAC
Delay Time	250 VAC, 30 VDC or less
Voltage On	80 VA (inductive), 100 W (lamp)
Voltage Off	Max 100 VA inductive
Delay Time	10 msec
Signal Indication	LED for every output

- ***Performance Specification***

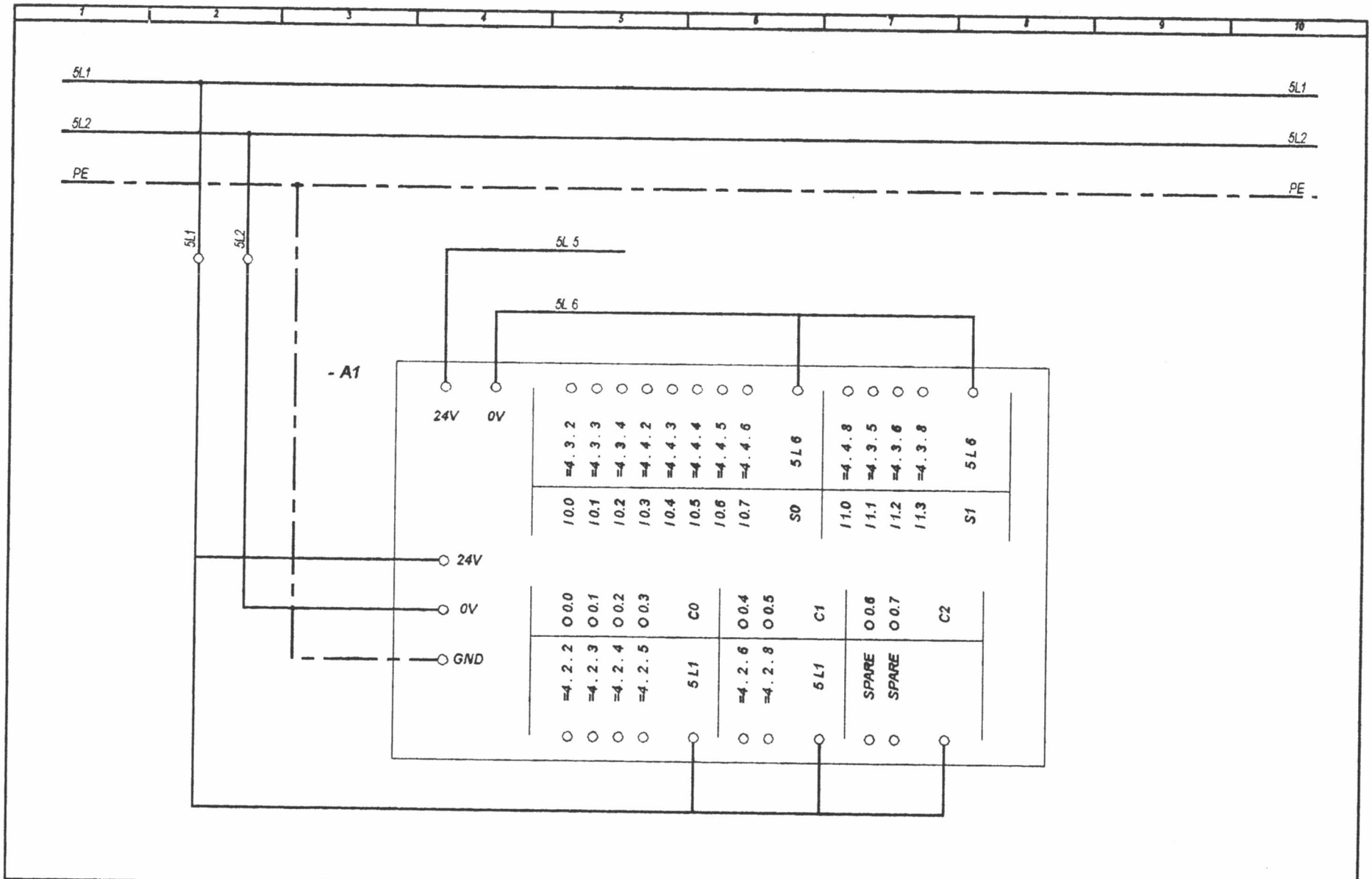
Input Facilites	2 fast input 4 kHz, NPN or PNP auto detection
Processor Speed	20 MHz, fast processing 1 k instruction 2 msec
Programming Language	Ladder Diagram or Statement List
Data Storage	32 kB in flash memory (retentive data 2k)
Program Storage	32 kB in flash memory
User Program	64, multitasking
Registers	256
Flag Words	10,000 (160,000 flags or internal relay)
Counters	256, count up or down
Timers	256, Normally Open or Closed, Built in external analog setting

INSTALLASI PLC

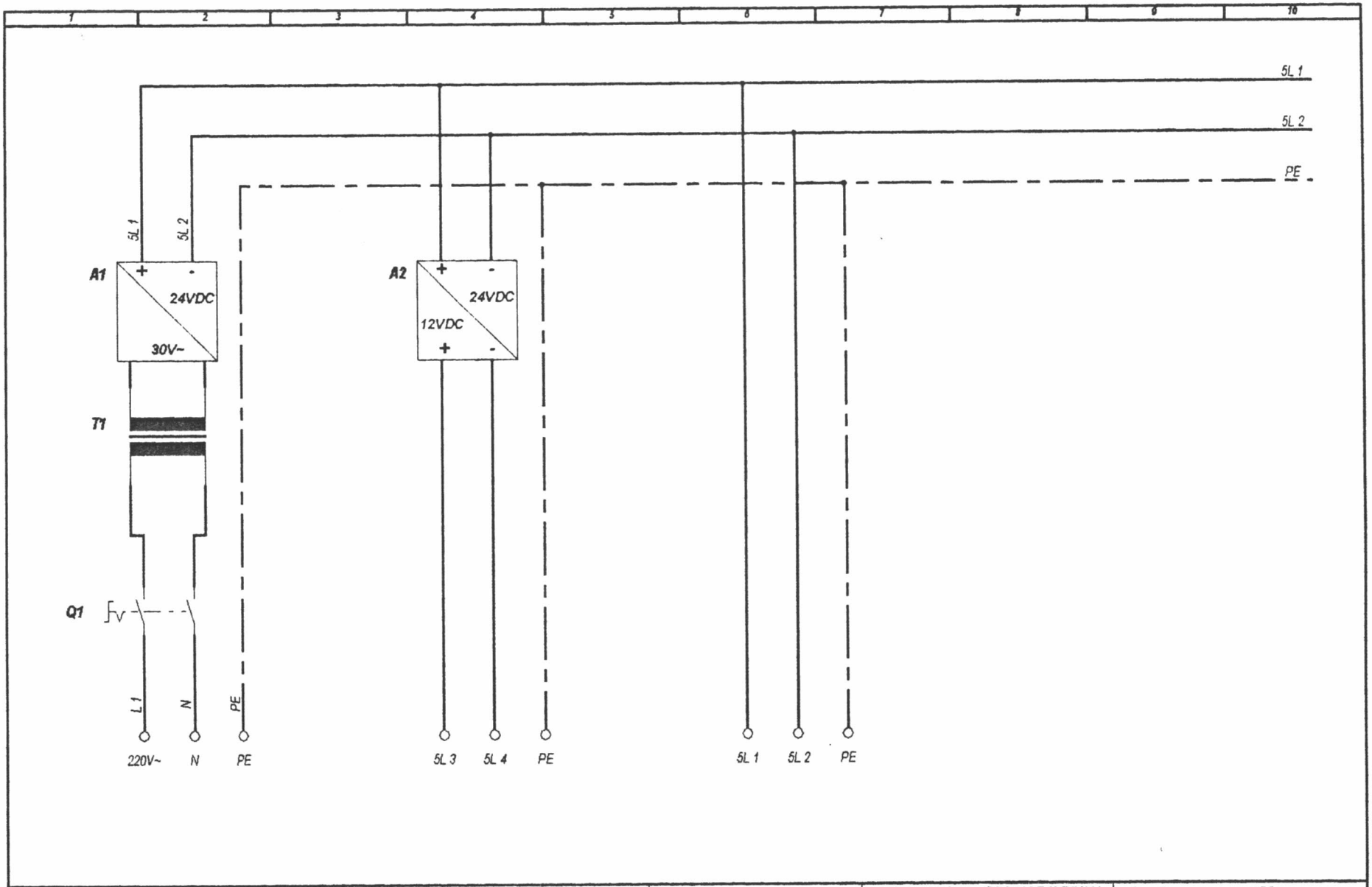
LAMPIRAN TIGA



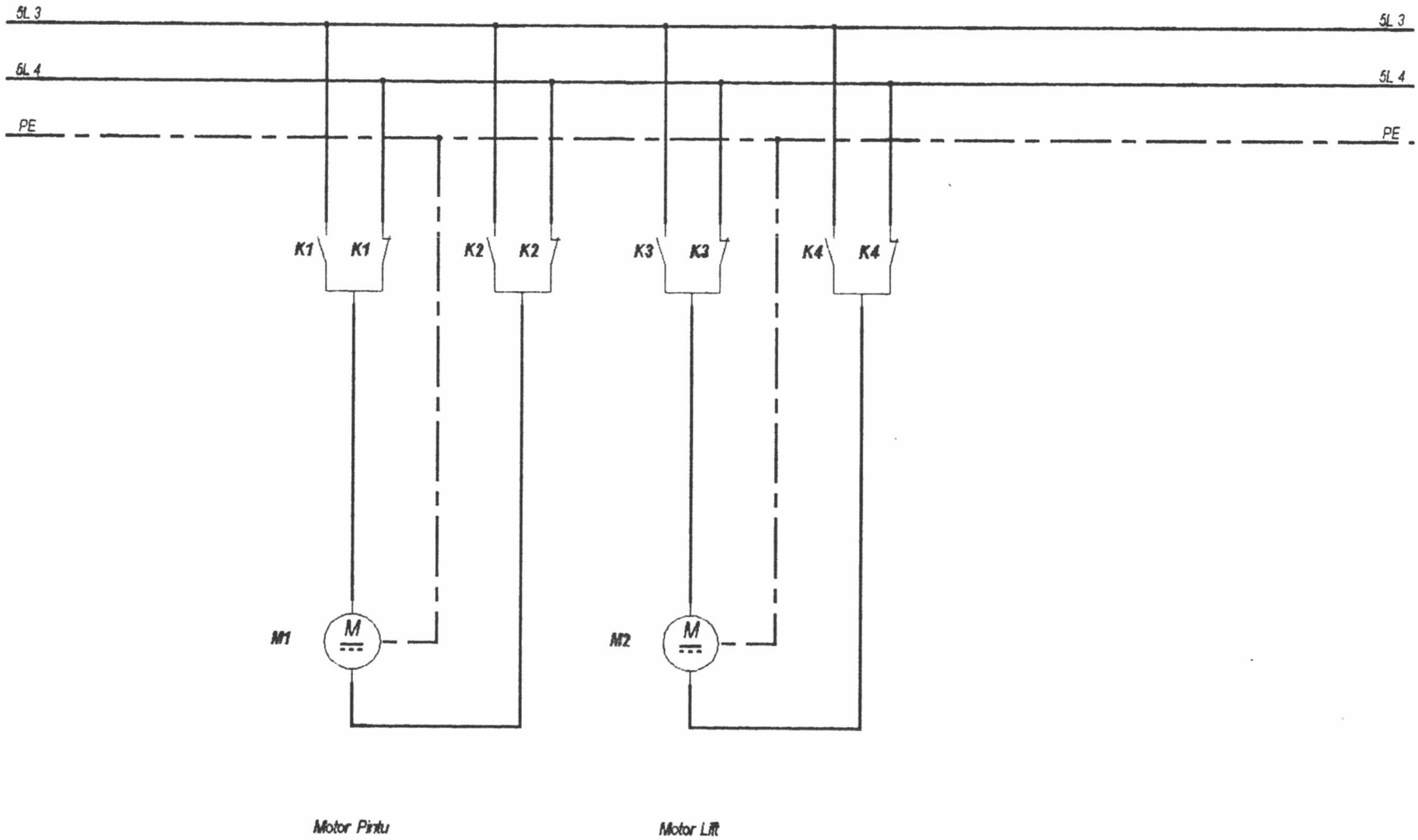
date :	CONTROL LIFT	LIFT 3 LANTAI	UNIVERSITAS MUHAMMADIYAH SURABAYA	function : = 01
revision :				
drawing : MULYADI			ELECTRIC LAY OUT	sheet no. : 1 / 1



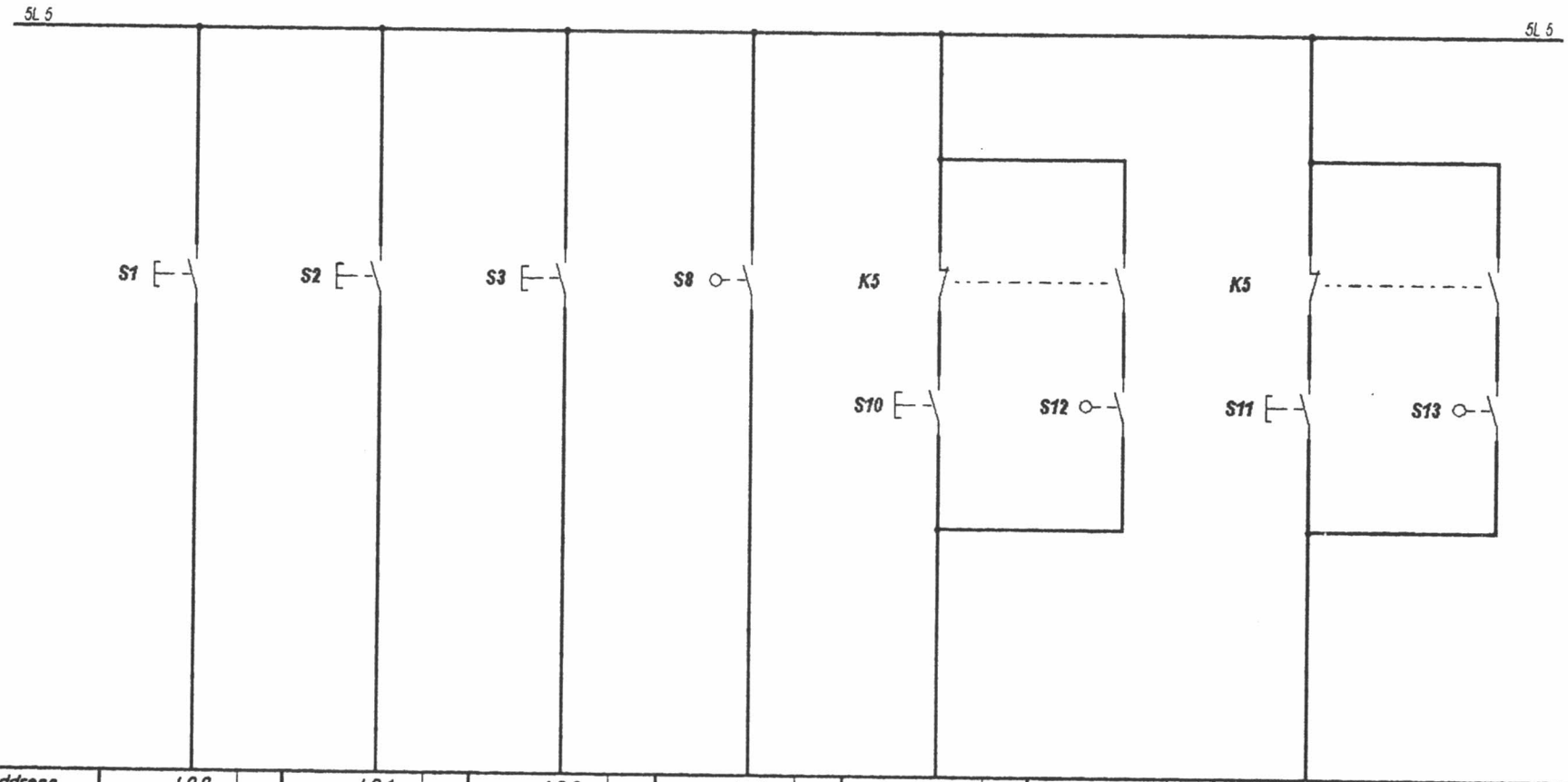
date :	CONTROL LIFT	LIFT 3 LANTAI	UNIVERSITAS MUHAMMADIYAH SURABAYA	function : = 03
revision :			INPUT / OUTPUT PLC	
drawing : MULYADI				sheet no. : 1 / 1



date :	CONTROL LIFT	LIFT 3 LANTAI	UNIVERSITAS MUHAMMADIYAH SURABAYA	function : = 02
revision :			POWER SUPPLY	
drawing : MUYADI				sheet no. : 1 / 1



date :	CONTROL LIFT	LIFT 3 LANTAI	UNIVERSITAS MUHAMMADIYAH SURABAYA	function : = 04
revision :			MOTOR PENGGERAK	
drawing : MULYADI				sheet no. : 1 / 4

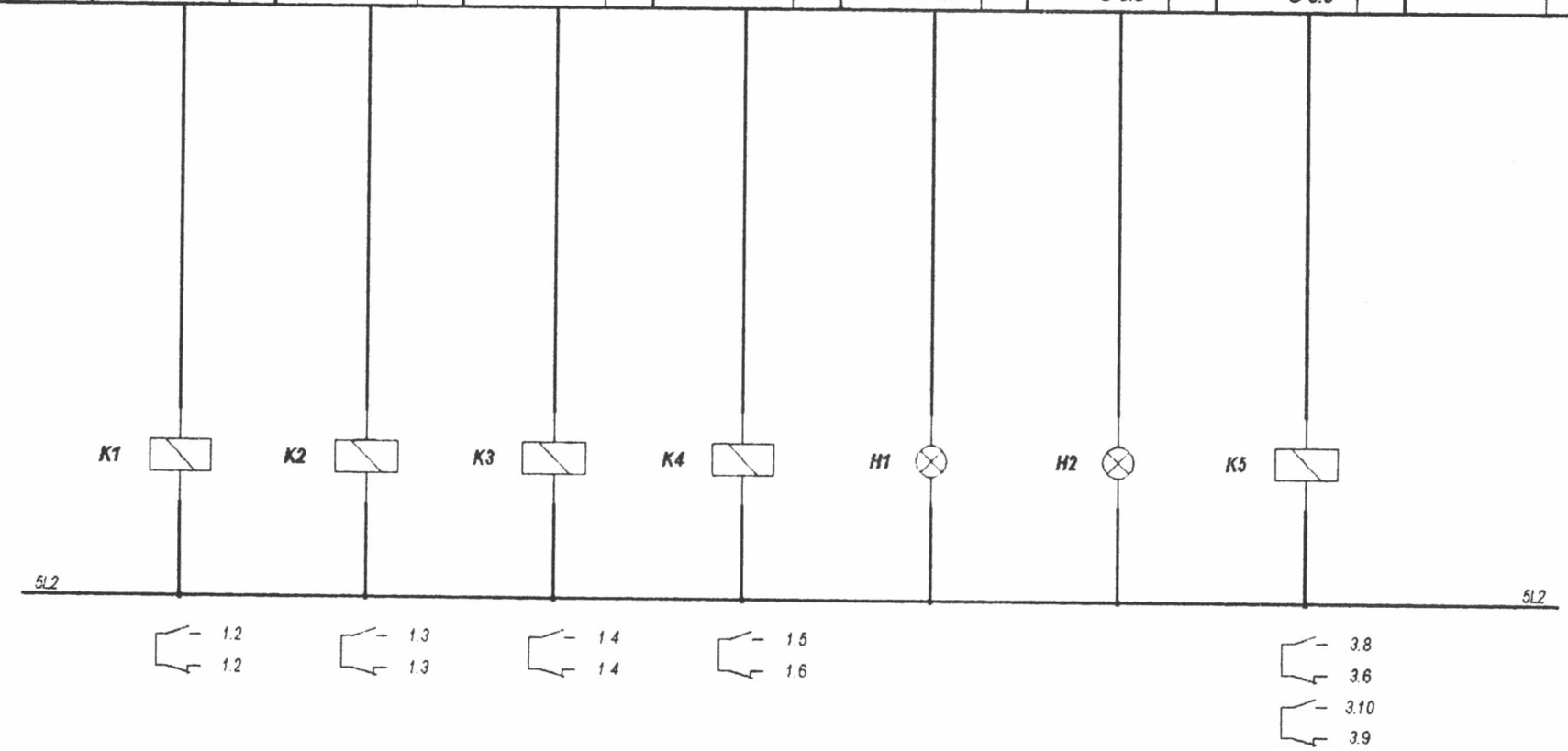


address	I 0.0	I 0.1	I 0.2	I1.0	I1.2		I1.1	
connection	=03 -A1	=03 -A1	=03 -A1	=03 -A1	=03 -A1		=03 -A1	
common	5L 6	5L 6	5L 6	5L 6	5L 6		5L 6	
comment	TOMBOL '1'	TOMBOL '2'	TOMBOL '3'	PINTU TERTUTUP	POSISI LIFT DI LANTAI 2 / TOMBOL TUTUP MANUAL		POSISI LIFT DI LANTAI 3 / PINTU TERBUKA	

date :	CONTROL LIFT	LIFT 3 LANTAI	UNIVERSITAS MUHAMMADIYAH SURABAYA	function : = 04
revision :				
drawing : MULYADI			INPUT PLC 1	sheet no. : 3 / 4

	1	2	3	4	5	6	7	8	9	10

comment	PINTU BUKA	PINTU TUTUP	LIFT NAIK	LIFT TURUN	INDIKATOR NAIK	INDIKATOR TURUN	LIFT SIAP BERGERAK (naik / turun)	
common	5L1	5L1	5L1	5L1	5L1	5L1	5L1	
connection	=03 -A1	=03 -A1	=03 -A1	=03 -A1	=03 -A1	=03 -A1	=03 -A1	
address	O 0.0	O 0.1	O 0.2	O 0.3	O 0.4	O 0.5	O 0.6	



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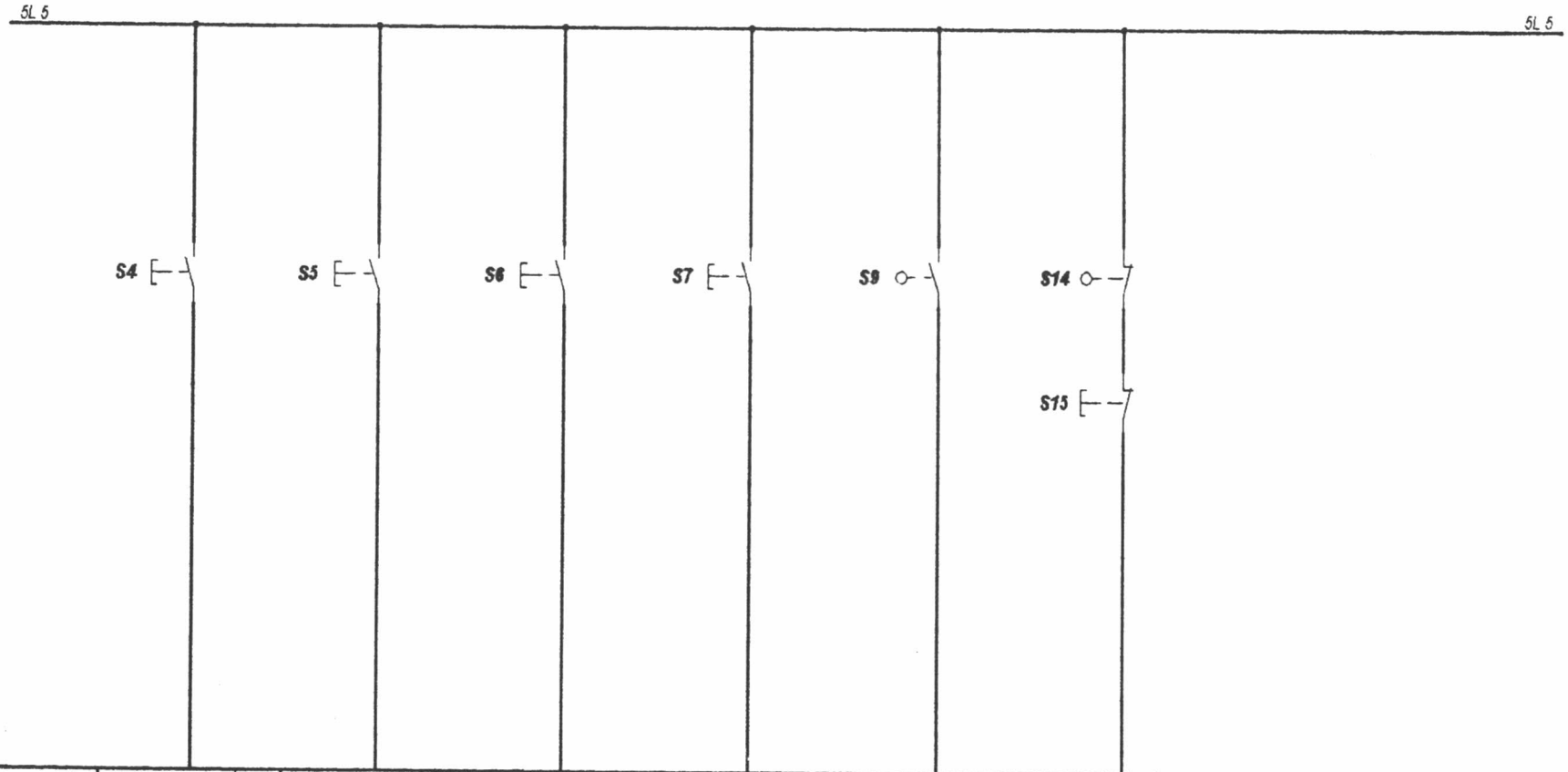
revision :				
drawing : MULYADI			PLC OUTPUT	sheet no. : 2/4



address	I 0.3	I 0.4	I 0.5	I0.6	I1.3	I0.7		
connection	=03 -A1	=03 -A1	=03 -A1	=03 -A1	=03 -A1	=03 -A1		
common	5L6	5L6	5L6	5L6	5L6	5L6		
comment	TOMBOL NAIK DI LANTAI 1	TOMBOL NAIK DI LANTAI 2	TOMBOL TURUN DI LANTAI 2	TOMBOL TURUN DI LANTAI 3	POSISI LIFT DI LANTAI 1	TOMBOL 'BUKA' & PENGAMAN PINTU		

date :	CONTROL LIFT	LIFT 3 LANTAI	UNIVERSITAS MUHAMMADIYAH SURABAYA	function : = 04
revision :				
drawing : MULYADI			INPUT PLC 2	sheet no. : 4 / 4

RIWAYAT HIDUP

NIM	:	**98.321.004**
Nama Lengkap	:	**GATOT WIBOWO**
Tempat/Tgl. Lahir	:	Surabaya, 18 Mei 1980
Agama	:	Islam
Alamat Rumah	:	Jl. Bulak Banteng Wetan 14 / 09 Surabaya 60128 ☎ 031-3724605

Penulis adalah *Putera ke tiga dari tiga saudara*

Riwayat Pendidikan :

SDN WONOKUSUMO X SURABAYA	(1986-1992)
SLTP NEGERI 9 SURABAYA	(1992-1995)
SMU NEGERI 19 SURABAYA	(1995-1998)
DIPLOMA III JURUSAN TEKNIK KOMPUTER UNMUH SURABAYA	(1998-2002)

RIWAYAT HIDUP

NIM	:	**98.321.005**
Nama Lengkap	:	**M U L Y A D I**
Tempat/Tgl. Lahir	:	Surabaya, 17 Nov 1974
Agama	:	Islam
Alamat Rumah	:	Jl. Tenggumung Karya IB / 11 Surabaya 60153
		☎ 031-3771527

Penulis adalah *Putera ke enam dari tujuh saudara*

Riwayat Pendidikan :

SDN SIDOTOPO I SURABAYA	(1982 - 1988)
SLTP NEGERI 15 SURABAYA	(1988 - 1991)
STM PEMBANGUNAN SURABAYA	(1991 - 1995)
DIPLOMA III JURUSAN TEKNIK KOMPUTER	
UNMUH SURABAYA	(1998 - 2002)