LAMPIRAN

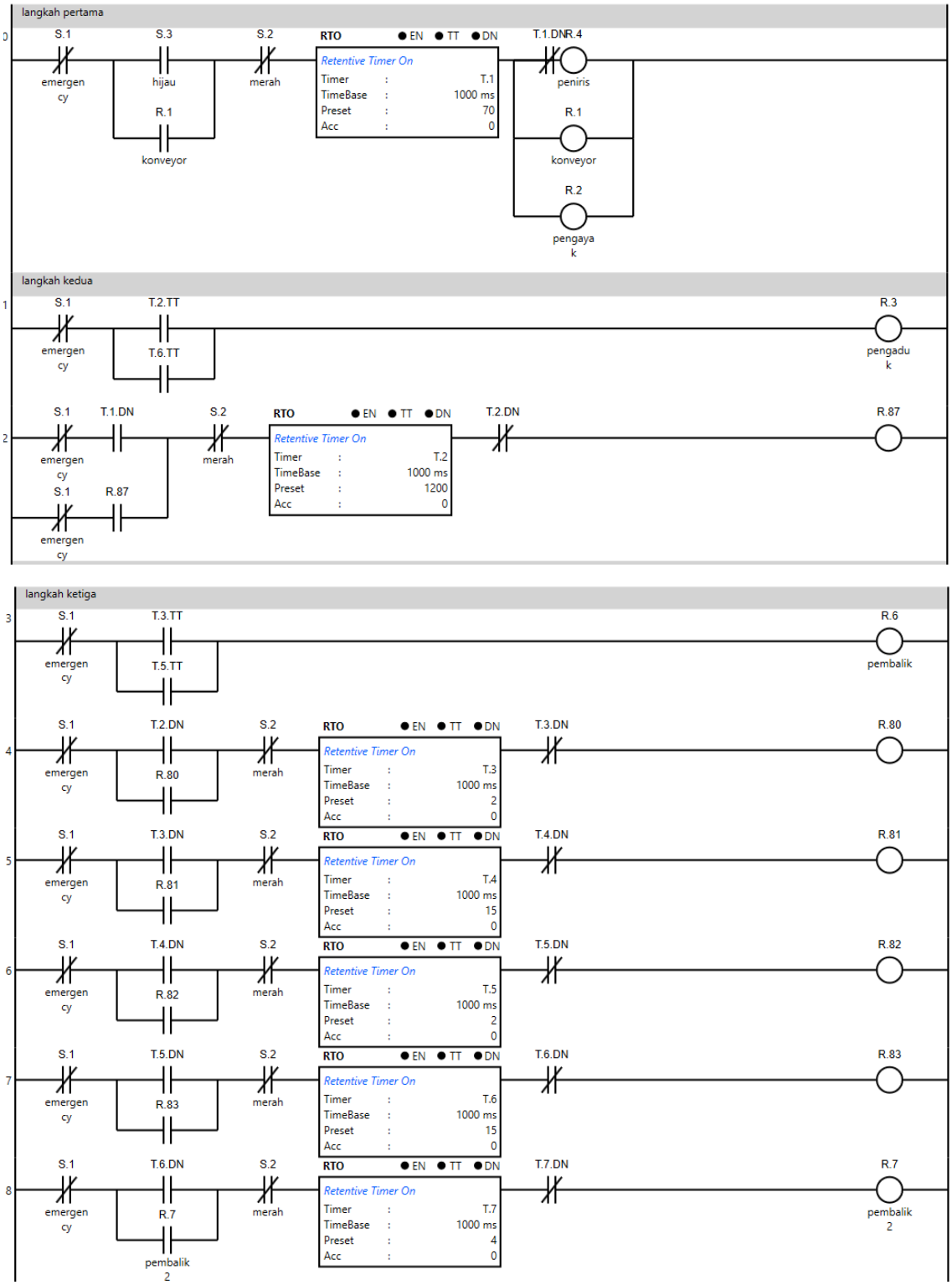
Lampiran 1 dokumentasi pembuatan mesin

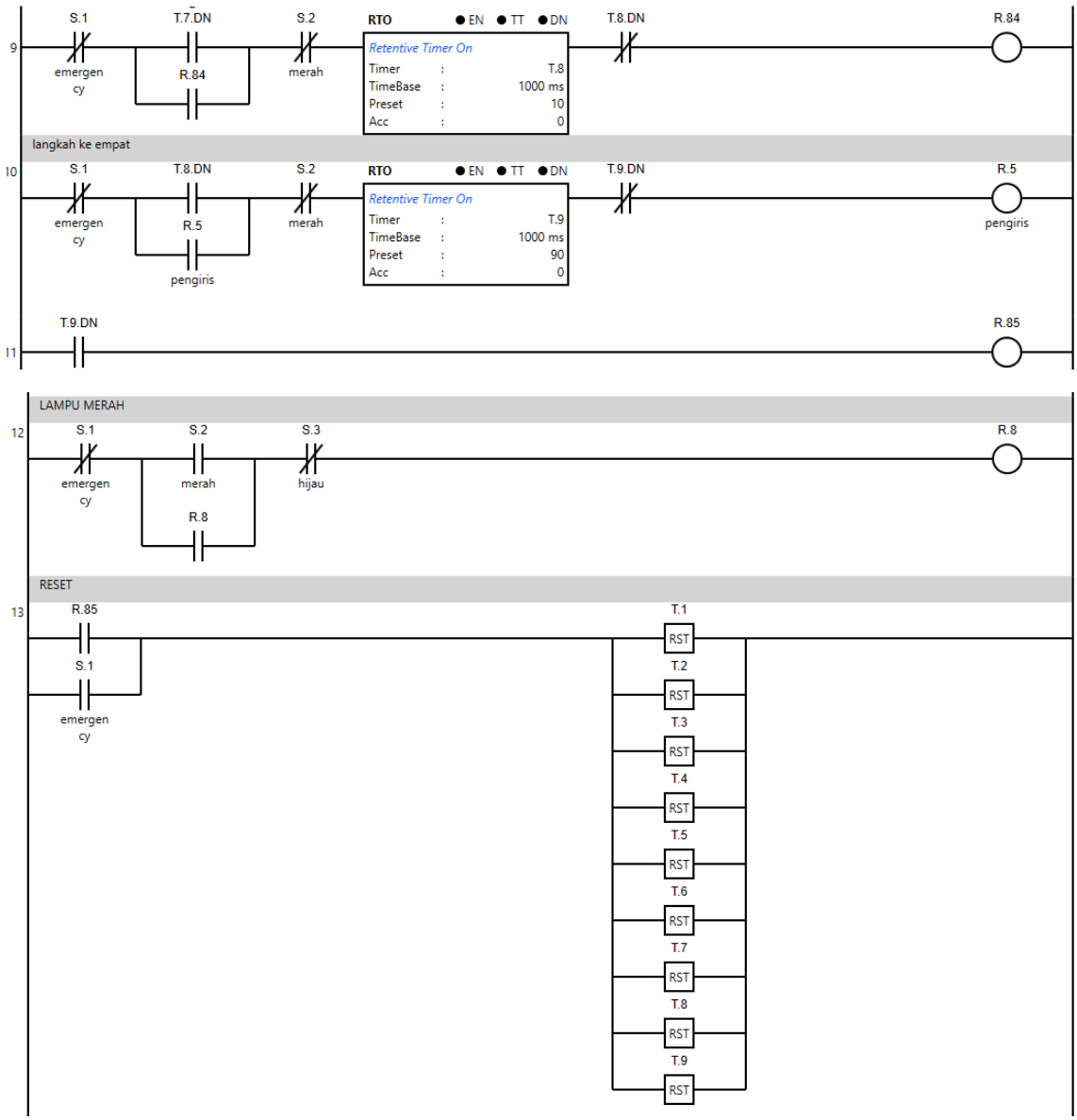





Lampiran 2 foto keseluruhan mesin

Lampiran 3 foto program




9
S.1
emergen
cy
T.7.DN
R.84
S.2
merah
RTO
EN
TT
DN
Retentive Timer On
Timer : T.8
TimeBase : 1000 ms
Preset : 10
Acc : 0
T.8.DN
R.84
langkah ke empat
10
S.1
emergen
cy
T.8.DN
R.5
pengiris
S.2
merah
RTO
EN
TT
DN
Retentive Timer On
Timer : T.9
TimeBase : 1000 ms
Preset : 90
Acc : 0
T.9.DN
R.5
pengiris
11
T.9.DN
R.85
LAMPU MERAH
12
S.1
emergen
cy
S.2
merah
R.8
S.3
hijau
R.8
RESET
13
R.85
S.1
emergen
cy
T.1
T.2
T.3
T.4
T.5
T.6
T.7
T.8
T.9
RST

Lampiran 4 Form Bimbingan Tugas Akhir

FORM BIMBINGAN
TUGAS AKHIR

NAMA : YOGI
NIM : 22010015
JUDUL LAPORAN : Desain mesin produksi bawang goreng berbasis Plc Outseal Mega V.2

Pembimbing 1

No	Hari / tanggal	Uraian	Tanda tangan
1	Senin, 28 April 2025	- pemberian judul - format tulisan - jarak spasi	
2	9/05/2025	ACC BAB I - Table - garis samping - penjelasan gambar	
3	16/05/2025	- kurangnya kelebihan plc - pembetulan tipe tulisan - sub - bab Bold	
	12/06/2025	ACC BAB II & III	
	29/06/2025	ACC BAB IV	

No	Hari/ tanggal	Uralan	Tanda Tangan
	27/07/2025	ACC BAB V	
		Siap. Ujian	

FORM BIMBINGAN
TUGAS AKHIR

NAMA : YOGI
NIM : 22010015
JUDUL LAPORAN : Desain mesin produksi bawang goreng berbasis PLC Outseal Mega V2

Pembimbing 2

No	Hari / tanggal	Uraian	Tanda tangan
1	24/maret/2025	- jusul - pembahasan - batasan masalah.	
2	14/April/2025	- Batasan masalah (Revisi) - Lanjut BAB II - Tinjauan pustaka - Landasan teori	
3	21/april/2025	Lanjut BAB II - Sub componen	
4.	8/mei/2025	Revisi BAB II - kata Kamus bahasa. - 2.2.1 - 2.2.3 - Ditambah Relay dan T. Emergensi Next lanjut BAB III	
5	16/mei/2025	- Revisi BAB II - Revisi BAB III - Diagram Blok penelitian, flowchart penelitian, flow Chart perancangan sistem	

6.	2 juni 2025	- Revisi Blok Diagram penelitian - Revisi flow chart proses kerja - Lanjut Bab III & IV	
7.	25 juni 2025	- Revisi Bab III flow chart cara kerja keseluruhan. - pengujian di lanjut sampai trial menemukan hasil yg terbaik - Lanjut Bab V. melengkapi Daftar pustaka	
8	28 juli 2025	- Revisi Bab IV wiring di kasih penjelasan - sop K3 sebelum pengujian.	
9.	30 juli 2025	- ACC laporan	

Lampiran 5 Penilaian Tugas Akhir Individu

PENILAIAN BIMBINGAN TUGAS AKHIR INDIVIDU

Judul : Desain mesin produksi bawang goreng berbasis PLC Ouseal Mega V.2

Nama : Yogi

NIM : 22010015

Kelas : 6A / D3 Teknik Elektronika

I. Nilai Bimbingan Tugas Akhir (Pembimbing I)

No	Unsur Yang Dinilai	Nilai
1	Kedisiplinan dalam bimbingan	85
2	Kreativitas pemecahan dalam bimbingan	85
3	Penguasaan materi tugas akhir	85
4	Kelengkapan dan referensi tugas akhir	85
Total Nilai = (Jumlah Nilai / 4)		85

II. Nilai Bimbingan Tugas Akhir (Pembimbing II)

No	Unsur Yang Dinilai	Nilai
1	Kedisiplinan dalam bimbingan	85
2	Kreativitas pemecahan dalam bimbingan	87
3	Penguasaan materi tugas akhir	87
4	Kelengkapan dan referensi tugas akhir	90
Total Nilai = (Jumlah Nilai / 4)		87.25

Nilai Bimbingan $= \frac{TotalNilaiPembimbing1 + TotalNilaiPembibing2}{2}$

$= 86$

Tegal, 29 Juli 2025

Mengetahui,

Pembimbing 1

Much Sobri Sungkar,M.kom

Pembimbing 2

Dany Sucipto,M.T

Lampiran 6 *Originality Report by Turnitin*

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Lampiran 7 *datasheet* komponen

1. Thermocontrol PID rex-c100

REX – C100 SERIES INSTRUCTION MANUAL

IMNZC17-E3

Before operating this instrument, please carefully read this manual and fully understand its contents. And always keep it around you to make it available easily anytime.

⚠ WARNING

- If failure or error of this instrument could result in a critical accident of the system, install an external protection circuit to prevent such an accident.
- Do not turn on the power supply until all of the wiring is completed. Otherwise electric shock, fire or malfunction may result.
- Use this instrument within the scope of its specifications. Otherwise fire or malfunction may result.
- Do not use this instrument in the places subject to flammable or explosive gas.
- Do not touch high-voltage blocks such as power supply terminals, etc. Otherwise electric shock may result.
- Never disassemble, repair or modify the instrument. This may cause electric shock, fire or malfunction.

CAUTION

- This is a Class A instrument. In a domestic environment this instrument may cause radio interference, in which case the user is required to take adequate measures.
- This instrument is protected from electric shock by reinforced insulation. So please arrange reinforced insulation to the wire for input signal against the wires for instrument power supply, source of power and loads as far as possible.
- This instrument is manufactured on the assumption that it is used in the condition of being mounted on the instrumentation panel. Therefore, take the necessary measures on the equipment side mounted with this instrument so that the operator or other personnel are not accessible to high-voltage blocks in this instrument such as power supply terminals, etc.
- Always observe precautions described in this manual. Otherwise serious injury or accident may result.
- Conduct all of the wiring in accordance with the local codes and regulations.
- Install a protection device such as a fuse, etc. in the power supply, input or output line, if necessary.
- Do not allow metal fragments or lead wire scraps to fall inside this instrument. This may cause electric shock, fire or malfunction.
- Firmly tighten each terminal screw at the specified torque. Otherwise electric shock or fire may result.
- Do not place any obstacle around this instrument in order not to impede radiation of heat. And do not close ventilation holes.
- Do not connect wires to unused terminals.
- Before cleaning the instrument, always turn off the power supply.
- Remove stains from this instrument using a soft, dry cloth. Do not use a volatile solvent such as thinner in order to avoid deformation or discoloration.
- Do not rub nor strike the display unit of this instrument with a hard object.

Notice

- This manual is subject to change without prior notice.
- Examples of figures, diagrams and numeric values used in this manual are for a better understanding of the text, but not for assuring the resultant operation.
- This manual may not be reproduced or copied in whole or in part without RKC's prior consent.
- RKC assumes no responsibility for any of the following damage which the user or third party may suffer.
  - Damage incurred as a result of using this product
  - Damage caused by product failure which cannot be predicted by RKC
  - Other indirect damage
- In order to use this instrument continuously and safely, periodic maintenance is required. Some of components and parts used in this instrument have a limited service life, or deteriorate over time.

1. PRODUCT CHECK

Check whether the delivered product is as specified by referring to the following model code list.

■Model code

C100□□□-□*□□
①②③ ④ ⑤⑥

① Control action
F : PID action [Reverse action]
D : PID action [Direct action]

② Input type
See input range table "Code"

③ Input range
See input range table "Code"

④ Control output [OUT]
M : Relay contact
V : Voltage pulse
I : Current 4 to 20mA DC
G : Trigger [for triac driving] *1

⑤ First alarm [ALM1]
N : No first alarm
A : Deviation high alarm *2
B : Deviation low alarm *2
C : Deviation high/low alarm *2
D : Band alarm
E : Deviation high alarm *3
F : Deviation low alarm *3
G : Deviation high/low alarm *3
H : Process high alarm *2
J : Process low alarm *2
K : Process high alarm *3
L : Process low alarm *3
R : Control loop break alarm *4

⑥ Second alarm [ALM2]
N : No second alarm
A : Deviation high alarm *2
B : Deviation low alarm *2
C : Deviation high/low alarm *2
D : Band alarm
E : Deviation high alarm *3
F : Deviation low alarm *3
G : Deviation high/low alarm *3
H : Process high alarm *2
J : Process low alarm *2
K : Process high alarm *3
L : Process low alarm *3
P : Heater break alarm [CTL-6]
S : Heater break alarm [CTL-12]
R : Control loop break alarm *4

*1 When control output is trigger output for triac driving, only the first alarm is available.
*2 Without hold action.
*3 With hold action.
*4 As control loop break alarm, only either the first alarm or second alarm is selected.

● Confirm that power supply voltage is also the same as that specified when ordering.

Accessories

●Mounting brackets... 2 pcs. ●Instruction manual [IMNZC11-E3]... 1 copy

2. MOUNTING

⚠ WARNING

●In order to prevent electric shock or instrument failure, do not turn on the power supply until all of the wiring is completed.

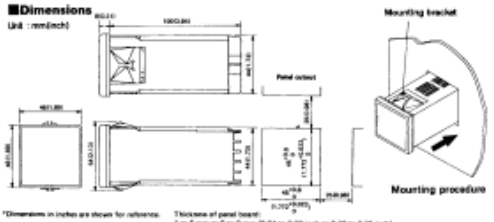
■Cautions for mounting ⚠

Avoid the following when selecting the mounting location.

●Ambient temperature of less than 0 °C(122 °F) or more than 50 °C(32 °F).
●Ambient humidity of less than 45% or more than 85% RH.
●Rapid changes in ambient temperature which may cause condensation.
●Corrosive or inflammable gases.
●Direct vibration or shock to the mainframe.
●Water, oil, chemicals, vapor or steam splashes.
●Excessive dust, salt or iron particles.
●Excessive induction noise, static electricity, magnetic fields or noise.
●Direct air flow from an air conditioner.
●Should be used indoors where the system is not exposed to direct sunlight.
●Heat to be accumulated radiation heat.

■Dimensions

Unit : mm(inch)



*Dimensions in inches are shown for reference. Thickness of panel board: 1 to 5 mm or 5 to 9 mm (0.04 to 0.20 inch or 0.20 to 0.35 inch)

■Mounting procedures

= When the controllers are mounted on panel with 1 to 5mm in thickness =
Since the mounting brackets are already installed on the controller, insert the controller into the panel front without removal of the brackets.

= When the controllers are mounted on panel with 5 to 9mm in thickness =
Remove the mounting brackets from the controller with a slotted screwdriver.
Engage each mounting bracket with holes marked with "5–9" on the housing and then insert the controller into the panel from the panel front.

3. MOUNTING

⚠ WARNING

●In order to prevent electric shock or instrument failure, do not turn on the power supply until all of the wiring is completed.
●If failure or error of this instrument could result in a critical accident of the system, install an external protection circuit to prevent such an accident.
●In order to prevent electric shock or instrument failure, protect power line and the input/output lines from high currents by using fuses with appropriate ratings.

■Cautions for wiring ⚠

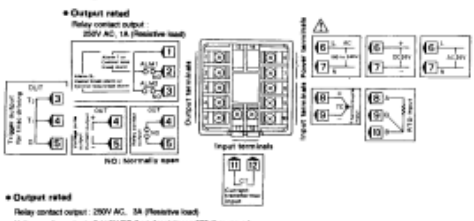
(1) For thermocouple input, use the specified compensation wire.
(2) For RTD input, use leads with low resistance and having no resistance differences among the 3 leads.
(3) Conduct input signal wiring away from instrument power, electric equipment power and load lines to avoid noise induction.
(4) Conduct instrument power wiring so as not to be influenced by noise from the electric equipment power. If the instrument may be affected by external noise, a noise filter should be used.
- Shorten the distance between twisted power supply wire pitches. The shorter the distance between the pitches, the more effective for noise reduction.
- Install the noise filter on the panel which is always grounded and minimize the wiring distance between the noise filter output side and the instrument power terminals.

- Do not install fuses and/or switches on the filter output signal since this may lessen filter effect.

(5) For power supply wires, use twisted wires with low voltage drop.
(6) About 5 to 6 sec are required as the preparation time for contact output after power on. Use a delay relay when the output line is used for an external interlock circuit.
(7) This instrument has no power supply switch nor fuses. Therefore, install the fuse close to the instrument and the switch, if required.
- Recommended fuse rating : Rated voltage ; 250 V Rated current ; 1 A - Fuse type ; Time-lag fuse

(8) To the instrument with power supply of 24 V, please be sure to supply the power from SELV circuit.
(9) This instrument is intended to be used under the following environmental conditions. IEC1010
*OVERVOLTAGE CATEGORY II *POLLUTION DEGREE 2

■Terminal configuration



● Output rated
Relay contact output : 250V AC, 1A (Resistive load)
Voltage pulse output : 0 / 12V DC (Load resistance 600 Ω or more)
Current output : 4 to 20mA DC (Load resistance 600 Ω or less)
Trigger output (for triac driving) : Zero-cross method for medium capacity triac driving (100A or less)
Load voltage : 100V AC system... 200V AC system
Load : Resistive load

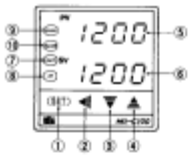
● Power supply & Power consumption

Power supply	Power consumption
100 to 240 V AC	9 VA max. (at 240 V AC), 6 VA max. (at 100 V AC)
24 V AC	6 VA max. (at 24 V AC)
24 V DC	145 mA max. (at 24 V DC)

● Heater break alarm function
CT input specifications
Measured current
0 to 30 A (CTL-6-P-N)
0 to 100 A (CTL-12-S56-10L-N)
Input rating
Maximum current rating : 120 mA
Input impedance : 2.5 Ω

*1. Terminals which are not used according to the controller type are all removed.
*2. When control output is trigger output for triac driving, the number of alarm output points becomes 1.
*3. Crimp-style terminal lug. Therefore, use the lug suitable for a screw of M3.

4. NAME OF PARTS

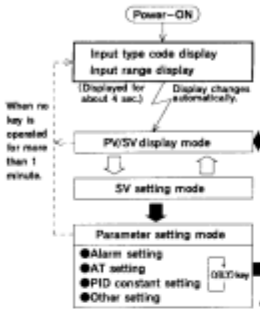


①Set (SET) key
②Setting digit shift key
③Set−value decrement key
④Set−value increment key
⑤Measured−value (PV) display unit (Green)
⑥Set−value(SV) display unit (Orange)
⑦Control output (OUT) lamp (Green)
⑧Auto−tuning (AT) lamp (Green)
⑨First alarm (ALM1) lamp (Red)
⑩Second alarm (ALM2) lamp (Red)

5. OPERATION

■Calling−up procedure of each mode

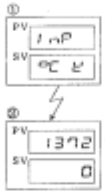
: Press the (SET) key.
: Press the (SET) key for more than 5 sec.



Input type code/input range display

This controller, with the power turned ON, displays automatically the input type code on the measured−value (PV) display unit and the input range, on the set−value (SV) display unit, respectively.

Example:
For a controller with the K thermocouple input type and input range from 0 to 1372℃



①Displays the input type code
: Indicates input abbreviation.
℃ : Indicates engineering unit. (℉ : ℉)
: Indicates input type.
②Displays the input range

■Parameter type

The following parameter symbols are displayed one by one every time the (SET) key is pressed. However, some parameter symbols may not be displayed depending on the specification.

Symbol	Name	Setting range	Description	Initial value prior to shipment
CT	Current transformer input	Setting is not possible. Set heater break alarm value by referring to this value.	Display input value from the current transformer.	
AL1	First alarm	Deviation alarm−Process alarm: −1999 to +9999℃[℉] or −199.9 to +999.9℃[℉] Differential gap: 2 or 2.0℃[℉]	Set alarm set−value of first alarm.	50 or 50.0
AL2	Second alarm		Set alarm set−value of second alarm.	
HbA	Heater break alarm	0.0 to 100.0A	Alarm value is set by referring to input value from the current transformer (CT).	0.0
LbA	Control loop break alarm	0.1 to 200.0 min.	Set control loop break alarm set−value. Cannot be set to "0.0".	8.0
Lbd	LBA deadband	0 to 9999℃[℉] Differential gap: 0.8℃[℉]	Set the area of not outputting LBA. No LBA deadband functions with "0" set.	0
AtU	Auto−tuning	0000: Auto−tuning end or stop 0001: Auto−tuning start	Turns the auto−tuning ON/OFF.	0000
P	(Heating side) Proportional band	1 to span or 0.1 to span	Set heating−side proportional band. ON/OFF action with P set to "0" or "0.0".	30 or 30.0
I	Integral time	1 to 3600 sec.	Eliminates offset occurring control is performed. I action turns OFF with I set to "0".	240
d	Derivative time	1 to 3600 sec.	Prevents ripples by predicting output change thereby improving control stability. D action turns OFF with D set to "0".	60
Ar	Anti−reset windup	1 to 100% of proportional band (heating side).	Prevents overshoot and/or undershoot caused by integral action. I action turns OFF with this action set to "0".	100
T	(Heating side) Proportional cycle	1 to 100 sec.	Set control output cycle.	Relay contact output: 20 Voltage pulse, trigger output: 2
LCK	Set data lock	0100: No set data locked (All parameters changeable) 0101: Set data locked (All parameters not changeable) 0110: Only the set−value (SV) is changeable with the set data locked	Performs set data change enable/disable.	0100

*The second alarm (or first alarm), heater break alarm, control loop break alarm parameter symbols are not simultaneously displayed.
*Heater break alarm is not available on a current output.

■Parameter setting procedure

●Setting set−value (SV)

Following is an example of setting the set−value (SV) to 200℃.

①Press the (SET) key to enter the SV setting mode. The digit which light brightly is settable.

②Press the ◀ key to shift the digit which lights brightly up to the hundreds digit.

③Press the ▲ key to "2". Pressing the ▲ key increments numerals, and pressing the ▼ key decrements numerals.

④After finishing the setting, press the (SET) key. All of the set−value digits light brightly and as a result the controller returns to the PV/SV display mode.

Set−value increase or decrease Example : When a temperature 199℃ is changed 200℃.

Press the ◀ key to shift the digit brightly lit to the least significant digit. Press the ▲ key to change "9" to "0", thereby obtaining 200℃. The same applies to set−value decrease.

Minus (−) value setting Example : For changing 200 to −100.

Press the ◀ key to shift the digit brightly lit to the hundreds digit. Press the ▼ key to decrement figures in order of 1 → 0 → −1.

●Setting parameters other than set−value

- Press the (SET) key for more than 5 sec. to set controller to the parameter setting mode.
- Press the (SET) key by the required number of times until the parameter symbol to be set is displayed.
- The setting procedures are the same as those of example ② to ④ in the above "Setting set−value (SV)". Pressing the (SET) key after the setting is finished in the parameters.
- When no parameter setting is required, return the controller to the PV/SV display mode.

⚠Key operation cautions

●For this controller, the value whose setting was changed is not registered. It is registered for the first time it is shifted to the next parameter by pressing the (SET) key.
●When the controller is not set to the SV setting mode (the SV does not light brightly or dimly even with the (SET) key pressed) or each value does not light brightly or dimly even with the controller moved to the parameter setting mode, set data lock is activated. In this case, change the "LCK" parameter set−value to "0100".
●This controller returns to the PV/SV display mode status if key operation is not performed for more than 1 minute.

■Set data locking procedures

This controller is provided with a set data locking function which disables each set−value change by the front key and also the auto−tuning function. Use this function for malfunction prevention at the end of each setting.

- Press the (SET) key by the required number of times to show "LCK" on the measured−value (PV) display unit.
- Press the ◀, ▲ and ▼ keys to set the number in the table at right. Thus the set data lock state can be selected.

0100	No set data locked. (All parameters changeable)
0101	Set data locked. (All parameters not changeable)
0110	Only the set−value (SV) is changeable with the set data locked

NOTES

1. Do not change the upper 2 digits "01" of the set−value, as it may cause malfunction.
2. Checking each set−value is possible during data lock.

■Cautions for operation

- If any problems arise due to hunting exists in the control system, do not use the auto−tuning function. In this case, set each value to match the controlled object.
- Connect the input signal wiring, and then turn ON the power. If the input signal wiring opens, the controller judges that input is disconnected to cause the upscale of measured−value display. (For thermocouple input, downscale is also available as option.)
- No influence is exerted upon the controller for power failure of 20ms or less. For power failure of 20ms or more, the controller performs the same operation as that at the time of power ON after power recovery (This applies only when alarm action is turned OFF).
- When the set−value (SV) is changed during progress in the auto−tuning function, suspend the auto−tuning to perform PID control using the values before auto−tuning start.
- When the auto−tuning function is suspended halfway, no values of PID and control loop break alarm are changed. (The value before auto−tuning function start is maintained.)

6. DISPLAY AT ERROR OCCURRENCE

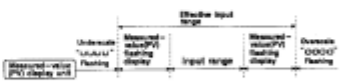
〈Error display〉

Err	● RAM failure (Incorrect set data write, etc.)	Please contact us or your nearest RKC agent.

〈Overscale, Underscale〉

0000 (Flashing)	Overscale (Measured−value exceeds the high input display range limit.)	⚠WARNING In order to prevent electric shock, prior to replacing the sensor, always turn OFF the power. Sensor or input lead check.
UUUU (Flashing)	Underscale (Measured−value below the low input display range limit.)	

Each status at input abnormality is shown in the following :



〈Input range table〉

Input type Character	Range	Code
TC K	0 to 200℃	01
	0 to 400℃	02
	0 to 600℃	03
	0 to 800℃	04
	0 to 1000℃	05
	0 to 1200℃	06
	0 to 1372℃	07
	0 to 400℉	13
	0 to 800℉	14
	0 to 1200℉	15
	0 to 1600℉	16
	0 to 2500℉	17
	200 to 400℉	18
TC J	0 to 200℃	01
	0 to 400℃	02
	0 to 600℃	03
	0 to 800℃	04
	0 to 1000℃	05
	0 to 1200℃	06
	0 to 400℉	13
	0 to 800℉	14
	0 to 1600℉	A1
	0 to 2100℉	A2
	0 to 3000℉	A3
TC J	0 to 1600℉	A4
TC R *	0 to 1600℃	01
	0 to 1769℃	02
	0 to 1250℃	03
	0 to 3200℉	11
	0 to 3216℉	12
TC S *	0 to 1600℃	01
	0 to 1769℃	02
	0 to 3200℉	11
	0 to 3216℉	12
TC B *	400 to 1800℃	01
	0 to 1828℃	02
	800 to 3200℉	A1
	0 to 3300℉	A2

Input type Character	Range	Code
TC E	0 to 600℃	01
	0 to 800℃	02
	0 to 3600℉	A1
	0 to 3632℉	A2
TC N	0 to 1200℃	01
	0 to 1300℃	02
	0 to 2300℉	A1
	0 to 2372℉	A2
TC T	−199.9 to +400.0℃	01
	−199.9 to +100.0℃	02
	−100.0 to +200.0℃	03
	0.0 to 350.0℃	04
	−199.9 to +752.0℉	A1
	−100.0 to +392.0℉	A2
	−100.0 to +400.0℉	A3
	0.0 to 450.0℉	A4
	0.0 to 752.0℉	A5
TC W5Re/W26Re	0 to 2300℃	01
	0 to 2320℃	W 02
	0 to 4200℉	A1
TC PLII	0 to 1300℃	01
	0 to 1390℃	02
	0 to 2400℉	A1
	0 to 2534℉	A2
TC U	−199.9 to +400.0℃	01
	−199.9 to +100.0℃	02
	0.0 to 400.0℃	03
	−199.9 to +392.0℉	A1
	−199.9 to +200.0℉	A2
TC U	0.0 to 599.0℉	A3
TC L	0 to 400℃	01
	0 to 800℃	02
	0 to 800℉	A1
	0 to 1600℉	A2

Input type Character	Range	Code
MTID Pt100	−199.9 to +649.0℃	01
	−199.9 to +200.0℃	02
	−199.9 to + 50.0℃	03
	−199.9 to +100.0℃	04
	−199.9 to +200.0℃	05
	0.0 to 90.0℃	06
	0.0 to 180.0℃	07
	0.0 to 280.0℃	08
	0.0 to 380.0℃	09
	0.0 to 580.0℃	10
MTID Pt100 D	−199.9 to +999.9℉	A1
	−199.9 to +480.0℉	A2
	−199.9 to +280.0℉	A3
	−199.9 to +180.0℉	A4
	−199.9 to +360.0℉	A5
	0.0 to 180.0℉	A6
	0.0 to 280.0℉	A7
	0.0 to 480.0℉	A8
	0.0 to 580.0℉	A9
MTID JPt100 P	−199.9 to +649.0℃	01
	−199.9 to +200.0℃	02
	−199.9 to + 50.0℃	03
	−199.9 to +100.0℃	04
	−199.9 to +200.0℃	05
	0.0 to 90.0℃	06
	0.0 to 180.0℃	07
	0.0 to 280.0℃	08
	0.0 to 380.0℃	09
	0.0 to 580.0℃	10

*Accuracy in the range of 0 to 400℃ (0 to 800℉) : Not guaranteed.

RKC. RKC INSTRUMENT INC.

IMNZC17−E3

HEADQUARTERS: 16−6, KUGAHARA 5−CHOME, OHTA−KU TOKYO 146−8515 JAPAN
PHONE : 03−3751−9799 (+81 3 3751 9799) E−mail : info@rkcinst.co.jp
FAX : 03−3751−8585 (+81 3 3751 8585)

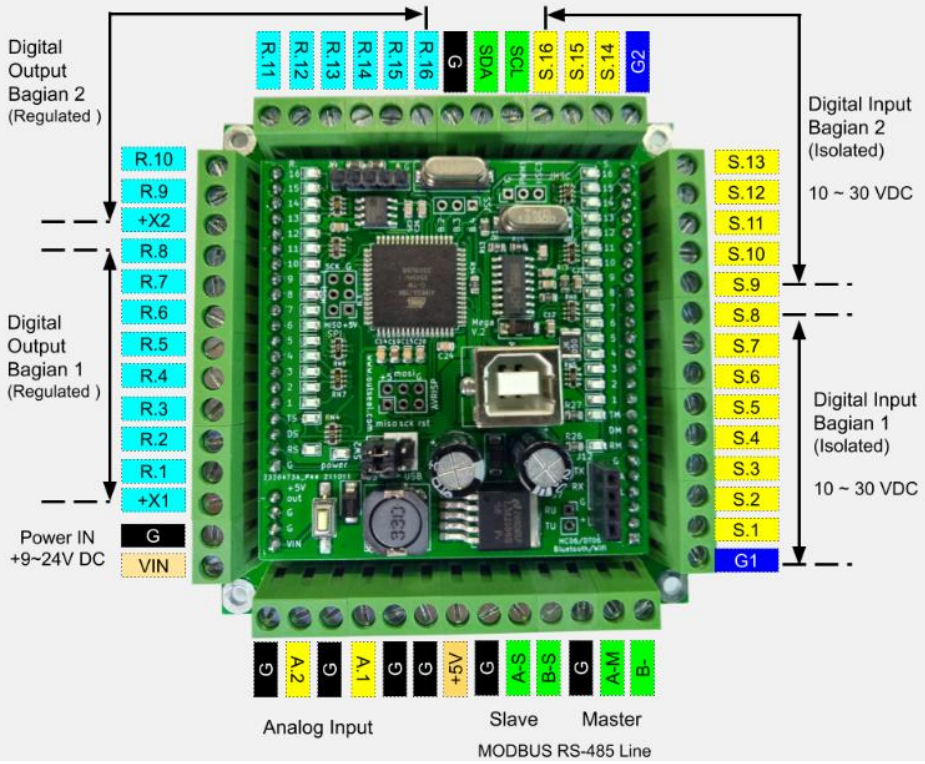
DEC. 2008 3,000 (P)

2. PLC Outseal Mega V.2

Mega V.2 Full

Outseal PLC mega V.2 full mempunyai specs:

- 16 digital input
- 16 digital output
- 2 analog input
- 1 jalur komunikasi MODBUS RTU serial RS485 slave
- 1 jalur komunikasi MODBUS RTU serial RS485 master
- 2 hardware timer untuk pwm / high speed counter
- 1 jalur komunikasi TWI/I2C
- 1 jalur komunikasi SPI



3. Power supply

IDEAL
FOR CCTV POWER SUPPLY
AND LED LIGHTING SYSTEMS POWER SOURCE

SPECIFICATION

Specification	
Output voltage	DC 12V
Output voltage control range	11V - 13.8V
Output current	10A
Output power	120W
Input voltage	100-240VAC/ 50Hz/60Hz
Operation temperature	-10°C to +50°C
Storage Temperature	-20°C to +60°C
Shell Material	Metal case / Aluminum base
Ambient Humidity	0~95% Non-Condensation
Dimensions	199 x 98 x 42mm
Weight	480g
Protection	Shortage, Overload, Over Voltage

INDOOR USE ONLY

4. MCB (miniature circuit braker)

3.2

	Standard		IEC/EN 60898-1	IEC/EN 60947-2	UL1077	UL1077
Electrical features	Rated current In	A	1, 2, 3, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63		1, 2, 3, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63	
	Poles		1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P
	Rated voltage Ue	V	230/400~240/415		277/480	110/125
	Insulation voltage Ui	V	500			
	Rated frequency		50/60Hz			DC
	Rated breaking capacity	A	6000/10000	6k	5k	10k
	Energy limiting class		3			
	Rated impulse withstand voltage(1.2/50) Uimp	V	4000			
	Dielectric test voltage at ind. Freq. for 1 min	kV	2			
	Pollution degree		2			
	Power loss per pole		Rated current (A)		Max power loss per pole (W)	
			1, 2, 3, 4, 5, 6, 10		2	
			13, 16, 20, 25, 32		3.5	
			40, 50, 63		5	
	Thermo-magnetic release characteristic		B, C, D	8-12In, 9.6-14.4In	B, C, D	4-7In, 7-14In
Mechanical features	Electrical life		4, 000			
	Mechanical life		20, 000			
	Contact position indicator		Yes			
	Protection degree		IP20			
	Reference temperature for setting of thermal element	℃	30			
	Ambient temperature (with daily average≤35℃)	℃	-5...+40(Special application please refer to P14 for temperature compensation correction)			
	Storage temperation	℃	-25...+70			
Installation	Terminal connection type		Cable/U-type busbar/Pin-type busbar			
	Terminal size top/bottom for cable	mm^2	25			
		AWG	18-4			
	Terminal size top/bottom for busbar	mm^2	10			
		AWG	18-8			
	Tightening torque	N*m	2.5			
		In-lbs.	22			
	Mounting		On DIN rail EN 60715 (35mm) by means of fast clip device			
	Connection		From top and bottom			
Combination with accessories	Auxiliary contact		Yes			
	Shunt release		Yes			
	Under voltage release		Yes			
	Alarm contant		Yes			

5. Thermocouple tipe K

TC-K2/TC-J2

Probe type thermocouple K/J with process fittings

Example: TC-K2-5-100-M8-2000-SS-GD
Thermocouple type K
Code: K2
Probe diameter: 5mm
Probe length:100mm
M8 screw
2 meters lead wire
stainless steel lead wire
Grounded type

Ordering Information(quick ordering code TC-K2 or TC-J2)

TC-K2, Thermocouple type K, code K2 TC-J2, Thermocouple type J, code J2	-1-2-3-4-5-6

1:Probe diameter(mm),customizable,other size not listed below but also available

2	Probe diameter 2mm
3	Probe diameter 3mm
4	Probe diameter 4mm
5	Probe diameter 5mm

2:Probe length(mm),customizable,other size not listed below but also available

50	Probe length 50mm
100	Probe length 100mm
150	Probe length 150mm
200	Probe length 200mm

3:Screw process fittings type(other specs available, please discuss with our sales person)

M8	M8 screw
1/2NPT	1/2 NPT
M6	M6 screw

4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want

2000	2000mm lead wire
3000	3000mm lead wire
5000	5000mm lead wire

5:Lead wire material

SS	Stainless steel wire
SILI	Silicon wire
FG	Fiber glass insulation wire
TF	Teflon wire

6:Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

6. Motor induksi 1 fasa

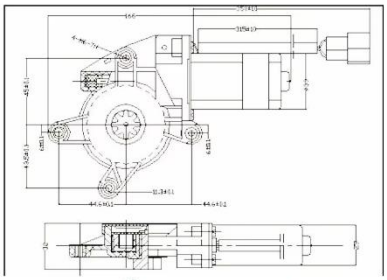
7. Electric power window

Car window regulator motor JHF-WP-1003

JHF-WP-1003

Weight: N/A (approx.)

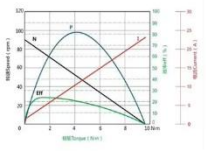
Typical Application
window regulator
Key Features
low noise
big torque
Tags: window regulator motor



Rated Voltage	12	V
Rated Torque	3	N·m
No Load Current	<2	A
No Load Speed	90±10	rpm
Rated Current	<8	A
Rated Speed	65±15	rpm
Stall Current	<25	A
Stall Torque	≥7.5	N·m
Noise	<55	dB
Maximum Power	25	w

Customization
speed
voltage
connector

Curve



8. Step down

Features

- Wide 5V to 32V Input Voltage Range
- Output Adjustable from 0.8V to 30V
- Maximum Duty Cycle 100%
- Minimum Drop Out 0.6V
- Fixed 300KHz Switching Frequency
- 5A Constant Output Current Capability
- Internal Optimize Power MOSFET
- High efficiency
- Excellent line and load regulation
- TTL shutdown capability
- EN pin with hysteresis function
- Built in thermal shutdown function
- Built in current limit function
- Built in output short protection function
- Available in TO-263 package

Applications

- LCD Monitor and LCD TV
- Digital Photo Frame
- Set-up Box
- ADSL Modem
- Telecom / Networking Equipment

General Description

The XL4005 is a 300KHz fixed frequency PWM buck (step-down) DC/DC converter, capable of driving a 5A load with high efficiency, low ripple and excellent line and load regulation. Requiring a minimum number of external components, the regulator is simple to use and include internal frequency compensation and a fixed-frequency oscillator.

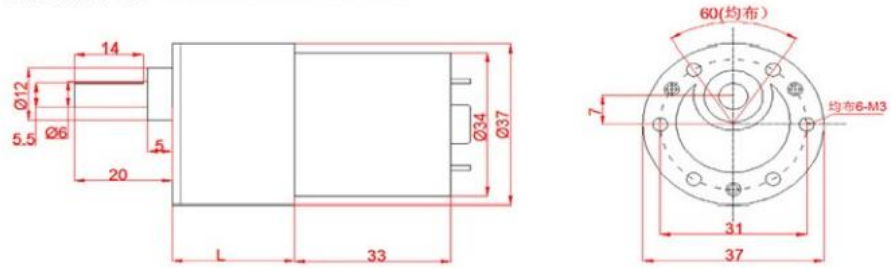
The PWM control circuit is able to adjust the duty ratio linearly from 0 to 100%. An enable function, an over current protection function is built inside. When short protection function happens, the operation frequency will be reduced from 300KHz to 60KHz. An internal compensation block is built in to minimize external component count.

9. Motor DC

INTRODUCTION

This is a metal DC geared motor, 100% pure copper coils, high-density molecular layer, 50:1 metal reducer, small size, large torque. The maximum torque could arrive 42 kg.cm, stable and durable!

电机外形尺寸-Motor Overall Dimension



SPECIFICATION

Rated voltage: 12 V
Gear reduction ratio: 50:1
D output shaft diameter: 6 mm
No-load speed: 100 RPM @ 12 v
No-load current: 0.17 A
Rated speed: 93 RPM @ 12 v
Current rating: 0.68 A
Rated torque: 7 kg.cm
Stall torque: 42 kg.cm
Stall current: 2.19 A
Power: 5W
Weight: 210 g

SHIPPING LIST

Metal DC Geared Motor - 12V 100RPM 42kg.cm x1

10. Magnetic Kontaktor

PRODUCT PARAMETER

NOTE: THE SIZE IS PURELY MANUAL MEASUREMENT,
THERE IS AN ERROR OF 1-3MM

PRODUCT NAME: AC CONTACTOR

PRODUCT MODEL: CJX2-0910 M7

COIL VOLTAGE: DC 24V 36V 48V 110V 220V 380V(OPTIONAL)

ELECTRIC CURRENT: 09A

PRODUCT SIZE: 56*80*74MM

AUXILIARY CONTACT: NO OR NC

Unit:mm

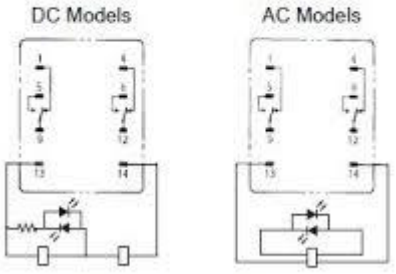
MODEL	A max	B max	C max	D max	E max	a	b	Φ
CJX2-09~12	47	76	82	120.5	140.5	34/35	50/60	4.5
CJX2-18	47	76	87	125.5	145.5	34/35	50/60	4.5
CJX2-25	57	86	95	133.5	153.5	40	48	4.5
CJX2-32	57	86	100	138.5	158.5	40	48	4.5
CJX2-4011~6511	77	129	116	154.5	174.5	40	105	6.5
CJX2-4004~6504	84	129	116	154.5	174.5	40	105	6.5
CJX2-8008~6508	84	129	127	154.5	174.5	40	105	6.5
CJX2-8011~9511	87	129	127	165.5	185.5	40	105	6.5
CJX2-8004~9504	96	129	122	160.5	180.5	40	105	6.5
CJX2-8008~9508	96	129	135	160.5	180.5	40	105	6.5

MODEL			CJX2-09	-12	-18	-25	-32	-40	-50	-65	-80	-95
RATED WORKING CURRENT (A)	380/400V	AC-3	9	12	18	25	32	40	50	65	80	95
		AC-4	3.5	5	7.7	8.5	12	18.5	24	28	37	44
	660/690V	AC-3	6.6	8.9	12	18	23	34	39	42	49	49
		AC-4	1.5	2	3.8	4.4	7.5	9	12	14	17.3	21.3
Agreed free air heating current(A)			20	20	32	40	50	60	80	80	95	95
Rated insulation voltage(V)			690	690	690	690	690	690	690	690	690	690
Controllable three-phase squirrel cage Motor power (AC-3)kw	220/230V		2.2	3	4	5.5	7.5	11	15	18.5	22	25
	380/400V		4	5.5	7.5	11	15	18.5	22	30	37	45
	660/690V		5.5	7.5	10	15	18.5	30	37	37	45	45

11. Relay MY2N

Terminal Arrangement/
Internal Connection Diagram
(Bottom View)

MY2N



(Coil has no polarity) (Coil has no polarity)

Sockets

Poles	Front-mounting Socket (DIN-track/ screw mounting)	Back-mounting Socket				
		Solder terminals		Wire-wrap terminals		PCB terminals
		Without clip	With clip	Without clip	With clip	
2	PYF08A-E PYF08A-N	PY08	PY08-Y1	PY08QN PY08QN2	PY08QN-Y1 PY08QN2-Y1	PY08-02
4	PYF14A-E PYF14A-N	PY14	PY14-Y1	PY14QN PY14QN2	PY14QN-Y1 PY14QN2-Y1	PY14-02

Socket Hold-down Clip Pairing

Relay type	Poles	Front-connecting Socket (DIN-track/ screw mounting)		Back-connecting Socket			
				Solder/Wire-wrap terminals		PCB terminals	
		Socket	Clip	Socket	Clip	Socket	Clip
Without 2-pole test button	2	PYF08A-E PYF08A-N	PYC-A1	PY08(QN)	PYC-P PYC-P2	PY08-02	PYC-P PYC-P2
	4	PYF14A-E PYF14A-N		PY14(QN)		PY14-02	
2-pole test button	2	PYF08A-E PYF08A-N	PYC-E1	PY08(QN)	PYC-P2	PY08-02	PYC-P2

Mounting Plates for Sockets

Socket model	For 1 Socket	For 18 Sockets	For 36 Sockets
PY08, PY08QN(2), PY14, PY14QN(2)	PYP-1	PYP-18	PYP-36

Note: PYP-18 and PYP-36 can be cut into any desired length in accordance with the number of Sockets.

Track and Accessories

Supporting Track (length = 500 mm)	PFP-50N
Supporting Track (length = 1,000 mm)	PFP-100N, PFP-100N2
End Plate	PFP-M
Spacer	PFP-S

Specifications

■ Coil Ratings

Rated voltage		Rated current		Coil resistance	Coil inductance (reference value)		Must operate voltage	Must release voltage	Max. voltage	Power consumption (approx.)
		50 Hz	60 Hz		Arm. OFF	Arm. ON	% of rated voltage			
AC	6 V*	214.1 mA	183 mA	12.2 Ω	0.04 H	0.08 H	80% max.	30% min.	110%	1.0 to 1.2 VA (60 Hz)
	12 V	106.5 mA	91 mA	46 Ω	0.17 H	0.33 H				
	24 V	53.8 mA	46 mA	180 Ω	0.69 H	1.30 H				
	48/50 V*	24.7/ 25.7 mA	21.1/ 22.0 mA	788 Ω	3.22 H	5.66 H				
	110/120 V	9.9/10.8 mA	8.4/9.2 mA	4,430 Ω	19.20 H	32.1 H				0.9 to 1.1 VA (60 Hz)
	220/240 V	4.8/5.3 mA	4.2/4.6 mA	18,790 Ω	83.50 H	136.4 H				
DC	6 V*	151 mA		39.8 Ω	0.17 H	0.33 H		10% min.		0.9 W
	12 V	75 mA		160 Ω	0.73 H	1.37 H				
	24 V	37.7 mA		636 Ω	3.20 H	5.72 H				
	48 V*	18.8 mA		2,560 Ω	10.60 H	21.0 H				
	100/110 V	9.0/9.9 mA		11,100 Ω	45.60 H	86.2 H				

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/–20% for rated currents and ±15% for DC coil resistance.

2. Performance characteristic data are measured at a coil temperature of 23°C.

3. AC coil resistance and impedance are provided as reference values (at 60 Hz).

4. Power consumption drop was measured for the above data. When driving transistors, check leakage current and connect a bleeder resistor if required.

5. Rated voltage denoted by "*" will be manufactured upon request. Ask your OMRON representative.

Lampiran 8 kesediaan pembibing 1

SURAT KESEDIAAN MEMBIMBING TUGAS AKHIR

Yang bertanda tangan di bawah ini :

Nama	: Much Sobri Sungkar, M.Kom
NIPY	: 09.012.144
Jabatan	: Dosen Tetap prodi DIII Teknik Elektronika

Dengan ini menyatakan bersedia menjadi Pembimbing 1 pada Tugas Akhir Mahasiswa berikut :

Nama	: Yogi
NIM	: 22010015
Program Studi	: DIII Teknik Elektronika
Judul Laporan Tugas	: **DESAIN MESIN PRODUKSI BAWANG GORENG BERBASIS PLC OUTSEAL MEGA V.2**

Demikian Pernyataan ini dibuat agar dilaksanakan sebagaimana mestinya.

Tegal, 28 April 2025

Mengetahui	Calon Dosen Pembimbing 1
Ka. Prodi DIII Teknik Elektronika	
Rony Darpono, M.T	**Much Sobri Sungkar, M.Kom**
NIPY. 09.015.282	NIPY. 09.012.144

Lampiran 9 kesediaan pembingbing 2

SURAT KESEDIAAN MEMBIMBING TUGAS AKHIR

Yang bertanda tangan di bawah ini :

Nama	: Dany Sucipto, M.T
NIPY	: 09.015.278
Jabatan	: Dosen Tetap Prodi DIII Teknik Elektronika

Dengan ini menyatakan bersedia menjadi Pembimbing 2 pada Tugas Akhir Mahasiswa berikut :

Nama	: Yogi
NIM	: 22010015
Program Studi	: DIII Teknik Elektronika
Judul Laporan Tugas	: **DESAIN MESIN PRODUKSI BAWANG GORENG BERBASIS PLC *OUTSEAL* MEGA V.2**

Demikian Pernyataan ini dibuat agar dilaksanakan sebagaimana mestinya.

Tegal, 24 Maret 2025

Mengetahui	
Ka. Prodi DIII Teknik Elektronika	Calon Dosen Pembimbing 2
Rony Darpono, M.T	**Dany Sucipto, M.T**
NIPY. 09.015.282	NIPY. 09.015.278

Lampiran 10 form revisi tugas akhir ketua penguji

FORMULIR REVISI

UJIAN TUGAS AKHIR

NAMA : YOGI

NIM : 22010015

JUDUL : DESAIN MESIN PRODUKSI BAWANG GORENG BERBASIS PLC OUTSEAL MEGA V.2

KETUA PENGUJI

No	Hari/Tanggal	Uraian	Tanda Tangan
1.	01/09/2025	- kesimpulan - Lampiran	
2.	02/09/2025	ACC	

Ketua Penguji

Rony Darpono, M.T

FORMULIR REVISI

Lampiran 11 form revisi tugas akhir penguji 1

UJIAN TUGAS AKHIR

NAMA : YOGI

NIM : 22010015

JUDUL : DESAIN MESIN PRODUKSI BAWANG GORENG BERBASIS PLC OUTSEAL MEGA V.2

PENGUJI 1

No	Hari/Tanggal	Uraian	Tanda Tangan
	29/agustus/2025	• berilcan batas toleransi - perjelas gambar bab III - berapa perbandingan dalam setiap percobaan	
	1 September 2025	Acc laporan dan projek	

Penguji 1

Ulil Albab, M.T

FORMULIR REVISI

UJIAN TUGAS AKHIR

Lampiran 12 form revisi tugas akhir penguji 2

NAMA : YOGI

NIM : 22010015

JUDUL : DESAIN MESIN PRODUKSI BAWANG GORENG BERBASIS PLC OUTSEAL MEGA V.2

PENGUJI 2

No	Hari/Tanggal	Uraian	Tanda Tangan
1	Revisi pengujian 20 Kabu Agustus 2025	Revisi pengujian · IV dan kesimpulan Hasil	[signature]
2.	29 Agustus 2025.	Acc laporan dan produk.	[signature]

Penguji 2

Dany Sucipto, M.T
09.015.278

FORMULIR REVISI
UJIAN TUGAS AKHIR