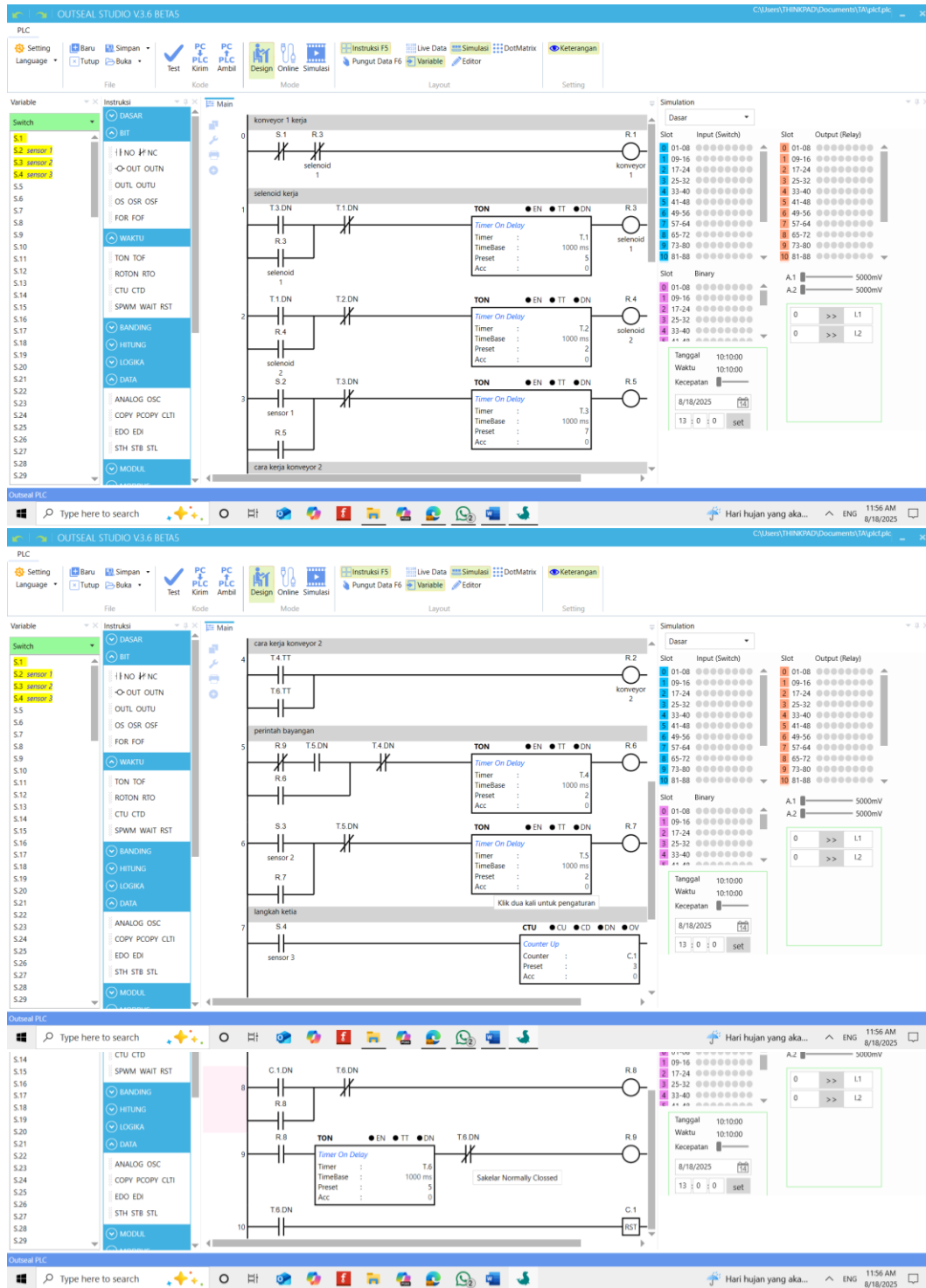


LAMPIRAN

Lampiran 1 Program plc outseal



Lampiran 2 Kesiadaan Membimbing 1

SURAT KESEDIAAN MEMBIMBING TUGAS AKHIR

Yang bertanda tangan di bawah ini :

Nama : Qirom, S.Pd, M.T
NIPY : 09.015.281
Jabatan Struktural : -
Jabatan Fungsional : Lektor

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

Nama : Mustika Ilmi Ramdhanti
NIM : 22010009
Program Studi : DIII Teknik Elektronika
Judul Laporan Tugas : **RANCANG BANGUN CONVEYOR UNTUK
PELABELAN DAN PENGEMASAN TELUR
ASIN BERBASIS PLC OUTSEAL**

Demikian Pernyataan ini dibuat agar dilaksanakan sebagaimana mestinya.

Tegal, 20 Maret 2025

Mengetahui,
Ka. Prodi DIII Teknik
Elektronika


Rony Darpono, M.T
NIPY. 09.015.282

Calon Dosen Pembimbing 1,


Qirom, S.Pd, M.T
NIPY. 09.015.281

Lampiran 3 Kesiediaan Membimbing 2

SURAT KESEDIAAN MEMBIMBING TUGAS AKHIR

Yang bertanda tangan di bawah ini :

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

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

Nama : Mustika Ilmi Ramdhanti
 NIM : 22010009
 Program Studi : DIII Teknik Elektronika
 Judul Laporan Tugas : **RANCANG BANGUN CONVEYOR UNTUK
 PELABELAN DAN PENGEMASAN TELUR
 ASIN BERBASIS PLC OUTSEAL**

Demikian Pernyataan ini dibuat agar dilaksanakan sebagaimana mestinya.

Tegal, 20 Maret 2025

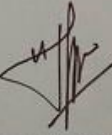
Mengetahui,

Ka. Prodi DIII Teknik

Elektronika


Ronv Darpono, M.T
 NIPY. 09.015.282

Calon Dosen Pembimbing 2,


Dany Sucipto, M.T
 NIPY. 09.015.278

Lampiran 4 Form Bimbingan 1

Lampiran 14
Form Halaman Bimbingan TA

FORM BIMBINGAN
TUGAS AKHIR

NAMA : Mustika Ilmi Ramdhanti
NIM : 22010009
JUDUL TA : Rancang bangun konveyor untuk
pelabalan dan pengemasan telur
asin berbasis PLC outseal

Pembimbing 1		Urutan	Tugas bimbingan
No.	Hari / tanggal		
1.	Kamis 20/3	-Tambahkan reset terdahulu	
2.	16/4	-Acc bab 1 -Penamaan orang menggunakan kapital -Tinjauan pustaka dijelaskan kelebihan kekurangan dan ide	
3.	24/4	- revisi judul	
4.		revisi flowchart + daftar	
5.	5/8 2025	-tambahkan formula pengujian bandingkan di program rancai	
6.	8/8 25	ACC siap sidang	

Lampiran 5 Form bimbingan 2

FORM BIMBINGAN
TUGAS AKHIR

NAMA : Mustika Ilni Ramdhanti
 NIM : 22010009
 JUDUL TA : Rancang bangun conveyor untuk
 Priabelan dan pengemasan telur
 asin berbasis PLC outseal

Penbimbing 2

No	Tgl Bimbingan	Uraian	Tanda Tangan
1	Kamis 20/3	Lanjut bab II - outseal - conveyor - motor dc - sensor - psu - Desain wiring, diagram line	
2	28/5	- Pelebaran bab 1, bab 2 - ganti gambar - Lanjut bab 3	
3	18/7/2025	lanjut bab IV - revisi program plc - tambahan penempatan sirkuit	
4	28 Juli 2025	- Revisi sistem kerja lalu program + lanjut pengujian	

5. 6 Agustus - revisi hasil pengujian
 6. 9 Agustus Ace laporan TA
 ace laporan -

Lampiran 6 Penilaian bimbingan tugas akhir individu

PENILAIAN BIMBINGAN TUGAS AKHIR INDIVIDU

Judul : RANCANG BANGUN *CONVEYOR* UNTUK PELABELAN
DAN PENGEMASAN TELUR ASIN BERBASIS *PLC OUTSEAL*
Nama : Mustika Ilmi Ramdhanti
NIM : 22010009
Kelas : 6A / D3 Teknik Elektronika

I. Nilai Bimbingan Tugas Akhir (Pembimbing I)

No	Unsur Yang Dinilai	Nilai
1	Kedisiplinan dalam bimbingan	80
2	Kreativitas pemecahan dalam bimbingan	80
3	Penguasaan materi tugas akhir	80
4	Kelengkapan dan referensi tugas akhir	80
Total Nilai = (Jumlah Nilai / 4)		80

II. Nilai Bimbingan Tugas Akhir (Pembimbing II)

No	Unsur Yang Dinilai	Nilai
1	Kedisiplinan dalam bimbingan	85
2	Kreativitas pemecahan dalam bimbingan	85
3	Penguasaan materi tugas akhir	80
4	Kelengkapan dan referensi tugas akhir	82
Total Nilai = (Jumlah Nilai / 4)		83

Nilai Bimbingan = $\frac{\text{TotalNilaiPembimbing I} + \text{TotalNilaiPembimbing II}}{2}$
= 81,5

Tegal, 8 Agustus 2025

Pembimbing 1,

Qirom, S.Pd, M.T
NIPY. 09.015.281

Mengetahui,
Pembimbing 2,

Dany Sucipto, M.T
NIPY. 09.015.278

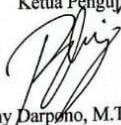
Lampiran 7 Form revisi 1

NAMA : MUSTIKA ILMI RAMDHANTI
 NIM : 22010009
 JUDUL : RANCANG BANGUN *CONVEYOR* UNTUK PENYETEMPELAN DAN
 PENGEMASAN TELUR ASIN BERBASIS *PLC OUTSEAL*

KETUA PENGUJI

No	Hari/Tanggal	Uraian	Tanda Tangan
1	Rabu 3 sep 2025	Pengujian stempel	
2	Jum'at 5 sep 2025	Revisi hasil stempel	
3	Rabu 19 sep 2025		

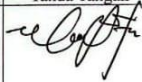
Ketua Penguji


 Rony Darpano, M.T

Lampiran 8 Form revisi 2

NAMA : MUSTIKA ILMI RAMDHANTI
NIM : 22010009
JUDUL : RANCANG BANGUN *CONVEYOR* UNTUK PENYETEMPELAN DAN
PENGEMASAN TELUR ASIN BERBASIS *PLC OUTSEAL*

PENGUJI 1

No	Hari/Tanggal	Uraian	Tanda Tangan
1.	3 September 2015	fee Laporan & pengesahan	

Penguji 1

Ulil Albab, M.T.

Lampiran 9 Form revisi 3

NAMA : MUSTIKA ILMI RAMDHANTI
NIM : 22010009
JUDUL : RANCANG BANGUN *CONVEYOR* UNTUK PENYETEMPELAN DAN
PENGEMASAN TELUR ASIN BERBASIS *PLC OUTSEAL*

PENGUJI 2

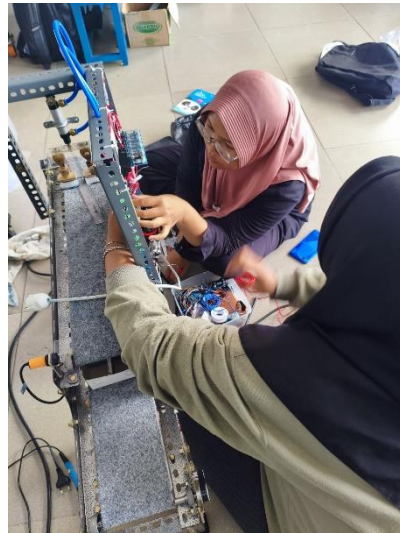
No	Hari/Tanggal	Uraian	Tanda Tangan
1	28 Agustus 2025	Revisi minor	
2	29 Agustus 2025	ACC	

Penguji 2



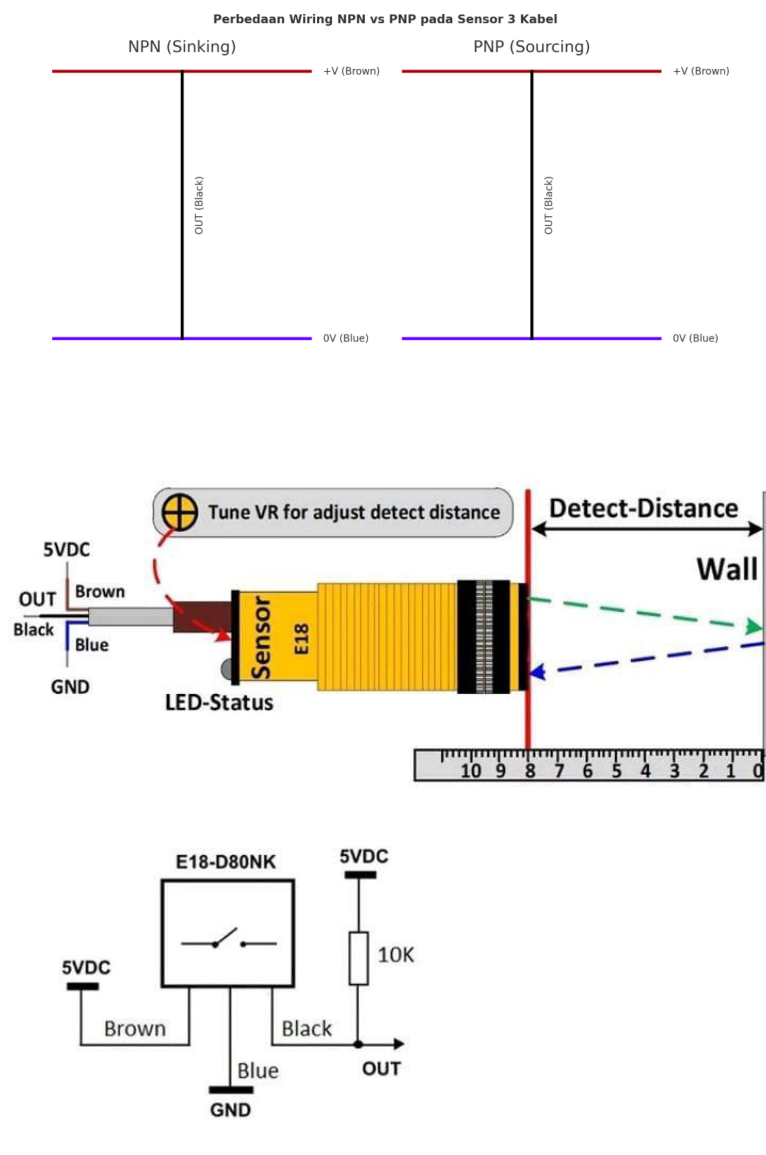
Ratri Wikaningtyas, M.Pd

Lampiran 10 dokumentasi pembuatan alat

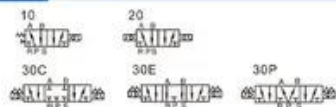


Lampiran 11 Datasheet Sensor Proximity

Parameter	Npn (Sinking)	Pnp (Sourcing)
Tipe Output	Output ke ground (0V)	Output ke +V (positif)
Arah Arus	Beban → Sensor → Ground	Sensor → Beban → Ground
Kondisi Aktif	Output = LOW (0V) saat objek terdeteksi	Output = HIGH (+V) saat objek terdeteksi



Lampiran 12 Datasheet Solenoid Valve

Solenoid valve(5/2 way,5/3 way)**AIRTAC****4V400 Series****Symbol****Product feature**

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

Ordering code

4V 4 10 15 A □ □						
1 2 3 4 5 6 7						
① Model	② Code	③ Valve type	④ Port size	⑤ Voltage	⑥ Electrical entry	⑦ Thread type
4V410-15		10: Single solenoid 5/2 way 20: Double solenoid 5/2 way 30C: Double solenoid 5/3 way		A: AC220V B: DC24V		Blank: PT

Specification

Model	4V410-15	4V420-15	4V430C-15	4V430E-15	4V430P-15
Fluid	Air(to be filtered by 40μm filter element)				
Acting	Internal pilot or external pilot				
Port size [Note1]	In=Out=Exhaust=1/2"				
Orifice size(Cv) [Note4]	4V410-15,4V420-15:48.0mm ² (Cv=2.82) 4V430C-15:40.0mm ² (Cv=2.35)				
Valve type	5 port 2 position		5 port 3 position		
Operating pressure	0.15~0.8MPa(21~114psi)				
Proof pressure	1.2MPa(175psi)				
Temperature	-20~70°C				
Material of body	Aluminum alloy				
Lubrication [Note2]	Not required				
Max. frequency [Note3]	3 cycle/sec				
Weight (g)	590	720		770	

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] The maximum actuation frequency is in the no-load state.

[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

Lampiran 13 Datasheet motor dc



福尼尔电机
FONEACC CO., LIMITED

蜗杆减速箱微电机
Worm Geared DC Motor

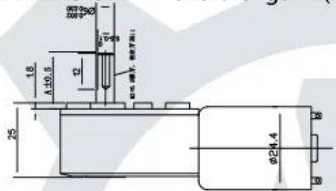
WG4632-370

典型应用 Typical Applications

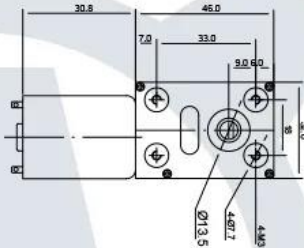
自动阀门	Automatic valve
保险箱	Safe
油烟机	Range hood
电动窗帘	Electrical Curtain
智能机器人	Smart Robotics
电动防火窗	Fire window



外形尺寸 DIMENSION



Shaft length A(mm): Customizable



UNIT:MM

直流减速电机参数
GEARED MICRO DC MOTOR SPECS(voltage, current, torque, etc free customization)

级数 Stages	50	62.5	86	104	155.5	187.5	262.5	337.5	354	562.5	787	1012	1312	1687	2362	3037
减速比 Gear Ratio	50	62.5	86	104	155.5	187.5	262.5	337.5	354	562.5	787	1012	1312	1687	2362	3037
蜗杆轴长度(mm) Gearbox Length	46															
空载转速(RPM) No load speed	120	96	69.8	57.7	38.6	32	22.9	17.8	16.9	10.7	7.6	5.9	4.6	3.6	2.5	2
额定转速(RPM) Rated speed	104	83	60.5	50	33.4	27.7	19.8	15.4	14.7	9.2	6.6	5	4	3	2	1.7
额定扭矩(N.m) Rated torque	0.039	0.049	0.068	0.082	0.123	0.148	0.207	0.267	0.196	0.311	0.435	0.559	0.508	0.653	0.914	1.175
输出功率(W) Output Power	0.43	0.513	0.43	0.43	0.43	0.43	0.43	0.43	0.3	0.3	0.3	0.29	0.21	0.2	0.19	0.21
瞬间允许扭矩(N.m) Max breaking torque	0.311	0.389	0.535	0.647	0.967	0.166	1.632	2.099	1.54	2.448	x	x	x	x	x	x
空载转速(RPM) No load speed	112	89.6	65	53.8	36	30	21.3	16.5	15.8	10	7	5.5	4.3	3.3	2.4	1.8
额定转速(RPM) Rated speed	86	76.8	55.8	46	31	25.5	18.3	14	13.5	8.5	6	4.7	3.7	2.8	2	1.5
额定扭矩(N.m) Rated torque	0.035	0.044	0.061	0.073	0.11	0.132	0.185	0.238	0.175	0.278	0.389	0.5	0.454	0.587	0.817	1.05
输出功率(W) Output Power	0.35	0.35	0.35	0.35	0.36	0.35	0.35	0.35	0.25	0.25	0.24	0.25	0.18	0.17	0.17	0.16
瞬间允许扭矩(N.m) Max breaking torque	0.294	0.368	0.506	0.612	0.915	1.103	1.544	1.985	1.457	2.315	x	x	x	x	x	x

电机参数 MICRO DC MOTOR SPECS(voltage, current, torque, etc free customization)

型号 Model	额定电压 Rated Volt	空载 No load		额定 Rated				堵转 Stall	
		转速 speed	电流 current	转速 speed	电流 current	扭矩torque	输出output	扭矩torque	电流 current
	V	RPM	A	RPM	A	g.cm	W	g.cm	A
RF-370-22170	6	6000	0.05	5200	0.3	23.5	1.18	185	1.85
RF-370-15370	12	5600	0.03	4800	0.15	21	1.03	175	0.9

深圳福尼尔科技有限公司 | Building A, No. 58 Qiaonan RD, Fuyong
FONEACC CO., LIMITED | Street, Bao'An Distr. Shenzhen, China

Email us: sales@foneacc.com

Visit our website: www.foneacc.com; www.foneaccmotor.com

Lampiran 14 Datasheet relay 4 channel

Relay Board 4 Channel 5v



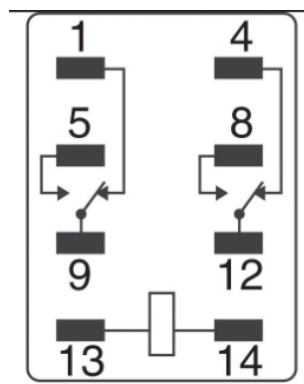
Description:

Relays are the Hulks (tm -DC Comics) of the electronics world. Often dumb and simple, but DANG they can control lots of power. These are ideal in situations where you need to comfortably control AC or DC power levels. Transistors and FETs can do the same job, but often not with the convenience and reliability of a good old relay.

Use this 4 Channel Relay Module board to interface any Microcontroller with Electrical Appliances/Loads. Can also be used in driving high power motors. 4-channel relay output modules, relay output contacts 250V 10A. Input IN1, IN2, IN3, IN4, the signal line LOW effective. VCC, GND power input, can relay a separate power supply relay power input of JD-VCC.

Product Summary:

- Module can be controlled directly by Microcontroller (Raspberry Pi, Arduino, 8051, AVR, PIC, DSP, ARM, ARM, MSP430, TTL logic)
- Easy to install and fix
- Optically Isolated relays to protect your microcontroller from damage if the equipment being controlled fails
- Four screw holes, hole diameter 3.1mm
- Relay status indicator light, release status LED is off
- Relay Maximum output: DC 30V/10A, AC 250V/10A
- Size: 75mm (l) x 55mm (b) x 19.3mm (h)
- Weight: 58 gm
- PCB Color: Blue



OMRON Industrial Automation | Global

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Home > Products > Product Category > Relays > General Purpose Relays > For Control Panel > MY > Item list > MY2N DC12

Miniature Power Relays

MY2N DC12

English

Print Page

image

Miniature Power Relay, 2-pole, Single contact, Plug-in terminals, With operation indicator, 12 VDC

Coil ratings	12 VDC 72.7 mA
Operating indicator	LED
Contact form	DPDT
Contact method	Single
Contact material	Ag
Contact rated load	220 VAC 5 A (Resistive load) 220 VAC 2 A (Inductive load (cosφ = 0.4)) 24 VDC 5 A (Resistive load) 24 VDC 2 A (Inductive load (L/R = 7 ms))
Terminal structure	Plug-in terminal

Item list of MY

Ratings / Performance | Terminal arrangement and internal connection | Characteristic chart

As of July 25, 2024

Ratings

Operating indicator	LED
Degree of protection	Closed type (cover)
Terminal structure	Plug-in terminal
Coil	Coil ratings: 12 VDC 72.7 mA Coil resistance: 165 Ω Operate voltage (Set voltage): 80 % max. Release voltage (Reset voltage): 10 % min. Maximum voltage: 110 % (23 °C) Power consumption: Approx. 0.9 W
Contact	Contact rated load: 220 VAC 5 A (Resistive load) 220 VAC 2 A (Inductive load (cosφ = 0.4)) 24 VDC 5 A (Resistive load) 24 VDC 2 A (Inductive load (L/R = 7 ms)) Max. contact voltage: 250 VAC 125 VDC Max. contact current: AC: 5 A DC: 5 A Maximum switching power: 1100 VA (Resistive load) 440 VA (Inductive load (cosφ = 0.4)) 120 W (Resistive load) 48 W (Inductive load (L/R = 7 ms)) Contact form: DPDT Contact method: Single Contact material: Ag

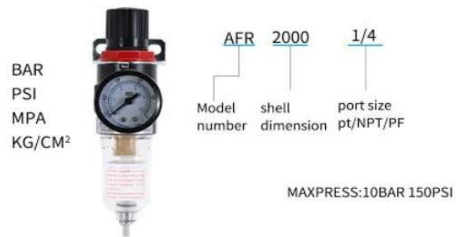
Performance

Contact resistance	50 mΩ max. (Voltage drop method with 5 VDC 1 A)
Operating time	20 ms max. (With rated operating power applied, not including contact bounce)
Reset time	20 ms max. (With rated operating power applied, not including contact bounce)
Maximum operating frequency	Mechanical: 18000 time/hour Rated load: 1800 time/hour
Insulation resistance	Between coil and contacts: 100 MΩ min. (at 500 VDC) Between contacts of different polarity: 100 MΩ min. (at 500 VDC) Between contacts of same polarity: 100 MΩ min. (at 500 VDC)
Dielectric strength	Between coil and contacts: 2000 VAC 50/60 Hz 1 min Between contacts of different polarity: 2000 VAC 50/60 Hz 1 min Between contacts of same polarity: 1000 VAC 50/60 Hz 1 min
Vibration resistance (destruction)	10 to 55 to 10 Hz, 0.5-mm single amplitude (1-mm double amplitude)
Vibration resistance (Malfunction)	10 to 55 to 10 Hz, 0.5-mm single amplitude (1-mm double amplitude)
Shock resistance (destruction)	1000 m/s ²
Shock resistance (Malfunction)	200 m/s ²
Endurance (Mechanical)	100 million operations min. (switching frequency 18,000 operations/h)
Endurance (Electrical)	500,000 operations min. (23 °C, Rated load, switching frequency 1,800 operations/h)
Failure rate	1 mA at 5 VDC (failure level: Preference value, Switching frequency: 120 operations per minute)
Ambient temperature (Operating)	-55 to 60 °C (with no freezing or condensation)
Ambient humidity (Operating)	5 to 85 %
Weight	Approx. 35 g
Mounting method	Socket
Applicable socket	PYF08S/ PYF08M/ PYF-08-PU/ PYF-08-PU-L/ PYFZ-08/ PYFZ-08-E/ PY08/ PY08-Y1/ PY08QN/ PY08QN2/ PY08QN-Y1/ PY08QN2-Y1/ PY08-02

Lampiran 16 Datasheet air service unit

Afr 2000

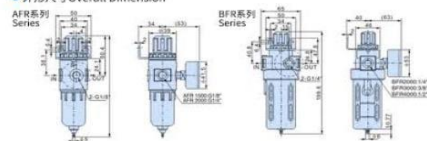
Al 2000

Model:AFR2000

● 规格 Specification

型号 Model:	AFR2000	BFR2000	BFR3000	BFR4000
使用液体 Operating Fluid	空气 / Air			
接管口径 Joint Pipe Bore	G1/4"	G1/4"	G3/8"	G1/2"
调节压力范围 Range of Adjustable Pressure	0.05-0.85MPa			
最大可调节压力 Max Adjustable Pressure	0.95MPa			
保压耐压力 Ensured Pressure Resistance	1.5MPa			
使用温度范围 Operating Temperature Range	5-60°C			
溢油杯容量 Oil Feed Cup	15cc	60cc		
重量 Weight	0.25KG	0.45KG		
材料 Material:	铝合金压铸成型 / Aluminum Die casting Forming			
主体 Container	PE			
保护罩 Protective Cup Cover	EVA			

● 外形尺寸 Overall Dimension



Ordering Code AL Series Lubricator

AL	30	00	- 03
AL Series Lubricator	10:1000 Body Size	MS M5	
	20:2000 Body Size	M11.5/8"	
	30:3000 Body Size	M11.5/8"	
	40:4000 Body Size	M11.5/8"	
	50:5000 Body Size	M11.5/8"	

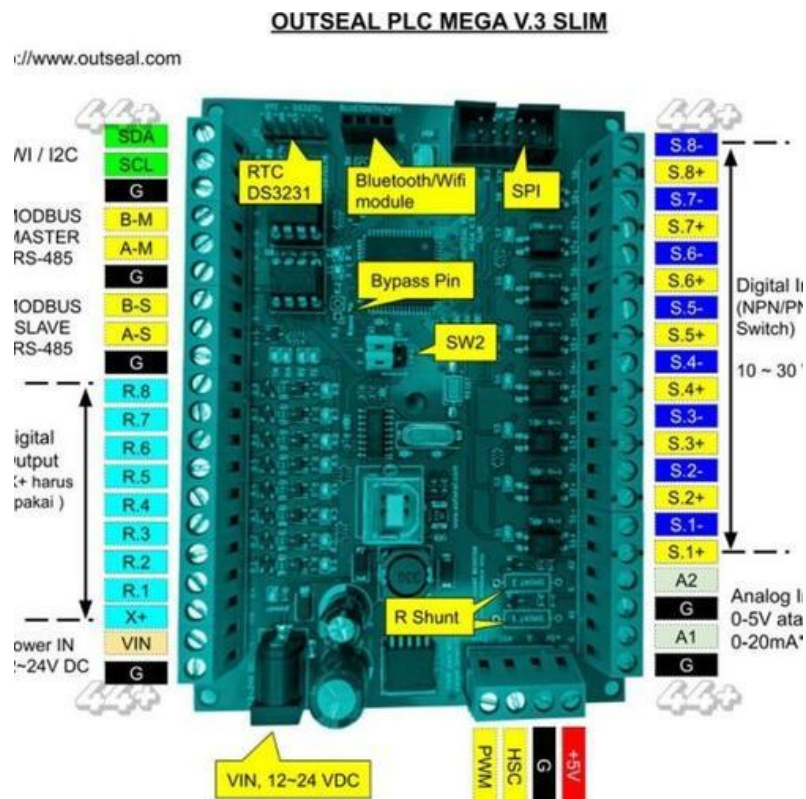
Specifications

Guaranteed pressure resistance	1.5MPa
Max. working pressure	1.0MPa
Working temperature	5-60°C
Recommended oil	Turbine No1 Oil ISOVG32
Bowl material	Polycarbonate
Bowl guard	AL1000-2000 (None) AL3000-5000 (Available)
Valve type	With overflow



1. Filter → menyaring kotoran, debu, dan uap air dari udara bertekanan.
2. Regulator → mengatur dan menstabilkan tekanan udara agar sesuai dengan kebutuhan sistem.
3. Lubricator → menambahkan pelumas dalam bentuk kabut oli ke aliran udara untuk melumasi komponen pneumatik yang bergerak.

Lampiran 17 Datasheet plc voutseal



Lampiran 18 Datasheet psu 12v

	PS15012100 PS 12V/10A enclosed switch mode power supply
	Edition: 5 from 05.12.2011 Supersedes edition: 4 from 12.08.2011 EN

Features of the power supply unit:

- wide AC input voltage range 176÷264V
- high efficiency 83%
- LED optical signalisation
- protections:
 - SCP short-circuit protection
 - overvoltage OVP
 - overvoltage protection (AC input)
 - overload (OLP)

1. Technical description.**1.1. General description.**

The power supply unit is intended for the feeding of alarm system equipments, which require 12V DC supply voltage and current load **I=10A**. The design enables simple changing of the output voltage, within the range of 12V÷15V DC, using a potentiometer. The power supply unit is protected against short-circuit, overload and overvoltage.

1.2. Technical parameters.

Supply voltage	176 ÷ 264 V AC 50÷60Hz
Current consumption	1.1A @230VAC max.
Supply power	150W max.
Efficiency	83%
Output voltage	12V DC
Output current	10A
Output current I_{AMB} < 30°C	10A - see graph 1.
Output current I_{AMB} = 40°C	7A - see graph 1.
Voltage adjustment range	12 V ÷ 15V DC
Ripple voltage	100mV p-p max.
Short-circuit protection SCP	electronic (activation requires disconnecting load or supply for about 5 s)
Overload protection OLP	105-150% of power supply (activation requires disconnecting load or supply for about 5 s)
Overvoltage protection OVP	U>115% ÷ 135% of the output. (activation requires disconnecting load or supply for about 20 s)
Optical signalisation	green LED – presence of DC voltage
Operation conditions	2-nd environmental class, temperature: -10°C÷+40°C relative humidity: 20%...90%, without condensation
Dimensions (LxWxH)	199 x 110 x 50 [mm]
Net/gross weight	0.73kg / 0.78kg
Protection class PN-EN 60950-1:2007	I (first) – requires a protective conductor (PE)
Connectors	power-supply: Φ 0.63-2.50 (AWG 22-10) outputs: Φ 0.63-2.50 (AWG 22-10)
Electrical strength of insulation: - between input (network) circuit and output circuits of power-supply (U _{IOIP}) - between input circuit and PE protection circuit (U _{IP-FG}) - between output circuit and PE protection circuit (U _{OP-FG})	3000 V/AC min. 1500 V/AC min. 500 V/AC min.
Insulation resistance: - between input circuit and output or protection circuit	100 M Ω , 500V/DC
Storage temperature	-20°C...+60°C
Vibrations and impulse waves during transport	according to PN-83/T-42106

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