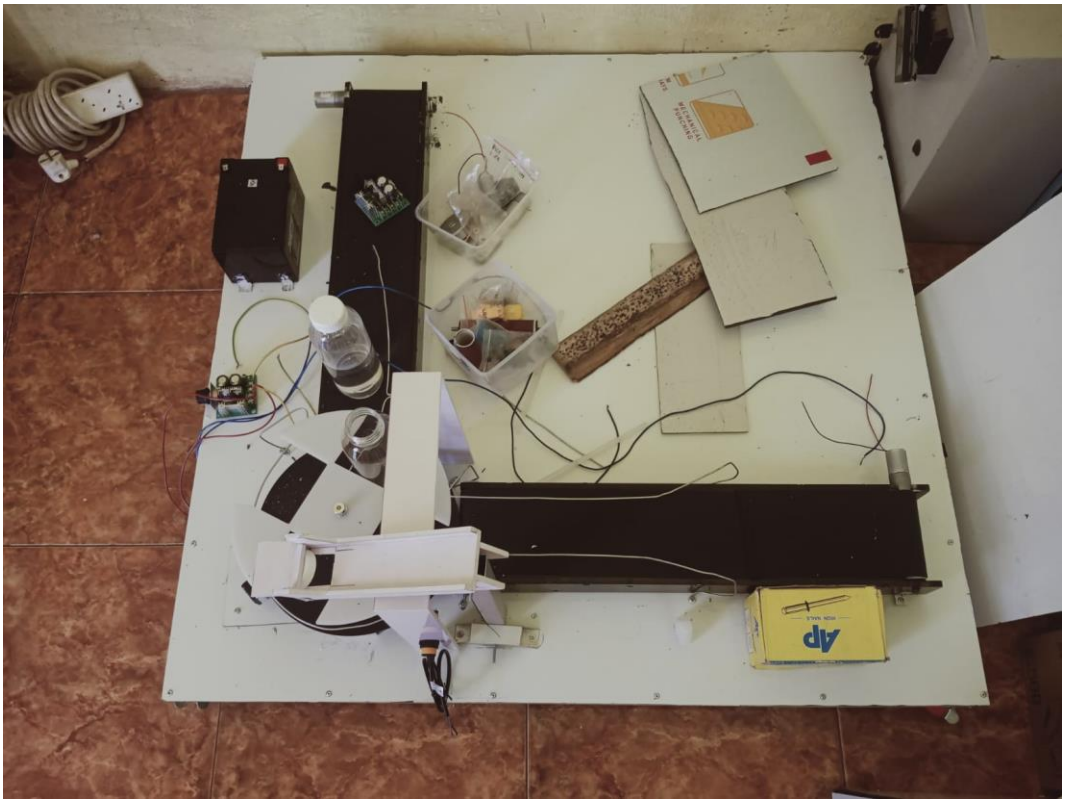
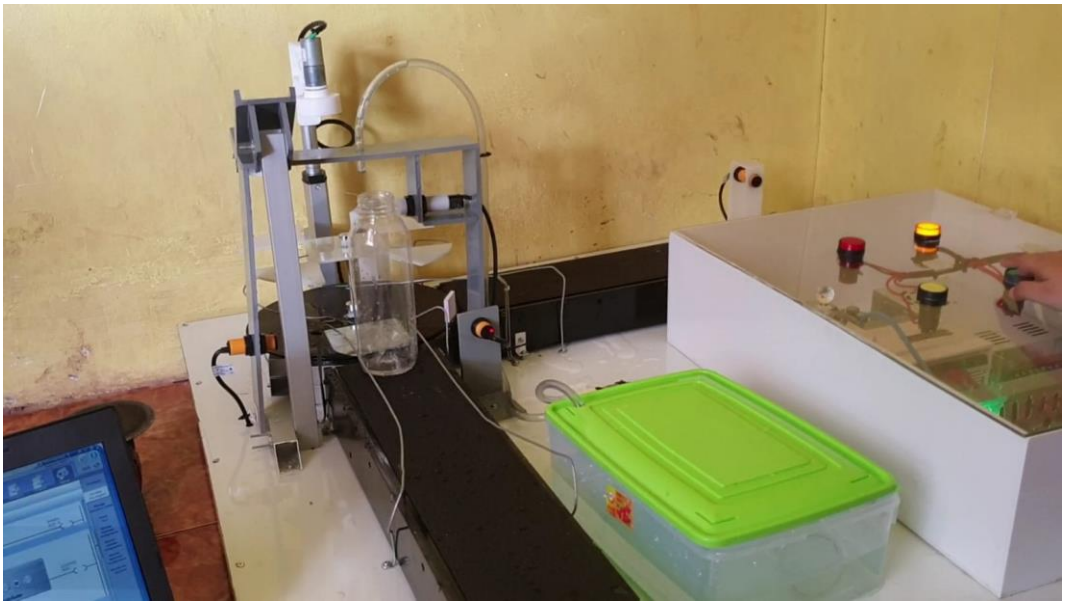
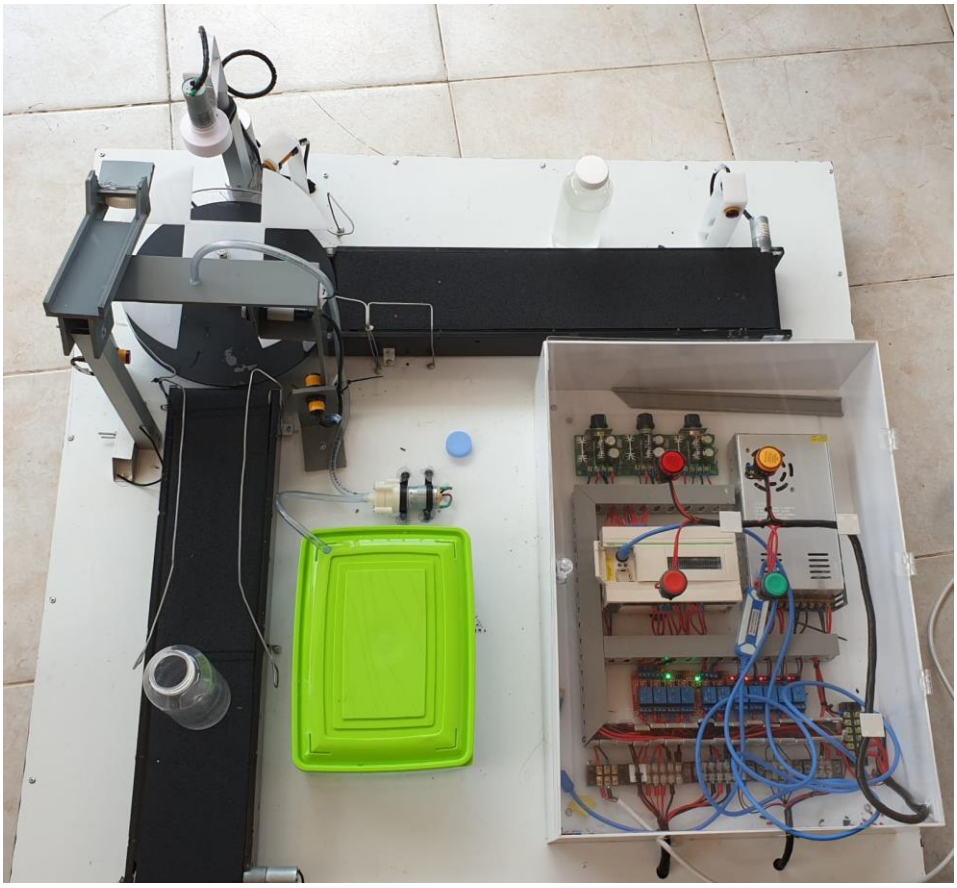
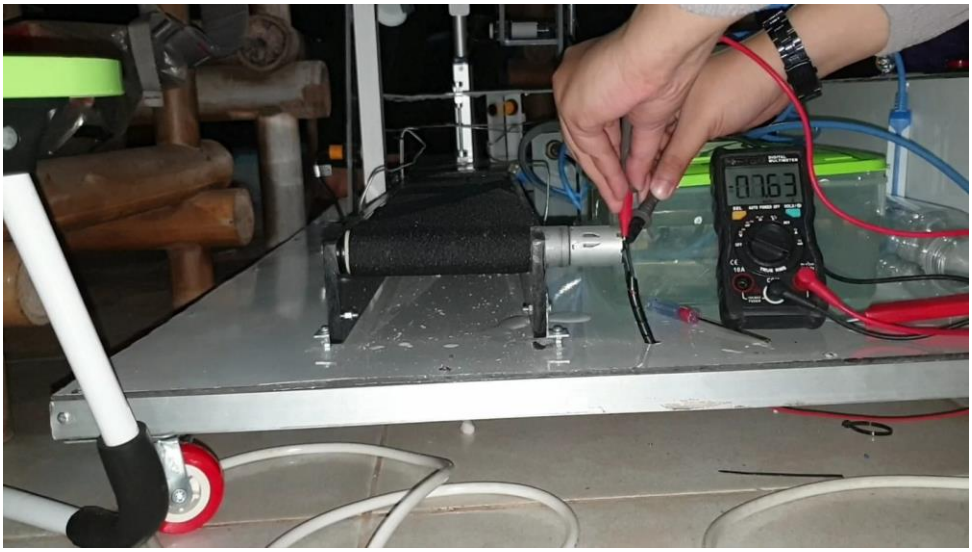
Dokumentasi Alat





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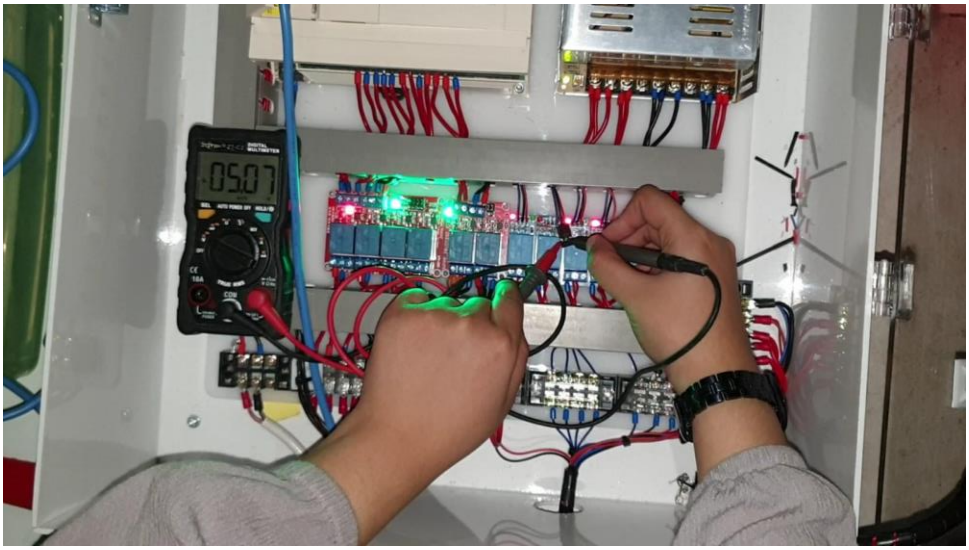
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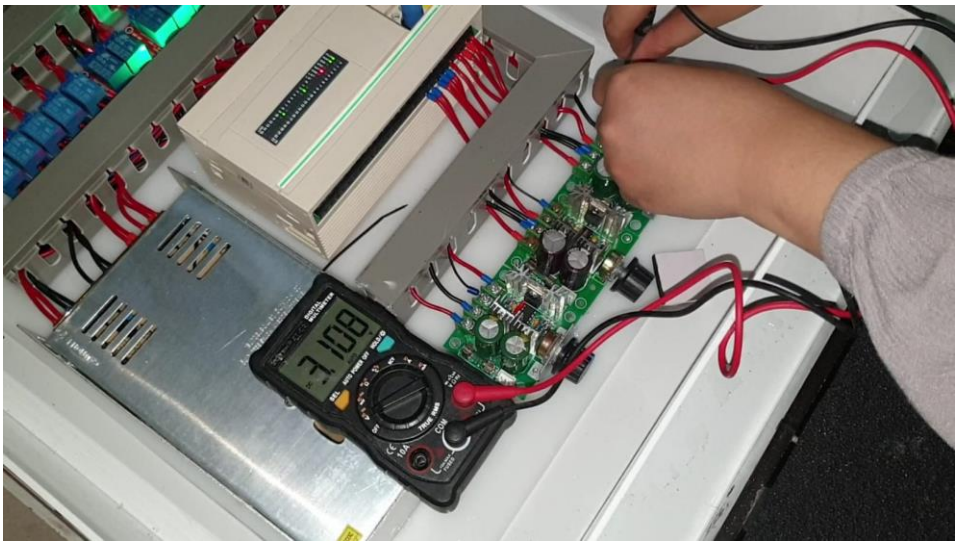

1.108

Product data sheet
Characteristics

TWDLCAE40DRF
compact PLC base Twido - 100..240 V AC supply - 24 I 24 V DC - 16 O

Main

Range of product	Twido
Product or Component Type	Compact base controller
Concept	Transparent Ready
Discrete I/O number	40
Discrete input number	24
Discrete input voltage	24 V
Discrete input voltage type	DC
Discrete output number	14 relay 2 transistor
[Us] rated supply voltage	100...240 V AC
Maximum Number of I/O Expansion Module	7
Use of slot	Memory cartridge
Data backed up	Internal RAM external battery TSXPLP01, 3 years
Integrated connection type	Power supply Non isolated serial link mini DIN, Modbus/character mode master/slave RTU/ASCII RS485) half duplex, 38.4 kbit/s Serial link interface adaptor RS232C/RS485) Ethernet TCP/IP RJ45, , 10/100 Mbit/s, 1 twisted pair transparent ready class A10
Complementary function	PID Event processing

Complementary

Discrete input logic	Sink or source
Input voltage limits	20.4...26.4 V
Discrete input current	11 MA I0.0 to I0.1 11 MA I0.6 to I0.7 7 MA I0.2 to I0.5 7 mA I0.8 to I0.23
Input impedance	2100 Ohm I0.0 to I0.1 2100 Ohm I0.6 to I0.7 3400 Ohm I0.2 to I0.5 3400 Ohm I0.8 to I0.23
Filter time	150 µs + programmed filter time for I0.6 to I0.23 at state 0 35 µs + programmed filter time for I0.0 to I0.5 at state 1 40 µs + programmed filter time for I0.0 to I0.5 at state 0 40 µs + programmed filter time for I0.6 to I0.23 at state 1
Insulation between channel and internal logic	1500 Vrms for 1 minute
Insulation resistance between channel	None
Minimum load	0.1 mA
Contact resistance	30000 µOhm
Load current	2 A 240 V AC inductive 30 cyc/mn relay output 2 A 240 V AC resistive 30 cyc/mn relay output 2 A 30 V DC inductive 30 cyc/mn relay output 2 A 30 V DC resistive 30 cyc/mn relay output
Mechanical durability	20000000 cycles relay output
Electrical durability	100000 cycles relay output

Current consumption	128 mA 24 V DC at state 1 128 mA 24 V DC state 1 + input ON 170 mA 5 V DC at state 0 240 mA 5 V DC state 1 + input ON 5 mA 24 V DC at state 0 90 mA 5 V DC at state 1
I/O connection	Non-removable screw terminal block
Maximum input/output number	152 removable screw terminal block with I/O expansion module 208 spring terminal block with I/O expansion module 264 HE-10 connector with I/O expansion module
Network Frequency	50/60 Hz
Supply voltage limits	85…264 V
Network frequency limits	47…63 Hz
Power supply output current	0.4 A 24 V DC sensors
Input Current	790 mA
Inrush current	35 A
Protection type	Power protection internal fuse
Power consumption in VA	65 VA 100 V 77 VA 264 V
Insulation resistance	> 10 MOhm at 500 V, between I/O and earth terminals > 10 MOhm at 500 V, between supply and earth terminals
Program memory	3000 instructions
Exact time for 1 Kinstruction	1 ms
System overhead	0.5 ms
Memory description	Internal RAM, 128 counters, no floating, no trigonometrical Internal RAM, 128 timers, no floating, no trigonometrical Internal RAM, 256 internal bits, no floating, no trigonometrical Internal RAM, 3000 internal words, no floating, no trigonometrical Internal RAM, double words, no floating, no trigonometrical Internal RAM, floating, trigonometrical
Free slots	1
Realtime clock	With <= 30 s/month 30 days
Port Ethernet	10BASE-T/100BASE-TX
Communication service	BOOTP client, Ethernet TCP/IP Modbus messaging, Ethernet TCP/IP
Positioning functions	PWM/PLS 2 7 kHz
Counting input number	2 20000 Hz 32 bits 4 5000 Hz 16 bits
Analogue adjustment points	1 point adjustable from 0 to 511 points 1 point adjustable from 0...1023
Status LED	PWR 1 LED Green) 1 LED (green)RUN I/O status 1 LED per channel Green) Module error (ERR) 1 LED Red) User pilot light (STAT) 1 LED 10 or 100 Mbit/s rate (LACT) 1 LED Ethernet status (LAN ST) 1 LED
Depth	2.76 in (70 mm)
Height	3.74 in (95 mm)
Width	3.54 in (90 mm)
Product Weight	1.16 lb(US) (0.525 kg)

Environment

Immunity to microbreaks	10 ms
Dielectric strength	1500 V for 1 minute, between I/O and earth terminals 1500 V for 1 minute, between supply and earth terminals
Product Certifications	UL CSA
Marking	CE
Ambient Air Temperature for Operation	32…131 °F (0…55 °C)
Ambient Air Temperature for Storage	-13…158 °F (-25…70 °C)
Relative humidity	30…95 % without condensation
IP degree of protection	IP20

Operating altitude	0...6561.68 ft (0...2000 m)
Storage altitude	0.00…9842.52 ft (0…3000 m)
Vibration resistance	0.075 mm 10…57 Hz 35 mm symmetrical DIN rail 1 gn 57…150 Hz 35 mm symmetrical DIN rail 1.6 mm 2…25 Hz plate or panel with fixing kit 4 gn 25…100 Hz plate or panel with fixing kit
Shock resistance	15 gn 11 ms

Ordering and shipping details

Category	22531-PLCS, TWIDO, TWD
Discount Schedule	PC12
GTIN	3595863816020
Nbr. of units in pkg.	1
Package weight(Lbs)	24.66 oz (699 g)
Returnability	No
Country of origin	ID

Packing Units

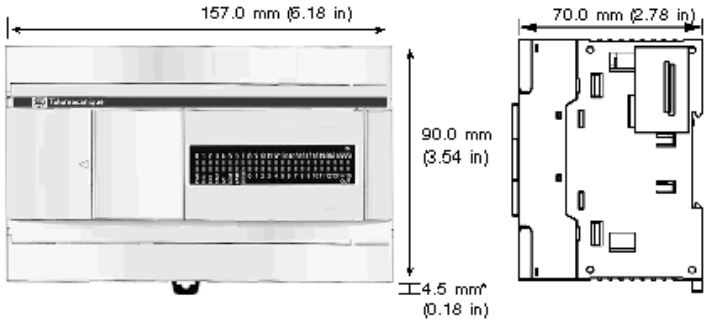
Unit Type of Package 1	PCE
Package 1 Height	4.33 in (11 cm)
Package 1 width	4.72 in (12 cm)
Package 1 Length	7.28 in (18.5 cm)

Contractual warranty

Warranty	18 months

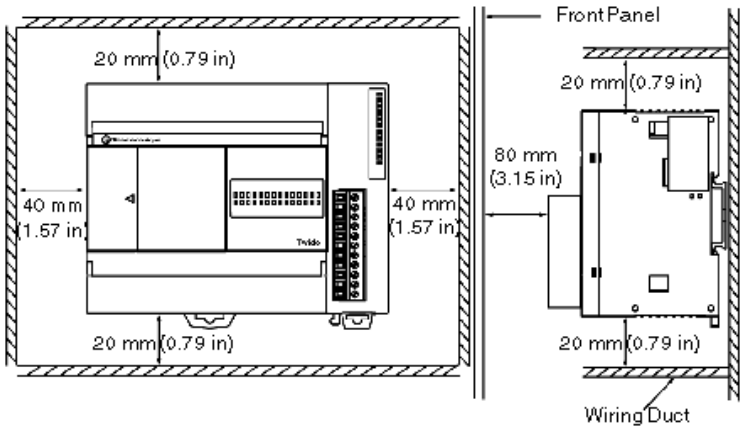
TWDLCAE40DRF

Dimensions

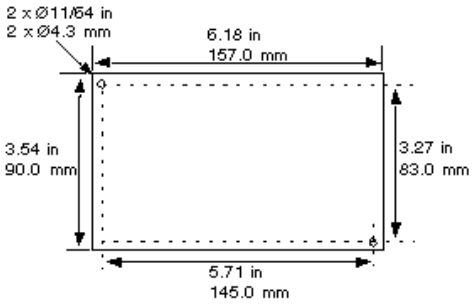


* 8.5 mm (0.33 in) when the clamp is pulled out.

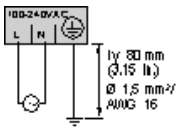
Minimum Clearances for a Compact Base and Expansion I/O Modules



Mounting Hole Layout

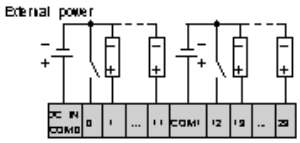


AC Power Supply Wiring Diagram

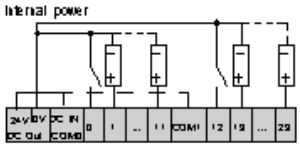


DC Source Inputs Wiring Diagrams

External Power



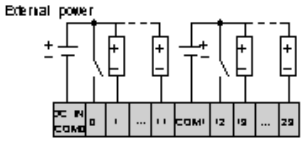
Internal Power



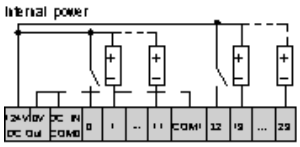
Max current: 400mA.

DC Sink Inputs Wiring Diagrams

External Power

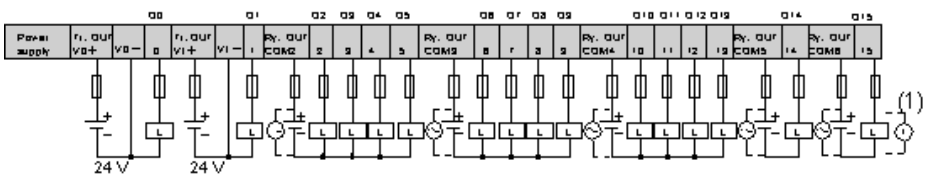


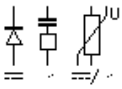
Internal Power



Max current: 400mA.

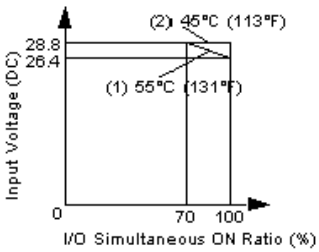
Relay and Transistor Outputs Wiring Diagram



(1) 

Performance Curves

I/O Usage Limits



(1) Limit for TWDLC•AA16DRF, TWDLC•A24DRF, TWDLCA•40DRF and TWDLD•40DRF
(2) All compact bases

Handson Technology

Data Specs

775 Ball Bearing DC Motor

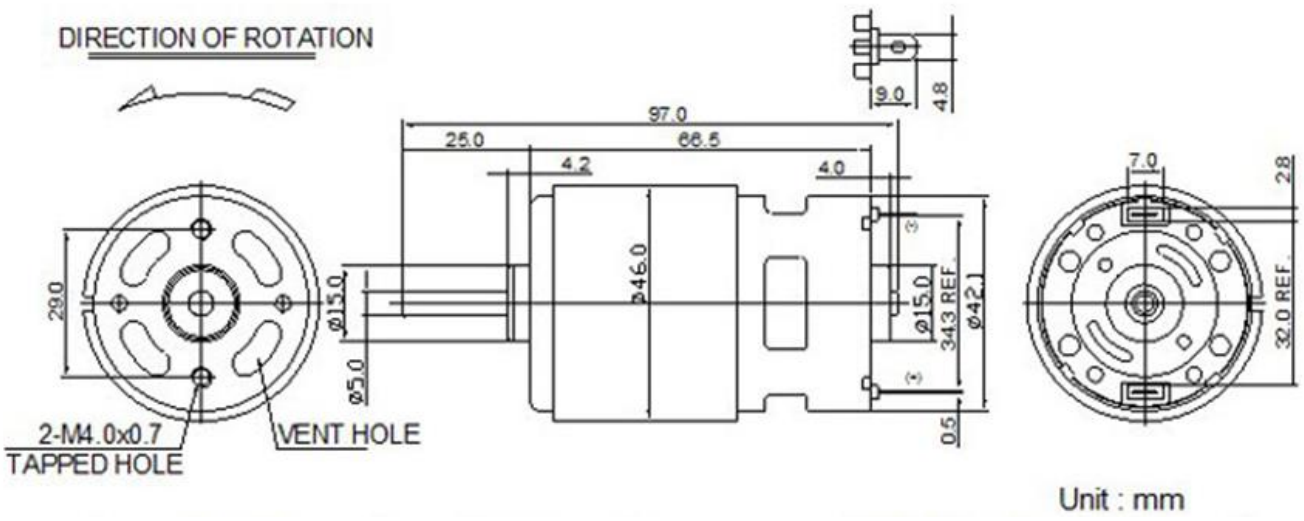
Ball bearing DC motor with built-in cooling fan. High torque with wide operating voltage 6~20Vdc. Suitable for motor tools application and DIY projects.

SKU: FAM1011

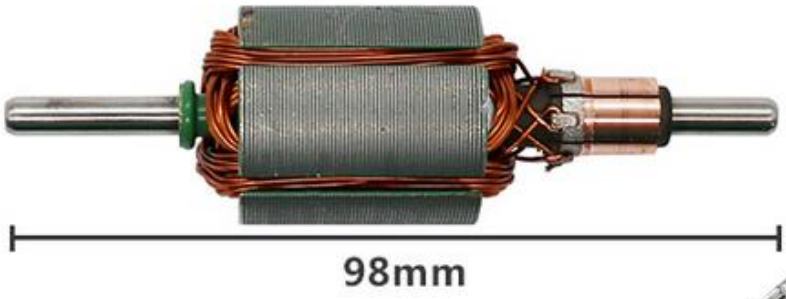
Specifications:

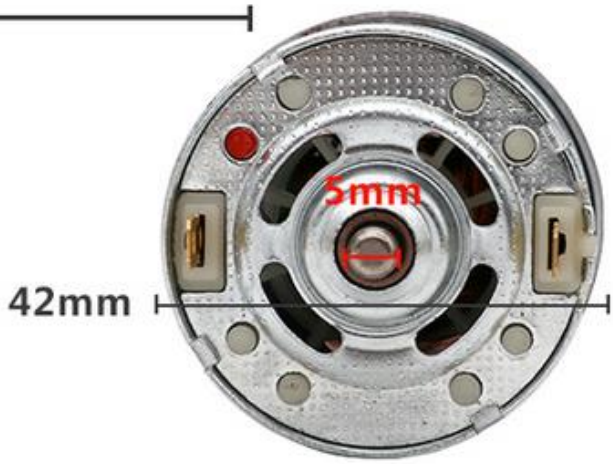
- Motor Type: 775.
- Operating Voltage: 6~20Vdc. (Nominal 12Vdc)
- No Load Speed: 12,000 RPM @ 12V.
- Rated current: 1.2A @ 12V.
- Stall Torque: 79Ncm @ 14.4V.
- Cooling Fan: Internal
- Overall Size: 98x42mm.
- Shaft: Full Round Type Ø5mm.
- Mounting Screw Size: M4.
- Weight: 350g.

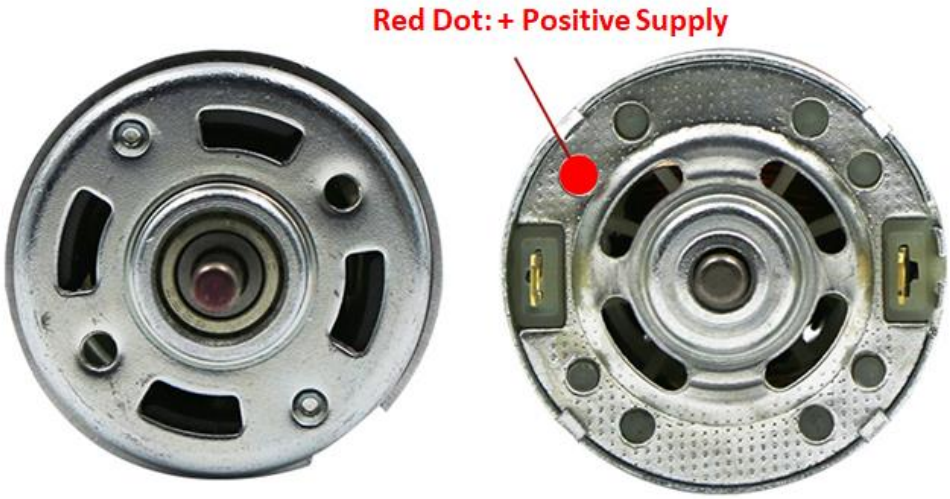
Mechanical Dimension:



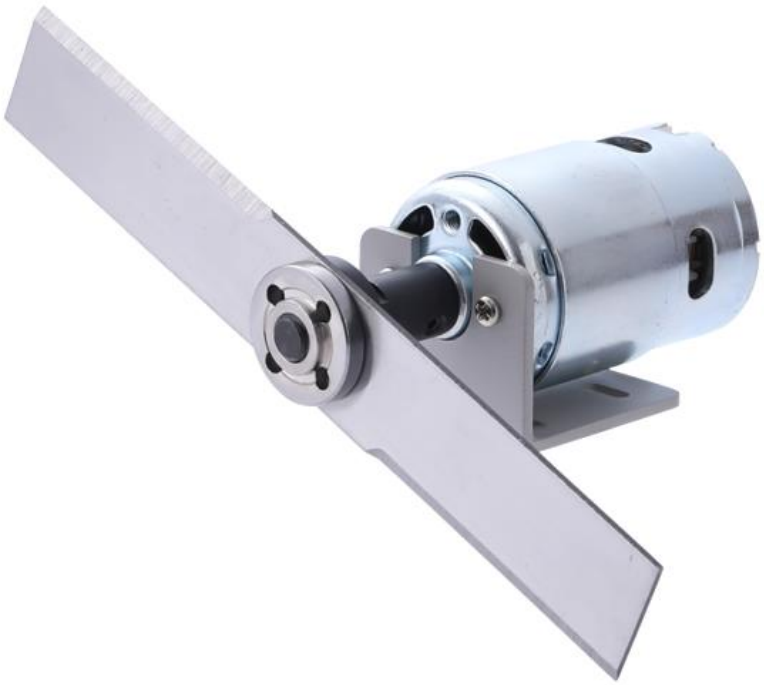

44.10mm
18mm
70mm


98mm


5mm
42mm


Red Dot: + Positive Supply

Application Examples:



Application Note: Useful Motor/Torque Equations

Force (Newtons)
F = m x a
m = mass (kg)
a = acceleration (m/s2)

Motor Torque (Newton-meters)
T = F x d
F = force (Newtons)
d = moment arm (meters)

Power (Watts)
P = I x V
I = current (amps)
V = voltage (volts)

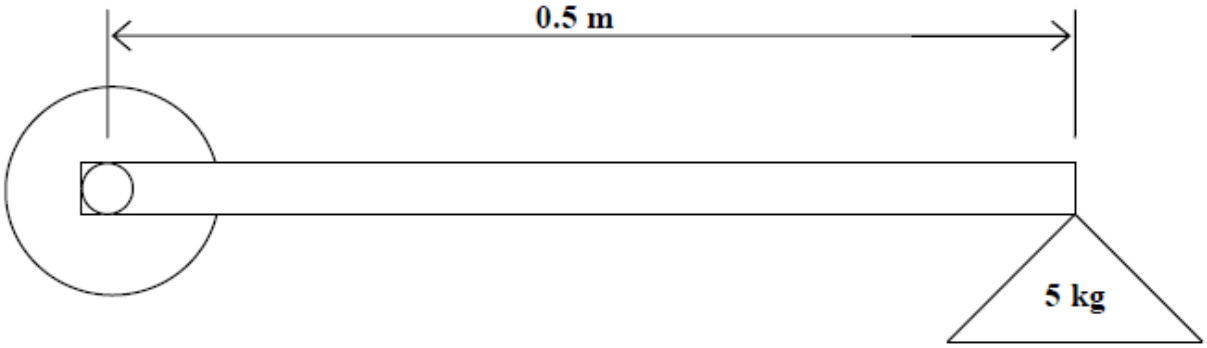
P = T x ω
T = torque (Newton-meters)
ω = angular velocity (radian/second)

Unit Conversions
Length (1 in = 0.0254 m)
Velocity (1 RPM = 0.105 rad/sec)
Torque (1 in-lb = 0.112985 N-m)
Power (1 HP = 745.7 W)

Example 1

Determine if the following motor can be used to lift a 5-kg load using a 0.5-m lever arm.

Merkle-Korff Gearmotor specifications
Stall Torque = 40 in-lb
Stall Current = 3.5 amps



Solution

Convert Stall Torque from in-lb to N-m

1 in-lb = 0.112985 N-m

40 in-lb = 40 x 0.112985 N-m = 4.5194 N-m

Calculate the Force required to lift the 5-kg load

F = m x a = 5 kg x 9.81 m/s2 = 49.05 N

Calculate the Torque required to lift the Force with the lever arm

T = F x d = 49.05 N x 0.5 m = 24.525 N-m

We cannot perform the lift with this set-up, because the stall torque is smaller than the torque required for the lift. We must either shorten the length of the lever arm, or we must choose another motor with a higher stall torque to perform this operation.

Example 2

Using the same motor as in Example 1 with a 12-V power supply:
a) Calculate the power used by the motor to rotate a 5-kg load at 50 RPM using a 3-inch lever arm.
b) Calculate the current draw from the battery to perform this operation.

Solution

Convert inches to meters:
1 in = 0.0254 m
3 in = 0.0762 m

Calculate the Force required to lift the 5-kg load:
F = m x a = 5 kg x 9.81 m/s2 = 49.05 N

Calculate the Torque required for this operation:
T = F x d = 49.05 N x 0.0762 m = 3.738 N-m

Note- This toque is lower than the motor's stall torque, so this operation is possible using the specified motor, mass, and lever arm

Convert RPM to radians/second:
1 RPM x 2π rad/rev x 1 min/60 sec = 0.105 rad/sec
ω = 50 rev/min x 0.105 rad/sec/RPM = 5.25 rad/sec

Calculate the Power required for this operation:
P = T x ω = 3.738 N-m x 5.25 rad/sec = 19.622 W

Calculate the Current draw from the battery (use the supply voltage in this calculation):
I = P/V = 19.622 W/12 V = 1.635 Amps

Note- This current is smaller than the maximum allowable current draw of the motor.

Example 3
Determine the motor torque necessary to power the robot drive wheels.

Solution
The following approach is merely one way to solve this problem. Several exist.
Assume the robot will be powered by two powered drive wheels and supported by two freely rotating caster wheels. Robot weight is denoted by W and for this simple example we'll assume the weight is distributed evenly over all 4 wheels, as shown in Figure 1 below.

Figure 1

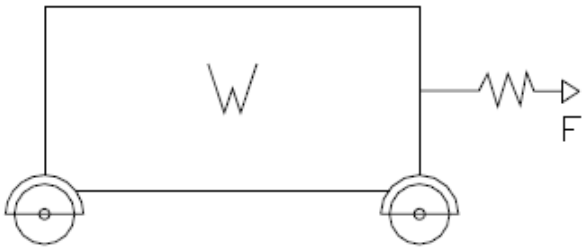


Figure 2

Thinking logically about the problem, we could model the robot as having 4 of the identical caster wheels (Figure 2) and the force required to propel the robot is simply the force needed to start the robot moving (this could be measured empirically with a force scale). The problem is we haven't yet built the robot so testing it in this manner is not an option. We need to calculate the force (and hence motor torque) required to move the robot **before** we build anything.
Looking closer at the caster wheel we can see the actual friction that must be overcome to put the robot in motion. Fw is the friction force between the wheel and the floor and Fa is the friction force between the wheel and the axle. Tw and Ta are the respective torques between the wheel and floor and the wheel and axle.

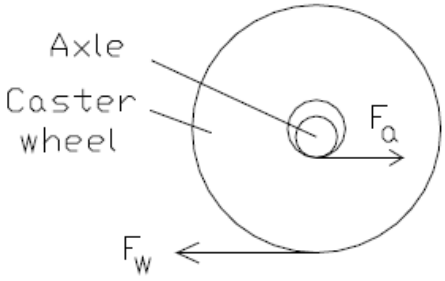


Figure 3

Fa = W/2 * μa
Ta = Fa * Ra
Fw = W/2 * μw
Tw = Fw * Rw
Tw is the *maximum* torque the wheel can transmit to the ground before it slips.

Our goal is to find a realistic range for Tm, the motor torque.
As calculated above, Tw would be the *maximum* amount of torque the motor could transfer to the ground before the wheel begins to slip (ie Tm, max).
Typically, we desire μw > μa, so the wheel does not slip/slide across the floor, but rather rolls. We can easily look up the μa value for the axle/wheel materials in contact. Knowing μa and the weight of the vehicle, Fa can be computed. This is the *minimum* amount of force we would have to provide at the wheel/axle interface to overcome the friction between the two. To relate the computed axle force Fa to the *minimum* amount of

wheel torque required to move the robot, we would use the "virtual radius" of the wheel/axle combination, which is computed as follows:

Rv = Rw – Ra

This is the fictitious radius about which Fa would act to rotate the wheel about the tangent point in contact with the ground at any instant, as shown in Figure 4 below.

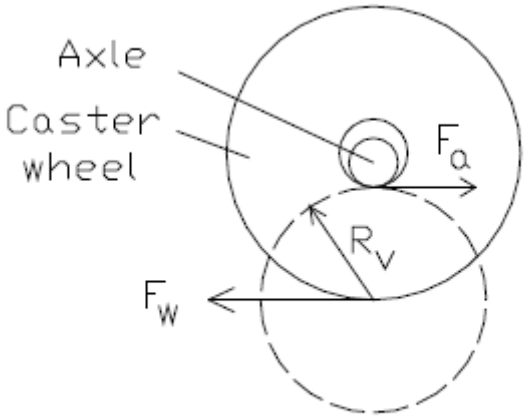


Figure 4

Therefore our equation for the *minimum* amount of torque the motor must transfer to the ground before the wheel begins to roll (thus causing the robot to move) would be:

Tm (min = Fa * Rv = Fa * (Rw – Ra)

In summation, Tm, min ≤ Tm ≤ Tm, max or alternatively, Fa * (Rw – Ra) ≤ Tm ≤ Fw * Rw

IR-Sensor Switch E18 This is Sensor Infrared device for distance detection that can be adjusted in the range of 6 cm.-80 cm.; and Output is Logic TTL; 0 (GND) and 1 (5V).

Specifications -Adjust distance detection in the range of 6 cm.-80 cm. by Adjustable VR and display the status by LED

- Sensing device should be opaque material or any material that allows less light to pass through; black color is the best because Sensor device works well by using reflection of Infrared

-OUTPUT is Open Collector; it has to connect R 10 K Pull Up at Out Putt

-Signal Output is Digital TTL; 0 = GND and 1 = 5V

-Use Power Supply DC 5V Current 100mA

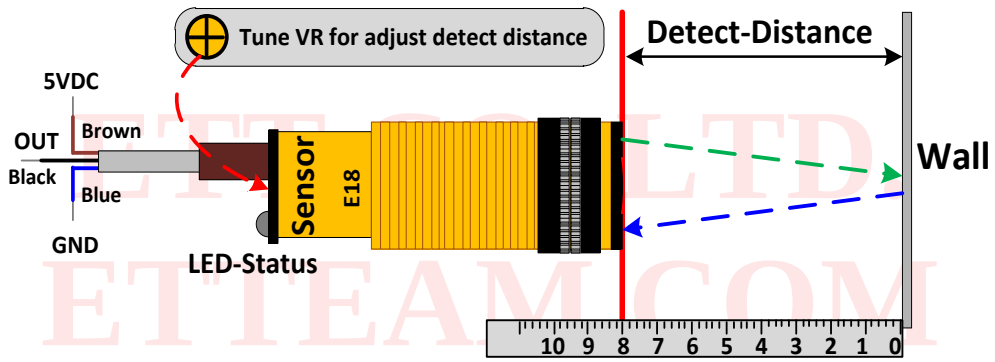
How to setup distance detection: Before using, it has to setup preferable distance detection for using with Sensor as follows;

1) Provide 5V Power Supply (brown cable) and GND (blue cable) to Sensor

2) Turn the head of Sensor upright to the ground or wall (it is the best if ground or wall is black color)

3) Measure the preferable distance detection from ground or wall to the head of Sensor by ruler; and hold Sensor at the preferable position to detect for awhile

4) Adjust VR at the end of Sensor. Look at the change of LED at the end of Sensor as described below;



- If LED is OFF (OUTPUT = 1), please adjust VR in a clockwise direction until LED becomes ON (OUTPUT = 0) and then stop adjusting VR. The position that LED changes the state is the specified distance detection. This is conditional operation; *if the distance of Sensor is less than or equal to the distance detection*, LED Status is ON and OUTPUT becomes Logic 0; but if the distance of Sensor is greater than the distance detection, LED Status is OFF and OUTPUT becomes Logic 1 instead.

- If LED is ON (OUTPUT = 0), please adjust VR in an anticlockwise direction until LED becomes OFF (OUTPUT = 1) and then stop adjusting VR. The position that LED changes the state is the specified distance detection. This is conditional operation; *if the distance of Sensor is greater than or equal to the distance detection*, LED Status is OFF and OUTPUT becomes Logic 1; but if the distance of Sensor is less than the distance detection, LED Status is ON and OUTPUT becomes Logic 0 instead.

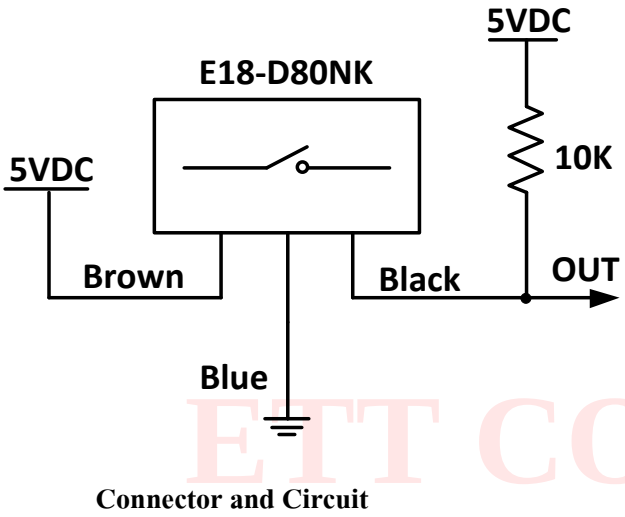
5) Test the operation of Sensor by moving Sensor. When the head of Sensor moves and passes the specified distance detection, LED of Sensor is lit up if the distance of Sensor is less or equal to the specified distance detection; but LED is OFF if the distance of Sensor is greater than or equal to the specified distance detection. If it does not accord with any conditional operation described above, it means that it fails to setup any distance detection for Sensor.

Referred to experiment in use, it found that color of ground or wall or any material that is used to reflect to Sensor is not enough dark. If the wall that is used to reflect is light color, the least distance detection of Sensor is also higher; so, the specified distance detection of user is lower than the least distance detection of Sensor. In this case, it should use wall with the dark color or it may setup the

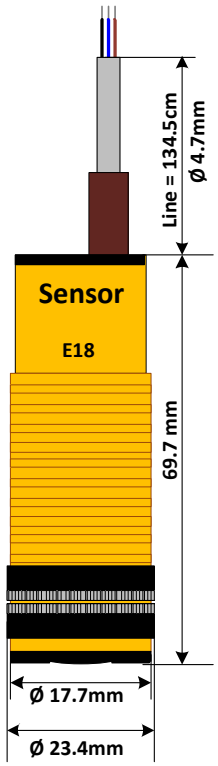
distance detection higher, depend on material of user. User has to test and setup distance detection by self because each color of wall that reflects to Sensor is different; and finally, user needs to return to step 1-5. Referred to experiment, the least distance detection of the black wall that can reflect to Sensor is 6 cm; the operating result accords with step 5, it means that it succeeds and Sensor is ready to use and connect.

How to use Sensor after setup distance detection

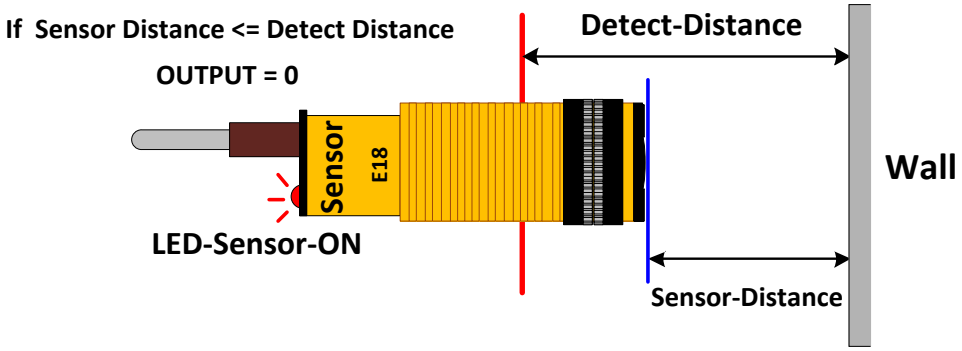
Please look at the circuit below and connect Sensor with Connectors according to the specified color; Brown Cable is 5VDC Power Supply, Blue Cable is GND, and Black Cable is OUTPUT(TTL). Next, please look at the conditional operation of Sensor to write program correctly.



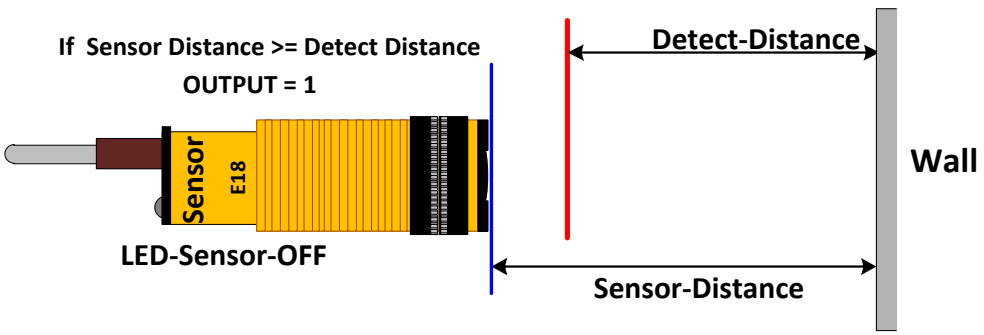
Connector and Circuit



Dimensions of Sensor



When distance of Sensor <= the specified distance detection, LED Status is ON and OUTPUT = 0



When distance of Sensor >= the specified distance detection, LED Status is OFF and OUTPUT = 1

SONGLE RELAY

松乐继电器 ® SONGLE RELAY	RELAY ISO9002	SRD

1. MAIN FEATURES

☐ Switching capacity available by 10A in spite of small size design for highdensity P.C. board mounting technique.

☐ UL,CUL,TUV recognized.

☐ Selection of plastic material for high temperature and better chemical solution performance.

☐ Sealed types available.

☐ Simple relay magnetic circuit to meet low cost of mass production.

2. APPLICATIONS

☐ Domestic appliance, office machine, audio, equipment, automobile, etc.

(Remote control TV receiver, monitor display, audio equipment high rushing current use application.)

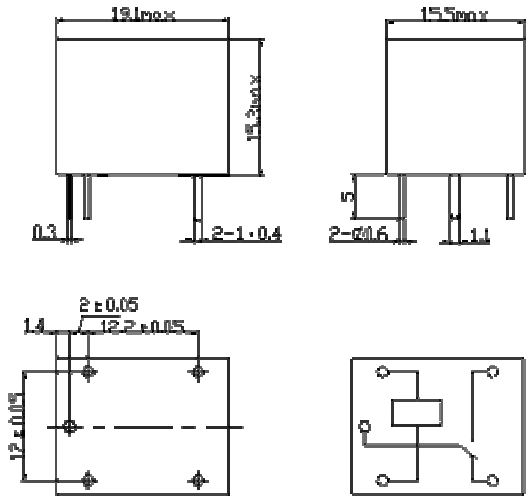
3. ORDERING INFORMATION

SRD	XX VDC	S	L	C
Model of relay	Nominal coil voltage	Structure	Coil	Contact form
SRD	03|05|06|09|12|24|48VDC	S:Sealed type	L:0.36W	A:1 form A
				B:1 form B
		F:Flux free type	D:0.45W	C:1 form C

4. RATING

CCC	FILE NUMBER:CQC03001003729	7A/240VDC
CCC	FILE NUMBER:CQC03001003731	10A/250VDC
UL /CUL	FILE NUMBER: E167996	10A/125VAC 28VDC
TUV	FILE NUMBER: R50056114	10A/250VAC 30VDC

5. DIMENSION(unit:mm) DRILLING(unit:mm) WIRING DIAGRAM



6. COIL DATA CHART (AT20 ö C)

Coil Sensitivity	Coil Voltage Code	Nominal Voltage (VDC)	Nominal Current (mA)	Coil Resistance (Ω) ☐ 10%	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
SRD (High Sensitivity)	03	03	120	25	abt. 0.36W	75%Max.	10% Min.	120%
	05	05	71.4	70				
	06	06	60	100				
	09	09	40	225				
	12	12	30	400				
	24	24	15	1600				
	48	48	7.5	6400				
SRD (Standard)	03	03	150	20	abt. 0.45W	75% Max.	10% Min.	110%
	05	05	89.3	55				
	06	06	75	80				
	09	09	50	180				
	12	12	37.5	320				
	24	24	18.7	1280				
	48	48	10	4500	abt. 0.51W			

7. CONTACT RATING

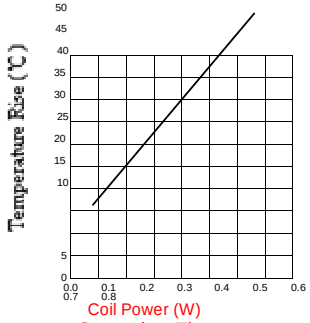
Item \ Type	SRD FORM C	SRD FORM A
Contact Capacity	7A 30VDC	10A 30VDC
Resistive Load (cosΦ=1)	10A 125VAC	10A 240VAC
Inductive Load (cosΦ=0.4 L/R=7msec)	10A 250VAC	5A 120VAC 5A 28VDC
	3A 120VAC 3A 28VDC	
Max. Allowable Voltage	250VAC/110VDC	250VAC/110VDC
Max. Allowable Power Force	800VAC/240W	1200VA/300W
Contact Material	AgCdO	AgCdO

8. PERFORMANCE (at initial value)

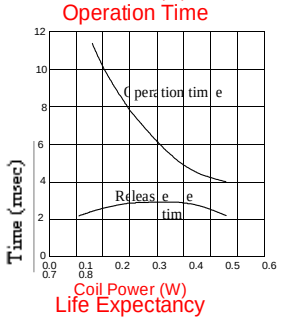
Item \ Type	SRD
Contact Resistance	100mΩ Max.
Operation Time	10msec Max.
Release Time	5msec Max.
Dielectric Strength	
Between coil & contact	1500VAC 50/60HZ (1 minute)
Between contacts	1000VAC 50/60HZ (1 minute)
Insulation Resistance	100 MΩ Min. (500VDC)
Max. ON/OFF Switching	
Mechanically	300 operation/min
Electrically	30 operation/min
Ambient Temperature	-25 ☐C to +70 C
Operating Humidity	45 to 85% RH
Vibration	
Endurance	10 to 55Hz Double Amplitude 1.5mm
Error Operation	10 to 55Hz Double Amplitude 1.5mm
Shock	
Endurance	100G Min.
Error Operation	10G Min.
Life Expectancy	
Mechanically	10^7 operations. Min. (no load)
Electrically	10^5 operations. Min. (at rated coil voltage)
Weight	abt. 10grs.

9.REFERENCE DATA

Coil Temperature Rise

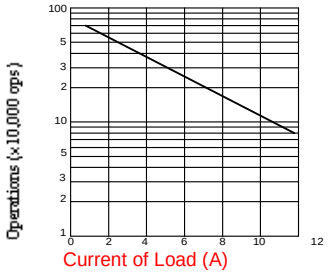


Operation Time

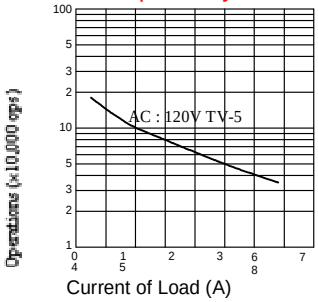


Life Expectancy

AC120V/DC24V cosΦ=1

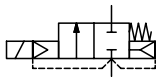


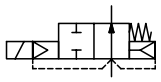
Life Expectancy



SOLENOID VALVES

pilot operated
built-in pilot, floating diaphragm
3/8 to 2

NC 

NO 

2/2
Series
238

C

FEATURES

- *Minimum operating pressure differential ΔP 0,3/0,5 bar*
- *Two way valves for automatic control of water, air and inert gas and other gases/liquids compatible with the sealing materials used*
- *Interchangeability of magnetic heads, AC and DC*
- *The solenoid valves satisfy all relevant EC Directives*

GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar =100 kPa]						
Ambient temperature range	-10°C to +60°C						
Maximum viscosity	40 cSt (mm²/s)						
Response time	3/8	1/2	3/4	1	1 1/4	1 1/2	2
opening time (ms)	25	30	55	70	300	300	1500
closing time (ms)	40	90	110	200	1000	1000	2000

fluids (✳)	temperature range (TS)	seal materials (✳)
DN ≤ 25: air, inert gas and water DN > 25: air and water	-10°C to +85°C	NBR (nitrile) FPM (fluoroelastomer)

MATERIALS IN CONTACT WITH FLUID

(✳) Ensure that the compatibility of the fluids in contact with the materials is verified

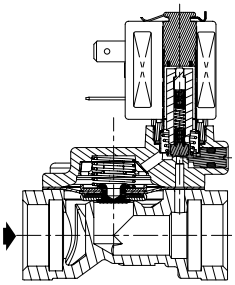
Body	Brass
Internal parts	Stainless steel and brass
Springs	Stainless steel
Diaphragm & valve disc	NBR
Seals and pilot disc	FPM (3/8 to 1), NBR (1 1/4 to 2)
Shading coil	Copper

ELECTRICAL CHARACTERISTICS

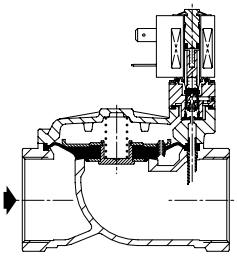
Coil insulation class	F
Connector	Spade plug (cable Ø 6-8 mm or Ø 6-10 mm)
Connector specification	
for power coil: 4 W/6,9 W	DIN 43650, 11 mm, industry standard B
for power coil: 5W/6,9W-8W/9W	ISO 4400 / EN 175301-803, form A
Electrical safety	IEC 335
Electrical enclosure protection	Moulded IP65 (EN 60529)
Standard voltages	DC (=) : 24V - 48V
(Other voltages and 60 Hz on request)	AC (~) : 24V - 48V - 115V - 230V / 50 Hz

prefix option	power ratings inrush ~ (VA)	holding ~ (VA)	holding ~ (W)	hot/cold = (W)	operator ambient temperature rangef (TS) (C°)	replacement coil ~ 230 V/50 Hz	replacement coil = 24 V DC	type [1]
SC	12	6	4	5/6,9	-10 to +60	400127-197	400127-142	01 [2]
	10,4	6	5	5/6,9	-10 to +60	400727-117	400727-185	02
	23	14	8	7,5/9	-10 to +50	43005275	43005272	03

[1] Refer to the dimensional drawings on the following page.
[2] UL/CSA certified.



NC function



NO function

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar) min.	operating pressure differential (bar) max. (PS) air / water (✳)		power coil (W)		catalogue number	options maintained man. operator	options FPM	options EPDM
	(mm)	(m³/h)	(l/min)		~	=	~	=	~/=			
NC - Normally closed												
G* 3/8	12	2,4	40	0,3	10	10	4	6,9	**SCE238D001**	**MO**	**V**	**E**
					16	16	5	6,9	**SCE238D006**	**MO**	**V**	**E**
G* 1/2	12	2,4	40	0,3	10	10	4	6,9	**SCE238D002**	**MO**	**V**	**E**
					16	16	5	6,9	**SCE238D007**	**MO**	**V**	**E**
	15	4,2	70	0,3	10	10	4	6,9	**SCE238D003**	**MO**	**V**	**E**
					16	16	5	6,9	**SCE238D008**	**MO**	**V**	**E**
G* 3/4	20	6,6	110	0,3	10	10	4	6,9	**SCE238D004**	**MO**	**V**	**E**
					16	16	5	6,9	**SCE238D009**	**MO**	**V**	**E**
G* 1	25	9,9	165	0,3	10	10	4	6,9	**SCE238D005**	**MO**	**V**	**E**
					16	16	5	6,9	**SCE238D010**	**MO**	**V**	**E**
G 1 1/4	30	15	250	0,5	10	10	8	9	**SCG238C016**	**MO**	**V**	**-**
G 1 1/2	45	27	450	0,5	10	10	8	9	**SCG238C017**	**MO**	**V**	**-**
G 2	45	34	566	0,5	10	10	8	9	**SCG238C018**	**MO**	**V**	**-**
NO - Normally open												
G 1 1/4	30	15	250	0,5	10	10	8	9	**SCG238C019**	**-**	**V**	**-**
G 1 1/2	45	27	450	0,5	10	10	8	9	**SCG238C020**	**-**	**V**	**-**
G 2	45	34	566	0,5	10	10	8	9	**SCG238C021**	**-**	**V**	**-**

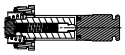
OPTIONS

- Valves can also be supplied with FPM (fluorelastomer), EPDM (ethylene-propylene) seals, diaphragm and disc. Use the appropriate optional suffix letter for identification
- Explosionproof enclosures for use in zones 1/21-2/22, categories 2-3 to ATEX Directive 94/9/EC (see "Explosionproof solenoids" section)
- Oxygen service, suffix NV, example: SCE238C002NVMO (Except pipe size G 1 1/4, G 1 1/2 and G 2)
- Plug with visual indication and peak voltage suppression or with cable length of 2 m (see Solenoids, Coils & Accessories section)

INSTALLATION

- The solenoid valves can be mounted in any position without affecting operation
- Pipe connections (G*) have standard combination thread according to ISO 228/1 and ISO 7/1. Pipe connections (G) have standard combination thread according to ISO 228/1
- Installation/maintenance instructions are included with each valve

SPARE PARTS KIT

catalogue number	spare parts kit no. (1)	
		
	~/=	~/=
SCE238D001/002/006/007	**C131600**	**C140262V**
SCE238D003/D008	**C131618**	**C140262V**
SCE238D004/D009	**C131606**	**C140262V**
SCE238D005/D010	**C131609**	**C140262V**

(1) Standard suffixes are also applicable to kits.

ORDERING EXAMPLES:

SC	E	238 **D** 001		230V / 50 Hz
SC	E	238 **D** 008	**V**	115V / 50 Hz
SC	E	238 **D** 004	**E**	24V / DC
SC	G	238 **C** 016		230V / 50 Hz

prefix — pipe thread — basic number — voltage — suffix

ORDERING EXAMPLES KITS:

C131600(1)	
C131618	**V**
C140262	**E**

basic number — suffix

DIMENSIONS (mm), WEIGHT (kg)

TYPE 01
Prefix "SC" Solenoid
Epoxy moulded
IEC 335 / DIN 43650
IP65

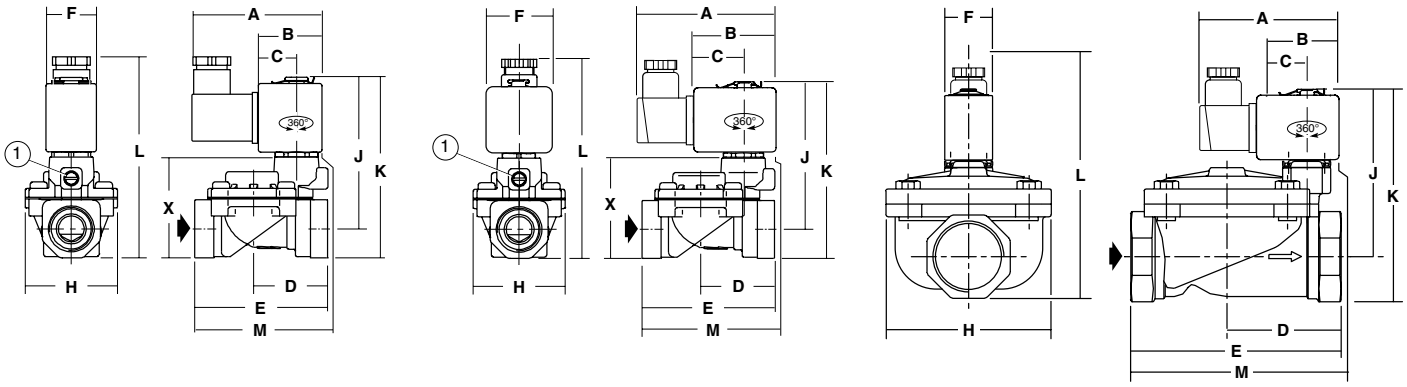
SCE238D001/002/004/005
SCE238D003

TYPE 02
Prefix "SC" Solenoid
Epoxy moulded
IEC 335 / ISO 4400
IP65

SCE238D006/007/009/010
SCE238D008

TYPE 03
Prefix "SC" Solenoid
IEC 335 / ISO 4400
IP65

SCG238C016/017/018
SCG238C019/020/021



type	prefix option	catalogue number	A	B	C	D	E	F	H	J	K	L	M	X	weight (2)
01	SC	SCE238D001/002	60,5	27,5	17	34,5	62	22	43	68,5	81	98	57,5	47	0,4
		SCE238D003	60,5	27,5	17	45,5	81,5	22	57	71	83,5	100	73,5	49,5	0,5
		SCE238D004	60,5	27,5	17	53	95	22	68	79,5	94,5	111	85,5	60,5	0,8
		SCE238D005	60,5	27,5	17	58	105,5	22	87	84,5	104	121	93	70	1,0
02	SC	SCE238D006/007	76	38	23	34,5	62	30	43	69,5	83	100,5	61,5	47	0,5
		SCE238D008	76	38	23	45,5	81,5	30	57	72	85,5	103	77,5	49,5	0,6
		SCE238D009	76	38	23	53	95	30	68	80,5	96,5	114	89,5	60,5	0,9
		SCE238D010	76	38	23	58	105,5	30	87	85,5	106	123,5	97	70	1,1
03	SC	SCG238C016	76	41,5	21,6	63	113	32	81	109(3)	135(3)	150	106	-	1,7
		SCG238C017	76	41,5	21,6	80	140	32	110	112(3)	142(3)	157	129	-	2,6
		SCG238C018	76	41,5	21,6	85	157	32	110	117(3)	153(3)	168	129	-	2,9
		SCG238C019	76	41,5	21,6	63	113	32	81	127	153	168	106	-	1,9
		SCG238C020	76	41,5	21,6	80	140	32	110	130	160	175	129	-	3,0
		SCG238C021	76	41,5	21,6	85	157	32	110	135	171	186	129	-	3,4

(1) Manual operator location

(2) Incl. coil(s) and connector(s).

(3) Maintained manual operator: added + 23 mm.

All leaflets are available on: **www.asconumatics.eu**

TOTAL POWER INT'L

60W Single Output Switching Power Supply **S-60 series**

■ Features :

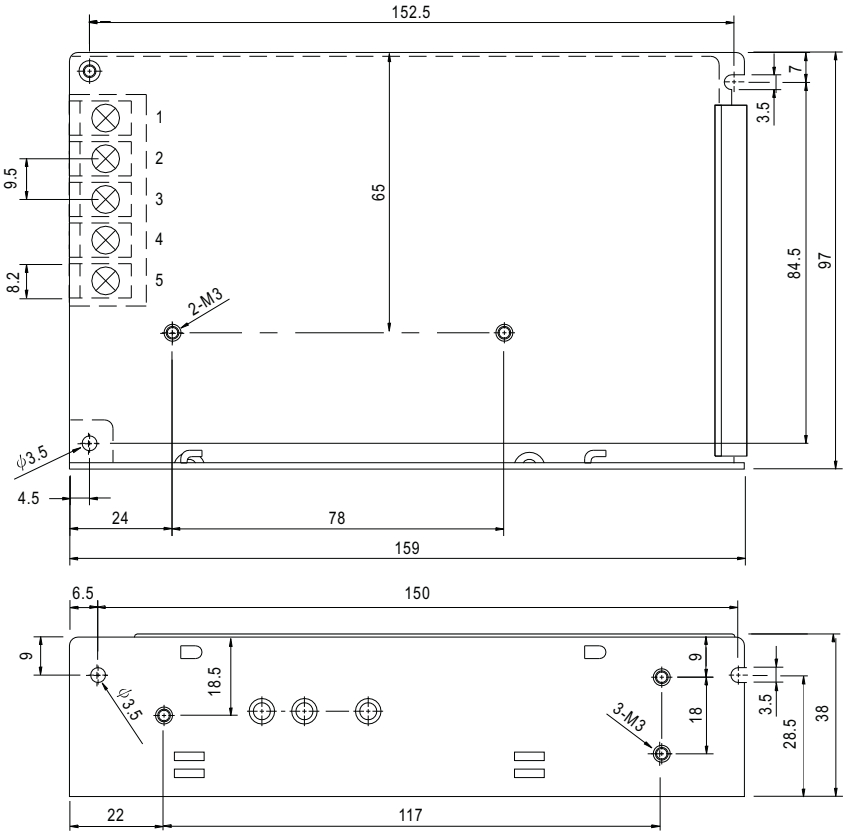
- Universal AC input/Full range
- Protections:Short circuit/Over load/Over voltage
- Cooling by free air convection
- 100% full load burn-in test
- Fixed switching frequency at 50KHz
- 2 years warranty

SPECIFICATION

MODEL		S-60-5	S-60-12	S-60-15	S-60-24
OUTPUT	DC VOLTAGE	5V	12V	15V	24V
	RATED CURRENT	12A	5A	4A	2.5A
	CURRENT RANGE	0 ~ 12A	0 ~ 5A	0 ~ 4A	0 ~ 2.5A
	RATED POWER	60W	60W	60W	60W
	RIPPLE & NOISE (max.) Note.2	120mVp-p	120mVp-p	150mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	4.75 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±0.5%	±0.5%	±0.5%
	SETUP, RISE, HOLD TIME	300ms, 50ms, 80ms / 230VAC 800ms, 50ms, 10ms / 115VAC at full load			
INPUT	VOLTAGE RANGE	85 ~ 264VAC 120 ~ 370VDC			
	FREQUENCY RANGE	47 ~ 63Hz			
	EFFICIENCY(Typ.)	73%	76%	77%	79%
	AC CURRENT	2A/115VAC 1A/230VAC			
	INRUSH CURRENT(max.)	COLD START 30A/115VAC 60A/230VAC			
	LEAKAGE CURRENT	<3.5mA / 240VAC			
PROTECTION	OVER LOAD	105 ~ 150% rated output power			
		Protection type : Hiccup mode, recovers automatically after fault condition is removed.			
	OVER VOLTAGE	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25	27.6 ~ 32.4V
		Protection type : Hiccup mode, recovers automatically after fault condition is removed.			
ENVIRONMENT	WORKING TEMP.	-10 ~ +60℃ (Refer to output load derating curve)			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing			
	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH			
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)			
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes			
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL1012, UL1950, TUV EN60950 Approved			
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC			
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC			
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B			
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3			
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, Light industry level, criteria A			
OTHERS	MTBF	316.2K hrs min. MIL-HDBK-217F (25℃)			
	DIMENSION	159*97*38mm (L*W*H)			
	PACKING	0.51Kg; 24pcs/13.1Kg/0.7CUFT			
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.				

■ Mechanical Specification

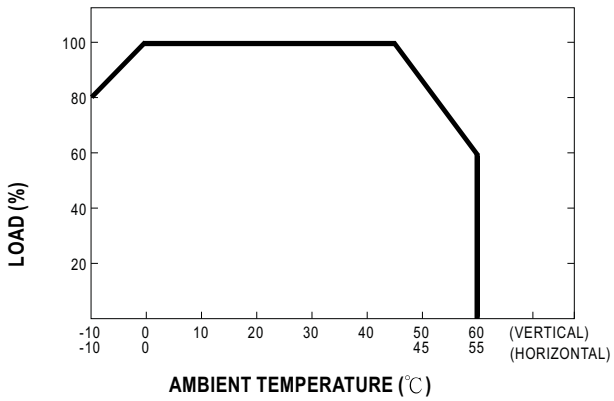
Case No. 901 Unit:mm



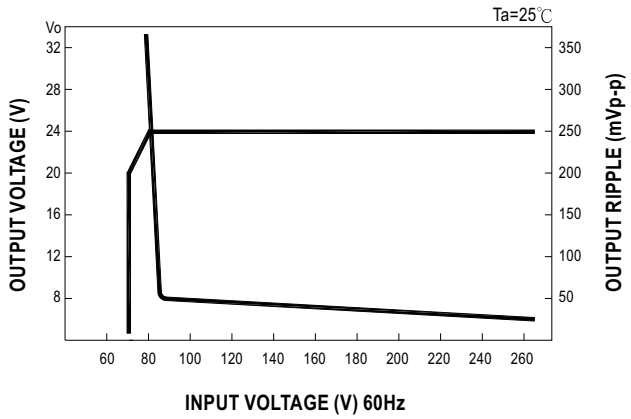
Terminal Pin. No Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4	DC OUTPUT -V
2	AC/N	5	DC OUTPUT +V
3	FG ⏚		

■ Output Derating



■ Static Characteristics (24V)



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139
Telp. 0711-353414 Fax. 0711-355918
Website : www.polisriwijaya.ac.id E-mail : info@polsri.ac.id

PELAKSANAAN REVISI LAPORAN TUGAS AKHIR (TA)

Mahasiswa berikut,

Nama	:	Aulya Surya Larasati
NIM	:	061940342291
Jurusan/Program Studi	:	Teknik Elektro / DIV Teknik Elektro
Judul Laporan Tugas Akhir	:	Penerapan Programmable Logic Controller Sebagai Sistem Kendali Pada Sistem Penutup Botol Air Minum

Telah melaksanakan revisi terhadap Laporan Tugas Akhir (TA) yang di ujikan pada hari Selasa tanggal 15 Agustus 2023. Pelaksanaan revisi terhadap Laporan Tugas Akhir tersebut telah disetujui oleh Dosen Penilai yang memberikan revisi:

No.	Komentar	Nama Dosen Penilai *)	Tanggal	Tanda Tangan
1.		Ir. Pola Risma, M.T.		
2.	Acc.	Ir. Iskandar Lutfi, M.T.	30/8 2023	
3.	ACC	Dewi Permata Sari, S.T., M.Kom	29/08/2023	
4.	ACC	Dr. Nyayu Latifah Husni, S.T., M.T.	29/08 2023	

Palembang, Agustus 2023
Ketua Penilai **),

Ir. Pola Risma, M.T.
NIP 196303281990032001

Catatan:
*) Dosen penilai yang memberikan revisi saat seminar laporan TA.
**) Dosen penilai yang ditugaskan sebagai Ketua Penilai saat Ujian TA.
Lembaran pelaksanaan revisi ini harus dilampirkan dalam Laporan Tugas Akhir (TA).

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REKOMENDASI UJIAN LAPORAN TUGAS AKHIR (TA)

Pembimbing I dan II Laporan Tugas Akhir memberikan rekomendasi kepada,

Nama	:	Aulya Surya Larasati
NIM	:	061940342291
Jurusan/Program Studi	:	Teknik Elektro/ DIV Teknik Elektro
Judul Laporan Akhir	:	Penerapan Programmable Logic Controller (PLC) Sebagai Sistem Kendali Pada Sistem Penutup Botol Air Minum

Mahasiswa tersebut telah memenuhi persyaratan dan dapat mengikuti Ujian Laporan Tugas Akhir (TA) pada Tahun Akademik 2022/2023

Palembang, 2023

Pembimbing I,

7/8 2023.

Ir. Iskandar Lutfi, M.T.
NIP 196501291991031002

Pembimbing II,

11/08 '2023

Dewi Permata Sari, S.T., M.Kom.
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LEMBAR BIMBINGAN LAPORAN TUGAS AKHIR

Lembar : 1

Nama : Aulya Surya Larasati
NIM : 061940342291
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Pembimbing I : Ir. Iskandar Lutfi, M.T.

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
1.	13 Februari 2023	Pengajuan Judul Proposal tugas akhir Sistem penutup Botol berbasis PLC	
2.	22 Februari 2023	Konsultasi Judul dan ACC " Penerapan Programable Logic Controller (PLC) sebagai Sistem kendali Alat "	
3.	3 Maret 2023	Bimbingan Bab I dan Bab II Proposal Revisi Latar Belakang	
4.	6 Maret 2023	ACC Bab I dan Bab II Proposal Lanjut Bab III Proposal dan Bab IV	
5.	10 Maret 2023	ACC Bab III dan Revisi Bab IV Proposal	
6.	3 April 2023	Konsultasi Jurnal "Automatic Bottle closure system Based on PLC"	
7.	8 Mei 2023	Submit Jurnal	

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
8.	10 Juli 2023	Menunjukkan video simulasi alat + data Lanjut Bab 4 dan Bab 5	
9.	4 Agustus 2023	Menunjukkan LOA dan Acc Bab 4	
10.	7 Agustus 2023	Rekomendasi utk ujian TA.	
11.			
12.			

Palembang, 2023

Ketua Jurusan/KPS,

Ir. Iskandar Lutfi, M.T.
NIP 196501291991031002

Catatan:
*) melingkari angka yang sesuai.
Ketua Jurusan/Ketua Program Studi harus memeriksa jumlah pelaksanaan bimbingan sesuai yang dipersyaratkan dalam Pedoman Laporan Akhir sebelum menandatangani lembar bimbingan ini.
Lembar pembimbingan LA ini harus dilampirkan dalam Laporan Akhir.

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LEMBAR BIMBINGAN TUGAS AKHIR

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Pembimbing II : Dewi Permata Sari, S.T., M.Kom.

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
1.	1/08/2023	Perbaiki Bab I, II, dan III	
2.	4/08/2023	Bab I, II, dan III : ACC.	
3.	9/08/2023	Lakukan Pengecekan alat, untuk data Bab IV	
4.	10/08/2023	Perbaiki Bab IV & Bab V	
5.	11/08/2023	Bab IV & V : ACC, Lanjut PPT	
6.			
7.			

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LETTER OF ACCEPTANCE

No. 53/UN35/JTIP-LOA/Acc/2023

Dear Iskandar Lutfi,

No. 753

All Authors

Iskandar Lutfi, Dewi Permata Sari, Aulya Surya Larasati

Article Title

"Automatic Bottle Closure System Based on Programmable Logic Controller"

Based on the recommendations from the peer review board, we are delighted to inform you that your following manuscript has been **ACCEPTED** for possible publication in **Jurnal Teknologi Informasi dan Pendidikan (JTIP) Vol. 16, No. 2, (2023)**.

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August 01, 2023

Best wishes,

Chief Editor

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