Anexo II

Especificaciones y Diagramas Electrónicos

Electric capacitive type proximity sensor

▣Features

- ●Sensing of iron, metal, plastic, water, stone, wood etc.
- ●Long life cycle and high reliability
- ●Integrated surge protection circuit
- ●Integrated reverse polarity protection circuit (DC type)
- ●Easy to adjust of the sensing distance with sensitivity adjuster
- ●Red LED status indication
- ●Easy to control of level and position

⚠ Please read "Caution for your safety" in operation manual before using.

▣Type

○DC 3-wire type

Appearances		Model
M18		CR18-8DN
		CR18-8DP
		CR18-8DN2 ✳
M30		CR30-15DN
		CR30-15DP
		CR30-15DN2 ✳

○AC 2-wire type

Appearances		Model
M18		CR18-8AO
		CR18-8AC
M30		CR30-15AO
		CR30-15AC

▶"✳" mark can be customized.

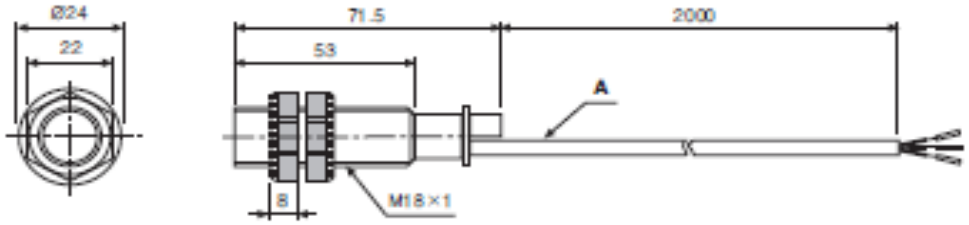
▣Specifications

Model	CR18-8DN CR18-8DP CR18-8DN2	CR30-15DN CR30-15DP CR30-15DN2	CR18-8AO CR18-8AC	CR30-15AO CR30-15AC
Sensing distance	8mm	15mm	8mm	15mm
Hysteresis	Max. 20% of sensing distance			
Standard sensing target	50×50×1mm(Iron)			
Setting distance	0 to 5.6mm	0 to 10.5mm	0 to 5.6mm	0 to 10.5mm
Power supply (Operating voltage)	12-24VDC (10-30VDC)		100-240VAC (85-264VAC)	
Current consumption	Max. 15mA		———	
Leakage consumption	———		Max. 2.2mA	
Response frequency(✳1)	50Hz		20Hz	
Residual voltage	Max. 1.5V		Max. 20V	
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃			
Control output	Max. 200mA		Max. 5 to 200mA	
Insulation resistance	Min. 50MΩ(at 500VDC megger)			
Dielectric strength	1500VAC 50/60Hz for 1 minute			
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s² (50G) in X, Y, Z direction for 3 times			
Indicator	Output operation indicator(Red LED)			
Ambient temperature	-25 to 70℃(at non-freezing status)			
Storage temperature	-30 to 80℃(at non-freezing status)			
Ambient humidity	35 to 95%RH			
Protection circuit	Surge protection circuit, Reverse polarity protecitonn circuit		Overload & Short protection circuit	
Protection	IP66(IEC standard)	IP65(IEC standard)	IP66(IEC standard)	IP65(IEC standard)
Cable	φ4×3P, 2m		φ4×2P, 2m	
Material	CR18 Series ☛ Case and nut : PA6, General cable(Black) : Polyvinyl chioride(PVC) CR30 Series ☛ Case and nut : Nickel-plated brass, Washer : Nickel-plated steel, Sensing part : Heat-resistant ABS, General cable(Black) L Polyvinyl chioride(PVC)			
Unit weight	Approx. 72g	Approx. 212g	Approx. 63g	Approx. 220g

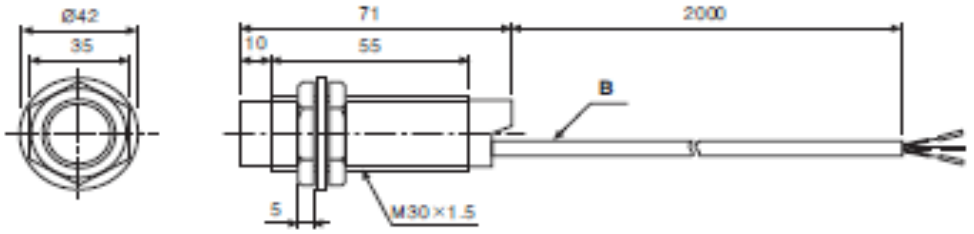
✳(✳1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Dimensions

●CR18-8D□ ●CR18-8A□



●CR30-15D□ ●CR30-15A□

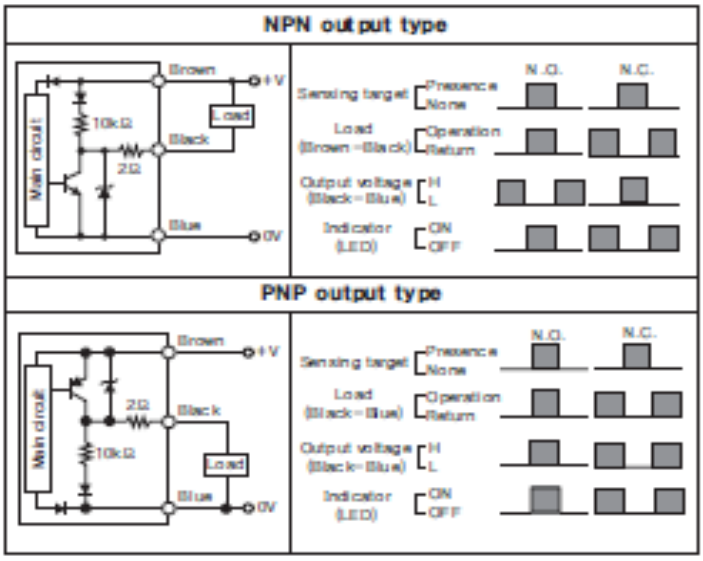


※"A" type : ϕ4, 2 cores / ϕ4, 3 cores(Conductor cross section: 0.3㎟, Insulator diameter: ϕ1.25)
※"B" type : ϕ5, 2 cores / ϕ5, 3 cores(Conductor cross section: 0.3㎟, Insulator diameter: ϕ1.25)

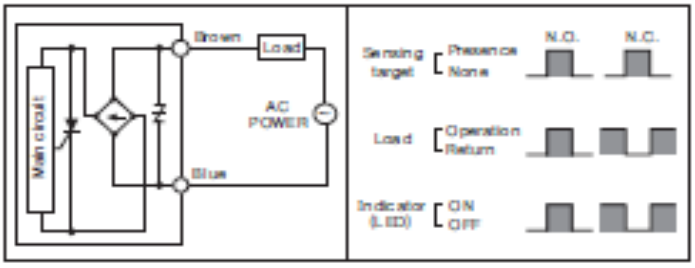
(Unit:mm)

▣Control output diagram

○DC 3-wire type

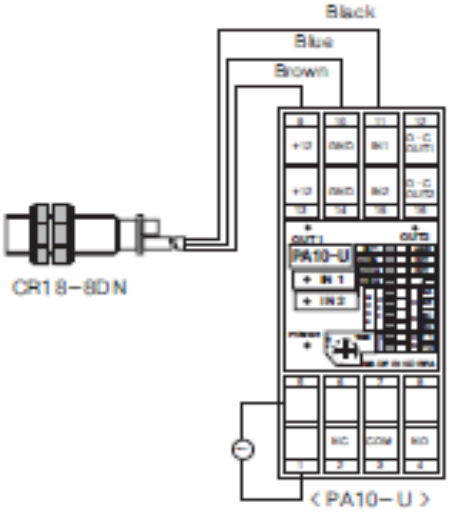


○AC 2-wire type

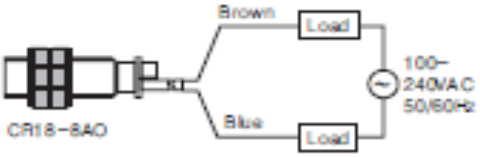


▣Connections

○DC 3-wire type



○AC 2-wire type



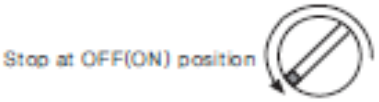
※The load can be connected to either wire.

▣Sensitivity adjustment

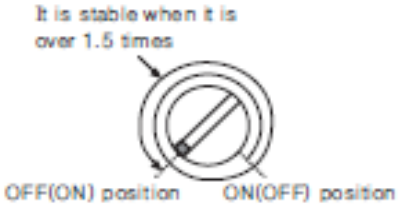
Please turn potention VR to set sensitivity as below procedure.

❶ Without a sensing object, turn the potention VR to the right and stop at the proximity sensor is ON(OFF).

❷ Put the object in right sensing position, turn the potention VR to the left and stop at the proximity sensor is OFF(ON).



❸ If the difference of the number of potention VR rotation between the ON(OFF) point and the OFF(ON) point is more than 1.5 turns, the sensing operation will be stable.



❹ If it is set in sensitivity adjustment position of potention VR at center between ❶ and ❷, sensitivity setting will be completed.

※ When there is distance fluctuation between proximity sensor and the target, please adjust ❷ at the farthest distance from this unit.
※ Turning potention VR toward clockwise, it will be max. and turning toward counter clockwise, it will be min. the number of adjustment should be 15±3 revolution and if it is turned to the right or left excessively, it will not stop, but it idles without breakdown.
※ ( ) is for Normally closed type.

▣Grounding

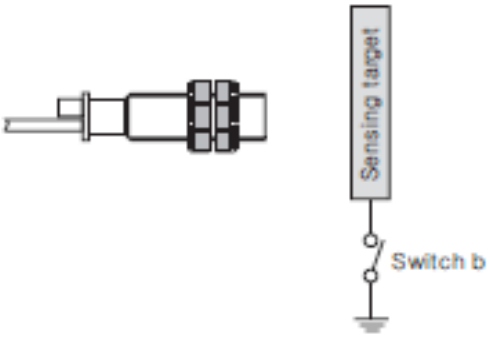
The sensing distance will be changed by grounding status of capacitive proximity sensor and the target[50×50×1mm(Iron)]. Please check the material when installing it on panel.

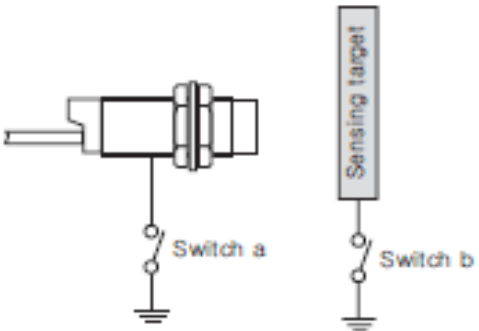
●CR18 Series

Ground condition (Switch b)	ON	OFF
Operating distance (mm)	8	4

●CR30 Series

Ground condition	Switch a	ON	OFF	ON	OFF
	Switch b	ON	ON	OFF	OFF
Operating distance(mm)		15	18	6	6

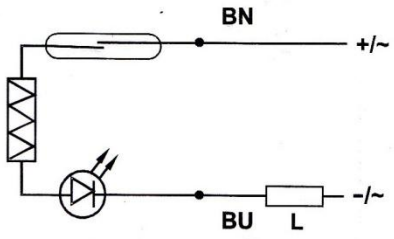




Interruptor Magnético MiCRO

Características técnicas	*Technical data*	Características técnicas
Código **DMRC: 0.900.000.532** **DMR: 0.900.000.533**	***Code*** ***DMRC: 0.900.000.532*** ***DMR: 0.900.000.533***	**Código** **DMRC: 0.900.000.532** **DMR: 0.900.000.533**
Tipo Contato reed switch normal aberto (NA)	***Type*** *Reed switch, normally open (NO)*	**Tipo** Contacto por reed normal abierto (NA)
Conexão **DMRC:** Cabo bipolar flexível com conector macho M8x1 **DMR:** Cabo bipolar flexível	***Connection*** ***DMRC:*** *Flexible bipolar cable with male connector M8x1* ***DMR:*** *Flexible bipolar cable*	**Conexión** **DMRC:** Cable bipolar con conector macho M8x1 **DMR:** Cable bipolar flexible
Comprimento do cabo **DMRC:** 0,30 m **DMR:** 3 m	***Cable lenght*** ***DMRC:*** *0,30 m* ***DMR:*** *3 m*	**Largo del cable** **DMRC:** 0,30 m **DMR:** 3 m
Potência máxima de comutação 10 W / 10 VA	***Maximum switching power*** *10 W / 10 VA*	**Potencia máxima de conmutación** 10 W / 10 VA
Tensão de conexão **DMRC:** 5 ... 30 Vcc/ca **DMR:** 5 ... 250 Vcc/ca	***Switching Voltage*** ***DMRC:*** *5 ... 30 V DC/AC* ***DMR:*** *5 ... 250 V AC/DC*	**Tensión de conexión** **DMRC:** 5 ... 30 Vcc/ca **DMR:** 5 ... 250 Vcc/ca
Corrente de conexão máx. 500 mA (sem sobrepassar potência máx.)	***Max. swtching current*** *500 mA (without exceeding max. power)*	**Corriente de conexión máx.** 500 mA (sin sobrepasar potencia máx.)
Queda de tensão Típico 2V a 20 mA - Máx. 3V a 500 mA	***Voltage drop*** *Typical 2V at 20 mA - Max. 3V at 500mA*	**Caida de tensión** Típico 2V a 20 mA - Máx. 3V a 500 mA
Freqüência de comutação máx. 500 Hz	***Max. switching frequency*** *500 Hz*	**Frecuencia de conmutación máx.** 500 Hz
Proteção IP 67 segundo IEC 529 Proteção contra pó e imersão com intervalo de tempo e pressões definidas.	***Protection*** *IP 67 according IEC 529* *Protection against penetration of dust and the effects of inmersion under specified pressure and time conditions.*	**Protección** IP 67 según IEC 529 Protección contra el polvo e inmersión con intervalo de tiempo y presiones definidos.
Proteção contra inversão de polaridade Sim. Em caso de corrente continua, quando se inverte a polaridade, o sensor funcionará normalmente mas o LED não acenderá.	***Reverse polarity protection*** *Yes. In the case of DC, when polarity is inverted, the sensor will work normally but the LED will not light up.*	**Protección contra inversión de polaridad** Si. En caso de corriente continua, cuando se invierte la polaridad, el sensor funcionará normalmente pero el LED no encenderá
Proteção contra curto circuito Não possue	***Short circuit protection*** *Not available*	**Protección contra cortocircuito** No posee
Indicador de funcionamento Diodo LED, luminoso através do corpo do sensor	***Function indicator*** *LED, shines through the housing*	**Indicador de funcionamiento** Diodo LED, luminoso a través del cuerpo del sensor
Tempo de conexão máx. 0,6 ms	***Max. switching time*** *0,6 ms*	**Tiempo de conexión máx.** 0,6 ms
Campo de temperatura -25 ... 80 °C	***Temperature range*** *-25 ... 80 °C*	**Campo de temperatura** -25 ... 80 °C
Materiais Corpo de policarbonato translúcido, encapsulado em resina epoxi, com cabo de PVC.	***Materials*** *Translucent polycarbonate body, encapsulated in epoxy resin, with PVC wire.*	**Materiales** Cuerpo de policarbonato translúcido, encapsulado en resina epoxi, con cable de PVC.
Peso **DMRC:** 0,015 Kg **DMR:** 0,084 Kg	***Weight*** ***DMRC:*** *0,015 Kg* ***DMR:*** *0, 084 Kg*	**Peso** **DMRC:** 0,015 Kg **DMR:** 0, 084 Kg

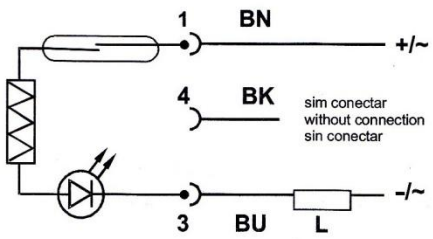
Conexionado



DMR

BN: marrom / *brown* / marrón
BU: azul / *blue* / azul

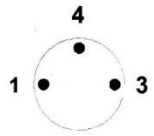
Wiring



DMRC

BK: preto / *black* / negro
L: carga / *load* / carga

Conexionado



S18 Sensors – dc-Voltage Series

Self-contained, dc-operated sensors

Installation Guide

Additional information on this product is immediately available online at **www.bannerengineering.com/116159**

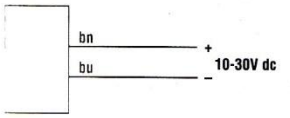
View or download additional information, including excess gain curves, beam patterns and accessories.
For further assistance, contact a Banner Engineering Applications Engineer at (763) 544-3164 or (888) 373-6767.

Sensing Mode		Range	LED	Output	Model*
Opposed		20 m (66')	Infrared 950 nm	–	S186E
				NPN	S18SN6R
				PNP	S18SP6R
Retro-reflective†		2 m (79")		NPN	S18SN6L
				PNP	S18SP6L
Polarized Retro-reflective†			Visible Red 680 nm	NPN	S18SN6LP
				PNP	S18SP6LP
Diffuse		100 mm (4")	Infrared 880 nm	NPN	S18SN6D
				PNP	S18SP6D
		300 mm (12")		NPN	S18SN6DL
				PNP	S18SP6DL
Fixed Field		25 mm (1") cutoff		NPN	S18SN6FF25
				PNP	S18SP6FF25
		50 mm (2") cutoff		NPN	S18SN6FF50
				PNP	S18SP6FF50
		100 mm (4") cutoff		NPN	S18SN6FF100
				PNP	S18SP6FF100

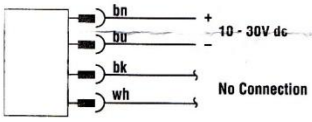
* Standard 2 m (6.5') cable models are listed.
- **9 m (30') cable:** add suffix **"W/30"** (e.g., **S186E W/30**).
- **4-pin Euro-style QD models:** add suffix **"Q"** (e.g., **S186EQ**). A model with a QD connector requires a mating cable.

† Use polarized models when shiny objects will be sensed.

Cabled Emitters

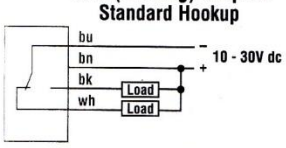


QD Emitters

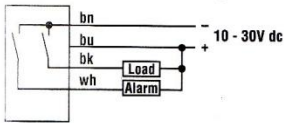


NPN (Sinking) Outputs

Standard Hookup

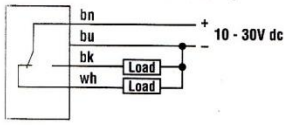


Alarm Hookup

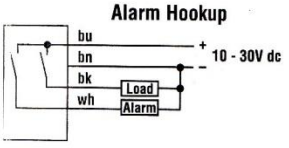


PNP (Sourcing) Outputs

Standard Hookup



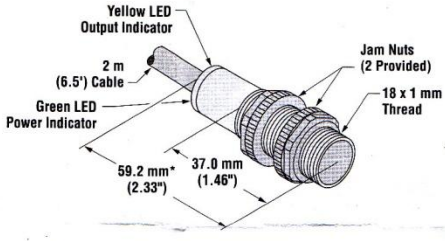
Alarm Hookup



NOTE: **QD hookups are functionally identical.**

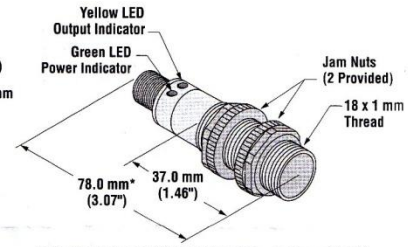
Dimensions

Cabled Models



*Polarized retro and fixed-field models = 65.0 mm (2.56")

QD Models



*Polarized retro and fixed-field models = 83.8 mm (3.30")

WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death. These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.

S18 Sensors – dc-Voltage Series

Specifications

Supply Voltage and Current (exclusive of load current): 10 to 30V dc (10% max. ripple); supply current (exclusive of load current):
Emitters, **Non-Polarized Retro, Diffuse:** 25 mA
Receivers: 20 mA
Polarized Retroreflective: 30 mA
Fixed-Field: 35 mA

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Output Configuration
SPDT solid-state dc switch; Choose NPN (current sinking) or PNP (current sourcing) models

Light Operate: N.O. output conducts when sensor sees its own (or the emitter's) modulated light

Dark Operate: N.C. output conducts when the sensor sees dark; the N.C. (normally closed) output may be wired as a normally open marginal signal alarm output, depending upon hookup to power supply (U.S. patent 5087838)

Output Rating
150 mA maximum (each) in standard hookup. When wired for alarm output, the total load may not exceed 150 mA.
OFF-state leakage current: < 1 microamp @ 30V dc
ON-state saturation voltage: < 1V at 10 mA dc; < 1.5V at 150 mA dc

Output Protection Circuitry
Protected against false pulse on power-up and continuous overload or short circuit of outputs

Output Response Time
Opposed mode: 3 ms ON, 1.5 ms OFF
Retro, Fixed-Field and Diffuse: 3 ms ON and OFF
NOTE: 100 ms delay on power-up; outputs do not conduct during this time.

Repeatability
Opposed mode: 375 µs
Retro, Fixed-Field and Diffuse: 750 µs
Repeatability and response are independent of signal strength.

Indicators
Two LEDs (Green and Yellow)
Green ON steady: power to sensor is ON
Green flashing: output is overloaded
Yellow ON steady: N.O. output is conducting
Yellow flashing: excess gain marginal (1 to 1.5x) in light condition

Construction
PBT polyester housing; polycarbonate (opposed mode) or acrylic lens

Environmental Rating
Leakproof design rated NEMA 6P, DIN 40050 (IP69K)

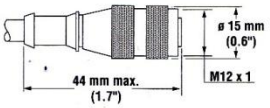
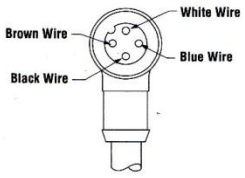
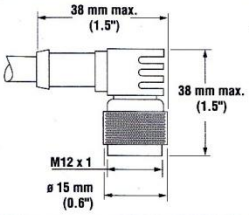
Connections
2 m (6.5') or 9 m (30') attached cable, or 4-pin Euro-style quick-disconnect fitting

Operating Conditions
Temperature: -40° to +70°C (-40° to +158°F)
Maximum relative humidity: 90% at 50°C (non-condensing)

Vibration and Mechanical Shock
All models meet Mil. Std. 202F requirements. Method 201A (Vibration; frequency 10 to 60 Hz, max., double amplitude 0.06" acceleration 10G). Method 213B conditions H&I (Shock: 75G with unit operating; 100G for non-operation)

Certifications

Quick-Disconnect (QD) Cables

Style	Model	Length	Dimensions	Pin-Out
4-pin Euro-style Straight	**MQDC-406** **MQDC-415** **MQDC-430**	2 m (6.5') 5 m (15') 9 m (30')		
4-pin Euro-style Right-angle	**MQDC-406RA** **MQDC-415RA** **MQDC-430RA**	2 m (6.5') 5 m (15') 9 m (30')		

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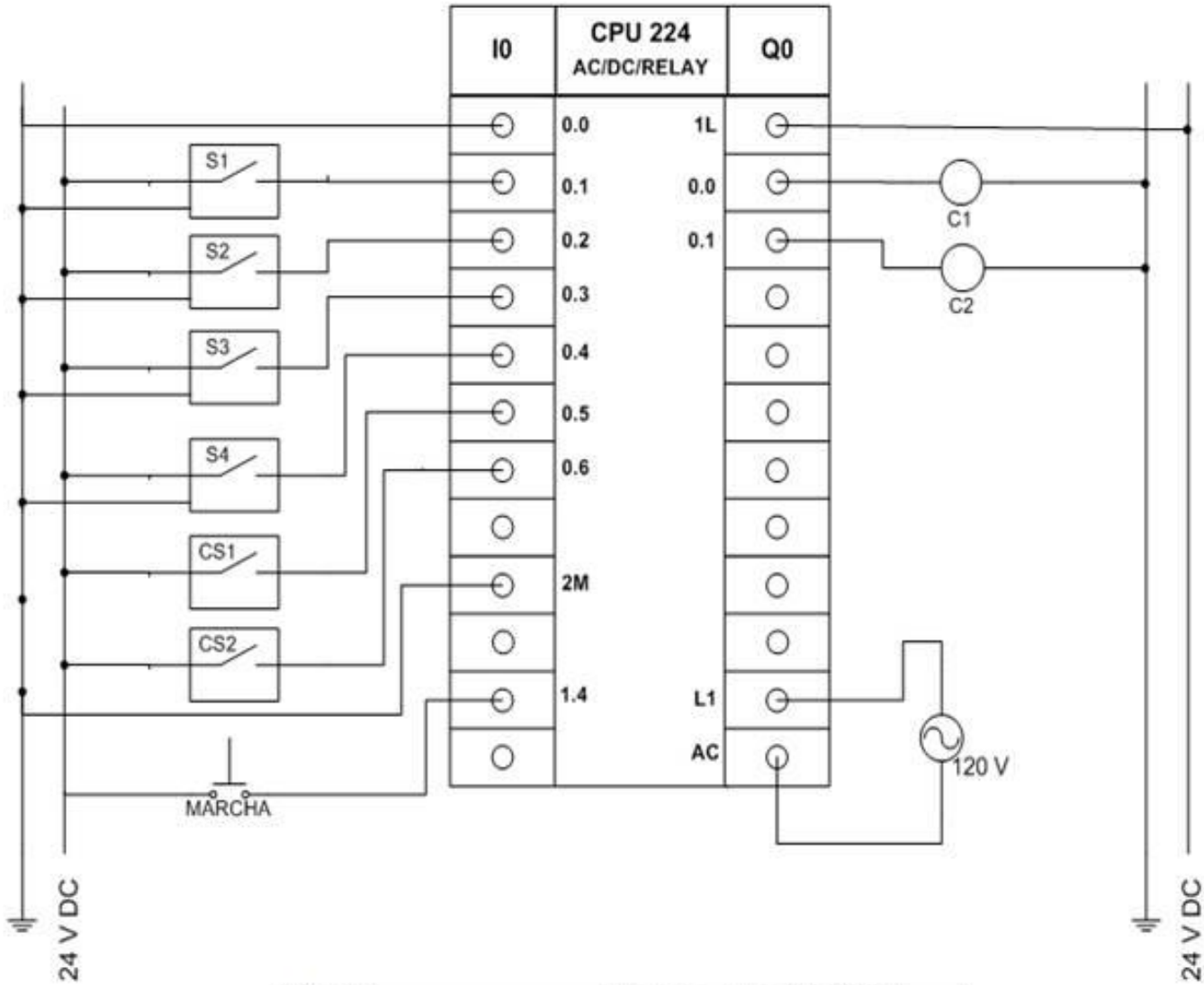
more sensors, more solutions

WARRANTY: Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.

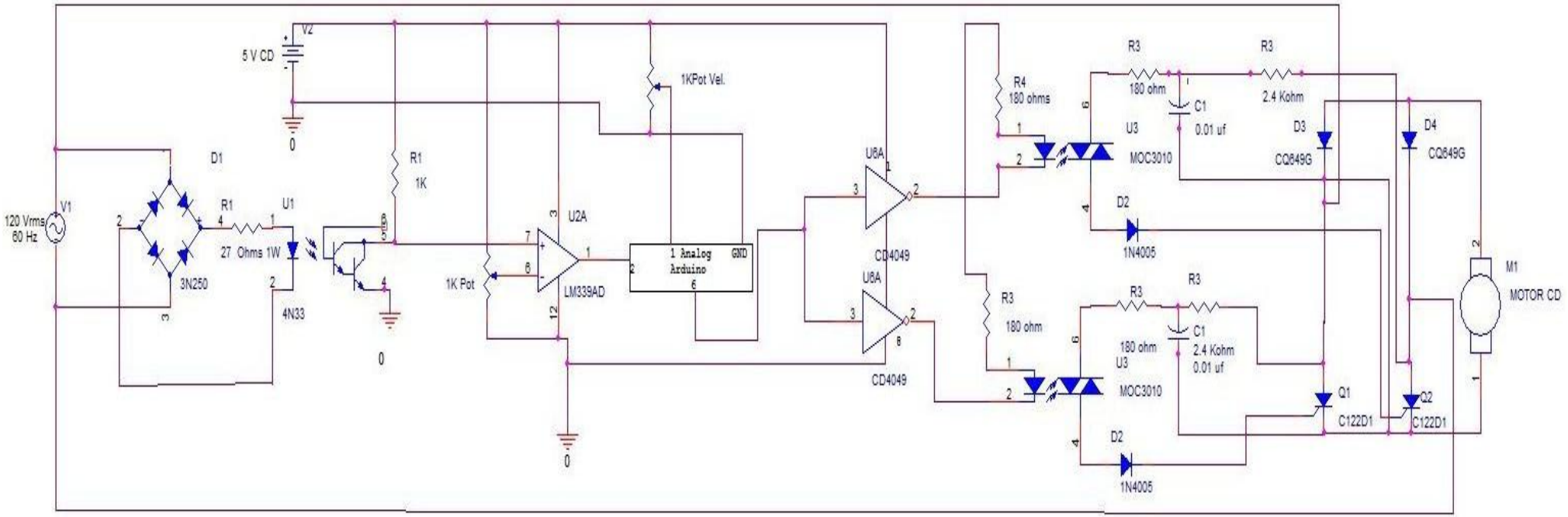
P/N 116159

Banner Engineering Corp., 9714 Tenth Ave. No., Minneapolis, MN USA 55441 • Phone: 763.544.3164 • www.bannerengineering.com • Email: sensors@bannerengineering.com



Elemento	Etiqueta	Localidad de PLC
Sensor Optico 1	S1	I0.0
Sensor Capacitivo 1	S2	I0.1
Sensor Capacitivo 2	S3	I0.2
Sensor Optico 2	S4	I0.3
Sensor de Posición de cilindro 1	CS1	I0.4
Sensor de Posición de cilindro 2	CS2	I0.5
Botón de Marcha	M	I1.4
Cilindro 1	C1	Q0.1
Cilindro 2	C2	Q0.2

Juan Manuel Hernandez Ordoñez	Ingenieria Mecatronica
Diagrama de Conexiónes a PLC SIEMENS S7-200 en el Prototipo de Clasificacion	UDLAP
	Diciembre 2012



Title	Controlador de Velocidad	
Size	Document Number #1	Rev
Date:	Wednesday, December 05, 2012	Sheet 1 of 1