SRF005 Ultrasonic Range Sensor

Specification:

TheSRF005ultrasonic rangesensor detectsobjectsinit'spath and canbeusedto calculate therangetotheobject. Itissensitive enoughtodetect a3cmdiameter broom handle atadistance ofover3m.

Voltage -5V
Current -30mATyp.50mAMax.
Frequency -40KHz
MaxRange -3m
MinRange -3cm
Sensitivity -Detect3cmdiameter broom handleat>3m
Input Trigger-10uSMin.TTLlevelpulse
EchoPulse -PositiveTTLlevelsignal, widthproportionaltorange. Small Size-43mm x20mm x17mm height

Themodule canbeusedintwodifferent modes:
SinglePin -Singlemicrocontrollerpin (08M,and allM2and X2parts) DualPin -Separate PICAXEmicrocontrollertriggerand echo pins

Mostusersusingthelatestgeneration (M2and X2)PICAXEpartsshould select 'singlepin'connectionmode.

SinglePinConnectionMode:

ThePICAXE-08Mand allM2/X2partshavebi-directionalpins, sotheSRF005can connect toasinglei/opin.

TherearetwowaytoachievethisconnectionontheSRF005,viathe5wayheader orviathe3wayheader. The3wayheader isdesigned tobecompatible with 'servoextension leads'(e.g.part DAG001) soisoften thepreferred methodon newdesigns. The5wayheader iscompatiblewith older SRF005modules/PCBs.

Usingthe5wayheader(note +5Vand0Vare markedontheSRF005):
+5V Connect to5V Not used Donotconnect
Signal Connect directlytothePICAXEpin
Mode Connect to0V
0V Connect to0V

Usingthe3wayheader(note SIGand0Vare markedontheSRF005):
Signal(SIG) Connect directlytothePICAXEpin
+5V Connect to5V
0V Connect to0V
Whenusingthe3pin headeryouMUSTalsosolderawirelinkbetweenthemodeand0V onthe5wayheader(ieawirelinkbetweenpads4and5onthe5wayheader).

Takecarenot tooverheat, and therefore damage, thesolder connectionpads whilst making connections.

Example PICAXEProgram 1:

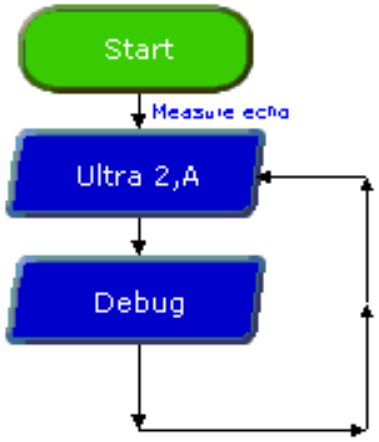
Thefollowing programgiveanexample ofhowtousetheSRF005module witha PICAXEmicrocontrollerinsinglepin mode. Thespecial‘ultra’command is designed forusewith theSRF005insinglepin mode.

```
symbolSIG=C.1            ;DefinepinforTrigger&Echo(AllM2,X2parts)
symbolrange=w1           ;16bitwordvariableforrange

main:
    ultraSIG,range;usededicatedultracommanddebugrange
    ;displayrangeviadebugcommand pause50
    ;shortdelay
    gotomain              ;looparoundforever
```

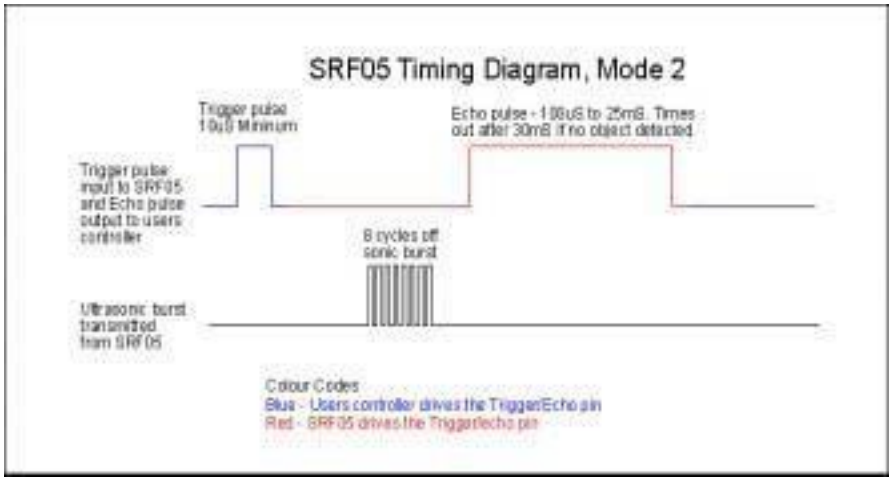
Example LogicatorFlowsheet:

Thefollowing flowchartgiveanexample ofhow tousetheSRF005module with aPICAXEmicrocontrollerin singlepin mode. Thespecial ‘ultra’cellisdesigned forusewiththeSRF005.



TechnicalDetails (Single PinMode):

Theinput/Outputpin isusedtotriggertheSRF005module viaa‘pulsout’commandand then thepinisconverted to aninput. TheSRF005module thensendsoutthesonicburst, and setsthepinhighforthetimeittakesthesonic burst tobereturned.Thereforethesame PICAXEpin isthen used toreceiveand timethisechopulseviaa‘pulsin’ command.



Thelength oftheecho pulseisthen divided by5.8togiveavalueincm,and displayed onthecomputerscreenvia the‘debug’command.Notethat aword variable, w1,isusedfortheecho timing, astheechopulsemaybeavalue greaterthan 255 (maximumvalueofabytevariable). Wordvariables aremade upoftwobytevariables and sohave amaximumvalueof65535 (in thiscasew1ismade upofb2and b3,sothesetwobytevariables must not beused anywhere elseintheprogram).

ExampleSinglePinPICAXEProgram 2:

```
symbolSIG=C.1            ;DefinepinforTrigger&Echo(AllM2,X2parts)
symbolrange=w1           ;16bitwordvariableforrange

main:
    pulsoutSIG,2          ;produce20uStriggerpulse(mustbeminimumof10uS)
    pulsinSIG,1,range      ;measurestherangein10uSsteps
;nowconvertrangetocm(divideby5.8)orinches(divideby14.8)
;aspicaxecannotuse5.8,multiplyby10thendivideby58instead
    letrange=range*10/58;multiplyby10thendivideby58 debugrange
    ;displayrangeviadebugcommand pause50
    ;shortdelay
    gotomain              ;andaroundforever

;NotethatX2partsoperateat8MHzinsteadof4MHzandsomodifythecalculation
;letrange=range*5/58;multiplyby(10/2=5)thendivideby58
```

DualPinMode-separatetrigger/echomicrocontroller pins:

Thedualpinmode isusedforolder PICAXEchipssuchasthe18Xor28X1.
TheSRF005ultrasonic rangefinderhas5connections pins.The3pinconnector isnot usedindualpinmode.

Usingthe5wayheader (note +5Vand 0Varemarked ontheSRF005):

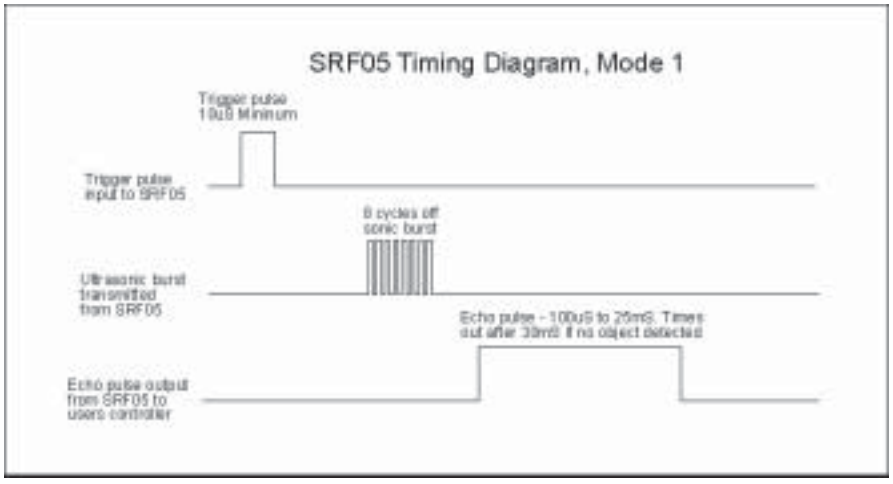
+5V	Connect to5V
Echo	Connect directlytoPICAXEinput pin
Trigger	Connect directlytoPICAXEoutputpin
Mode	Donotconnect
0V	Connect to0V

Important-Notethatthe‘Mode’(pin 4)connection**MUSTNOT**beconnected forcorrectoperationinthisseparate trigger/echomode.

Takecarenot tooverheat, and therefore damage, thesolder connectionpads whilstmaking connections.

TheSRF005**EchoOutput**isconnected toaPICAXE**input**pin.
TheSRF005**TriggerInput**isconnected toaPICAXE**output**pin.Notethismust beadirectconnectiontothePICAXE chipleg(do not connect viaadarlingtondriverbuffered outputonaPICAXEprojectboard).

Thefollowing programgivesanexample ofhowtousetheSRF005module with aPICAXEmicrocontroller.Output 3isusedtotriggertheSRF005module viaa‘pulsout’command.TheSRF005module thensendsoutthesonicburst, and setstheEchoOutput connection high forthetimeittakesthesonicburst tobereturned.Therefore thePICAXE input (input6)isused toreceiveand time thisecho pulseviaa‘pulsin’command.



Thelength oftheecho pulseisthen divided by5.8togiveavalueincm,and displayed onthecomputerscreenvia the‘debug’command.Notethat aword variable, w1,isusedfortheecho timing, astheechopulsemaybeavalue greaterthan 255 (maximumvalueofabytevariable). Wordvariables aremade upoftwobytevariables and sohave amaximumvalueof65535 (in thiscasew1ismade upofb2and b3,sothesetwobytevariables must not beused anywhere elseintheprogram).

SampleDualPinMode PICAXEProgram:

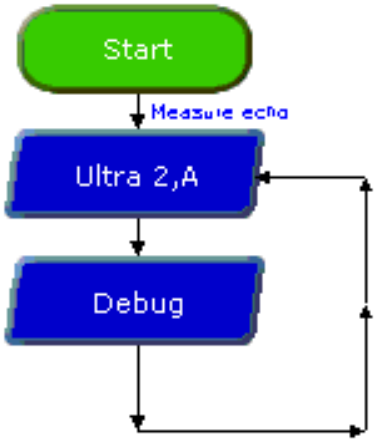
```
symboltrig=3        ;DefineoutputpinforTriggerpulse(A,M,X,X1parts)
;symboltrig=b.3     ;DefineoutputpinforTriggerpulse(M2,X2parts)
symbolecho=6       ;DefineinputpinforEchopulse(A,M,X,X1parts)
;symbolecho=c.6    ;DefineinputpinforEchopulse(M2,X2parts)
symbolrange=w1       ;16bitwordvariableforrange

main:
   pulsouttrig,2      ;produce20uStriggerpulse(mustbeminimumof10uS)
   pulsinecho,1,range;measurestherangein10uSsteps
   pause20            ;rechargeperiodafterrangingcompletes
;nowconvertrangetocm(divideby5.8)orinches(divideby14.8)
;aspicaxecannotuse5.8,multiplyby10thendivideby58instead
   letrange=range*10/58      ;multiplyby10thendivideby58 debugrange
   ;displayrangeviadebugcommand gotomain
   ;andaroundforever

;NotethatX2partsoperateat8MHzinsteadof4MHzandsomodifythecalculation
;letrange=range*5/58;multiplyby(10/2=5)thendivideby58
```

Example LogicatorFlowsheet:

Thefollowing flowchartgiveanexample ofhow tousethe SRF005module with aPICAXEmicrocontrollerindual pin mode. Thespecial‘ultra’cellisdesigned forusewith theSRF005and willautomaticallyenable dual pin mode forthose PICAXEchipsthatrequire it.



LOGO!
TechnicalData

	LOGO! 24CE	LOGO! 12/24RCE	LOGO! 24RCE	LOGO! 230RCE
Inputs	8	8	8	8
ofwhichcanbeused inanalogmode	4(0to10V)	4(0to10V)	–	–
Input/supply voltage	24VDC	12...24VDC	24VAC/DC	115...230VAC/DC
Permissiblerange	20.4...28.8VDC	10.8V...28.8VDC	20.4 V AC to 26.4 V AC 20.4VDCto28.8VDC	85VACto265VAC 100VDCto253VDC
Outputs	4;transistors	4;relays	4;relays	4;relays
Continuouscurrent	0.3A	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload
Short-circuitprotection	Electronic (approx. 1 A)	Externalfuserequired	Externalfuserequired	Externalfuserequired
Switchingfrequency	10Hz	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load
Cycletime	<0.1ms/function	<0.1ms/function	<0.1ms/function	<0.1ms/function
Display	Yes	Yes	Yes	Yes
Integratedtimeswitches/ powerreserve	Yes/typ.20days	Yes/typ.20days	Yes/typ.20days	Yes/typ.20days
Connectioncables	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²
Ambienttemperature	0to+55ºC	0to+55ºC	0to+55ºC	0to+55ºC
Storagetemperature	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC
Emittedinterference	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)
Degreeofprotection	IP20	IP20	IP20	IP20
Certification	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals
Mounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting
Dimensions(WxHxD)	71.5(4MW)x90x 60mm	71.5(4MW)x90x 60mm	71.5(4MW)x90x 60mm	71.5(4MW)x90x 60mm
Programmingcable	Ethernet	Ethernet	Ethernet	Ethernet

LOGO! 8 Basic				
	LOGO! 24CE	**LOGO! 12/24RCE**	**LOGO! 24RCE**	**LOGO! 230RCE**
LOGO!<=>LOGO! communication (Ethernet)	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG
LOGO!<=>network (Ethernet)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)
Maximumprogram memory	400blocks	400blocks	400blocks	400blocks
Externalmemory module	Standard microSD card	Standard microSD card	Standard microSD card	Standard microSD card
DataLogging	Internalmemory (200datarecords)/ microSDcard (2000datarecords)	Internalmemory (200datarecords)/ microSDcard (2000datarecords)	Internalmemory (200datarecords)/ microSDcard (2000datarecords)	Internalmemory (200datarecords)/ microSDcard (2000datarecords)
Onlinestatuschart	Yes, withsavingonthePC	Yes, withsavingonthePC	Yes, withsavingonthePC	Yes, withsavingonthePC
Macrofunction	Yes	Yes	Yes	Yes
Webserver	Yes	Yes	Yes	Yes
ArticleNo.	6ED1052-1CC01-0BA8	6ED1052-1MD00-0BA8	6ED1052-1HB00-0BA8	6ED1052-1FB00-0BA8

LOGO!
TechnicalData

LOGO! 8 Pure				
	LOGO! 24CEo	**LOGO! 12/24RCEo**	**LOGO! 24RCEo**	**LOGO! 230RCEo**
Inputs	8	8	8	8
ofwhichcanbeused inanalogmode	4(0to10V)	4(0to10V)	–	–
Input/supply voltage	24VDC	12...24VDC	24VAC/DC	115...230VAC/DC
Permissiblerange	20.4...28.8VDC	10.8V...28.8VDC	20.4 V AC to 26.4 V AC 20.4VDCto28.8VDC	85VACto265VAC 100VDCto253VDC
Outputs	4;transistors	4;relays	4;relays	4;relays
Continuouscurrent	0.3A	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload
Short-circuitprotection	Electronic (approx. 1 A)	Externalfuserequired	Externalfuserequired	Externalfuserequired
Switchingfrequency	10Hz	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load
Cycletime	<0.1ms/function	<0.1ms/function	<0.1ms/function	<0.1ms/function
Display	No	No	No	No
Integratedtimeswitches/ powerreserve	Yes/typ.20days	Yes/typ.20days	Yes/typ.20days	Yes/typ.20days
Connectioncables	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²
Ambienttemperature	0to+55ºC	0to+55ºC	0to+55ºC	0to+55ºC
Storagetemperature	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC
Emittedinterference	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)
Degreeofprotection	IP20	IP20	IP20	IP20
Certification	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals
Mounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting
Dimensions	71.5(4MW)x90x 60mm	71.5(4MW)x90x 60mm	71.5(4MW)x90x 60mm	71.5(4MW)x90x 60mm
Programmingcable	Ethernet	Ethernet	Ethernet	Ethernet

LOGO! 8 Pure				
	LOGO! 24CEo	**LOGO! 12/24RCEo**	**LOGO! 24RCEo**	**LOGO! 230RCEo**
LOGO!<=>LOGO! communication (Ethernet)	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG	Yes,max.16LOGO!+ 1LOGO!TDE+1PC/PG
LOGO!<=>network (Ethernet)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)	Yes,max.16TN (LOGO!,SIMATICCPU / HMI,PC)
Maximumprogram memory	400blocks	400blocks	400blocks	400blocks
Externalmemory module	Standard microSD card	Standard microSD card	Standard microSD card	Standard microSD card
DataLogging	Internalmemory (200datarecords)/ microSDcard (2000datarecords)	Internalmemory (200datarecords)/ microSDcard (2000datarecords)	Internalmemory (200datarecords)/ microSDcard (2000datarecords)	Internalmemory (200datarecords)/ microSDcard (2000datarecords)
Onlinestatuschart	Yes, withsavingonthePC	Yes, withsavingonthePC	Yes, withsavingonthePC	Yes, withsavingonthePC
Macrofunction	Yes	Yes	Yes	Yes
Webserver	Yes	Yes	Yes	Yes
ArticleNo.	6ED1052-2CC01-0BA8	6ED1052-2MD00-0BA8	6ED1052-2HB00-0BA8	6ED1052-2FB00-0BA8

LOGO!
TechnicalData

	LOGO! 12/24RCE	LOGO! 230RCE
Inputs	8	8
ofwhichcanbeusedinanalogmode	4(0to10V)	–
Input/supply voltage	12...24VDC	AC/DC115...230V
Permissiblerange	10.8V...28.8VDC	85VACto265VAC 100VDCto253VDC
Outputs	4;relays	4;relays
Continuouscurrent	10Awithresistiveload; 3Awithinductiveload	10Awithresistiveload; 3Awithinductiveload
Short-circuitprotection	Externalfuserequired	Externalfuserequired
Switchingfrequency	2Hzwithresistiveload; 0.5Hzwithinductiveload	2Hzwithresistiveload; 0.5Hzwithinductiveload
Cycletime	<0.1ms/function	<0.1ms/function
Display	Yes	Yes
Integratedtimeswitches/ powerreserve	Yes/typ.20days	Yes/typ.20days
Connectioncables	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²
Ambienttemperature	0to+55ºC	0to+55ºC
Storagetemperature	–40ºCto+70ºC	–40ºCto+70ºC
Emittedinterference	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)
Degreeofprotection	IP20	IP20
Certification	CSA,UL,FM, IEC61131,VDE0631,marineapprovals	CSA,UL,FM, IEC61131,VDE0631,marineapprovals
Mounting	on35mmDINrail, 6spacingunitswide, orwallmounting	on35mmDINrail, 6spacingunitswide, orwallmounting
Dimensions(WxHxD)	107(6MW)x90x60mm	107(6MW)x90x60mm
Programmingcable	Ethernet	Ethernet

	LOGO! 12/24RCE	LOGO! 230RCE
LOGO!<=>LOGO!communication (Ethernet)	Yes,max.8LOGO!+1PC/PG	Yes,max.8LOGO!+1PC/PG
LOGO!<=>network(Ethernet)	Yes,max.8TNLOGO!,SIMATICCPU, 1xSIMATICHMI,PC)	Yes,max.8TN(LOGO!,SIMATICCPU, 1xSIMATICHMI,PC)
Maximumprogrammemory	400blocks	400blocks
Externalmemorymodule	SIMATICmemorycardor standardSDcardmax.8GB	SIMATICmemorycardor standardSDcardmax.8GB
DataLogging	Internalmemory(200datarecords)/ microSDcard(2000datarecords)	Internalmemory(200datarecords)/ microSDcard(2000datarecords)
Onlinestatuschart	Yes, withsavingonthePC	Yes, withsavingonthePC
Macrofunction	Yes	Yes
Webserver	No	No
ArticleNo.	6ED1052-1MD00-0BA7	6ED1052-1FB00-0BA7

LOGO!
TechnicalData

	LOGO! 24C	LOGO! 12/24RC	LOGO! 24RC	LOGO! 230RC
Inputs	8	8	8	8
ofwhichcanbeused inanalogmode	4(0to10V)	4(0to10V)	–	–
Input/supply voltage	24VDC	12...24VDC	24VAC/DC	115...230VAC/DC
Permissiblerange	20.4...28,8VDC	10.8V...28.8VDC	20.4 V AC to 26.4 V AC 20.4VDCto28.8VDC	85VACto265VAC 100VDCto253VDC
Outputs	4;transistors	4;relays	4;relays	4;relays
Continuouscurrent	0.3A	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload
Short-circuitprotection	Electronic (approx. 1 A)	Externalfuserequired	Externalfuserequired	Externalfuserequired
Switchingfrequency	10Hz	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load
Cycletime	<0.1ms/function	<0.1ms/function	<0.1ms/function	<0.1ms/function
Display	Yes	Yes	Yes	Yes
Integratedtimeswitches/ powerreserve	Yes/typ.80h (2yearswithbattery module)	Yes/typ.80h (2yearswithbattery module)	Yes/typ.80h (2yearswithbattery module)	Yes/typ.80h (2yearswithbattery module)
Connectioncables	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²
Ambienttemperature	0to+55ºC	0to+55ºC	0to+55ºC	0to+55ºC
Storagetemperature	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC
Emittedinterference	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)
Degreeofprotection	IP20	IP20	IP20	IP20
Certification	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals
Mounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting
Dimensions(WxHxD)	71,5(4MW)x90x 60mm	71,5(4MW)x90x 60mm	71,5(4MW)x90x 60mm	71,5(4MW)x90x 60mm
Programmingcable	LOGO!PCcable, (RS232orUSB)	LOGO!PCcable, (RS232orUSB)	LOGO!PCcable, (RS232orUSB)	LOGO!PCcable, (RS232orUSB)
Optionalbackup battery	Yes	Yes	Yes	Yes

	LOGO! 24C	LOGO! 12/24RC	LOGO! 24RC	LOGO! 230RC
LOGO!<=>LOGO! communication (Ethernet)	No	No	No	No
LOGO!<=>network (Ethernet)	No	No	No	No
Maximumprogram memory	200blocks	200blocks	200blocks	200blocks
Externalmemory module	LOGO!memorycard	LOGO!memorycard	LOGO!memorycard	LOGO!memorycard
DataLogging	No	No	No	No
Onlinestatuschart	No	No	No	No
Macrofunction	No	No	No	No
Webserver	No	No	No	No
ArticleNo.	6ED1052-1CC01-0BA6	6ED1052-1MD00-0BA6	6ED1052-1HB00-0BA6	6ED1052-1FB00-0BA6

LOGO!
TechnicalData

	LOGO! 24Co	LOGO! 12/24RCo	LOGO! 24RCo	LOGO! 230RCo
Inputs	8	8	8	8
ofwhichcanbeused inanalogmode	4(0to10V)	4(0to10V)	–	–
Input/supply voltage	24VDC	12...24VDC	24VAC/DC	115...230VAC/DC
Permissiblerange	20.4...28,8VDC	10.8V...28.8VDC	20.4 V AC to 26.4 V AC 20.4VDCto28.8VDC	85VACto265VAC 100VDCto253VDC
Outputs	4;transistors	4;relays	4;relays	4;relays
Continuouscurrent	0.3A	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload	10Awithresistive load; 3Awithinductiveload
Short-circuitprotection	Electronic (approx. 1 A)	Externalfuserequired	Externalfuserequired	Externalfuserequired
Switchingfrequency	10Hz	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load	2Hzwithresistive load; 0.5Hzwithinductive load
Cycletime	<0.1ms/function	<0.1ms/function	<0.1ms/function	<0.1ms/function
Display	No	No	No	No
Integratedtimeswitches/ powerreserve	Yes/typ.80h (2yearswithbattery module)	Yes/typ.80h (2yearswithbattery module)	Yes/typ.80h (2yearswithbattery module)	Yes/typ.80h (2yearswithbattery module)
Connectioncables	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²	2x1.5mm² or 1x2.5mm²
Ambienttemperature	0to+55ºC	0to+55ºC	0to+55ºC	0to+55ºC
Storagetemperature	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC	–40ºCto+70ºC
Emittedinterference	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)	In accordance with EN 55011 (limit class B)
Degreeofprotection	IP20	IP20	IP20	IP20
Certification	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals	CSA,UL,FM, IEC61131,VDE0631, marineapprovals
Mounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting	on35mmDINrail, 4spacingunitswide, orwallmounting
Dimensions(WxHxD)	71,5(4MW)x90x 60mm	71,5(4MW)x90x 60mm	71,5(4MW)x90x 60mm	71,5(4MW)x90x 60mm
Programmingcable	LOGO!PCcable, (RS232orUSB)	LOGO!PCcable, (RS232orUSB)	LOGO!PCcable, (RS232orUSB)	LOGO!PCcable, (RS232orUSB)
Optionalbackup battery	Yes	Yes	Yes	Yes

	LOGO! 24Co	LOGO! 12/24RCo	LOGO! 24RCo	LOGO! 230RCo
LOGO!<=>LOGO! communication (Ethernet)	No	No	No	No
LOGO!<=>network (Ethernet)	No	No	No	No
Maximumprogram memory	200blocks	200blocks	200blocks	200blocks
Externalmemory module	LOGO!memorycard	LOGO!memorycard	LOGO!memorycard	LOGO!memorycard
DataLogging	No	No	No	No
Onlinestatuschart	No	No	No	No
Macrofunction	No	No	No	No
Webserver	No	No	No	No
ArticleNo.	6ED1052-2CC01-0BA6	6ED1052-2MD00-0BA6	6ED1052-2HB00-0BA6	6ED1052-2FB00-0BA6

LOGO!
TechnicalData

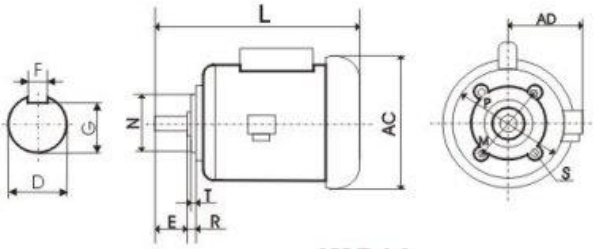
JY SERIES

SINGLE-PHASE CAPACITOR-START INDUCTION MOTORS

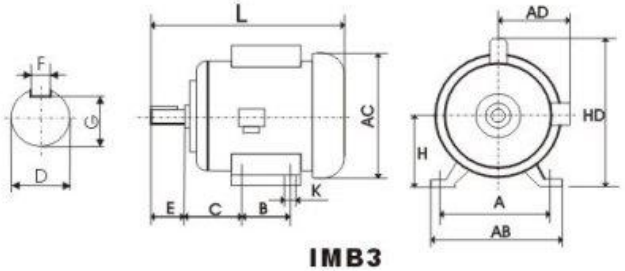
Http://www.fufamotor.com

JY series single-phase capacitor start induction motor is widely used in air compressors, refrigerators, medical apparatus and other small machines which demand full-load starting, a large starting torque and limited starting current.
These series motors are of totally enclosed fan-cooled, and have three frame sizes(09, 1, 2). The frames are made of cast iron or cast aluminium according to the requests.

Ambient temperature:	**-15℃ ≤ θ ≤ 40℃**
Altitude:	**Not exceeding 1000 meters**
Protection type:	**IP44 / IP54**
Cooling type:	**IC0141**
Insulation class:	**B / F**
Rated frequency:	**50Hz (60Hz is available on request)**
Duty/Rating:	**Continuous (S1)**



IMB14



IMB3

OVERALL & INSTALLATION DIMENSIONS

Frame No.	Mounting Dimensions (mm)															Overall Dimensions (mm)				
	A	B	C	D	E	F	G	H	K	M	N	P	R	S	T	AB	AC	AD	HD	L
2	160	112	63	19	40	6	15.5	100	12	115	95	140	0	M8	3	190	190	128	246	330
1	140	100	56	16	40	5	13	90	10	100	80	120	0	M8	3	176	176	121	220	286
09	125	100	50	14	30	4	11.5	80	10	85	70	105	0	M8	3	156	156	108	190	258

TECHNICAL DATA

Frame No.	Type	HP	W	Voltage (V)	Speed (r/min)	Power factor	Eff (%)	Max torque / Rated torque	Locked rotor torque / rated torque
2	JY2A-2	1.5	1100	220V	2850	0.77	71	1.8-2	2-3.5
	JY2B-2	1	750	220V	2850	0.75	70		
	JY2A-4	1	750	220V	1400	0.68	69		
	JY2B-4	3/4	550	220V	1400	0.68	67		
1	JY1A-2	3/4	550	220V	2800	0.72	66	1.8-2	2-3.5
	JY1B-2	1/2	370	220V	2800	0.72	66		
	JY1A-4	1/2	370	220V	1400	0.62	64		
	JY1B-4	1/3	250	220V	1400	0.62	60		
09	JY09A-2	1/3	250	220V	2800	0.72	63	1.8-2	2-3.5
	JY09B-2	1/4	180	220V	2800	0.72	60		
	JY09A-4	1/4	180	220V	1400	0.62	56		

Note:The motor is designed according to power supplies 220V,50Hz,Special design may be accommodated with the customers,particular requirements as 230V,50Hz or 220V/110V,60Hz,etc.

LOGO!
TechnicalData