INDUCTIVE SPEED DETECTORS

Feature

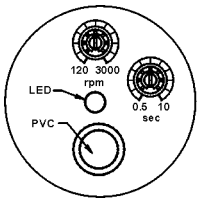
The speed detector is a self contained device incorporating an impulse generator for the detection of rotational speed.
No additional external amplifier or control device is required. The speed monitor gives noncontact rotational speed detection on the principle of an inductive proximity switch and monitors the speed to check that it does not fall below a minimum preset value. This minimum value is adjustable.
The unit contains a fixed time duration override circuit for the start up period,as well as an indicator to show the output state.
When the supply voltage is switched on, the output circuit is on for the start up override period.
If the desired set speed is reached by the end of the start up period then the circuit remains on.
If the set minimum speed is not reached by the end of the start up override period,or if the speed subsequently falls below the set minimum value,then the output is switched off.
Cancellation of this state is achieved by disconnecting the supply voltage.

Application

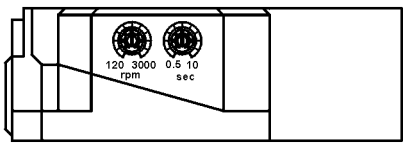
Typical applications include under speed,locked rotor and zero speed detection for shaft,belt or web breakage,sequentional motor starting or runout detection.

■ Panel Face

- **CULINDER M30**



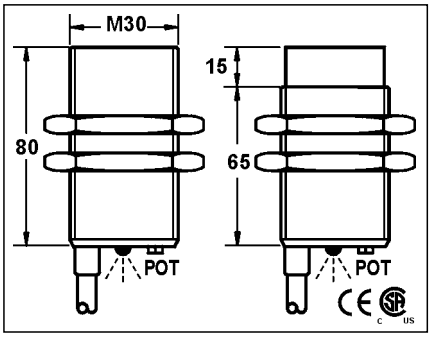
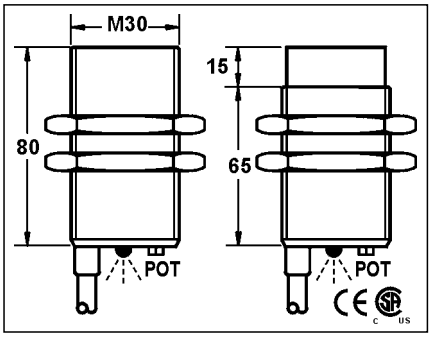
- **5 WAY ROTATIONAL HEAD**



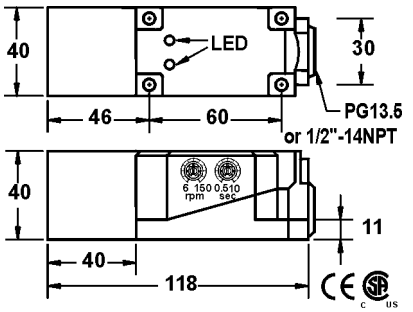
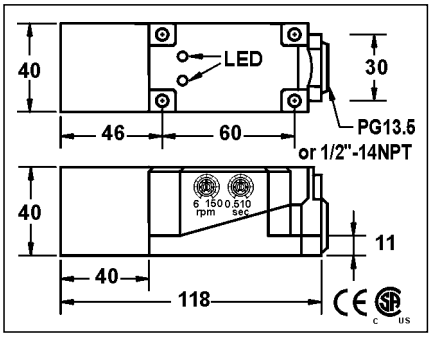
■ Functional Instruction and Adjustment

Front Diagram	Condition	Functional Instruction and Adjustment
 120 3000 rpm	The green LED on the front turns on.	Turn the potentiometer to the point required the speed range is 120 rpm to 3000 rpm.
 0.5 10 sec		The time delay is 0.5 sec to 10 sec, turn the potentiometer to the point required.

INDUCTIVE SPEED DETECTORS

Diameter	M 30			M 30		
● Shielded ○ non-shielded	●		○	●		○
Sensing Distance Sn mm	10 mm		15 mm	10 mm		15 mm
Housing Material	Nickel plated brass			Nickel plated brass		
● LED Have ○ Without LED	●			●		
Dimensions (Unit: mm)						
Speed Range Available(one pulse one turn)	6-150 targets/minute			120-3000 targets/minute		
Power Up Delay	0.5-10 sec			0.5-10 sec		
Supply Voltage	10-30VDC			10-30VDC		
Max. Load Current	200mA			200mA		
Max. Leakage Current	0.01mA			0.01mA		
No Load Current	≤15mA			≤15mA		
Short Circuit Protection	YES			YES		
Hysteresis	<15%			<15%		
Repeat Accuracy	<1.0%(Sn)			<1.0%(Sn)		
Ambient Temperature	-25 °C - +70 °C			-25 °C - +70 °C		
Temperature Drift	<10%(Sn)/ °C			<10%(Sn)/ °C		
Protection Degree	IP67			IP67		
Time Delay Before Availability	-			-		
EMC	RFI>3V/m / EFT>1KV / ESD>4KV (contact)			RFI>3V/m / EFT>1KV / ESD>4KV (contact)		
Shock / Vibration	IEC 60947-5-2,Part 7.4.1 / IEC 60947-5-2,Part 7.4.2			IEC 60947-5-2,Part 7.4.1 / IEC 60947-5-2,Part 7.4.2		
Material Active Face	PBT			PBT		
NPN N.O.	FCM1-3010N-A3U2/S	1	FCM2-3015N-A3U2/S	FCM1-3010N-A3U2/F	1	FCM2-3015N-A3U2/F
NPN N.C.	FCM1-3010N-B3U2/S	2	FCM2-3015N-B3U2/S	FCM1-3010N-B3U2/F	2	FCM2-3015N-B3U2/F
PNP N.O.	FCM1-3010P-A3U2/S	3	FCM2-3015P-A3U2/S	FCM1-3010P-A3U2/F	3	FCM2-3015P-A3U2/F
PNP N.C.	FCM1-3010P-B3U2/S	4	FCM2-3015P-B3U2/S	FCM1-3010P-B3U2/F	4	FCM2-3015P-B3U2/F
Changeover PNP (N.O. & N.C.)						
Changeover NPN (N.O. & N.C.)						
DC 2 wire N.O.						
DC 2 wire N.C.						
NAMUR						
Capacitive Mini Size						
DC 3 wire 10-55v NPN N.O.						
DC 3 wire 10-55v NPN N.C.						
DC 3 wire 10-55v PNP N.O.						
DC 3 wire 10-55v PNP N.C.						
AC N.O.						
AC N.C.						
AC N.O. N.C. Changeable						
DC/AC (Short Circuit Protection)						
Remarks	Connector type available			Connector type available		
Cable 2M (PVC)	5.8φ3x0.5			5.8φ3x0.5		
Weight	approx. 264g		approx. 256g	approx. 264g		approx. 256g

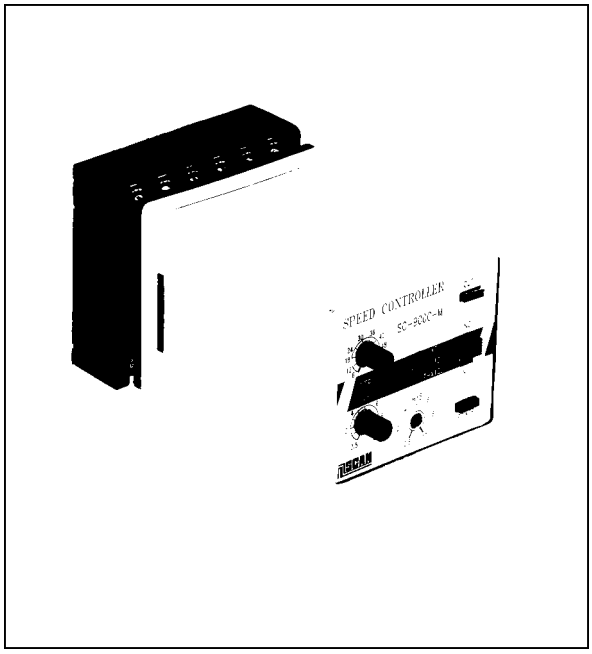
INDUCTIVE SPEED DETECTORS WITH 5 WAY ROTATABLE HEAD

Diameter	Q 40		Q 40	
● Shielded ○ non-shielded	●	○	●	○
Sensing Distance Sn mm	20 mm	30 mm	20 mm	30 mm
Housing Material	PBT		PBT	
● LED Have ○ Without LED	●		●	
Dimensions (Unit: mm)				
Speed Range Available(one pulse one turn)	6-150 targets/minute		120-3000 targets/minute	
Power Up Delay	0.5-10 sec		0.5-10 sec	
Supply Voltage	10-30VDC		10-30VDC	
Max. Load Current	200mA		200mA	
Max. Leakage Current	0.01mA		0.01mA	
No Load Current	≤15mA		≤15mA	
Short Circuit Protection	YES		YES	
Hysteresis	<15%		<15%	
Repeat Accuracy	<1.0%(Sn)		<1.0%(Sn)	
Ambient Temperature	-25 ° C - +70 ° C		-25 ° C - +70 ° C	
Temperature Drift	<10%(Sn)/ ° C		<10%(Sn)/ ° C	
Protection Degree	IP67		IP67	
Time Delay Before Availability	-		-	
EMC	RFI>3V/m / EFT>1KV / ESD>4KV (contact)		RFI>3V/m / EFT>1KV / ESD>4KV (contact)	
Shock / Vibration	IEC 60947-5-2,Part 7.4.1 / IEC 60947-5-2,Part 7.4.2		IEC 60947-5-2,Part 7.4.1 / IEC 60947-5-2,Part 7.4.2	
Material Active Face	PBT		PBT	

NPN N.O.	FQP1-Q4020N-A3U/S	1	FQP2-Q4030N-A3U/S	FQP1-Q4020N-A3U/F	1	FQP2-Q4030N-A3U/F
NPN N.C.	FQP1-Q4020N-B3U/S	2	FQP2-Q4030N-B3U/S	FQP1-Q4020N-B3U/F	2	FQP2-Q4030N-B3U/F
PNP N.O.	FQP1-Q4020P-A3U/S	3	FQP2-Q4030P-A3U/S	FQP1-Q4020P-A3U/F	3	FQP2-Q4030P-A3U/F
PNP N.C.	FQP1-Q4020P-B3U/S	4	FQP2-Q4030P-B3U/S	FQP1-Q4020P-B3U/F	4	FQP2-Q4030P-B3U/F
Changeover PNP (N.O. & N.C.)						
Changeover NPN (N.O. & N.C.)						
DC 2 wire N.O.						
DC 2 wire N.C.						
NAMUR						
Capacitive Mini Size						
DC 3 wire 10-55v NPN N.O.						
DC 3 wire 10-55v NPN N.C.						
DC 3 wire 10-55v PNP N.O.						
DC 3 wire 10-55v PNP N.C.						
AC N.O.						
AC N.C.						
AC N.O. N.C. Changeable						
DC/AC (Short Circuit Protection)						

Remarks	Connector type available	Connector type available
Cable 2M (PVC)		
Weight	approx. 242g	approx. 242g

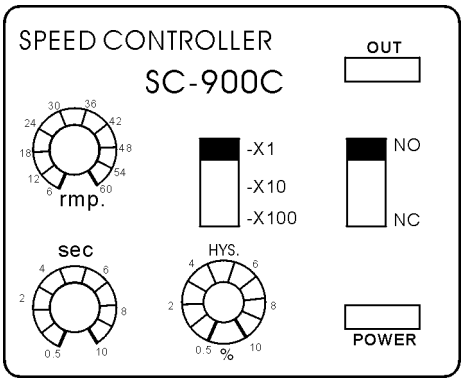
SPEED CONTROLLER/SC-900C



Feature

The speed control SC-900C contains a transformer, a DC stabilizer, an electronic evaluater and an output relay. It is a complete electronic unit, suitable for connection to the sensors, including inductive and capacitive proximtiy switch. The input signals (>0.5ms) pass through a level-regulator to a frequency-cross-over before going to differentiating unit. If the speed is too high, then the relay closes and the green LED lights up and vice versa.
Flutter from the rotating devices, can be compensated by altering the hysteresis, using the potentiometer meter mounted on the front. The unit requires a warming up time of 10 seconds for the motor, but this can be varied from 0.5 to 10 seconds by an internal potentiometer.

Panel face



Technical Data

Items / Model	SC-900C
Supply voltage	110V/220V±10%, 50/60 HZ
power consumption	less than 8 VA
Input	PNP or NPN
Hysteresis	0.5% to 10% via potentiometer adjustable
Start-up delay	0.5 to 10 sec. via potentiometer adjustable
Speed range	3 ranges can be selected 6-60 rpm, 60-600rpm, 600-6000rmp
Output	Relay contact SPDT 3A resistive at 250 VAC
Ambient temperature/humidity	0°C to 60°C
Insulating resistance	More than 10 M Ω (500VDC,insulation resistance tester) between AC(input) and DC(output) terminals
Dielectric resistance	1500 VAC, 50/60HZ for 1 minute between AC(inout)and DC(output) terminals
Net weight	Approx. 430 g
Accessories	Socket with terminals. Fixing clamps

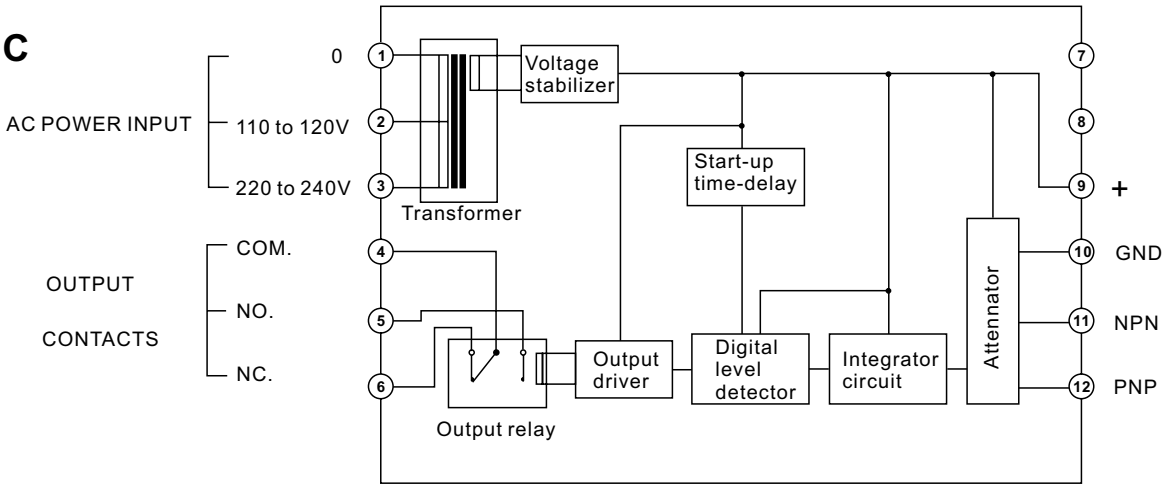
Function Instruction and Adjustment

Front Diagram	Condition	Function Instruction and Adjustment
	The position of the slide switch depend upon the requirement	NO: normally open NC: normally closed
		Hysteresis indicates the percent of difference between speed increasing values and speed decreasing values. Suitable for controling speed of devices with moment of ineria.
	The slide switch is set, the Hys. Potentiometer is regulated.	-X1: speed range from 6-60 rpm. -X10: speed range from 60-600rpm. -X100: speed range from 600-6000 rpm.
		Turn the potentiometer to the speed values required
		The start-up time delay inhibits the function of speed controller during system start-up. Only after the preset start-up time period has elapsed, does speed controller become operative.
		The green LED indicates the status of output.
		The red LED indicates power on.

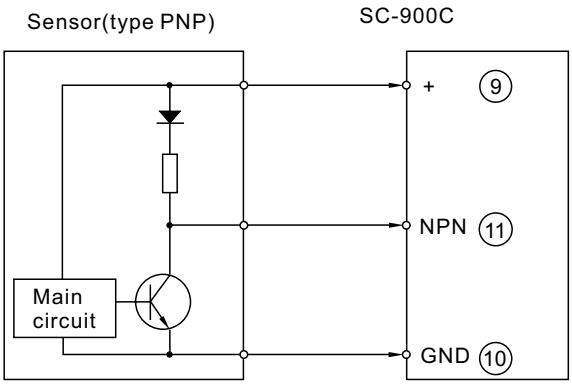
SPEED CONTROLLER/SC-900C

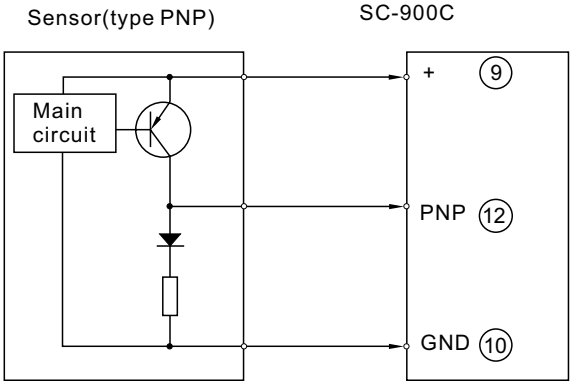
Functional Diagram

SC-900C



Connection instruction



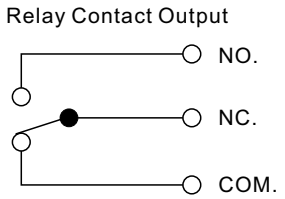


Wiring Guidelines

Distance between proximity switches (inductive and capacitive) and this control unit is 3000 ft (max.). If the electrical parameters of the cable are unknown, the values below may be used. Based on a survey of manufacture s data.

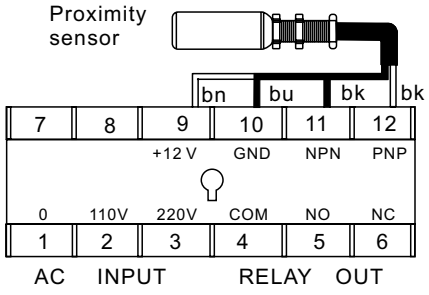
Capacitance: 60 PF/ft. Inductance: 0.20uH/ft.

OUTPUT CIRCUIT



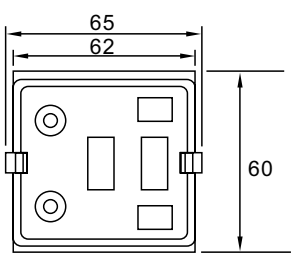
Contact capacity: 3A resistive at 250VAC

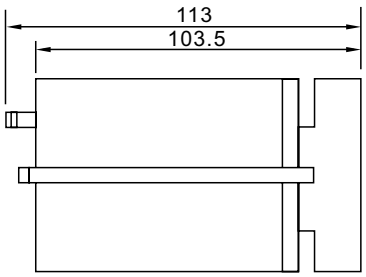
Wiring



Dimensions

● Control unit





● Socket with terminals