

ELECTRONIC ROTATION CONTROL



WORKING PRINCIPLE

This device measures the time gap between two signals read by a sensor on a revolving or cycling mechanism. When the time gap becomes greater than the pre-set value, the device itself activates and signals a drop in velocity or full stop of the mechanism's movement.

Lower values compared to pre-set value do not activate the device.

This device is available with a control unit independent from signal reading

sensor (CRTP) or with the sensor incorporated in the device (CRT30).

This device is ideal for control of slipping transport belts, chain breakage, power interruption or overloads etc... in applications such as belt transport, chain elevators, mills, grinders, pumps, kneading mixers and in other situations where movement control of revolving or cycling mechanisms is necessary.

TYPE CRTP

This device is composed of a central electronic unit inside a plastic undecal insertable housing and a detecting sensor that works according to inductive, capacitive or photoelectric principles in NAMUR-NPN-PNP versions. Utilisation of sensors with various size and shapes permits CRTP to be useful in any detecting of different space and distances which makes its utilisation very vast.

PROGRAMMABLE FUNCTIONS TYPE CRTP

1) TIME AND RPM

The time range is from 0.03 sec. and 512 sec. distributed on nine scales which can be selected by means of the front mounted dip switches. The selected scale can then be adjusted by means of a potentiometer which has a graduated scale from 0.05÷1.

It is possible by summing two or more scales to obtain full scale values which are different to the standard ones, this is obtained by placing the switch with the values preselected in the ON position (e. g.: Pos. 2 and 4 switch on corresponds to a full scale of 144 seconds). This operation can also be carried out on the RPM scale. For the conversion time/RPM see chart 1 at page 90.

2) FUNCTION A-B

When the CRTP gives out a signal of standstill or slowing down it is possible to have two types of functions which can be selected by switch number 10 ON/OFF.

A: in order to reactivate the unit it is necessary to switch the power supply off and then on or reset.

B: the unit can be reactivated by means of the first impulse which arrives from the sensor or by means of the reset.

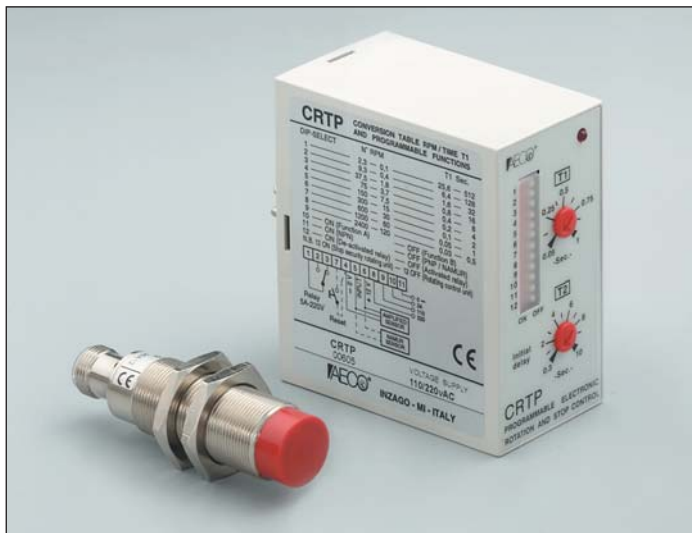
This is obtained with the switch in the OFF position.

3) SENSOR - NAMUR - NPN - PNP

It is possible to select via the switch number 11 in the ON/OFF position the type of logic for the sensing unit. In the ON position it is possible to connect NPN sensors and in the OFF position PNP and NAMUR sensors.

4) ROTATION CONTROL - SHAFT STAND STILL

These functions can be selected by switch number 12 and in this way both functions can be carried out by the same instrument.



4a) ROTATION CONTROL - SWITCH OFF

With power applied the relay switches and maintains this position as long as the impulses from sensors are within the set time.

If within that time no impulse is received the relay changes state giving an alarm condition, in the case of lack of power supply the relay changes state (see working diagram) giving the alarm condition (slowdown or stopping).

4b) SHAFT STAND STILL CONTROL - SWITCH ON

In this situation the relay works in exactly the opposite way.

The relay activates when no impulse arrives within the set time thus showing the shaft standstill condition.

In the case of loss of power supply the relay changes state thus giving the alarm condition (shaft movement).

TYPE CRT30

It's a rotation control device with the shape of a cylindrical threaded metallic sensor M30x1.5 inductive sensing featuring an activating distance between 4 and 6 mm on metallic material.

This rotation control sensor may be limited in the amount of applications where we can use it because of its 30 mm diameter but in other cases it proves to be very interesting because we have both detecting and control all in the



same device.

Moreover the power supply tension range from 18-50 D.C. and 18-240 A.C., various programmable functions and output exchange relay make of this device a compact and practical instrument for installers.

PROGRAMMABLE TYPES AVAILABLE

CRT30-R10L = 6÷150 RPM detectable by means of trimmer.

Functions A and B available by means of selector.

CRT30-R10V = 120÷3000 RPM detectable by means of trimmer.

Functions A and B available by means of selector.

CRT30-R10L/V = two range of RPM can be detected (6÷150 RPM and 120÷3000RPM) and selected by means of trimmer regulator.

Function B pre-programmed and fixed.

Function types A-B: when CRT30 detects full stop or velocity decrease you can have two working functions (excluding type CRT-R10 L/V):

A: to re-activate the device you must switch off power and then turn on again.

B: the device re-activates itself automatically as soon as the number of rotations exceeds alarm range.

ELECTRONIC ROTATION CONTROL

ROTATION CONTROL AND FULL STOP SHAFT CRTP PROGRAMMABLE



ALL FUNCTIONS AVAILABLE AD PROGRAMMABLE
RPM RANGE PROGRAMMABLE FROM 0.1 TO 2400 Imp./min.

CONTROL UNIT FREE OF SENSOR

COMBINABLE TO INDUCTIVE, CAPACITIVE, PHOTOELECTRIC AND HALL SENSORS

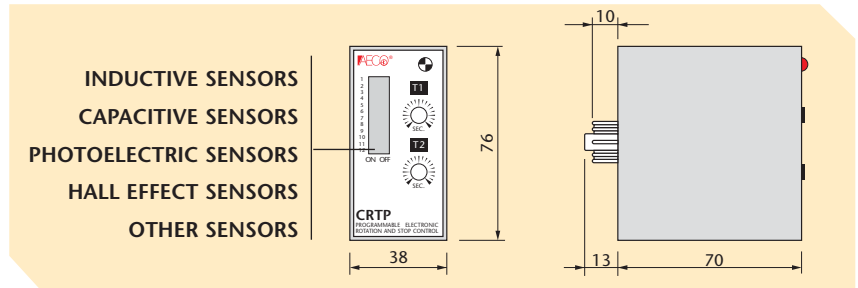
RELAY OUTPUT CHANGEOVER

TECHNICAL CHARACTERISTICS

Dimensions mm

TYPE

		CRTP
Working distance	mm	About half Sn of sensor being used
D.C. voltage (ripple <10%)	V	24
A.C. voltage 50/50 Hz	V	24 or 110/220
Detectable rotations range	RPM	0.1 ÷ 2400
Delayed alarm activation time	sec	0.3 ÷ 10
Response time	sec	See chart 1
Function - A		Programmable - DIP SWITCH 10 = ON
Function - B		Programmable - DIP SWITCH 10 = OFF
Max absorption (relay ON)	mA	1,5 VA
Output voltage	Vcc	12
Max supply current	mA	50
Output type		Changeover contact 5A - 240 Vac (resistive load)
Led		Incorporated
Temperature range	°C	-20 ÷ +60
IP rating	IP	40
Housing		Plastic
PVC cable	2m	-

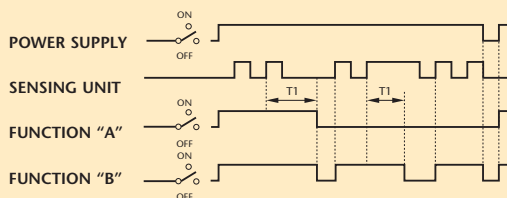


CONVERSION TABLE RPM/TIME AND PROGRAMMABLE FUNCTIONS

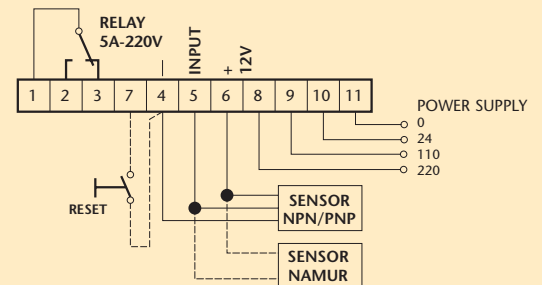
DIP SWITCH position	Number of RPM	T1 Seconds	Chart 1	
1	2,3	0,1	25,6	512
2	9,3	0,4	6,4	128
3	37,5	1,8	1,8	32
4	75	3,7	0,8	16
5	150	7,5	0,4	8
6	300	15	0,2	4
7	600	30	0,1	2
8	1200	60	0,05	1
9	2400	120	0,03	0,5
10	ON (A FUNCTION)		OFF (B FUNCTION)	
11	ON (NPN SENSOR)		OFF (PNP/NAMUR SENSORS)	
12	ON (SHAFT STANDSTILL)		OFF (ROTATION CONTROL)	

ON ↔ OFF
N.B. The positions from 1 ÷ 9 (Preselection ON) programme the time or RPM ranges.
Positions 10-11-12 programme the available functions.

WORKING DIAGRAM

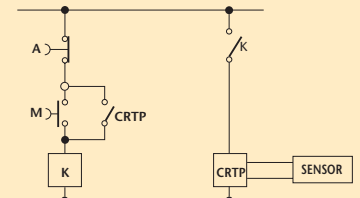


WIRING DIAGRAMS



SENSOR NPN = POSITION 11 / ON
SENSOR PNP / NAMUR = POSITION 11 / OFF

TYPICAL WORKING DIAGRAM

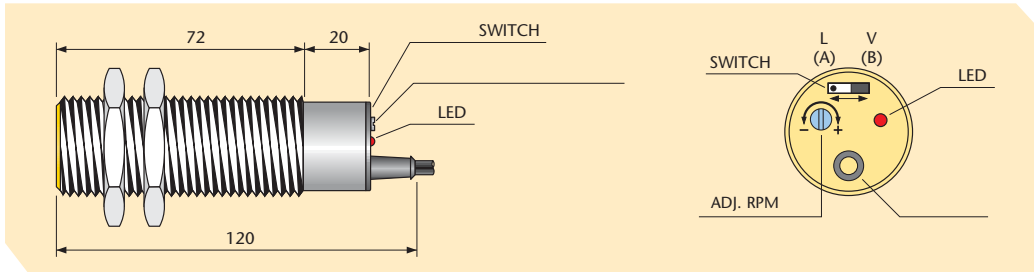


For a correct fixing of the AECO units it is recommended to use socket B8 an B11 with fixing spring MF. (page 102)

INDUCTIVE ROTATION CONTROL CRT30



DECREASING ROTATION CONTROL
 METALLIC CYLINDER HOUSING M30x1.5
 VERSIONS WITH 2 RANGES OF RPM FIXED OR PROGRAMMABLE
 CONTROL UNIT AND SENSOR INCORPORATED
 CHANGEOVER RELAY OUTPUT ACTIVATED IN NORMAL CONDITIONS
 AUTOMATIC RE-ACTIVATION OR BLOCKED WHEN IN ALARM MODE



CRTP 30 - R10L

CRTP 30 - R10V

CRTP 30 - R10L/V

4 ÷ 6 with metallic plate ≥ 30 x 30 x 1

18 ÷ 50

18 ÷ 240

Low (L) 6 ÷ 150 Adjustable

High (V) 120 ÷ 3000 Adjustable

Programmable by switch

9 ÷ 15

6 imp./min. Tr = 10 150 imp./min. Tr = 0,4

120 imp./min. Tr = 0,5 3000 imp./min. Tr = 0,02

Selected range function

Programmable by switch

Programmable by switch

Incorporated

< 20

-

-

Changeover contact 1A - 240 Vac (resistive load)

Incorporated

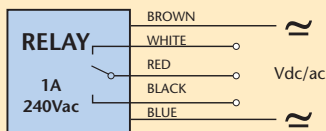
- 20 ÷ + 70

65

Nickelled brass

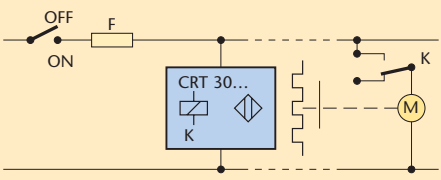
5 x 0.35 mm²

WIRING DIAGRAM

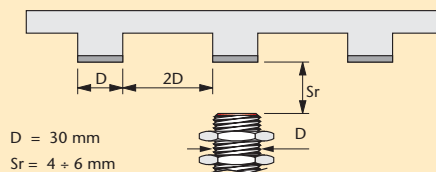


Multivoltage power supply
 18÷50 Vdc / 18÷240 Vac

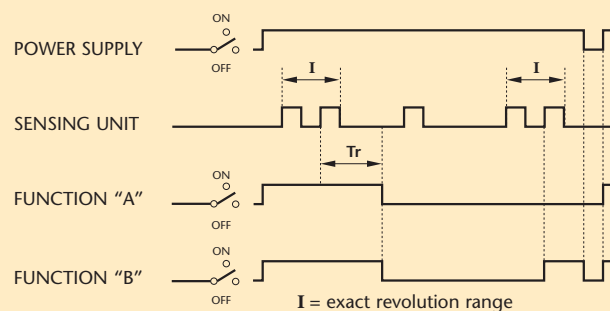
TYPICAL WORKING DIAGRAM



INSTRUCTION FOR CORRECT INSTALLATION



WORKING DIAGRAM



IDENTIFICATION REFERENCE



L Revolution range: 6÷150 RPM preset. Switch selecting functions "A" and "B".

V Revolution range: 120÷3000 RPM preset. Switch selecting functions "A" and "B".

L/V Switch selecting revolution range. Preset "B" function.