ELECTRONIC ROTATION CONTROL

CE

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 then 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 indipendent 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 inuctive, 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 swith on correspods 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 pratical 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.

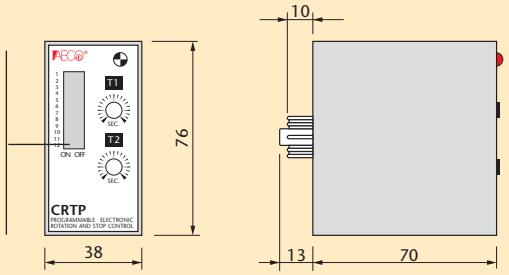
B: thz device re-activates itself automatically as soon as the number of rotations exceeds alarm range.

ROTATION CONTROL AND FULL STOP SHAFT CRTP PROGRAMMABLE

CE

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

INDUCTIVE SENSORS
CAPACITIVE SENSORS
PHOTOELECTRIC SENSORS
HALL EFFECT SENSORS
OTHER SENSORS



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

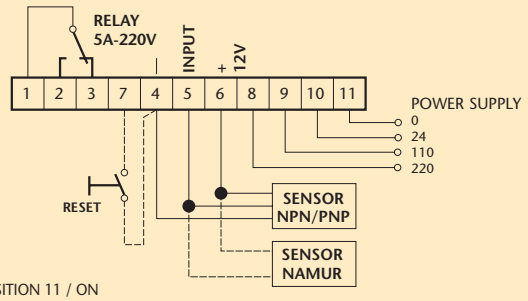
Chart 1

DIP SWITCH position	Number of RPM		T1 Seconds	
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

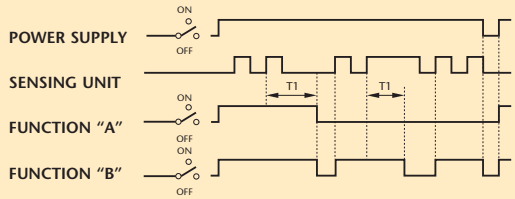
N.B. The positions from 1 ÷ 9 (Preselection ON) programme the time or RPM ranges.
Positions 10-11-12 programme the available functions.

WIRING DIAGRAMS

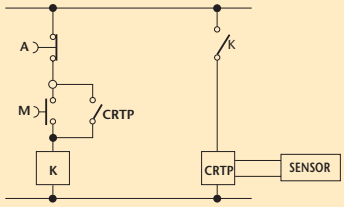


SENSOR NPN = POSITION 11 / ON
SENSOR PNP / NAMUR = POSITION 11 / OFF

WORKING DIAGRAM



TYPICAL WORKING DIAGRAM

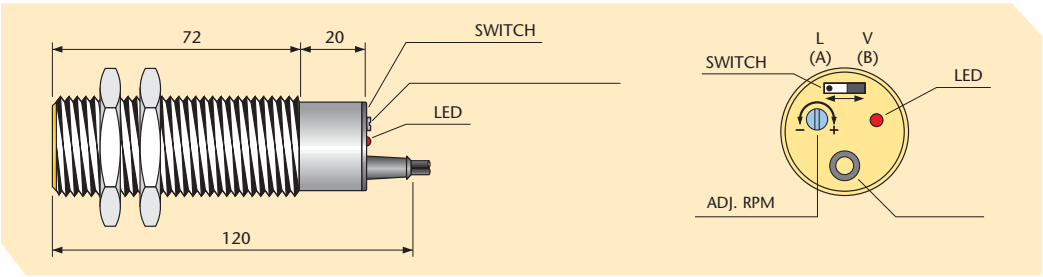


For a correct fixing of the AECO units it is recommended to use socket B8 an B11 with fixing spring MF. (page 102)

INDUCTIVE ROTATION CONTROL CRT30

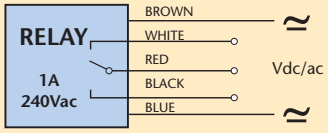
CE

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



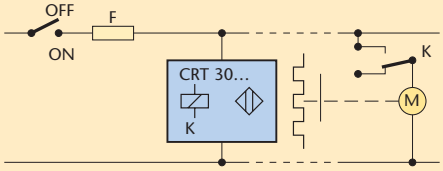
CRTP 30 - R10L	CRTP 30 - R10V	CRTP 30 - R10L/V
4 ÷ 6 with metallic plate ≥ 30 x 30 x 1		
18 ÷ 50		
18 ÷ 240		
Low (L) 6 ÷ 150 Adjustable	High (V) 120 ÷ 3000 Adjustable	Programmable by switch
9 ÷ 15		
6 imp./min. Tr = 10 150 imp./min. Tr = 0,4	120 imp./min. Tr = 0,5 3000 imp./min. Tr = 0,02	Selected range 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

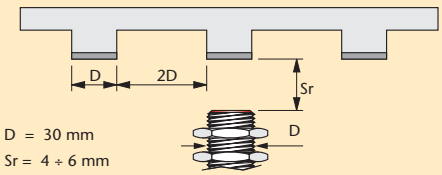


Multivoltage power supply
18÷50 Vdc / 18÷240 Vac

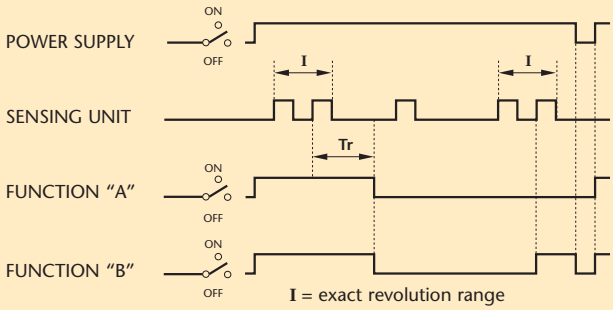
TYPICAL WORKING DIAGRAM



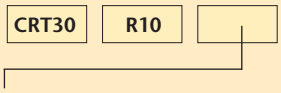
INSTRUCTION FOR CORRECT INSTALLATION



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.