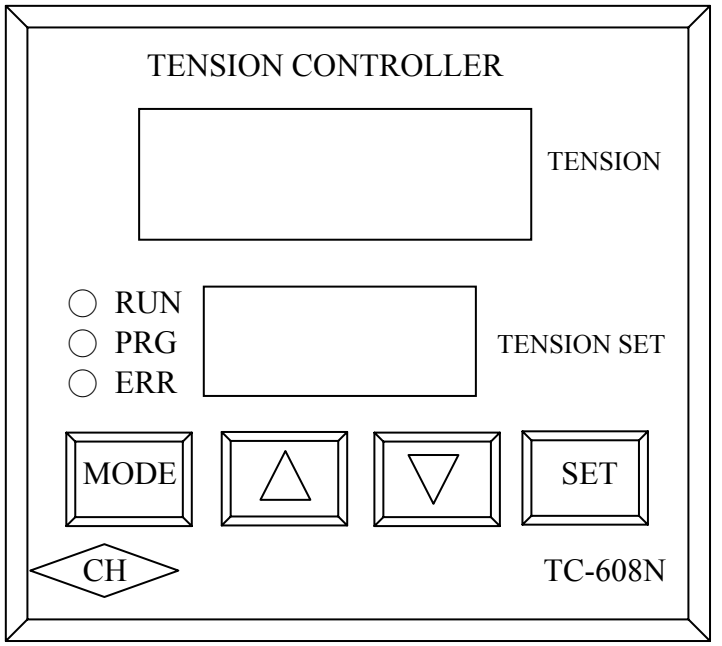
Tension Controller – Feed-back system

TC-608N Control Panel

In the form of a Load Cell

USER'S MANUAL



October, 2005

Prelude

Thank you for applying our TC-608N Tension Controller – Feedback system (abb. 608N) to your machinery equipment. Since the control systems renew quickly with time, usually the former customers have to acquaint all complicate parameters and programs very well before running each new system. We hear the voice from the customers' mind and notice the aspirations of them, so we develop the 608N series with strong function but simple operation.

Please read this manual carefully before running 608. Also please keep this manual properly in order to arrange electric wires, set up parameters and trouble-shooting if required in the future.

☆CAUTION:

(1) Forbid to arrange the electric wires or unload the connector of 608N when electricity is supplying.
(2) Terminals 11~14 are reserved for signals feedback and output, please do not connect with other usages.
(3) Forbid to connect Terminals 6 (+) and 7 (-) with AC power source or wrong voltage.
(4) Please do not take apart the housing of controller, and do not test voltage resistance on components of controller inside, either.
(5) The parameters of 608N have been set up properly by factory, except on particular control requirements, it needs not to re-set any.
(6) Assure power source to be AC 220V ± 10% and connected with Terminals 1 and 2.
(7) Assure tension signals output to be connected with Terminals 11 ~ 14.

Contents

1. Working principle of TC-608N

TC-608N is a high accuracy tension controller. The working principle of this controller is based on the comparative calculation between the required value and the actual value of tension, then the controller will automatically command to modify the brake power or roll-up torque to match the actual tensile value with the required one.

*The required tensile value is set up by the operator at site to decide the tension for material put-in or roll-up.

*The actual tensile value is gotten from measuring the actual tension by LOAD CELL when material is put in or rolled up.

2. How to operate TC-608N

(1) Terminals 15 and 16 are contacts for start.

(2) Terminals 15 and 17 are short-circuited to set up the parameters

(3) Secondly push Δ or ∇ on Control Panel to set up the required tension value.

(4) Terminals 15 and 18 are short-circuited to break off the function of PID.

(5) Compulsory second integral function: terminals 15 and 19 are short-circuited to enter compulsory second integral function for modifying the setting value.

3. Characteristics of TC-608N

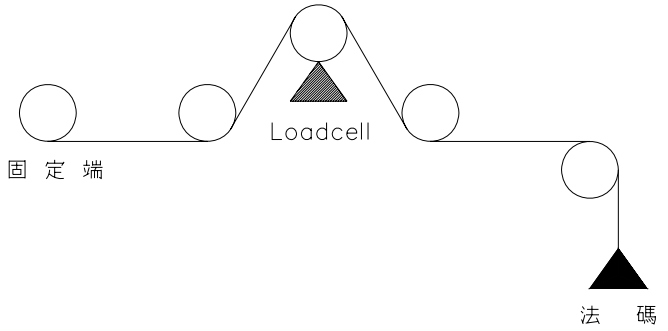
1. High accuracy and reliability with reasonable price.
2. Intelligent design with easy operation.
3. Changeover units of tensile value: kg / N / LB.
4. Inbuilt signal amplifier of Tension detector.
5. Digital design.
6. Dual displays for the required and the actual value of tension.
7. Multi separate power sources built inside, with signals input isolated by photo coupling in order to get the best anti-interfering effect.
8. Unique anti-interference design, available for positive or negative signal output.
9. Function of memory as power failure.

13. Tension Detection ZERO SET and Tension Rectification(SPAN)

When tension detector is mounted on the machine,a tension transmitting is generally put in **.**The weight of the device has to betaken into account. As a result, before using TC-608N,structural zero set and tension rectifying procedures have to be performed.

Step 1 :
When tension detector is mounted on the machine, first of all, please clear all objects on the detector device. Getting into parameter method and read the value of red LED(Tension feedback value),then make the setting value of Pr15 to be Zero, which is called “Tension zero set” procedures.

Step 2 :
Please placing tension rectifying weights on the device and read the value of red LED(Tension feedback value),
Caution: Please make sure the way of bring pressure to be the same as the material processing direction.
Then make Pr16 value equal to rectifying weights. Repeat Step1 and Step2 to finish “Tension Rectification” procedures.



Pr１３ Lower limit for feedback of Tension

Pr１４ Max. voltage output for TC608N

Pr１５ Zero point setting for tension detector

Pr１６ K value from tension detector

Pr１７ Decimal point position for Tension display value

Pr１８ Upper display content
1. Tension feedback value
2. Voltage output

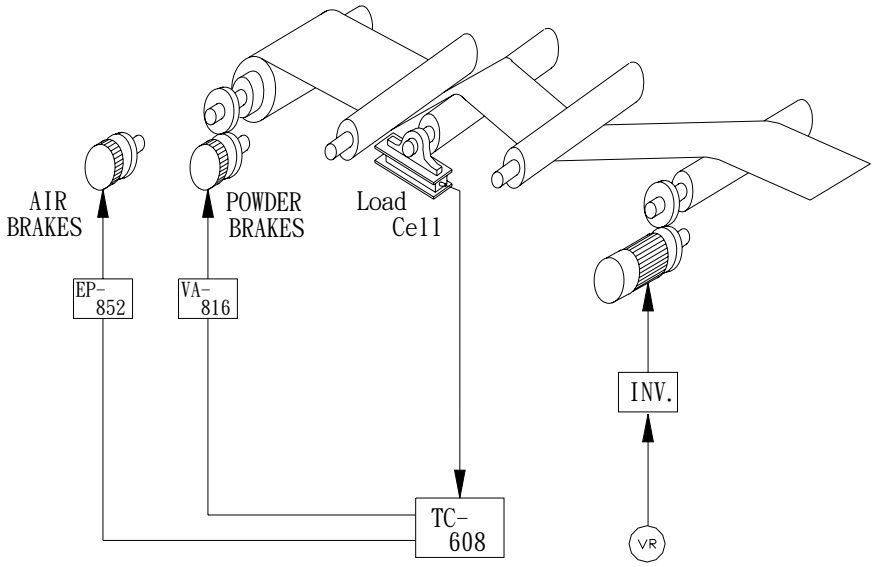
Pr１９ Ave. time for Tension display（0.01~25.5 Sec.）

Pr20 Output method selections(Option : 0/1)
0 : active power(Motor)
1 : passive power(Brake)

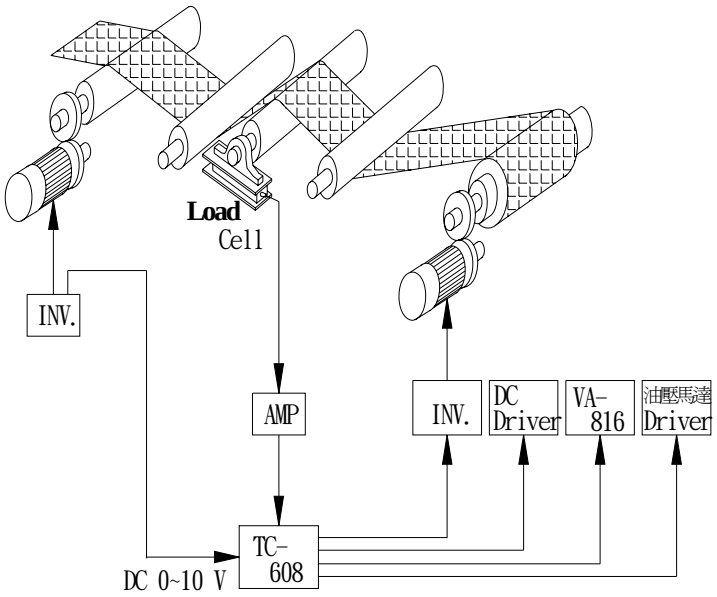
Pr21 Initial output value of voltage
When executing TC-608N(Shortcut terminals 15 and 17) , there is a voltage output value.

4. TC-608N Working diagram

(1)Material Put-in



(2)Material Roll-up



Pr０７ First IK value（0.01～99.99 Sec.）。

Pr０８ Second IK value（0.01～99.99 Sec.）。

Pr０９ Deviation range for second IK. When the actual value is under the range, TC608N will modify by First IK value; if not (over tolerated range), TC608N will modify by Second IK value.

Pr１０ Max. voltage range by integral modification：Limit voltage output range, modified by integral value

Pr１１ Unwinding / winding module setting
０＝unwinding module, material put-in
１＝winding module, material roll-up

Pr１２ Upper limit for feedback of Tension

12. Description of Parameters

Pr０１ Password: present at 1234 into parameters modifying

Pr０２ No-response range. When feedback value is in the period of No-response range，TC-608N will not execute

Pr０３ Startup deviation delay time（0.1～25.5 Sec.）: After starting, TC608 will stop for your setting time, then restart to output voltage

Pr０４ （Ｐ）ratio modification by percentage：000～100% 。

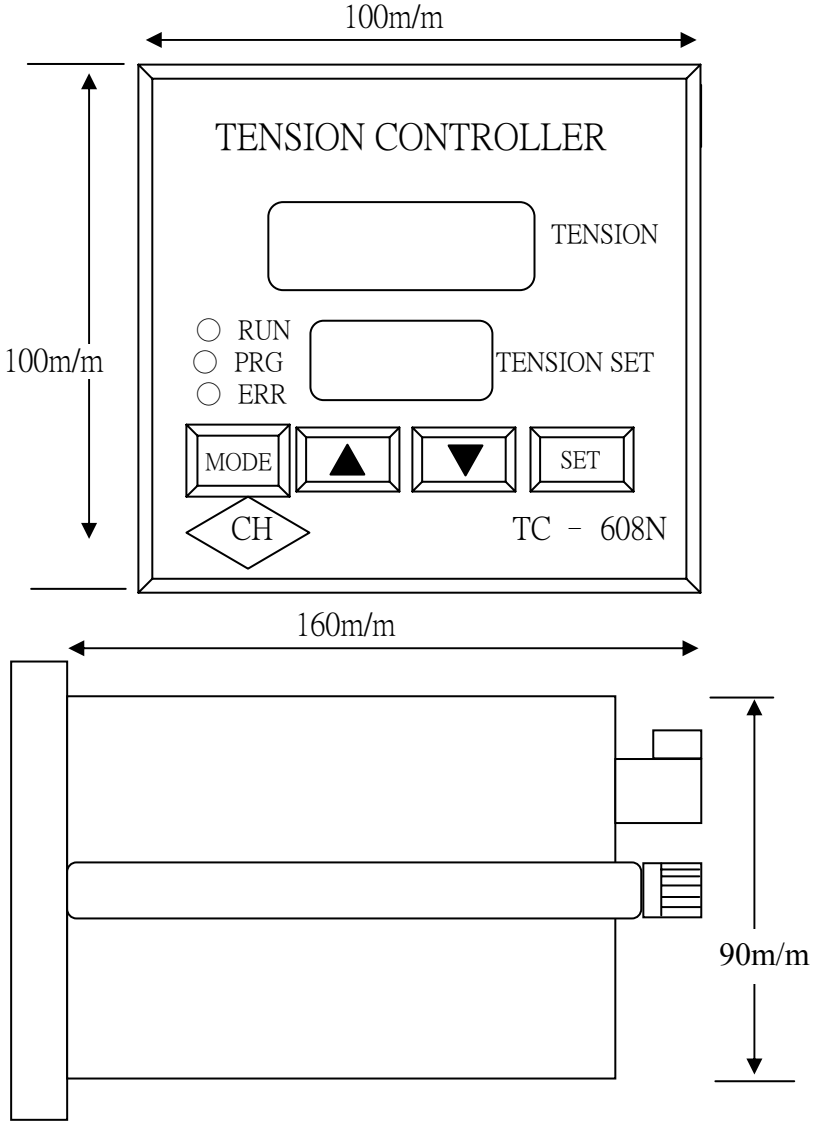
Pr０５ Max. voltage range by ratio modification：Limit voltage output range, modified by ratio value

Pr０６ Startup value for executing integral function： Under startup value, the function won't be executed. On the contrary, when actual value meet Startup value, TC608N output First IK value for modification.

5. Electrical Specifications

Power Source	AC 220V ± 10%, 50/60 Hz
Power Consumption	15W max.
Analog Tension Input	A/D 14Bit
Control Output	D/A 12Bit
Alarm Output x 2	RELAY, 250VAC, 1A
Operating Temperature	0º~60ºC
Storage Temperature	-20º~70ºC
Humidity	0~95%RH
Weight	1kg max.

6. External Dimensions

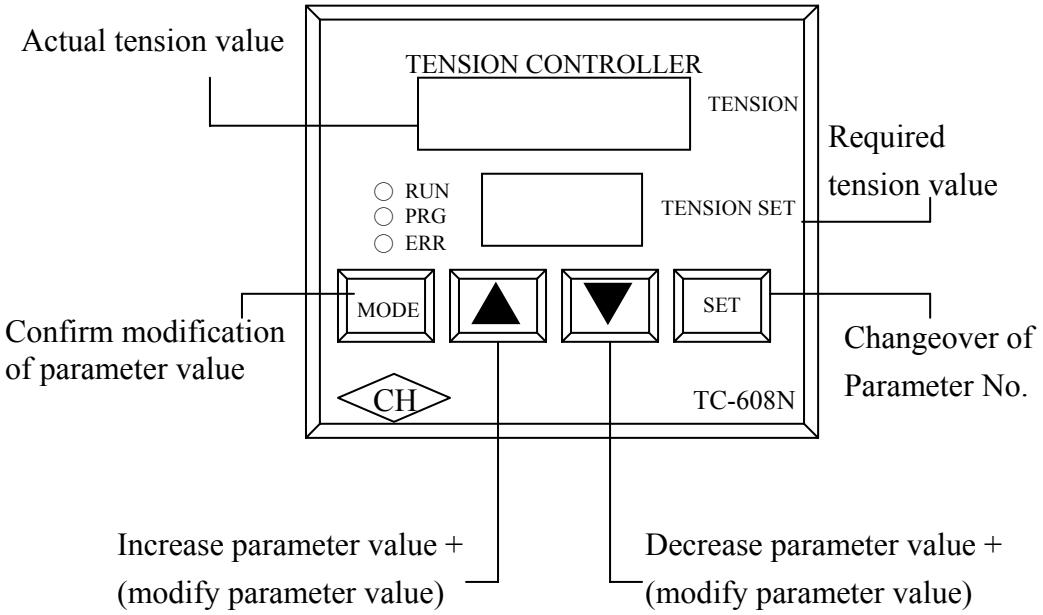


Panel opening: 92 x 92 m/m

11.Parameters Table

Pr. No.	Function	Range	Factory setting
1	Pass-code	0000~9999	1000
2	Irresponsive zone of Tension	0000~999.9	00.2
3	Startup deviation delay time	0.1~25.5（S）	00.2
4	Ratio modification value	0 ~ 100%	0.60
5	Max. voltage modified by ratio value	0~10（V）	0.20
6	Starting value for integral function	0000~99.99%	00.1
7	First IK value	0.01~99.99 Sec.	0.60
8	Second IK value	0.01~99.99 Sec.	0.40
9	Tolerated range for second IK value	000 ~ 99.99	00.8
10	Max. voltage modified by Integral value	00.01 ~ 10.00	8.00
11	0：material put-in 1：material roll-up	0 ~ 1	0
12	Upper limit for feedback signal	0000 ~ 9999	500.0
13	Lower limit for feedback signal	0000 ~ 9999	-12.3
14	Voltage output range	00.00 ~ 10.00	10.00
15	Zero point setting	—	adjustment
16	Tension input “K”	—	adjustment
17	decimal point position	0~2	1
18	Upper display content 1 : feedback value 2 : output voltage	1~2	1
19	Ave. time for Tension display	00.1~25.5	1.5
20	Output methods 0 : active power(Motor) 1 :passive power(Brake)	0~1	0
21	Initial output voltage	0.00~10.00	02.00

7. Functions of Control Panel



8. For setting up the parameters' values, push MODE with correct pass-code, then push SET for confirmation. The system will get in the parameter setting procedure.

9. The required tensile value can be set up on control panel directly. It needs not to get in the parameter setting procedure.

10. Parameters Setting Method

Assure Terminals 15 and 17 are short-circuited before parameters setting.

Step 1. Push MODE button, display 1234 ☼ PRG on (parameter value)
0001 (parameter no.)

Note: The pass-code of Parameter No. 1 must be 1234 (a fixed value) Please push △ or ▽ on Control Panel to adjust to be 1234, then push SET to display normal value.

Step 2. Push MODE button, display 1234 ☼ PRG on
0001

↓

Push MODE button, display 0100 ☼ PRG on
0002

↓

Push MODE button, display 0005 ☼ PRG on
0003

. .

. .

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Push MODE button, display 0000 ☼ PRG on
0016

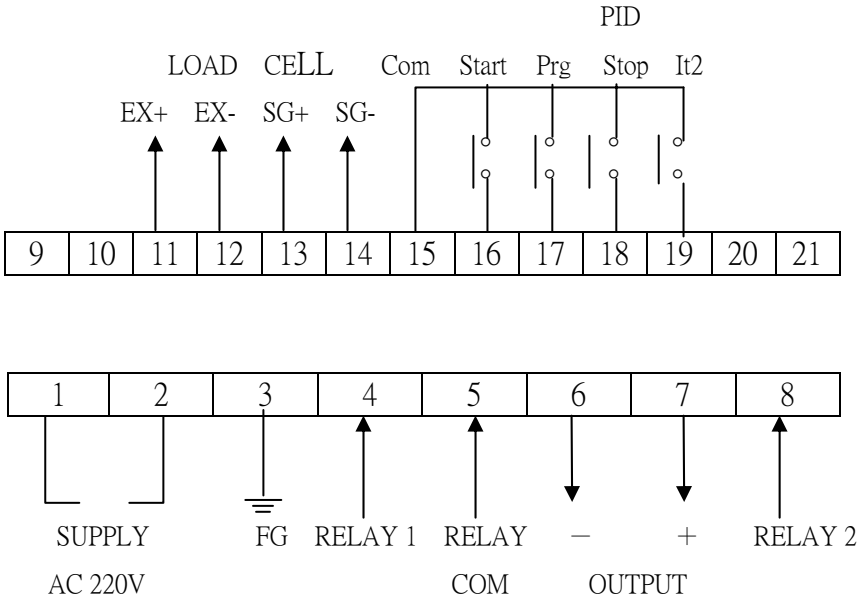
Push MODE button, display 0030 Actual tensile value
0030 Required tension value

Push SET to confirm the value modification accomplished. Then system goes back to operative mode. If need to modify other parameters, just repeat the procedure above.

Push MODE on and on, green LED displays from 01~19 in a circle.

In normal operating module, PRG lights up means the feedback value is under the range of setting value (Pr02 : Irresponsive zone).

8. Connection of Terminals



RELAY 1: OUTPUT once tension go beyond the max. limit (HI)
RELAY 2: OUTPUT once tension go beyond the min. limit (LO)

Note:
Signal transmitting line should be isolated from power line and cannot be arranged in the same channel. Please use metal shield cable for signal lines.

9. Connection Description

Code	Item	Description
1	AC1	Power source AC220V
2	AC2	Power source AC220V
3	FG	Earth contact
4	RELAY1	Upper limit for RELAY
5	COM	RELAY COM
6	VCOM	Voltage output（－）
7	VOUT	Voltage output（＋）
8	RELAY2	Lower limit for RELAY
9	Inactive	
10	Inactive	
11	AI	Load Cell EX＋
12	AI	Load Cell EX－
13	AI	Load Cell SG＋
14	AI	Load Cell SG－
15	ICOM	Common contact for control
16	IP1	Start contact
17	IP2	Parameters revised contact
18	IP3	Temporality stop PID function
19	IP4	The contact of compulsory process of Second integral
20	Inactive	
21	Inactive	