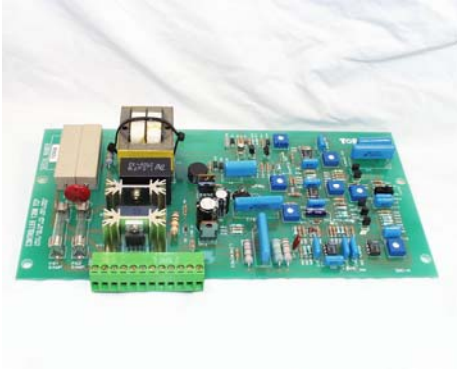


# **TORSPEC™** VARIABLE SPEED DRIVE CONTROLLERS



**1280TCP Controller**



**1281TCP Controller**

## **INSTALLATION AND SETTING UP MANUAL 1280/1281TCP LOAD SHARING CONTROLLERS**

### WARNING

*Disconnect all incoming power before working on this equipment.  
Follow power lockout procedures.  
Use extreme caution around electrical equipment.  
Do not touch the circuit board while power is applied.*



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*Manufacturers & Suppliers of World Class Quality Variable Speed Drives & Controls*

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## SPECIFICATIONS

- 220/240 VAC 50/60 Hertz 960 VA
- Fuse rating, 5 AMP, 250 Volt
- 5 AMP DC output
- 90 Volt DC output
- Maximum ambient temperature, 0-60 degrees C
- Control Range, 90 to 3 VDC output
- Response to supply voltage variation, <0.2% per volt
- Weight 1.0 lb.
- Response to ambient temperature variation <0.07% per degree C
- Output torque of secondary drive = 97% of primary drive

## DESCRIPTION

The 1280/1281TCP load sharing control system can be used in conveyor applications requiring two or more drives on the same conveyor. This system is designed to share the load and equally compensate for changing load.

The 90-Volt DC output is derived from a SCR controlled by a current feedback circuit, which minimizes error due to coil temperature and resistance changes. The system functions as a master-slave Torque Control when multiple secondary units (slave units) are connected. As the Torque demand of the master unit increases, a signal is sent to all secondary units to increase their torque supply. This results in a balance of load between the master and all of the slave units.

If only one speed control is required, use the TORSPEC 5001TCP Controller.

The number of trim potentiometers is kept to a minimum for easy set-up. The terminal strip incorporates a quick release construction for easy board changes.

### **CAUTION**

***THIS CONTROL BOARD MUST BE INTERLOCKED WITH THE DRIVE'S MOTOR STARTER TO PREVENT THE CONTROLLER BEING ENERGIZED WHEN THE MOTOR IS OFF.***

***CONFIRM SUPPLY VOLTAGE IS AS PER CONTROL BOARD'S RATING.***

## INSTALLATION

It is critical that the conveyor chain be connected to properly set up the system.

1. Connect up system according to interconnection diagram.

***DO NOT GROUND TERMINAL A3 ON CONTROLLER. IT IS USED FOR TACHOMETER CONNECTION. CHECK INSTALLATION BEFORE FITTING CONTROLLER.***

2. When controller 1280TCP or 1281TCP is used with a TORSPEC DRIVE with a coil current of 2.5 AMPS or less (see nameplate attached to TORSPEC DRIVE) then LINK WIRE 1 marked on panel just above the fuses, should be removed.
3. When a 4 pole TORSPEC DRIVE with a maximum speed of approximately 1600 RPM (see nameplate attached to TORSPEC DRIVE) is being controlled, move the 2-pole/4-pole switch to the right into the 4-pole position.
4. When a 2 pole TORSPEC DRIVE with a maximum speed of approximately 3300 RPM (see nameplate attached to TORSPEC DRIVE) is being controlled, move the 2-pole/4-pole switch to the left into the 2-pole position.
5. Set RV3 on ***EVERY*** control panel fully counter-clockwise
6. Potentiometers on the controller have been factory set for average conditions.

***DO NOT ADJUST THE SEALED POTENTIOMETER RV10***

7. RV2 Maximum Speed - 3300 RPM at full load when RV1 (external speed potentiometer) is fully clockwise and 2-pole/4 pole switch is in the 2-pole position and approximately 1600-RPM will be achieved when 2 pole/4 pole switch is in the 4 pole position.
8. RV3 Minimum Speed - Zero RPM at no load when the external speed potentiometer (RV1) is fully counter-clockwise.
9. RV5 Meter Zero (1281TCP only) - To zero null meter with no input.
10. RV6 Regulation (1280TCP only) - To adjust the change of speed resulting from a change of load. Factory set to minimum.
11. RV7 Internal Torque Limit - Factory set to maximum to allow maximum output torque.
12. RV8 Stability (Differential Control on 1280TCP only) - Factory set to 1/3 clockwise rotation.

13. RV9 Stability (Integral Control on 1280TCP only) - Factory set to 1/3 clockwise rotation.

The control RV8 and RV9 determine the dynamic performance of the system and have been factory set for average conditions.

14. Set the Master Speed Potentiometer RV1 completely counter-clockwise.

15. The TORSPEC DRIVE will turn in the same direction as its drive motor. Check that the motor is running in the correct direction before applying power to the control panel. Three phase motors can be reversed by switching off power to the motor and interchanging any two of the three supply leads. To reverse the direction of a single phase motor refer to instructions on the motor label.

16. Switch on power to motors and controllers.

17. Check that the NULL METERS on the secondary control panels (1281TCP) are centered. If it is necessary, adjust RV5 potentiometer; it should be noted that there is a delay after each movement of the potentiometer before the meter movement is stabilized. Only very small adjustments of this potentiometer are necessary. This is the only time RV5 will be adjusted.

## STANDARD SET UP

Taking frequency readings across tach lines (A8 & A9) will help determine drive speed and will make set-up easier.

\* Hz X 5 = RPM \*      E.g. 300 Hz X 5 = 1500 RPM

1. Adjust RV3 on EACH secondary control panel (1281TCP) so that the light barely flashes then turn it back so that the flashing just ceases.
2. Adjust RV3 on primary control panel (1280TCP) so that the light barely starts to flash. Note: This will cause secondary lights to flash more.
3. Adjust master speed potentiometer RV1 slowly clockwise to 20% speed.
4. Check positions of null meters. If they need resetting use the RV2 control on the corresponding secondary control panel (1281TCP). Each adjustment of an RV2 control should be small. Wait until the null meter pointer has finished moving before making additional adjustments. If RV2 on a secondary panel (1281TCP) reaches the end of its travel, then RV2 on the primary panel (1280TCP) should be adjusted to give a null reading on the secondary panel meter.
5. Turn the master speed potentiometer RV1 to 40% speed.

6. Re-balance system by adjusting RV2 on each secondary control panel if necessary to give a null reading on the meter.
7. Gradually increase the setting of the master speed potentiometer RV1 in steps. Re-balancing the system at each stop until the maximum speed has been achieved.
8. At this point, check that all motor currents are equal. This indicates a balance of load in the system.

## **FINE TUNING**

The functions of potentiometers RV6, RV8, and RV9 (on primary control panel 1280TCP only) are as follows:

### **1. RV6 - REGULATION CONTROL**

This control adjusts the gain of the system. Clockwise rotation reduces regulation but may promote instability.

### **2. RV8 - DIFFERENTIAL CONTROL**

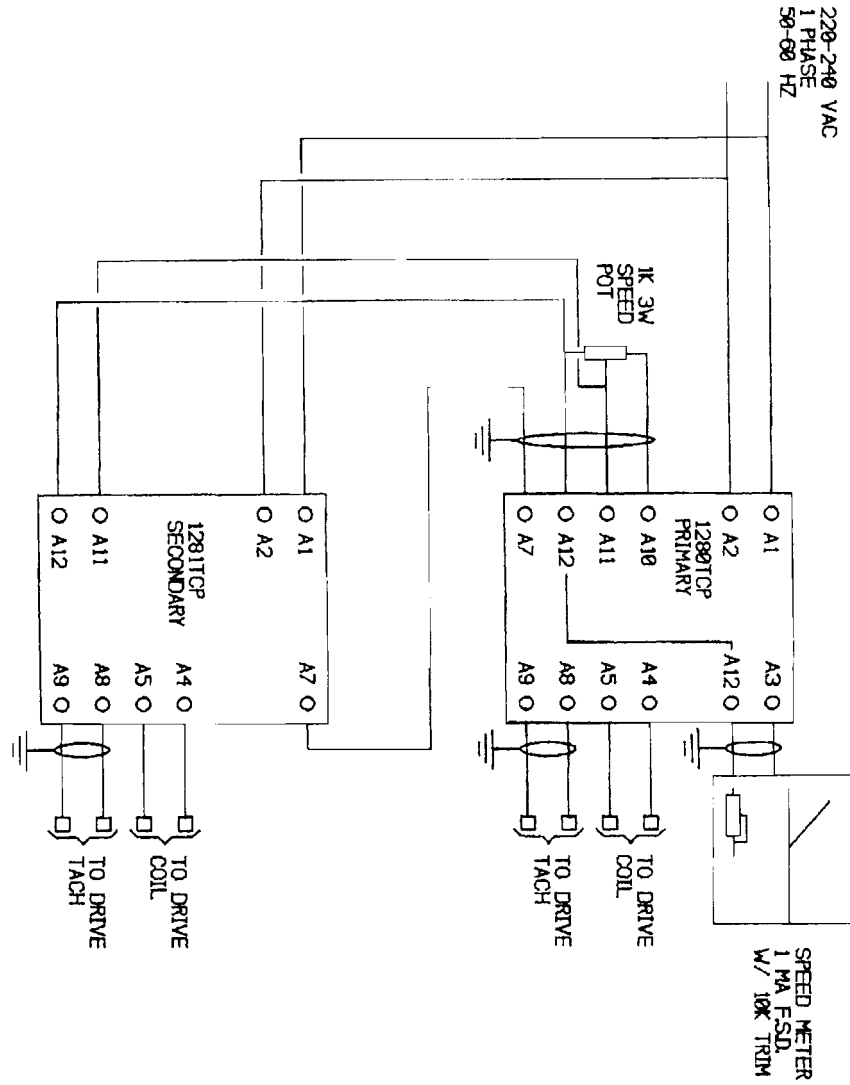
This increases the response of the system to transient speed changes. Clockwise rotation improves stability and minimizes overshoot and undershoot when speed changes are made but may cause an increase in regulation at low speeds.

### **3. RV9 - INTEGRAL CONTROL**

This decreases the response of the system to transient speed changes. Clockwise rotation reduces the response, improves stability and minimizes overshoot and undershoots when speed changes are made, but may cause an increase in regulation at low speeds.

If RV6, RV8 or RV9 are adjusted, recheck standard set up responses.

# INTERCONNECTION AND DIMENSIONAL DRAWING



- NOTES:
- DISCONNECT POWER BEFORE WORKING ON EQUIPMENT
  - FOLLOW SAFETY LOCK-OUT PROCEDURES
  - POWER TO THE CONTROLLERS IS TO BE INTERLOCKED WITH THE MOTOR STARTER TO ENSURE THE MOTORS ARE RUNNING BEFORE THE CONTROLS ARE POWERED
  - ALL SIGNAL WIRES TO BE SHIELDED CABLE

