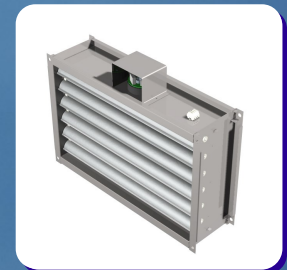


TEMPERATURE CONTROL DAMPER WITH MLM CONTROLS

21

TCD & TCD-ELECTRIC HEATING

- ❁ INTEGRATES WITH MLM CONTROLS
- ❁ TCD'S CONTROL TEMPERATURE WITH VOLUME
- ❁ TCD-EH'S CONTROL TEMPERATURE WITH VOLUME AND HEATING
- ❁ ELECTRONIC MINIMUM AND MAXIMUM LIMITS
- ❁ COST EFFECTIVE SOLUTION WITH CONSTANT VOLUME DIFFUSERS
- ❁ USE IN AREAS WITH A CONSTANT LOAD
- ❁ 2 YEAR WARRANTY



INTRODUCTION

The RICKARD TCD is used in conjunction with constant volume diffusers for the purpose of providing a measure of temperature control by the variation of supply air volume. The turn-down ratio is limited to between 50% and 60% of maximum because a greater volume reduction will result in dumping of cold air through the fixed aperture diffusers.

The TCD is therefore ideally suited to applications where the heat load variation is limited, such as internal zones in buildings. Very often these internal zones are open plan and in such cases a single TCD could serve as many as 20 diffusers because the whole zone may be regarded as a zone of uniform heat load. Individual temperature control of any one diffuser is therefore not possible unless that diffuser is replaced by a VAV diffuser such as the RICKARD VCD.

The TCD can also incorporate an electrical heater bank to provide heating in situations where the occupied space is overcooled even when the damper is in the minimum air position. In this case it is designated as a TCD-EH (E=Electric & H=Heater) and a longer sheet metal casing is manufactured to incorporate the heater elements. Typically the heater will be energised only when the damper is in the minimum air position.

Rickard's TCD design has been upgraded. A new blade profile has been designed to be more aerodynamic and open further. This has reduced the pressure drop across it though a wider range and makes it quieter close to closed. An improved seal makes it shut down more tightly and a lower friction mechanism makes it more reliable.

We've also integrated it with our MLM controls so that you can manage and monitor it just like our VAV diffusers. Now you can set the temperature, monitor the damper position, monitor the supply air temperature (if fitted) and read and write to the BMS.

LINEAR CHARACTERISTICS

Linear airflow response to actuator movement.

LOW NOISE

Low noise throughout the airflow range.

ELECTRIC ACTUATION

Rickard builds its standard TCD's with a Lindrive Push-Pull Actuator. The Rickard controller supplies a 24VAC 3 point floating signal to control the Actuator. Alternatively a Push-Pull Actuator by others may be specified.

If a 0-10VDC signal is supplied, the Rickard TCD can be supplied with a Rotary Shaft to be driven by a Rotary Actuator by others.

MLM CONTROLS

The Rickard TCD is now available with Rickard's proven MLM controls.

Standalone or BMS compatible.

Free MLM Software allows the user to:

- Commission and manage TCD's from a laptop.
- Surface all TCD information to BMS.

- Use Manual Mode to drive the TCD to any position.
- View Supply Air Temperature, Set point, Motor position and Status.

MAINTENANCE

No regular maintenance is required.

WARRANTY

Rickard offers a 2 year manufacturer's warranty. Please see Terms and Conditions for a full description of our Warranty.

SAFETY

If fitted with heating, overheat cut-outs are incorporated as a safety. Please see our Electric Heating Section for more information regarding our heating safeties.

APPLICATION

DUCT MOUNTED VAV COOLING CONTROL

DUCT MOUNTED VAV COOLING AND HEATING CONTROL (CHANGE-OVER SENSOR REQUIRED)

DUCT MOUNTED VAV COOLING AND HEATING CONTROL WITH REHEAT (CHANGE-OVER SENSOR REQUIRED)

CONTROLS

The option is available to control the TCD with Rickard's MLM controls.

If the TCD is used in conjunction with Rickard CCD's, the MLM wall thermostat controller should be fitted in a position to sense a representative temperature for that zone. The wall thermostat can also be placed in the return air path. For details of the various configurations available, contact your nearest Rickard representative.

When the unit includes a heater and a current valve for stepless proportional heating, the MLM controls will modulate the heating output on a proportional basis, i.e., if the room temperature falls below setpoint, the damper will first close to the minimum air position before the heater is energised. Heating will commence at 0.5°C below setpoint and the heater will be fully energised at 1.5°C below setpoint.

The TCD may also be used with a changeover sensor in situations where primary heating is provided by the central plant. The primary air temperature sensor must be fitted in the duct, upstream of the damper so that the damper will receive the correct signal to operate in the correct direction.

Power: Requires a 230V AC power supply and is supplied with a PVC insulated power cable and plug top. A 230/24V AC transformer is built into the controller. Since each PCD has its own power supply, no separate PSU is needed.

Connection: Multiple PCD's can be daisy chained together and connected with inter-PCD cables. Each inter-PCD cable can be up to 30m in length. Up to 15 PCD's can be connected per MCU channel.

To connect to the MLM network, a USB module or MCU can be used. Diffusers and PCD's can be connected to the same MCU.

* **Termination:** PCD's are daisy chained together. The first and last PCD should be terminated. Termination ensures reliable communications on the network. Please see the last page of this section for termination connection.

Software: Both PCD's and diffusers appear on the same Rickard MLM Software.

BMS options:

- MLM24 Application (TCP/IP) - Magnetic Ethernet
- BACnet/IP - Magnetic Ethernet
- BACnet MS/TP - RS485 bus
- MCU2 Lon-BW2011-2L

COMMISSIONING

Once airflow is established, the operation of the TCD can be set as follows:

MAXIMUM AIR

From the diffuser selection table, determine the duct static pressure required to deliver the desired maximum air volume from the index diffuser. Use the MLM Software to put the TCD in manual mode and drive the TCD fully open.

Now adjust the main static pressure controller to give the design pressure at the index diffuser. Use a measuring cone or Rickard modular airflow sensors to confirm the volume at this diffuser. This completes the setting up for maximum air volume.

MINIMUM AIR

The minimum air volume should not be less than 50-60% of the maximum to avoid dumping and should be set as follows:

From the same diffuser selection table, determine the duct static pressure required for the index diffuser to deliver say 60% of maximum air. This will be the minimum air pressure in the branch duct. Using manual mode, drive the damper closed until the position corresponding to the chosen minimum pressure is reached and set the electronic minimum damper position. You can take the TCD out of manual mode now.

NOTE : The factory setting for the minimum air is between 50 & 60%.

TYPES

SIZES

Sizes are usually in 50mm increments. Maximum size per TCD 0.5m². Larger sizes can be accommodated by using multiple TCD's joined together or splitting the TCD with a mullion and driving each section separately.

MODELS

VAV Cooling Only

VAV Cooling and Heating Control

VAV Cooling and Heating Control with Re-heaters

MOUNTING

Standard Flange Mounting: 30mm Flange with 10mm Corner holes for Duct attachment. The TCD can be mounted with the actuator on the top or bottom. Do not mount the TCD with the actuator on the side.

SIZING

200 (minimum width) x 200 (minimum height) x 150 (minimum depth)

