

The ASCO FOUNDATION Fieldbus Type 4449 (FF4449)

The ASCO FF4449 is EMC (electro-magnetic Compliance) approved to ensure immunity against electrical interference from equipment such as hand held radios and has one of the industries lowest power consumption at 12.5mA total.

Unlike competitors, the ASCO FF4449 has Link Active Scheduler (LAS) capability and can be configured as a backup Link Master. In the event that communication with the DCS is lost, the FF4449 becomes Link Master of the bus segment and keeps the process running preventing down time. It can also be configured as a Basic device. In this configuration, it can be pre-programmed to move to a Fail-safe position (OPEN or CLOSE) or hold last valid command when communication with the DCS is lost.

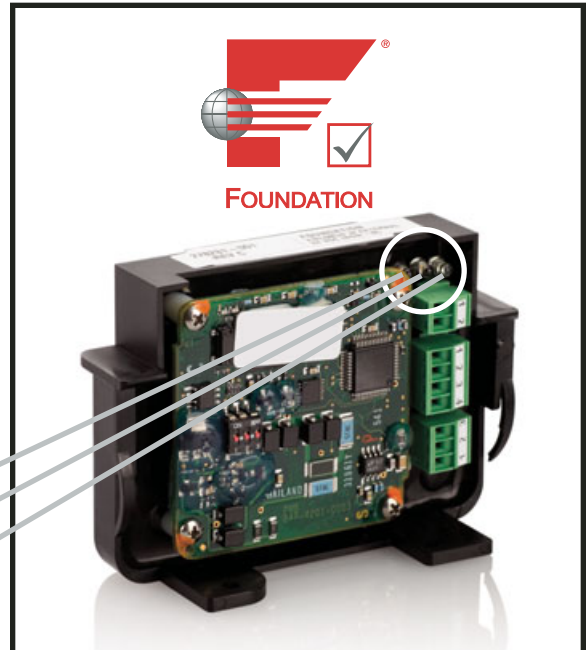
FF4449 can be configured to operate with both spring return (single acting) and double acting actuators.

Visual Diagnostics

CLOSED DETECTION: Yellow LED

EXTERNAL 24VDC DETECTION: Green LED

OPEN DETECTION: Yellow LED



The outputs for the FF4449 can be powered with either an external 24VDC or from the bus.

- For bus powered applications, since available power for operating pilotvalves is limited, piezo based pilot valves must be used due to its inherent low power consumption (typically 6.6VDC @ 1.4mA). The total power consumption for the FF4449 remains at 12.5mA. In this application an external 24Vdc supply is **NOT NEEDED**. Power for the outputs will be taken from the fieldbus line. With the piezo pilot valves, the operating temperature range is from 0°C to 60°C (32°F to 140°F). This configuration is required for Intrinsically Safe application.
- For non-intrinsically safe applications an external 24VDC can be used to supply extra power to the outputs. This will allow customers to use traditional solenoid based pilot valves of up to 1.4watts. In this configuration, the operating temperature range is from -40°C to 60°C (-40°F to 140°F).

Approvals

- FOUNDATION Fieldbus Inter-operability test (ITK 4.61)
- EMC Directive (89/336/EEC/93/68/EEC) per EN 61326
- CSA approved
- FM approved
- Delta V – certified as Link Master



ASCO Valve Monitoring Systems power the PlantWeb digital architecture via FOUNDATION Fieldbus by monitoring the diagnostic feedback received from the actuator and process valve to which it is attached. In addition to the various diagnostics available in the ASCO FF, the device also has integrated PlantWeb alerts. With PlantWeb alerts, users can set limits for the device performance. Once the limits in desired performance have been exceeded the device can communicate the information to the user through Plantweb. The Plantweb alerts in also user configurable to either failure, advisory, or maintenance.

Diagnostics

Short Circuit – detection that outputs are shorted. Separate detection for output # 1 & 2

External Voltage – detection that an external 24Vdc supply is connected. This feature is disabled if FF4449 is configured for piezo valves (Bus powered application)

Time in Position – the time the Process Valve/Actuator has been in its current position. This information is valuable in determining if the valve/actuator needs to be cycled to ensure it is not frozen in its current position.

Travel Deviation / Lost Position – an alert generated if the valve/actuator moves to a position that is not desired. For example – the FF4449 energizes an output to OPEN a spring return actuator. The position feedback indicates the device has reached OPEN position. Afterwards, air pressure is lost and the actuator moves back to the CLOSED position (spring-return). The position feedback sensor will indicate the actuator in the CLOSED position although a command to CLOSE the actuator was never issued. In this situation a Travel Deviation alert will be generated indicating the actuator was in a desired position, but moved to undesired position

Travel Counters – the FF4449 is available with counters that record the number of travels the device has gone through. Two travel counts equals one cycle (travel OPEN + travel CLOSE = 1 cycle). Settable limit indicators are also available. Once the travel count has exceeded the value set in the limit and alert will be generated. There are 3 Travel Counters and limits for the following: • Pilot Valve • Actuator • Process Valve

OPEN Times:

Calibrated Travel Time Open – calibration value of the time between the change-in-state command-OPEN and the indication the valve is in the OPEN position. This value is automatically recorded & saved during Calibration command

Last Travel Time Open – Last time between Open command and the indication the valve reaches the Open state

Average Travel Time Open – Average of up to last 30 values. Time between Open command and the indication the valve reaches the Open state

Calibrated Break Time Open – calibration value of the time between the change-in-state command-OPEN and the indication the valve leaves the CLOSE state. This value is automatically recorded & saved during Calibration command

Last Break Time Open – Last time between Open command and the indication the valve leaves the Closed state

Average Break Time Open – Average of up to last 30 values. Time between Open command and the indication the valve leaves the Closed state

CLOSED Times:

Calibrated Travel Time Close – calibration value of the time between the change-in-state command-CLOSE and the indication the valve is in the CLOSE position. This value is automatically recorded & saved during Calibration command

Last Travel Time Close – Last time between CLOSE command and the indication the valve reaches the CLOSE state

Average Travel Time Close – Average of up to last 30 values. Time between CLOSE command and the indication the valve leaves the Open state

Calibrated Break Time Close – calibration value of the time between the change-in-state command-CLOSE and the indication the valve leaves the OPEN state. This value is automatically recorded & saved during Calibration command

Last Break Time Close – Last time between CLOSE command and the indication the valve leaves the Open state

Average Break Time Close – Average of up to last 30 values. Time between CLOSE command and the indication the valve reaches the CLOSE state

Average Time Values (Travel & Break times for Open & CLOSE) – process valve/actuators typically wear out at a constant steadily pace. A good indication of wear will be the average travel times since the change is slow, but constant.

Last Time Values (Travel & Break times for Open & CLOSE) – these values are important in determining abnormal events that recently occurred. For example, a temporary drop in pressure or a sticky process valve (valve that has been left in the same position for a long time without cycling) will affect the performance of the last operation of the valve, but does not necessarily mean the mechanical device is worn out.