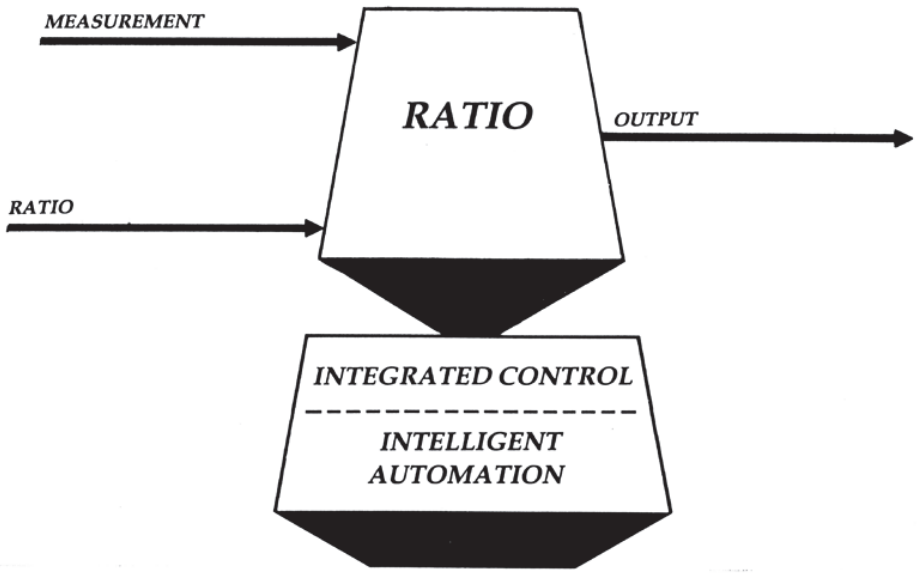
Foxboro Evo™ Process Automation System

Product Specifications

Foxboro by Schneider Electric

PSS 31S-3RATIO

Ratio (RATIO) Block



The RATIO block is an adjustable ratio multiplier with input/output scaling and alarm functions. It controls air/fuel mixture to a a burner or similar operation requiring ratio control.

OVERVIEW

The RATIO block (Figure 1) multiplies the input measurement (wild flow) by the ratio signal. Ratio signal scaling produces the desired ratio range corresponding to 0 to 100% of the ratio signal. A track feature causes the block's output to automatically follow the track input signal. Also included are absolute and output alarms. The blocks functional equation is OUTPUT = MEASUREMENT X RATIO.

The ratio may be supplied locally by an operator or remotely from an upstream block. Back-calculation inputs and outputs support initialization and recovery from limiting in cascade control applications.

SUPERVISORY CONTROL

Supervisory Control (SSC) allows a user's application program to perform supervisory control over the RATIO block's ratio input. SSC can be enabled/disabled by an operator, or enabled by the supervisory application program at a control block group or control block level. If SSC is enabled in the

control block, the back calculated value status requests the application program initialization. The application program must send the supervisory ratio to the block periodically. While SSC is enabled, the control block parameters associated with local set point are not settable by the operator. If the operator disables SSC or if a supervisory application program failure is detected, the control block falls back to a configured fall back mode (Manual, Auto, Remote, or Local).

STANDARD FEATURES

- Manual/Auto control of the output, which can be initiated by either a host process or another block
- Local/Remote ratio signal source selection
- Assignable engineering range and units to the local/remote ratio signals, input measurement, and output
- Scaling of the ratio calculation, based on the assigned engineering ranges, so that the computed result is dimensionally compatible with the specified output units
- Output clamping between variable output limits
- Bad inputs detection and handling
- Automatic cascade handling that includes:
    - Initialization input/output connection parameters that provide proper coordination and initialization of cascade schemes
    - Back calculation of the ratio signal input for the up-stream block for bumpless cascade operation
- Set point clamp limits in Remote, Local, or Supervisory modes

OPTIONS

- Measurement Alarming – provides absolute alarming of the measurement during auto operation
- Ratio Tracking – forces the local ratio signal (RATIO) to track the back-calculated ratio value. It can become activated only if the ratio source selector is in Local under the following conditions: either the output is in Manual or any downstream block is open loop. It is not performed if any measurement data errors are detected. This feature allows bumpless return to ratio control when the block returns to auto operation.
- Manual Clamping – provides output clamping in manual operation
- Manual Alarm – allows Measurement alarming in manual operation
- Workstation lock access allows write access only to the Display Manager which owns the lock
- Loop identifier allows the user to identify the loop or process unit that contains the block
- Supervisory Control (SSC) of the block ratio

ADDITIONAL FEATURES

- Delayed alarming. A configurable timer delays alarm detection or return-to-normal messages for a specific alarm to reduce the number of alarm messages generated when a block parameter crosses back and forth over an alarm limit.
- Quality Status output parameter provides a single source for the block's value record status, block status, and alarm status.

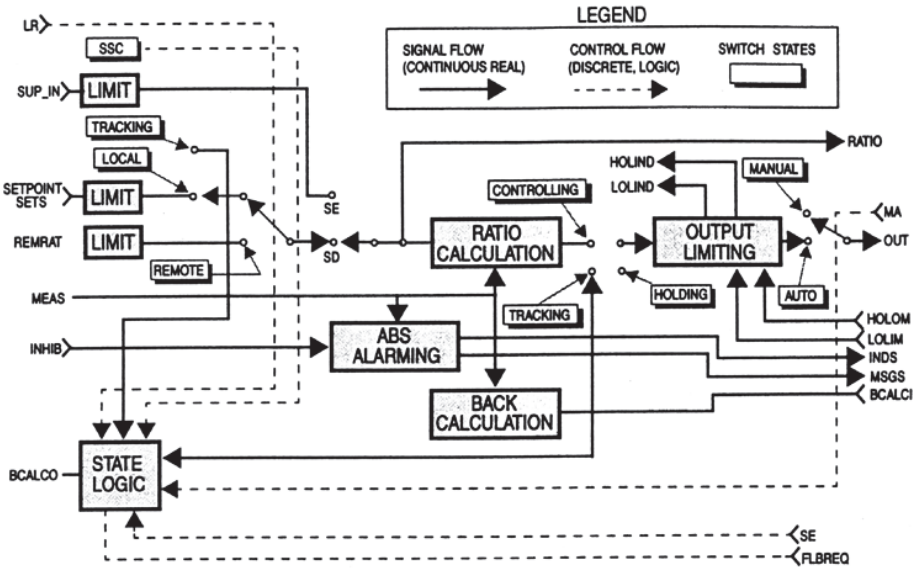


Figure 1. Ratio Block signal Flow Diagram

Foxboro®

by Schneider Electric

Invensys Systems, Inc
10900 Equity Drive
Houston, TX 77041
United States of America
http://www.invensys.com

Global Customer Support
Inside U.S.: 1-866-746-6477
Outside U.S.: 1-508-549-2424
Website: https://support.ips.invensys.com

MB 031 0914