EcoStruxure™

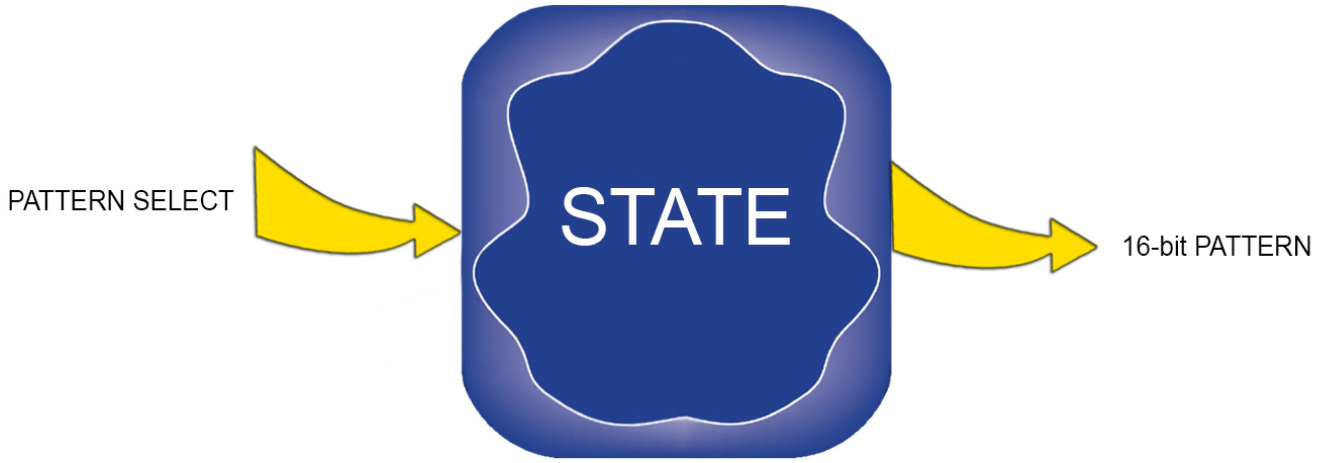
Foxboro™ DCS

State (STATE) Block

PSS 41S-3STATE

Product Specification

May 2019



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Legal Information

Overview

The STATE block allows you to write either a single 16-bit packed boolean State, or a sequence of such States, to the block output Packed Output.

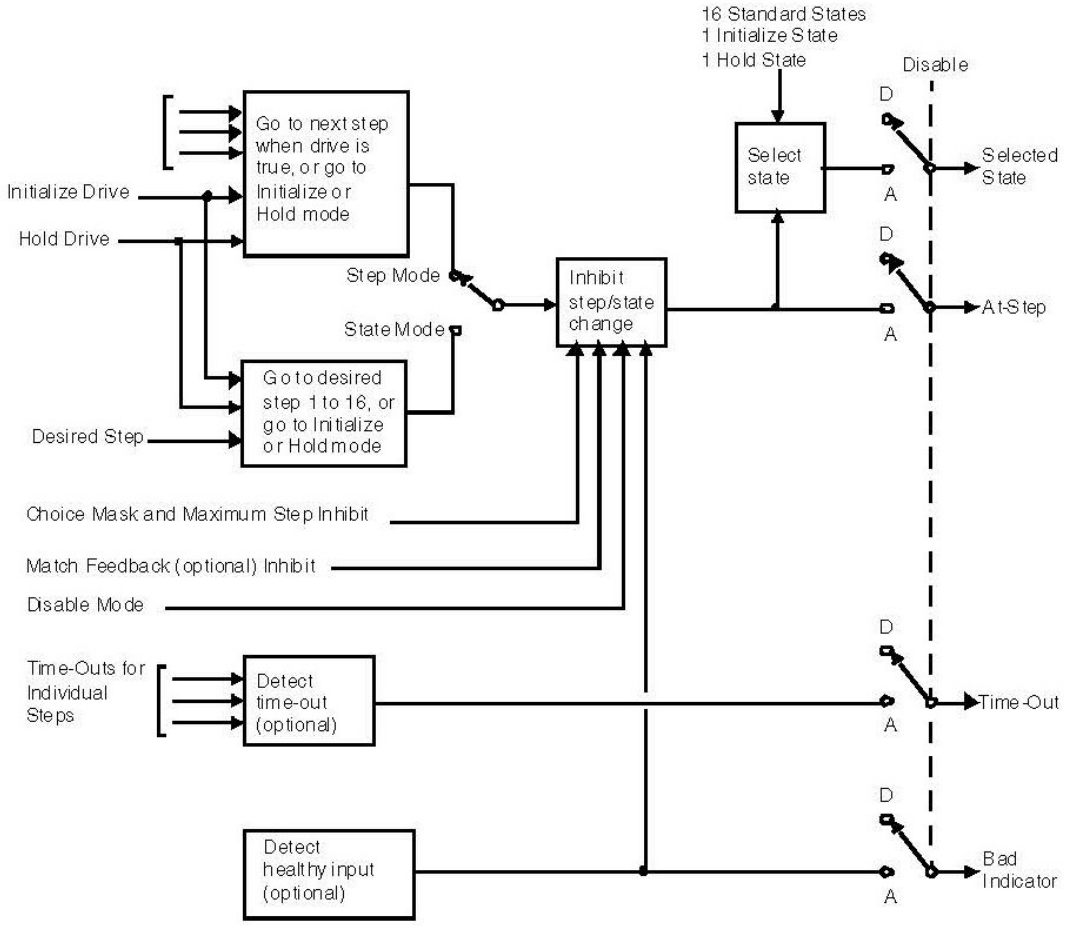
When in the Auto Mode, the block operates in one of the following sub-modes:

- State Mode. The State specified by the integer input Desired State Drive is written to the output.
- Step Mode. A pre-determined sequence of States is written to the output.

In either State or Step mode, the output transitions to the new State only after all required conditions have been met.

The STATE block has the following modes in addition to Auto:

- Disable Mode
- Manual Mode
- Hold Mode
- Initialize Mode



Standard Features

State Mode

- Desired State Drive specifies the output State.
- If the specified State exceeds the configured value of Maximum Step the output holds at the current State.
- Choice Mask is a bypass mask for the States.
- If the bit of Choice Mask corresponding to the specified State is true, the output holds at the current State.
- At-Step indicates the number of the current output State.
- Initialization State Drive causes the output to transition into the Initialization State. Desired State Drive is overridden.
- Hold State Drive causes the output to transition into the Hold State. Desired State Drive and Initialize State Drive are both overridden.

Step Mode

- The output advances from State to State based on the values of the State Drives 1-16.
- The output transitions to the next higher-numbered State whenever the State Drive for that State is true.
- States bypassed by the Choice Mask are ignored in the sequence.
- Transitions cease when the next State not bypassed would be greater than Maximum Step.
- The sequence is restarted by toggling Initialization State Drive on, then off.
- Initialization State Drive causes the output to transition into the Initialization State. The State Drives are overridden.
- Hold State Drive causes the output to transition into the Hold State. The State Drives and Initialize State Drive are both overridden.

Initialize Mode

- The Initialize Mode is entered when the Initialization State Drive is true.
- The block outputs State I and At-Step 0 when in this mode.
- When the Initialization State Drive goes false, the block enters the State or Step mode as specified by Mode Selector.
- If it enters State Mode, Desired State Drive determines the output.
- If it enters Step Mode, the output is the lowest-numbered non-bypassed State whose State Drive is true.

Hold Mode

- The Hold Mode is entered when the Hold State Drive is true.
- The block outputs State H and At-Step 17 when in this mode.
- When the Hold State Drive goes false, the block output returns to the State it held before the Hold Mode was entered. State Mode or Step Mode proceeds normally.
- If the Bumpless Hold Return option is true, the output returns to its previous value bumplessly.

Disable Mode

- The block ignores all requested transitions of Packed Output and mode changes while the Disable Mode input is true.
- Disable Mode is of higher priority than Manual Mode; the block outputs are secured against sets during Disable Mode.

Manual Mode

- Packed Output is only changed by manual sets; no other output transitions occur.
- All settable outputs may be changed manually.
- If the Bumpless Manual Return option is true, and the output has been changed manually, the manual setting is retained when the block returns to Auto Mode. Otherwise the output returns to the value specified by At-Step.

Options

Feedback Option

- When Feedback Option is set to 1 the block does not change its output, in either State or Step Mode, until Match Feedback is true.
- You may use a PATT block in conjunction with the STATE block to help assure that the process has had time to respond to each State output before the next output transition is allowed, as follows:
  - Configure each PATT block pattern with the desired process response to the State output of the STATE block with the same number.
  - Connect the At-Step output of the STATE block to the Pattern Select input of the PATT block.
  - Connect the Match Indicator output of the PATT block to the Match Feedback input of the STATE block.
  - Configure Feedback Option to 1.
- When Feedback Option is set to 2, the Match Feedback input is timed, but is not required for output transitions.

Time-Out Option

- When the Time-Out Option is true, the Countdown Timer is initialized with Time x.
- Unless the Feedback Option is set to 2, the Countdown Timer times the duration of the output stay in State x.
- When Feedback Option is set to 2, the Count-down Timer times only the process response delay (time before Match Feedback goes true).
- The Time-Out output is set true if the Countdown Timer times out before the next State transition (Feedback Option set to 1), or if it times out because the process response is too slow (Feedback Option set to 2).
- The Countup Timer always indicates the time the block output has remained in the current State.
- Both Timers are initialized on any output transition in either State Mode or Step Mode.

Bad Lock Option

- Helps prevent change of output State unless the Initialization State Drive, the Hold State Drive, the Disable Mode input, the Auto/Manual input, and, if applicable, the State Drive are all healthy.
- Helps prevent change between State and Step Modes unless Mode Selector is healthy.
- Unhealthy condition sets Bad Indicator output.

Extended Features

- Workstation lock allows write access to the block parameters only by the user interface that owns the block.
- Owner identifier allows you to allocate control blocks to applications.

WARNING: This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.p65warnings.ca.gov/.

Schneider Electric Systems USA, Inc.
38 Neponset Avenue
Foxborough, Massachusetts 02035–2037
United States of America

Global Customer Support: https://pasupport.schneider-electric.com

As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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