EcoStruxure™

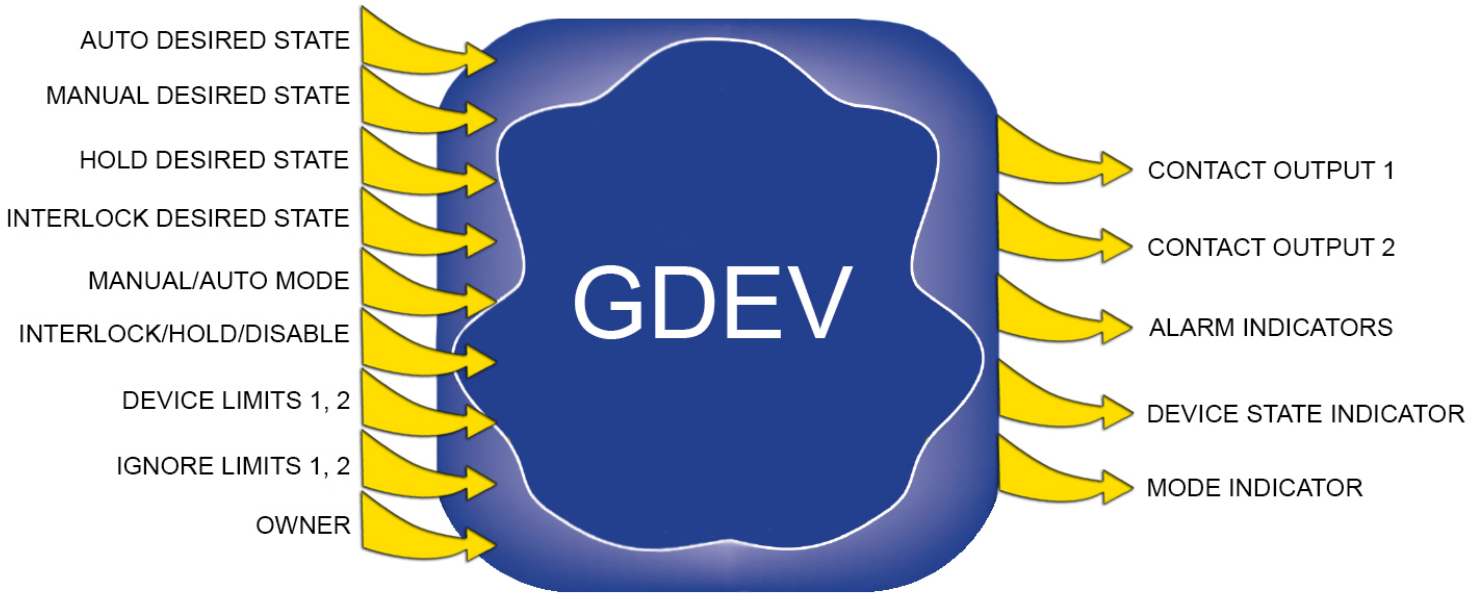
Foxboro™ DCS

Generic Device (GDEV) Block

PSS 41S-3GDEV

Product Specification

April 2019



Schneider Electric™

Legal Information

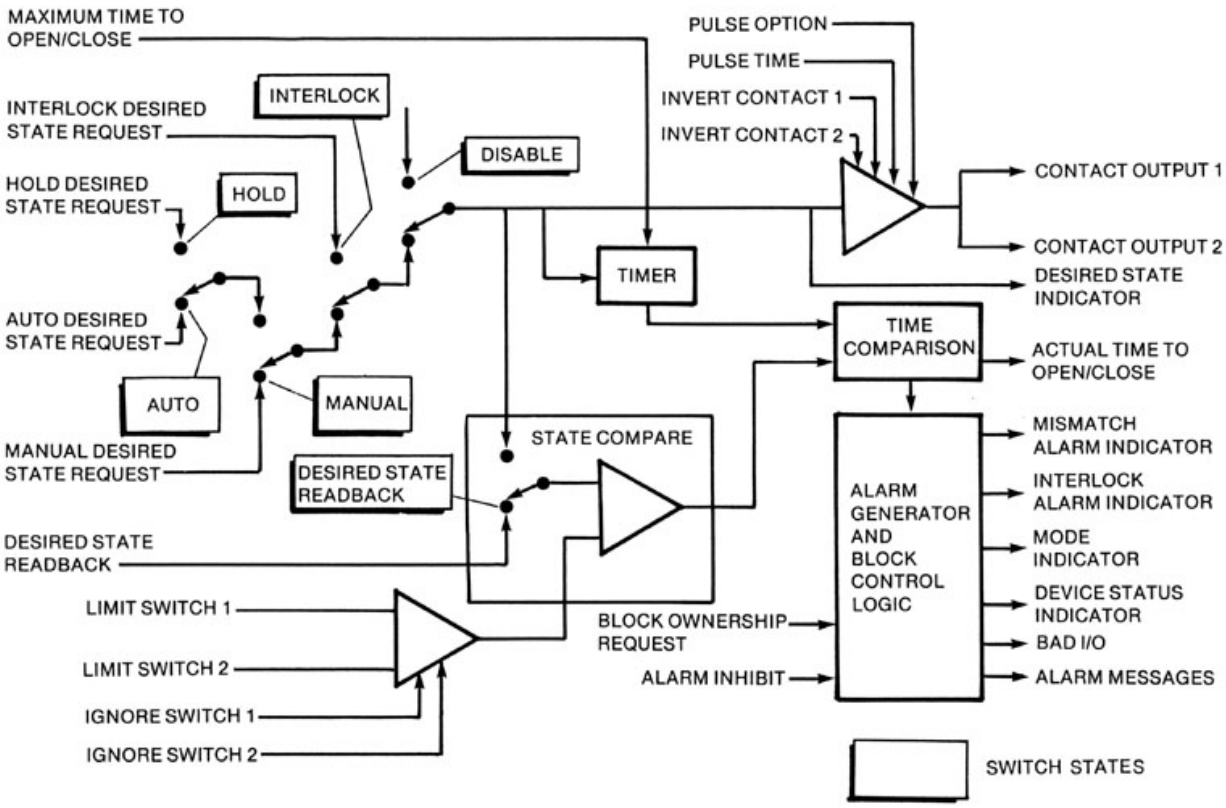
Overview

The Generic Device (GDEV) block provides Run/Stop and Open/Close control of devices such as motors or air-operated valves. The term generic points to the general nature of the block, which is adaptable to other ON/OFF devices via its many configurable options.

The GDEV block supports five modes for controlling the output state: Disable, Interlock, Manual, Hold, and Auto. Figure 1 shows the principal input and output signals for the block.

In the Disable mode, the outputs are driven to inactive. The Disable mode inhibits GDEV block operation to allow local control of field equipment. The Interlock (fallback) mode sets the device state to the Interlock Desired State.

Figure 1. GDEV Simplified Signal Flow Diagram



In the Manual mode, the Manual Desired State controls the outputs. Operator requests may be honored in this mode. The Hold mode has the Hold Desired State as the controlling input parameter. The Auto mode has the Auto Desired State as the controlling input parameter. The GDEV block performs a bumpless transfer whenever the mode switches to Manual or Auto, except for the Hold-to-Auto transition.

The GDEV block can read the feedback input (limit switch) from a Fieldbus Module or from other blocks. Valve position is monitored by limit switches at the fully-open and fully-closed positions. Motor status is monitored by limit switch(es) at the fully-running and fully-stopped states. If one or both feedbacks are not present, the GDEV block can simulate these feedbacks.

The GDEV block can drive the contact outputs directly to a Fieldbus Module, or it can drive only output parameters. In case a Fieldbus Module is used for both the feedback inputs and the contact outputs, both inputs and outputs must reside in the same Fieldbus Module.

Alarming occurs when the sensed state of the device does not match the desired-state request within a user specified time interval. Under steady state conditions, a mismatch between the sensed state and the desired state generates a State alarm immediately. To help prevent physical limit switches from generating an abundance of mismatch alarm messages, individual limit switches can be set to ignored. The GDEV block will simulate the setting of an ignored limit switch. When the GDEV block connects to a Fieldbus Module, a bad alarm is generated when the Fieldbus Module fails.

The GDEV block has parameters that are not used by the block itself, but are available to batch control applications. The GDEV block can synchronize the use of a shared device via its ownership. Ownership is requested by supplying a name for the owner parameter. If the GDEV block is not in use by another block, the name is accepted, otherwise it is refused. Only the application task that temporarily owns the GDEV block controls the GDEV block via its input parameters. Ownership can be given up as soon as the shared device is not used anymore. Of course, at all times it is possible to control the GDEV block without owning it.

Features

- Two contact outputs for device state control, using either sustained outputs or pulsed outputs with a user-defined pulse width.
- Auto, Manual, Hold, Interlock, and Disable control modes, which can be initiated by a host process or another block.
- Auto and manual desired state inputs for setting the contact outputs in Auto and Manual.
- Hold mode inputs for driving both contact outputs to the desired hold state.
- Interlock mode inputs for driving both contact outputs to the desired interlock state.
- Disable mode input to disable block operation – sets both contact outputs to false. You can drive this input with a local field contact and use it as a permissive for maintenance or local control.
- Output indicator for current operating mode of the block.
- Bumpless transfer of the contact outputs when switching the mode to Manual or Auto, except when switching from Hold to Auto.
- One or two contact inputs for feeding back device status, for use in state mismatch alarming.
- Limit switch simulation to compensate for one or more bad or missing switches. This allows the block to control the device until the bad switch is replaced.
- State mismatch alarming when the actual state of the device does not match the desired state within the specified time interval. The block sets an alarm indicator and generates an alarm message.
- Device status inputs can be read through input parameters or a Fieldbus Module.
- Contact outputs can be driven to output parameters or a Fieldbus Module.
- Bad Fieldbus Module detection, handling, and alarming. Upon detecting a bad Fieldbus Module, the block sets an alarm indicator and generates an alarm message. The contact outputs remain at the last known driven state of the Fieldbus Module contacts.
- Output indicators for device status, mismatch status, interlock alarm, and block mode.
- Output parameter for the actual time it takes the device to travel from Off to On, or from On to Off.
- Block owner parameter allows a Sequence to own the GDEV block while controlling the device. This allows you to synchronize the use of a shared device.
- Two user input parameters for use by Sequence blocks or batch control task.
- User-defined text strings to describe device status and mismatch status in alarm reports and detailed displays.
- Inversion of one or both contact outputs.
- Desired state read-back input to help prevent false mismatch alarms when other conditions, not controlled by the GDEV block, also determine the On/Off state of the generic device. For example, you can use ladder logic (that is, a Programmable Logic Block) between the GDEV block contact outputs and a motor starter relay. In this case, the read-back input is connected to the output of the ladder logic.
- Inhibiting of all block alarm messages.
- Indication of the alarm level (1 to 5) and alarm type of the highest-priority active alarm for the block.

Principal Parameters

Inputs

- Auto desired state request (Boolean)
- Manual desired state request (Boolean)
- Hold desired state request (Boolean)
- Interlock desired state request (Boolean)
- Manual/Auto control mode switching (Boolean)
- Interlock mode (Boolean)
- Hold mode (Boolean)
- Disable mode (Boolean)
- Device limits 1, 2 (Boolean)
- Ignore limits 1, 2 (Boolean)
- Desired state readback (Boolean)
- Owner (character array)

Outputs

- Contact outputs 1, 2 (Boolean)
- State mismatch alarm indicator (Boolean)
- Interlock alarm indicator (Boolean)
- Bad Fieldbus Module alarm indicator (Boolean)
- Device state indicator (Boolean)
- Mode indicator (Boolean)

Configurable Options

- Pulse option (Boolean)
- Pulse time (real)
- Travel time (real)
- Fieldbus option (Boolean)
- Available device limits 1, 2 (Boolean)

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

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