Custom Scenarios

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Introduction to Custom Scenarios functionality

To meet the diverse and evolving needs of our clients, we have developed the Custom Scenarios feature. This solution allows users to define specific conditions using customizable parameters to trigger events or control a device's digital outputs. By connecting the device to peripherals like alarms, buzzers, or relays, this functionality can notify drivers or perform targeted actions seamlessly.

The feature enables the device to operate autonomously based on predefined conditions, eliminating the need for constant monitoring of device status or complex backend integrations. With Custom Scenarios, any data the device can read becomes a potential input for controlling digital outputs, providing flexibility and efficiency.

Custom Scenarios functionality logic

Figure 1. "Custom Scenarios" functionality logic

The Custom Scenarios functionality enables configuration of up to three independent scenarios, each with up to three unique triggers. Triggers are defined using data from various I/O elements, such as: Fuel Level, Engine RPM, Seatbelt Status, DTC Faults, Movement Status, Ignition State, GSM Signal Level, 1-Wire/Bluetooth sensor temperature and etc. Each trigger is configured with specific logic operands (e.g., "On Entrance," "On Exit"), threshold values (Low and High levels), and an activation delay timer, which specifies how long a value must remain within the defined range before the trigger is activated.

When all triggers of a scenario evaluate as true, the scenario becomes active. This can generate a record (if configured) and control the digital output (DOUT) by toggling it on or off based on the active conditions. Additionally, if configured for continuous operation, the DOUT remains active as long as the conditions are met.

Key features include:

- Support for dynamic trigger logic based on selected operands and conditions.
- Autonomous device operation, even in low-power or deep-sleep modes, provided compatible I/O sources are used.
- Adjustable ON/OFF durations or permanent output control, enabling versatile device behaviors such as blinking or continuous activation.
- Custom Scenarios operate independently from the I/O menu, with priority management ensuring that higher-priority scenarios take precedence in controlling the DOUT when multiple scenarios are configured.

Custom Scenarios functionality configuration

Below is a detailed explanation of configurable parameters for each scenario.

Parameter ID	Parameter Name	Min Value	Max Value	Default Value	Description
19100, 19130, 19160	Output Control	0	3	0	Specifies the DOUT controlled by the scenario: • 0 – None • 1 – DOUT1 • 2 – DOUT2 • 3 – DOUT3
19101, 19131, 19161	Priority	0	3	0	Sets the scenario priority: • 0 – None • 1 – Low • 2 – High • 3 – Panic
19124, 19154, 19184	Permanent Output Control	0	1	0	Enables continuous DOUT control as long as conditions are met.
19102, 19132, 19162	DOUT ON Duration	100 ms	65,000,000 ms	200 ms	Duration for which DOUT remains ON when the scenario is active.
19103, 19133, 19163	DOUT OFF Duration	0	65,000,000 ms	200 ms	Duration for which DOUT remains OFF. A value of 0 means the DOUT stays ON continuously.
19105, 19135, 19165	Source #1	Device-specific	Device-specific	IO element ID	The primary I/O source for the trigger. Cannot be ignored.
19110, 19140, 19170	Source #2	Device-specific	Device-specific	Ignored	The secondary I/O source. Can be ignored.
19116, 19146, 19176	Source #3	Device-specific	Device-specific	Ignored	The tertiary I/O source. Can be ignored.

19106, 19136, 19166	Operand	0	6	0	Defines the condition logic for the trigger: • 0 – On Exit • 1 – On Entrance • 2 – On Both • 3 – On Hysteresis • 4 – On Change • 5 – On Delta Change • 6 – Is
19107, 19137, 19167	Low Level	Dynamic	Dynamic	0	Sets the lower threshold value for the source trigger.
19108, 19138, 19168	High Level	Dynamic	Dynamic	0	Sets the upper threshold value for the source trigger.
19109, 19139, 19169	Activation Delay Timer	0 s	65,535 s	0	Time (in seconds) the condition must remain true for activation.
19115, 19145, 19175	Logic	0	1	1	Determines trigger evaluation logic: • 0 – OR (any trigger activates the scenario) • 1 – AND (all triggers must be true to activate the scenario)

Configuration Process

1. **Define Output Control**:

   - Assign the DOUT (DOUT1, DOUT2, or DOUT3) to be controlled by the scenario.

2. **Configure Triggers**:

   - Select up to three I/O sources (e.g., ignition, fuel level, temperature).
   - Define operands to specify logic (e.g., "On Entrance," "Is").
   - Set Low and High threshold values for each source.
   - Adjust the Activation Delay Timer for precise control.

3. **Set Priority**:

   - Choose the priority level for the scenario. Higher-priority scenarios override lower-priority ones for the same DOUT.

4. **Adjust DOUT Control Settings**:

   - Configure DOUT ON/OFF durations or enable Permanent Output Control for continuous activation.

5. **Save Configuration**:

   - Verify all parameters and save the configuration. The device evaluates scenario conditions every second.

Example Use Cases

- **Scenario 1**: Control a relay when fuel level drops below 10%. - **Scenario 2**: Trigger a buzzer if RPM exceeds 3000 while ignition is ON. - **Scenario 3**: Activate an alarm when GSM signal strength drops below 20%.