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Class specifications for embedded hardware components

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Introduction

Class specifications for embedded hardware components is a project of Ecma international's Technical Committee 53 with the goal of collecting and disseminating ECMAScript class definitions for specific embedded hardware components. An embedded hardware component is a physical device in an embedded system, such as:

- Microcontrollers
- Sensors
- Actuators
- I/O providers and expanders
- Displays

Class specifications for embedded hardware components is a repository of individual class definition documents developed by committee members, hardware component manufacturers, and the community. These class definitions describe how the class patterns and host provider specified in ECMA-419, ECMAScript® embedded systems API specification are applied to specific hardware components. The repository is publicly available at https://github.com/EcmaTC53/spec/tree/master/docs/Hardware%20Components.

This Ecma Technical Report was developed by Technical Committee 53 and was adopted by the General Assembly of June 2021.

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Class specifications for embedded hardware components

1 Scope

This Ecma Technical Report describes a repository of embedded hardware component class definitions developed by TC53 members and other contributors to document ECMAScript modules for specific hardware components. It is assumed that the reader is familiar with ECMA-419, ECMAScript® embedded systems API specification.

2 References

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ECMA-419, *ECMAScript® embedded systems API specification*

3 Abbreviations

TC53 Ecma International Technical Committee 53

4 Status

Development of the class specifications for embedded hardware components repository is an on-going and open-ended process. Each class definition describes the ECMAScript module for a specific hardware component or embedded host. Because countless such hardware components and hosts exist and new hardware components and hosts are continuously being developed, there will never be a full and complete set of class definitions in the repository.

As of February 2021, the repository consists of example class definitions created by members of TC53. As additional definitions are contributed by TC53 members, hardware component manufacturers, and the community, the repository will be continuously updated at https://github.com/EcmaTC53/spec/tree/master/docs/Hardware%20Components, which references the git `master` branch of the repository.

5 Contributions

The class specifications for embedded hardware components repository is initially composed of contributions from TC53 members. It is anticipated that additional contributions will come primarily from hardware component manufacturers and members of the community.

6 Relation to ECMA-419, ECMAScript® embedded systems API specification

ECMA-419, ECMAScript® embedded systems API specification provides normative definitions of class patterns and the host provider. For example, the sensor class pattern defines the requirements and guidelines for ECMAScript Modules that provide access to sensor hardware. The class specifications for embedded hardware

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components repository is a non-normative collection of documentation for specific instances of those class patterns—i.e., ECMAScript modules for specific hardware components and embedded hosts.

The Class Patterns in ECMA-419, ECMAScript® embedded systems API specification specify the baseline API for hardware components that fill common roles in an embedded system: sensor, display, IO provider, etc. The implementation of a class for a specific hardware component adapts the API to the unique capabilities of the component. This is done in ways permitted by the class pattern. The class specifications for embedded hardware components describe the ways in which a specific hardware component has adapted a given class pattern.

These are some ways that the class patterns may be adapted to provide access to the diverse capabilities of individual hardware components:

- Adding methods
- Removing methods unsupported by the hardware
- Adding properties to options objects
- Adding values for existing properties.

In addition, the specification gives the host responsibility for some choices. The documents for hosts in class specifications for embedded hardware components describe those choices. They include:

- Modules that are available
- Values of pin specifiers
- Values of port specifiers.

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