



2.2.5 Common services

These services are available to the host application and remote EtherNet/IP clients.

Service Code	Name	Addressing the object's		Description
		Class Level	Instance Level	
0x01	Get Attribute All	✓	✓	Retrieve all attribute values
0x05	Reset ¹⁾	✓	✓	Reset the device
0x4B	Flash LEDs	✗	✓	Flash the device's LEDs for identification
0x0E	Get Attribute Single	✓	✓	Retrieve attribute value
0x10	Set Attribute Single	✓	✓	Modify attribute value

¹⁾ In case the Safety Network Number is activated (see section Instance attributes), the reset service will not be supported for any instance. In that case the service will be rejected with general status code 0x08 "Service not supported".

Table 7. Identity Object - common services

2.2.5.4 Identity Attributes 5 and 8: Status and State

These two attributes reflect the current device state as per specification. For attribute 5, we find the bit definitions:

Bit(s)	Called	Definition
0	Owned	TRUE indicates the device (or an object within the device) has an owner. Typically this will be due to the device being an end point of an I/O connection to an ownable resource within the device, such as output data. A resource may also be owned through explicit messaging. The existence of an I/O connection alone does not indicate ownership, such as may be present through a CIP router.
2	Configured	TRUE indicates the application of the device has been configured to do something different than the "out-of-box" default. This shall not include configuration of the communications.
3	Reserved	shall be 0
4 – 7	Extended Device Status	Vendor-specific or as defined [...]
8	Minor Recoverable Fault	TRUE indicates the device detected a problem with itself, which is thought to be recoverable. The problem does not cause the device to go into one of the faulted states.
9	Minor Unrecoverable Fault	TRUE indicates the device detected a problem with itself, which is thought to be unrecoverable. The problem does not cause the device to go into one of the faulted states. See Behavior section.
10	Major Recoverable Fault	TRUE indicates the device detected a problem with itself, which caused the device to go into the "Major Recoverable Fault" state. See Behavior section.
11	Major Unrecoverable Fault	TRUE indicates the device detected a problem with itself, which caused the device to go into the "Major Unrecoverable Fault" state. See Behavior section.

Table 8. Identity Object - Attribute 5 as per CIP specification Vol 1. (shortened)

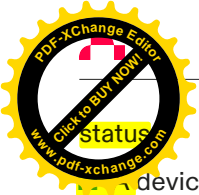
For attribute 8, figure Attribute 8 value definition, screenshot of CIP Vol 1. shows the defined values.

State	USINT	Present state of the device as represented by the state transition diagram
		0 = Nonexistent
		1 = Device Self Testing
		2 = Standby
		3 = Operational
		4 = Major Recoverable Fault
		5 = Major Unrecoverable Fault
		6 – 254 = Reserved
		255 = Default Value ¹

Figure 3. Attribute 8 value definition, screenshot of CIP Vol 1.

A certain redundancy between the two fields is obvious to the reader.

By default, the values of attributes 5 and 8 are automatically managed by the EtherNet/IP stack. This includes handling the Module and Network status and controlling the corresponding LEDs. Here are a few key points regarding device



A device is considered "configured" when the host application has applied a **valid configuration**.

- A device is "owned" when an exclusive owner connection has been established.
- **An internal major unrecoverable fault, such as a watchdog timeout, indicates a critical error.**
- ACD (Address Conflict Detection) conflicts are reported internally as major recoverable faults.
- Technically, all **internal** faults are recoverable through HIL_CHANNEL_INIT_REQ

If the host application seeks to impose its own external fault states and/or vendor-specific interpretations, it has limited capabilities to do so. These capabilities are described in the following section [Modification of device status and Application fault signaling](#).

2.2.5.5 Modification of device status and Application fault signaling

The EtherNet/IP stack provides the host application with independent control over the following fields:

- The Owned bit of Attribute 5 "Status"
- The Configured bit of Attribute 5 "Status"
- The **error** bits 8-11 of Attribute 5 "Status"
- The device state field, Attribute 8, "State"

The error bits can be used to enter the four error states. Minor error states do not affect the device functionally. However, major error bits are integrated with the Module Status (see section [Module status](#)) and manifest in the LED patterns "MS permanently red" and "MS flashing red". The device state field (Attribute 8) is maintained automatically unless the host application takes exclusive control over it through the independent EIP_OBJECT_PRM_HOST_CONTROLS_IDENTITY_STATE_ATTRIBUTE_8 stack parameter.

The host application can also use the service [EIP_OBJECT_FORCE_LED_STATE_REQ](#) to enforce LED patterns directly, **which overrides the error blink patterns**.

Since both the stack and the application can signal faults simultaneously, errors persist until explicitly cleared or the device resets. Internally, faults from the stack and the host application are prioritized, with unrecoverable major faults having higher priority than recoverable ones.

The owned, configured, and error bits can be forced by the host application through Attribute 769, which directly affects Attribute 5. For consistency, the stack's internal status can still be observed through the read-only Attribute 768 ("internal status") in such cases.

Attribute 8 can be set directly and exclusively by the host application through EIP_OBJECT_CIP_SERVICE_REQ, Set_Attribute_Single, if enabled by setting the corresponding stack parameter through EIP_OBJECT_SET_PARAMETER_REQ.

Even if the host application signals a major fault, the **device will remain accessible to network communication**. In cases of major unrecoverable faults, the host application may need to set the device into a well-defined, non-operational state. Such actions (e.g., BusOff) **must be** performed manually by the application developer for application-signaled faults.