

INTERNATIONAL STANDARD

**Alarm and electronic security systems –
Part 11-5: Electronic access control systems – Open supervised device protocol
(OSDP)**

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ALARM AND ELECTRONIC SECURITY SYSTEMS –**Part 11-5: Electronic access control systems –
Open supervised device protocol (OSDP)**

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The text of this International Standard is based on the following documents:

FDIS	Report on voting
79/634/FDIS	79/636/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60839 series, published under the general title *Alarm and electronic security systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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INTRODUCTION

This document describes the communication protocol for interfacing one or more Peripheral Devices (PD) to an Access Control Unit (ACU). This document specifies the protocol implementation over a two-wire RS-485 multi-drop serial communication channel.

This document is based upon the work done by the Security Industry Association OSDP Working Group.

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ALARM AND ELECTRONIC SECURITY SYSTEMS –

Part 11-5: Electronic access control systems – Open supervised device protocol (OSDP)

1 Scope

This part of IEC 60839 specifies the Open supervised device protocol (OSDP) for electronic access control systems. This includes communication settings, commands and replies between the ACU and the peripheral devices. It also includes a mapping of mandatory and optional requirements as per IEC 60839-11-1:2013 as covered by Annex F.

This document applies to physical security only. Physical security prevents unauthorized personnel, attackers or accidental intruders from physically accessing a building, room, etc.

This document does not in any way limit a manufacturer to add other commands to the protocol defined here.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[IEC 60839-11-5:2020](https://standards.iteh.ai/catalog/standards/sist/f781536c-0460-401f-8c0d-777777777777/iec-60839-11-5-2020)

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IEC 60839-11-1:2013, *Alarm and electronic security systems – Part 11-1: Electronic access control systems – System and components requirements*

IEC 60839-11-2:2014, *Alarm and electronic security systems – Part 11-2: Electronic access control systems – Application guidelines*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document the terms and definitions given in IEC 60839-11-1 and IEC 60839-11-2, as well as the following, apply:

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

client

service requester

EXAMPLE User interface, etc.

3.1.2

server

service provider

EXAMPLE Access control unit, etc.

3.1.3

peripheral device

I/O device connected via OSDP to the access control unit

EXAMPLE Token reader, card reader, biometric reader, client, etc.

3.2 Abbreviated terms

For the purposes of this document, the abbreviated terms given in IEC 60839-11-1 and IEC 60839-11-2, as well as the following apply.

ACU	Access Control Unit
AES	Advanced Encryption Standard
APDU	Application Protocol Data Unit
CBC	Cypher Block Chaining
C-MAC	Command MAC (for packets from ACU to PD)
cUID	Client's Unique Identifier
ICV	Initial Chaining Vector
MAC	Message Authentication Code
MK	Master Key
PD	Peripheral Device
PGM	Portable Grey Map
R-MAC	Reply MAC (for packets from PD to ACU)
SCBK	Secure Channel Base Key
SCS	Secure Channel Session
S-ENC	Session Key for ensuring data confidentiality (message encryption)
S-MAC1	Session Key for Message Authentication, key 1
S-MAC2	Session Key for Message Authentication, key 2
SPE	Secure PIN Entry

4 Overview

This document defines the protocol for connecting an ACU to peripheral devices including communication settings, commands and replies as shown in Figure 1.

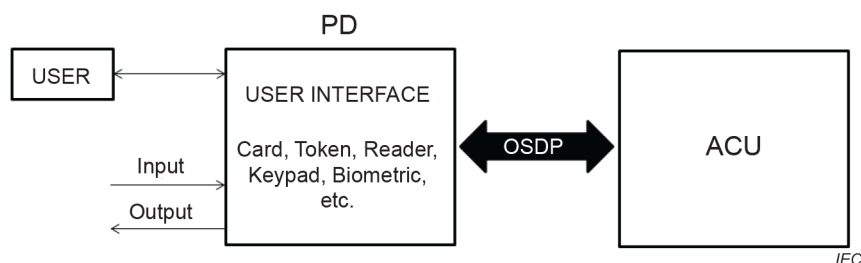


Figure 1 – Schematic overview of an OSDP connection

5 Communication settings

5.1 Physical interface

The physical interface shall be a half-duplex RS-485 communication bus using one twisted pair of wires with shield/signal ground.

5.2 Signaling

The signaling port shall be half-duplex asynchronous serial with following settings:

- 8 data bits,
- 1 stop bit,
- no parity bits,
- at least one of 9 600, 19 200, 38 400, 57 600, 115 200, 230 400 baud.

5.3 Character encoding

Data encoding shall be compliant with UTF-8 (ISO/IEC 10646:2017).

5.4 Channel access

The communication channel is used in the “interrogation/reply” mode. Only the ACU may spontaneously send a message. Each message sent by the ACU is addressed to one and only one PD. The “broadcast message”, as described in Table 1, assumes that there is only one PD connected to the ACU.

The PD shall send a single reply message to each message addressed to it within the specified MAX_REPLY_DELAY, as defined in 5.7.

Special case: if the PD is unable to accept the command for processing due to temporary unavailability of a resource required to process the command, then the PD shall send the osdp_BUSY reply as defined in 7.19. When the ACU receives the osdp_BUSY reply, it may, at its discretion, choose to re-send the same command as it would if the command delivery timed out. If the ACU elects to re-send the command that caused the osdp_BUSY reply, it may do so right away, or at its option may service other PDs before re-sending the command. If, on the other hand, the ACU elects to abandon the command that received the BUSY reply, the PD shall recognize this condition (new sequence number) and shall process the new command.

Commands which request specific data from the PD shall be limited to data that is expected to be immediately available. Following that guideline, applications where the ACU needs to request data that may take some time before it is available shall implement the operation in two distinct steps. The ACU shall issue a command requesting the data. The acceptance of that command shall be indicated by osdp_ACK. On completion of the operation, the PD shall return the matching reply in response to osdp_POLL.

5.5 Multi-byte data encoding

Messages are constructed using a character stream model, meaning that all data shall be packed without any "alignment pad" characters.

Numeric data types that require more than 1 byte are stored with the least significant byte first ("little-endian" format).