

ILNAS

Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 13757-2:2018+A1:2023

Communication systems for meters - Part 2: Wired M-Bus communication

Kommunikationssysteme für Zähler - Teil
2: Drahtgebundene M-Bus-
Kommunikation

Systèmes de communication pour
compteurs - Partie 2 : Communication M-
Bus filaire

12/2023



National Foreword

This European Standard EN 13757-2:2018+A1:2023 was adopted as Luxembourgish Standard ILNAS-EN 13757-2:2018+A1:2023.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

ILNAS-EN 13757-2:2018+A1:2023

EUROPEAN STANDARD **EN 13757-2:2018+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2023

ICS 33.200; 35.100.10; 35.240.99; 91.140.50

Supersedes EN 13757-2:2018

English Version

Communication systems for meters - Part 2: Wired M-Bus communication

Systèmes de communication pour compteurs - Partie 2
: Communication M-Bus filaire

Kommunikationssysteme für Zähler - Teil 2:
Drahtgebundene M-Bus-Kommunikation

This European Standard was approved by CEN on 8 February 2018 and includes Amendment approved by CEN on 22 October 2023.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword..... 5

Introduction 7

1 Scope..... 8

2 Normative references..... 8

3 Terms, definitions $\overline{A_1}$ and abbreviations $\overline{A_1}$ 8

3.1 $\overline{A_1}$ Terms and definitions $\overline{A_1}$ 8

3.2 $\overline{A_1}$ Abbreviations $\overline{A_1}$ 9

4 Physical layer specifications 9

4.1 General..... 9

Figure 1 — Representation of bits on the M-Bus 10

4.2 Electrical requirements slave..... 10

4.2.1 Master to slave bus voltages..... 10

4.2.2 Slave bus current and multiple unit loads 11

4.2.3 Dynamic requirements 12

4.3 Electrical requirements master 12

4.3.1 Parameters 12

4.3.2 Function types 13

4.3.3 Requirements 13

4.4 Electrical requirements mini-master 15

4.4.1 Definition of a mini-master 15

4.4.2 Requirements 15

4.5 Repeaters 15

4.5.1 General requirements 15

4.5.2 Additional requirements..... 16

4.6 Burst and surge requirements 16

4.6.1 General..... 16

4.6.2 Requirements for devices intended for domestic use 16

4.6.3 Requirements for devices intended for industrial use..... 16

5 Link Layer (master and slave)..... 16

5.1 General..... 16

5.2 Baud rate..... 16

5.2.1 Required baud rate..... 16

5.2.2 Recommended additional baud rates..... 16

5.2.3 Special baud rates 17

5.2.4 Baud rate after reset 17

5.2.5 Baud rate set..... 17

5.2.6 Auto speed mode 17

5.2.7 Transmit baud rate accuracy 17

5.3 Bit position 17

5.3.1 Synchronous transmit bit distortion..... 17

5.3.2 Gross transmit bit distortion and minimum signal element..... 17

5.3.3 Character interval requirement 18

5.3.4 Practical receive margin and character interval requirement 18

ILNAS-EN 13757-2:2018+A1:2023 - Preview only Copy via ILNAS e-Shop

5.3.5	Minimum signal element	18
5.4	Byte format	18
5.5	Block format	18
5.5.1	Transmission interbyte gaps.....	18
5.5.2	Reception interbyte gaps.....	18
5.5.3	Idle time between datagrams.....	18
5.6	Datagram abort on collision	18
5.7	Datagram description	19
5.7.1	General	19
5.7.2	Data integrity	19
5.7.3	[A1] Communication types [A1]	19
5.7.4	Datagram coding.....	20
5.7.5	Addressing	20
5.7.6	Link layer time schedule.....	20
5.7.7	Datagram sequencing.....	20
6	Tables and figures	22
Table 1 — Signal quality characteristics for slaves and masters		22
Figure 2 — Start stop distortion (example for bit 4), minimum signal element (example for bit 7) (Transmit).....		23
Figure 3 — Character interval requirement (Transmit)		23
Figure 4 — Practical receive margin (example for two falling slopes)		24
Figure 5 — Character interval requirement (Receive)		24
Figure 6 — Minimum duration start element (Receive).....		25
Figure 7 — Reception of datagram packets.....		25
Figure 8 — Quiescent time after reception.....		26
Annex A (informative) Schematic implementation of slave.....		27
Figure A.1 — Slave transceiver		27
Annex B (informative) [A1] Examples of protection techniques for M-Bus meters against surge/lightning [A1]		28
Annex C (informative) Slave powering options		33
Annex D (informative) Slave collision detect		34
Annex E (informative) Wire installation		35
E.1	General	35
E.2	Type A: small in house installation	35
E.2.1	Description.....	35
E.2.2	Usage	35
E.3	Type B: large in house installation.....	35
E.3.1	Description.....	35
E.3.2	Usage	35
E.4	Type C: small wide area net	35
E.4.1	Description.....	35

E.4.2 Usage..... 36

E.5 Type D: large wide area net..... 36

E.5.1 Description 36

E.5.2 Usage..... 36

E.6 Type E: mini installation (meter cluster) 36

E.6.1 Description 36

E.6.2 Usage..... 36

Annex F (informative) Protocol examples 37

F.1 Startup..... 37

F.2 Slave (meter) readout 37

Bibliography..... 38

ILNAS-EN 13757-2:2018+A1:2023 - Preview only Copy via ILNAS e-Shop

European foreword

This document (EN 13757-2:2018+A1:2023) has been prepared by Technical Committee CEN/TC 294 “Communication systems for meters”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2024, and conflicting national standards shall be withdrawn at the latest by June 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes A1 EN 13757-2:2018 A1.

This document includes Amendment 1 approved by CEN on 22 October 2023.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The following significant technical changes have been incorporated in the new edition of this document:

- a) more precise definition of collision state under 4.3.3.8;
- b) modification of application under 5.7.3.4 from “required” to “optional”;
- c) additional explanations for usage of REQ-SKE under 5.7.3.4;
- d) addition of new datagram SND-UD2 under 5.7.3.4;
- e) alignment of Annex D with revised definition of collision state under 4.3.3.8 and
- f) editorial alignments with other parts of this standard, e.g. replacement of \$E5 with ACK.

EN 13757 is currently composed with the following parts:

- *Communication systems for meters — Part 1: Data exchange;*
- *Communication systems for meters — Part 2: Wired M-Bus communication;*
- *Communication systems for meters — Part 3: Application protocols;*
- *Communication systems for meters and remote reading of meters — Part 4: Wireless meter readout (Radio meter reading for operation in SRD bands);*
- *Communication systems for meters — Part 5: Wireless M-Bus relaying;*
- *Communication systems for meters — Part 7: Transport and security services;*
- *CEN/TR 17167, Communication systems for meters — Accompanying TR to EN 13757-2,-3 and -7, Examples and supplementary information.*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.