

DIN EN 61800-7-303

ICS 29.160.30; 29.200

Ersatz für
DIN EN 61800-7-303:2008-11
Siehe Anwendungsbeginn

**Elektrische Leistungsantriebssysteme mit einstellbarer Drehzahl –
Teil 7-303: Generisches Interface und Nutzung von Profilen für
Leistungsantriebssysteme (PDS) –
Abbildung von Profil-Typ 3 auf Netzwerktechnologien
(IEC 61800-7-303:2015);
Englische Fassung EN 61800-7-303:2016**

Adjustable speed electrical power drive systems –
Part 7-303: Generic interface and use of profiles for power drive systems –
Mapping of profile type 3 to network technologies
(IEC 61800-7-303:2015);
English version EN 61800-7-303:2016

Entraînements électriques de puissance à vitesse variable –
Partie 7-303: Interface générique et utilisation de profils pour les entraînements
électriques de puissance –
Mise en correspondance du profil de type 3 avec les technologies de réseaux
(IEC 61800-7-303:2015);
Version anglaise EN 61800-7-303:2016

Gesamtumfang 123 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE

Anwendungsbeginn

Anwendungsbeginn für die von CENELEC am 2015-12-25 angenommene Europäische Norm als DIN-Norm ist 2016-11-01.

Für DIN EN 61800-7-303:2008-11 besteht eine Übergangsfrist bis 2018-12-25.

Nationales Vorwort

Vorausgegangener Norm-Entwurf: E DIN EN 61800-7-303:2015-02.

Für dieses Dokument ist das nationale Arbeitsgremium K 226 „Ausrüstung von Starkstromgeräten und -anlagen mit elektronischen Betriebsmitteln“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE (www.dke.de) zuständig.

Die enthaltene IEC-Publikation wurde vom SC 22G „Adjustable speed electric drive systems incorporating semiconductor power converters“ erarbeitet.

Das IEC-Komitee hat entschieden, dass der Inhalt dieser Publikation bis zu dem Datum (stability date) unverändert bleiben soll, das auf der IEC-Website unter „<http://webstore.iec.ch>“ zu dieser Publikation angegeben ist. Zu diesem Zeitpunkt wird entsprechend der Entscheidung des Komitees die Publikation

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- zurückgezogen,
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- geändert.

Für den Fall einer undatierten Verweisung im normativen Text (Verweisung auf ein Dokument ohne Angabe des Ausgabedatums und ohne Hinweis auf eine Abschnittsnummer, eine Tabelle, ein Bild usw.) bezieht sich die Verweisung auf die jeweils aktuellste Ausgabe des in Bezug genommenen Dokuments.

Für den Fall einer datierten Verweisung im normativen Text bezieht sich die Verweisung immer auf die in Bezug genommene Ausgabe des Dokuments.

Der Zusammenhang der zitierten Dokumente mit den entsprechenden Deutschen Dokumenten ergibt sich, soweit ein Zusammenhang besteht, grundsätzlich über die Nummer der entsprechenden IEC-Publikation. Beispiel: IEC 60068 ist als EN 60068 als Europäische Norm durch CENELEC übernommen und als DIN EN 60068 ins Deutsche Normenwerk aufgenommen.

Das Präsidium des DIN hat mit Präsidialbeschluss 1/2004 festgelegt, dass DIN-Normen, deren Inhalt sich auf internationale Arbeitsergebnisse der Informationsverarbeitung gründet, unter bestimmten Bedingungen allein in englischer Sprache veröffentlicht werden dürfen. Diese Bedingungen sind für die vorliegende Norm erfüllt.

Da sich die Anwender der vorliegenden Norm der englischen Sprache als Fachsprache bedienen, wird die Englische Fassung der EN 61800-7-303 veröffentlicht. Zu deren Abschnitt 1, der den Anwendungsbereich festlegt, und Abschnitt 3, der die Begriffe festlegt, wurde eine Übersetzung angefertigt und als Nationaler Anhang NA der vorliegenden Norm hinzugefügt. Für einige der verwendeten Begriffe existieren keine gebräuchlichen deutschen Benennungen, da sich die deutschen Anwender in der Regel ebenfalls der englischen Benennungen bedienen. Diese Norm steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

Das Original-Dokument enthält Bilder in Farbe, die in der Papierversion in einer Graustufen-Darstellung wiedergegeben werden. Elektronische Versionen dieses Dokuments enthalten die Bilder in der originalen Farbdarstellung.

Änderungen

Gegenüber DIN EN 61800-7-303:2008-11 wurden folgende Änderungen vorgenommen:

- a) Erweiterungen der Festlegungen für PROFINET Diagnose- und Alarm-Anwendungsdienstelemente (ASE);
- b) geringfügige Aktualisierungen bei der Abbildung des Base Mode Parameter Access zu PROFIBUS und PROFINET;
- c) redaktionelle Überarbeitung des gesamten Dokuments.

Frühere Ausgaben

DIN EN 61800-7-303: 2008-11

Nationaler Anhang NA (informativ)

Auszugsweise Übersetzung^{N1)}

1 Anwendungsbereich

Dieser Teil der IEC 61800 beschreibt die Abbildung des in IEC 61800-7-203 festgelegten Profil-Typs 3 (PROFIdrive) auf verschiedene Netzwerktechnologien.

- PROFIBUS DP, siehe Abschnitt 4;
- PROFINET IO, siehe Abschnitt 5.

Es ist nicht Zweck der in diesem Teil der IEC 61800-7 beschriebenen Funktionen, funktionale Sicherheit sicherzustellen. Dies erfordert zusätzliche Maßnahmen nach den maßgeblichen Normen, Vereinbarungen und Gesetzen.

3 Begriffe und Abkürzungen

3.1 Begriffe

Für die Anwendung dieses Dokuments gelten die folgenden Begriffe.

3.1.1

Istwert

(en: actual value)

Wert einer variablen Größe zu einem gegebenen Zeitpunkt

Anmerkung 1 zum Begriff: Der Istwert wird in diesem Dokument als Eingangsdatenwert des Programms zur Steuerung der Anwendung verwendet, um Variable des PDS (z. B. Rückführgrößen) zu überwachen.

[QUELLE: IEC 61800-7-1:2015, 3.3.1.1]

3.1.2

Algorithmus

(en: algorithm)

vollständig bestimmte endliche Folge von Operationen, nach denen die Werte der Ausgangsdaten aus den Werten der Eingangsdaten berechnet werden können

[QUELLE: IEC 61800-7-1:2015, 3.2.1]

3.1.3

Anwendung

(en: application)

funktionales Element der Software, spezifisch für die Problemlösung bei industriellen Prozessen mit Messen und Regeln

Anmerkung 1 zum Begriff: Eine Anwendung kann über Ressourcen verteilt sein und kann mit anderen Anwendungen kommunizieren.

[QUELLE: IEC 61800-7-1:2015, 3.2.2]

^{N1)} Nationale Fußnote: Die Nummerierung aus IEC 61800-7-303:2015-11 wurde beibehalten.

3.1.4**Attribut**

(en: attribute)

Eigenschaft oder Charakteristik einer Funktionseinheit

[QUELLE: IEC 61800-7-1:2015, 3.2.3]

3.1.5**Achse**

(en: axis)

logisches Element in einem Automatisierungssystem (z. B. ein Bewegungssteuerungssystem), das eine bestimmte Form der Bewegung darstellt

Anmerkung 1 zum Begriff: Achsen können rotatorisch oder linear, physisch oder virtuell, gesteuert oder nur beobachtet sein.

Anmerkung 2 zum Begriff: Eine physische Achse kann eine oder mehrere der folgenden Komponenten einschließen: einen Bewegungssensor, eine Bewegungssteuerungsstruktur, einen Leistungsverstärker und einen Bewegungsaktor.

[QUELLE: IEC 61800-7-1:2015, 3.2.4, modifiziert – Es wurde eine Anmerkung zum Begriff ergänzt.]

3.1.6**Klasse**

(en: class)

Beschreibung einer Menge von Objekten, die dieselben Attribute, Operationen, Methoden, Beziehungen und dieselbe Semantik haben

[QUELLE: IEC 61800-7-1:2015, 3.2.5]

3.1.7**taktzyklussynchrone Anwendung**

(en: clock cycle synchronous application)

Synchronisation der Abtast- und Zykluszeiten in der Regelungssoftware in digitalen Antriebs- und Steuerungssystemen

3.1.8**Befehle**

(en: commands)

Menge an Befehlen von dem Programm zur Steuerung der Anwendung an das PDS, um das Verhalten des PDS oder der funktionalen Elemente des PDS zu steuern

Anmerkung 1 zum Begriff: Das Verhalten wird durch Zustände oder Betriebsarten wiedergegeben.

Anmerkung 2 zum Begriff: Die verschiedenen Befehle können jeweils durch ein Bit dargestellt werden.

[QUELLE: IEC 61800-7-1:2015, 3.3.1.3]

3.1.9**Leiten**

(en: control)

zweckmäßige Maßnahmen an oder in einem Prozess, um vorgegebene Ziele zu erreichen

[QUELLE: IEC 61800-7-1:2015, 3.2.6]

3.1.10**Steuergerät**

(en: control device)

Baueinheit, die – innerhalb eines Moduls/einer Baugruppe oder eines Geräts – ein Anwendungsprogramm zur Steuerung des PDS enthält

[QUELLE: IEC 61800-7-1:2015, 3.2.7]

3.1.11

Datentyp

(en: data type)

Menge von Werten mit einer Menge zulässiger Operationen

[QUELLE: IEC 61800-7-1:2015, 3.2.8]

3.1.12

Gerät

Feldgerät

(en: device; field device)

<Funktionsbausteine> vernetzte unabhängige physische Einheit eines industriellen Automatisierungssystems, die fähig ist, spezifische Funktionen in einem speziellen Kontext auszuführen, und die durch ihre Schnittstellen abgegrenzt ist

[QUELLE: IEC 61800-7-1:2015, 3.2.9]

3.1.13

Gerät

Feldgerät

(en: device; field device)

<Systemintegration> Einheit, die Steuerungs- und/oder Regelfunktionen sowie Aktor- und/oder Sensorfunktionen ausführt und Schnittstellen zu anderen derartigen Einheiten innerhalb eines Automatisierungssystems hat

[QUELLE: IEC 61800-7-1:2015, 3.2.10]

3.1.14

Geräteprofil

(en: device profile)

Darstellung eines Geräts bezüglich seiner Parameter, Parametergruppen und seines Verhaltens gemäß eines Gerätemodells, das die Daten und das Verhalten des Geräts beschreibt, wie es durch ein Netzwerk gesehen wird, unabhängig von einer bestimmten Netzwerktechnologie

[QUELLE: IEC 61800-7-1:2015, 3.2.11]

3.1.15

E/A-Daten des DO

(en: DO IO Data)

Sammlung aller Eingangs- und Ausgangsdaten (zyklische Übertragung) eines Antriebsobjektes (Antriebsachse)

3.1.16

Antriebsobjekt

(en: Drive Object)

funktionales Element einer Antriebseinheit

3.1.17

Kommunikation zwischen Antrieben

(en: Drive to Drive communication)

(zyklische) Kommunikation zwischen Antrieben aus der Sicht des Nutzers

3.1.18

Antriebseinheit

(en: Drive Unit)

logisches Gerät, das alle funktionalen Elemente bezogen auf eine zentrale Verarbeitungseinheit umfasst

3.1.19

funktionales Element

(en: functional element)

Einheit von Software oder von Hardware, die mit Hardware kombiniert ist, fähig, eine festgelegte Funktion eines Geräts zu erfüllen

Anmerkung 1 zum Begriff: Ein funktionales Element hat eine Schnittstelle zu anderen funktionalen Elementen und Funktionen.

Anmerkung 2 zum Begriff: Ein funktionales Element kann aus einem oder mehreren Funktionsbausteinen, Objekten oder Parameterlisten erstellt werden.

[QUELLE: IEC 61800-7-1:2015, 3.2.13]

3.1.20

Eingangsdaten

(en: Input Data)

Daten, die zyklisch vom Gerät an die Steuerung zu senden sind

3.1.21

Schnittstelle

(en: interface)

Grenze zwischen zwei Einheiten, die durch funktionale Merkmale, Signalkenngrößen oder andere Merkmale als geeignet festgelegt ist

[QUELLE: IEC 61800-7-1:2015, 3.2.15]

3.1.22

E/A-Daten

(en: IO Data)

Eingangs- und Ausgangsdaten eines Geräts

3.1.23

isochroner Modus

(en: Isochronous Mode)

Dienst des Kommunikationssystems für die Taktzyklussynchronisation, der einen konstanten Bus(zeit)zyklus mit einem Taktzyklussignal am Anfang des Zyklus erzeugt

3.1.24

Modell

(en: model)

mathematische oder physikalische Darstellung eines Systems oder Prozesses, die das System oder den Prozess aufgrund bekannter Gesetzmäßigkeiten, einer Identifikation oder getroffener Annahmen genügend genau abbildet

[QUELLE: IEC 61800-7-1:2015, 3.2.17]

3.1.25

Betriebsart

(en: operating mode)

Kennzeichnung von Art und Umfang, wie der Mensch als Bediener in eine Leiteinrichtung eingreift

[QUELLE: IEC 61800-7-1:2015, 3.2.18]

3.1.26

Ausgabedaten

(en: Output Data)

Daten, die zyklisch von der Steuerung an das Gerät zu senden sind

3.1.27

Parameter

(en: parameter)

Datenelement, das Geräteinformationen darstellt, die aus einem Gerät gelesen oder in ein Gerät geschrieben werden können, z. B. durch ein Netzwerk oder ein lokales Bediengerät

Anmerkung 1 zum Begriff: Ein Parameter ist typischerweise durch einen Parameternamen, einen Datentyp und eine Zugriffsrichtung gekennzeichnet.

[QUELLE: IEC 61800-7-1:2015, 3.2.20]

3.1.28

Prozessdaten

(en: Process data)

Daten in Verbindung mit dem Regelungs- bzw. Steuerungsprozess, z. B. Verstärkungsfaktor und Zustandsvariablen, typischerweise auf Parameter abgebildet

3.1.29

Profil

(en: profile)

Darstellung einer PDS-Schnittstelle bezüglich ihrer Parameter, Parametergruppen und ihres Verhaltens nach einem Kommunikationsprofil und einem Geräteprofil

[QUELLE: IEC 61800-7-1:2015, 3.2.21, modifiziert – Anmerkung 1 zum Begriff wurde gestrichen.]

3.1.30

Sollwert

(en: setpoint)

Wert oder Variable, der/die als Ausgabedaten von dem Programm zur Steuerung der Anwendung verwendet wird, um das PDS zu steuern

3.1.31

Zustand

(en: status)

Menge an Informationen von dem PDS an das Programm zur Steuerung der Anwendung, die den Zustand oder die Betriebsart des PDS oder eines funktionalen Elements des PDS wiedergibt

Anmerkung 1 zum Begriff: Die verschiedenen Zustandsinformationen können jeweils mit einem Bit kodiert werden.

[QUELLE: IEC 61800-7-1:2015, 3.3.1.6]

3.1.32

technologische Funktionen

(en: technological functions)

Regelungen und Ablaufsteuerungen für die Automatisierung von anwendungsspezifischen Prozessen

3.1.33

Typ

(en: type)

Hardware- oder Software-Element, das die gemeinsamen Attribute festlegt, die von allen Instanzen des Typs gemeinsam genutzt werden

[QUELLE: IEC 61800-7-1:2015, 3.2.23]

3.1.34

Variable

(en: variable)

Software-Einheit, die jeweils verschiedene Werte zu einer Zeit annehmen kann

Anmerkung 1 zum Begriff: Die Werte sowohl einer Variablen als auch eines Parameters sind üblicherweise auf einen bestimmten Datentyp festgelegt.

[QUELLE: IEC 61800-7-1:2015, 3.2.25]

3.2 Abkürzungen

AC x	Anwendungsklasse x, wobei x die Nummer der Anwendungsklasse ist (en: Application Class)
AP	Anwendungsprozess (en: Application Process)
API	Anwendungsprozesskennzeichner (en: Application Process Identifier)
AR	Anwendungsbeziehung (en: Application Relationship)
ASE	Anwendungsdienstelement (en: Application Service Element)

CM	Kontextmanagement (en: Context Management)
CO	Kommunikationsobjekt (en: Communication Object)
CR	Kommunikationsbeziehung (en: communication relationship)
C-LS	Lebenszeichen des Reglers (en: Controller's Sign-Of-Life)
DO	Antriebsobjekt (en: Drive Object)
DO-LS	Lebenszeichen des Antriebsobjektes (en: Drive Object Sign-Of-Life)
DP	dezentrale (verteilte) Peripherie (en: Decentralized (distributed) Periphery)
DSC	dynamische Servoregelung (en: Dynamic Servo Control)
DU	Antriebseinheit (en: Drive Unit)
DX	Datenaustausch (en: Data_Exchange)
DXB	Querverkehr (en: Data-eXchange-Broadcast)
f	Frequenz (en: frequency)
FDL	Feldbus-Sicherungsschicht (Schicht 2) (en: Fieldbus Data Link (Layer 2))
GAP	Bereich zwischen eigener Stationsadresse und der nächsten Stationsadresse (Versuch, neue aktive Stationen einzuschließen)
GC	globales Steuerungstelegramm (en: Global Control Telegram)
GSD	Gerätestammdaten-Datei (Gerätebeschreibung, Eingangsinformation für ein Bus-Konfigurationstool) (en: General Station Description)
GSDML	GSD-Auszeichnungssprache (en: GSD Markup Language)
HW	Hardware
ID	Kennzeichner (en: identifier)
IO AR	E/A-Anwendungsbeziehung (en: IO Application Relationship)
IOCS	E/A-Konsumentenstatus (en: IO Consumer Status)
IOPS	E/A-Produzentenstatus (en: IO Producer Status)
IO Data	E/A-Daten; zyklisch übertragen
IP	Internetprotokoll
IRT	isochrones Echtzeit-Ethernet (en: Isochronous Realtime Ethernet)
I/O	Eingang/Ausgang (en: input/output)
LS	Lebenszeichen (en: Sign-Of-Life)
MAP	Modulzugangspunkt (en: Module Access Point)
MSG	azyklische Dienste (Nachricht) (en: acyclic services (message))
M CR	Multicast-CR
MS0 AR	PROFIBUS-MS0-AR (zyklischer Datenaustausch zwischen Master (Klasse 1) und Slave)
MS1 AR	PROFIBUS-MS1-AR (azyklischer Datenaustausch zwischen Master (Klasse 1) und Slave)
MS2 AR	PROFIBUS-MS2-AR (azyklischer Datenaustausch zwischen Master (Klasse 2) und Slave)
NAMUR	Normenarbeitsgemeinschaft für Mess- und Regeltechnik in der chemischen Industrie
NC	numerische Steuerung (en: numerical control system) mit einem numerischen Steuerbefehlssatz
OP	Bedienfeld (en: operator panel)
Pxxx	Parameter (gekennzeichnet durch Nummer xxx)
PAP	Parameterzugangspunkt (en: Parameter Access Point)
PC	Personalcomputer
PDS	Leistungsantriebssystem (en: power drive system)

P-Device	Peripheriegerät (PROFIdrive Base Model) (en: Peripheral Device)
PDU	Protokolladateneinheit (en: Protocol Data Unit)
PG	Programmiergerät
SPS	speicherprogrammierbare Steuerung ohne einen Befehlssatz zur Bewegungssteuerung (en: PLC; programmable logic controller)
PLL	Phasenregelkreis (en: phase locked loop)
PNO	PROFIBUS-Nutzerorganisation
PNU	Parameternummer (en: parameter number)
PROFIBUS	Prozessfeldbus (en: Process Field Bus) nach IEC 61158-5-3 und IEC 61158-6-3
PROFINET	Prozessfeldbus (en: Process Field Bus) nach IEC 61158-5-10 und IEC 61158-6-10
RES	reservieren
RT	Echtzeit-Ethernet (en: Realtime Ethernet)
SAP	Dienstzugangspunkt (en: Service Access Point)
SW	Software
SYNC	Synchronisation
SYNCH	Synchronisationstelegramm (globale Steuerung)
$T_{\text{BASE_DP}}$	Zeitbasis von T_{DP}
$T_{\text{BASE_IO}}$	Zeitbasis von T_{I} , T_{O}
t_{BIT}	Bitzeit
TCA_Min	Verzögerungszeit für den Anwendungsprozess des Reglers
TCA_Valid	Zeit für verfügbare Eingangsdaten
T_{DC} , T_{DC}	Datenzykluszeit (en: Data-Cycle-Time)
T_{DP}	DP-Zykluszeit (en: DP-Cycle-Time)
$T_{\text{DP_MAX}}$	Maximum von T_{DP}
$T_{\text{DP_MIN}}$	Minimum von T_{DP}
T_{DX}	Datenaustauschzeit (en: Data_Exchange-Time)
T_{J}	Jitter-Zeit
T_{I}	Eingangserfassungszeit (en: Input-Time)
$T_{\text{I_MIN}}$	Minimum von T_{I}
T_{ID1}	Leerlaufzeit 1
T_{ID2}	Leerlaufzeit 2
$T_{\text{input_valid}}$	Verzögerungszeit für den Erfassungsprozess
$T_{\text{IO_Input}}$	Zeit für die Erfassung des Istwertes
$T_{\text{IO_InputMin}}$	Verzögerungszeit für den Erfassungsprozess
$T_{\text{IO_Output}}$	Zeit für die Ausgabe des Sollwertes
$T_{\text{IO_OutputMin}}$	Verzögerungszeit für den Prozess der Ausgabe des Sollwertes
$T_{\text{IO_OutputValid}}$	Zeit für verfügbare Ausgangsdaten
T_{M}	Masterzeit
T_{MAPC}	Zykluszeit der Masteranwendung (en: Master_Application_Cycle-Time)
T_{MLS}	Zeit für Lebenszeichen des Masters (en: Master_Life_Sign-Time)

T_O	Ausgabezeit (en: Output-Time)
T_{O_MIN}	Minimum von ($T_O - T_{DX}$)
T_{PLL_D}	PLL-Verzögerung (en: PLL-Delay)
T_{PLL_W}	PLL-Fenster (en: PLL-Window)
T_{SAPC}	Zykluszeit der Slave-Anwendung (en: Slave_Application_Cycle-Time)
T_{SC}	Abtastzeit des Drehzahlreglers (en: Speed Controller Sampling Time)
T_{SDR}	Zeitverzögerung für das Antworten der Station (en: Station_Delay_Responder Time)
T_{TR}	Zielumdrehungszeit (en: Target_Rotation-Time)
T_{WD}	Watchdog-Zeit (en: Watchdog-Time)
UUID	universeller eindeutiger Kennzeichner (en: Universal Unique Identifier)
TOK	Tokenweitergabe (en: token passing)
VIK	Verband der Industriellen Energie- und Kraftwirtschaft
ZSW	Zustandswort (en: status word)

– Leerseite –

English Version

**Adjustable speed electrical power drive systems -
Part 7-303: Generic interface and use of profiles for power drive
systems - Mapping of profile type 3 to network technologies
(IEC 61800-7-303:2015)**

Entraînements électriques de puissance à vitesse variable -
Partie 7-303: Interface générique et utilisation de profils
pour les entraînements électriques de puissance - Mise en
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Elektrische Leistungsantriebssysteme mit einstellbarer
Drehzahl - Teil 7-303: Generisches Interface und Nutzung
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Abbildung von Profil-Typ 3 auf Netzwerktechnologien
(IEC 61800-7-303:2015)

This European Standard was approved by CENELEC on 2015-12-25. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 22G/313/FDIS, future edition 2 of IEC 61800-7-303, prepared by SC 22G "Adjustable speed electric drive systems incorporating semiconductor power converters" of IEC/TC 22 "Power electronic systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61800-7-303:2016.

The following dates are fixed:

- latest date by which the document has to be (dop) 2016-09-25
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2018-12-25
standards conflicting with the
document have to be withdrawn

This document supersedes EN 61800-7-303:2008.

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Endorsement notice

The text of the International Standard IEC 61800-7-303:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61158-2:2014	NOTE	Harmonized as EN 61158-2:2014 (not modified).
IEC 61158-3-3:2014	NOTE	Harmonized as EN 61158-3-3:2014 (not modified).
IEC 61158-4-3:2014	NOTE	Harmonized as EN 61158-4-3:2014 (not modified).
IEC 61499-1:2005	NOTE	Harmonized as EN 61499-1:2005 ¹⁾ (not modified).
IEC 61800 Series	NOTE	Harmonized as EN 61800 Series.
IEC 61800-7:2015 Series	NOTE	Harmonized as EN 61800-7:2016 Series.
IEC 61800-7-1:2015	NOTE	Harmonized as EN 61800-7-1:2016 (not modified).
IEC 61800-7-201:2015	NOTE	Harmonized as EN 61800-7-201:2016 (not modified).
IEC 61800-7-202:2015	NOTE	Harmonized as EN 61800-7-202:2016 (not modified).
IEC 61800-7-204:2015	NOTE	Harmonized as EN 61800-7-204:2016 (not modified).
IEC 61800-7-301:2015	NOTE	Harmonized as EN 61800-7-301:2016 (not modified).
IEC 61800-7-302:2015	NOTE	Harmonized as EN 61800-7-302:2016 (not modified).
IEC 61800-7-304:2015	NOTE	Harmonized as EN 61800-7-304:2016 (not modified).

¹⁾ Superseded by EN 61499-1:2013 (IEC 61499-1:2012).

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INTRODUCTION

0.1 General

The IEC 61800 series is intended to provide a common set of specifications for adjustable speed electrical power drive systems.

IEC 61800-7 specifies profiles for power drive systems (PDS) and their mapping to existing communication systems by use of a generic interface model.

IEC 61800-7 describes a generic interface between control systems and power drive systems. This interface can be embedded in the control system. The control system itself can also be located in the drive (sometimes known as "smart drive" or "intelligent drive").

A variety of physical interfaces is available (analogue and digital inputs and outputs, serial and parallel interfaces, fieldbuses and networks). Profiles based on specific physical interfaces are already defined for some application areas (e.g. motion control) and some device classes (e.g. standard drives, positioner). The implementations of the associated drivers and application programmers interfaces are proprietary and vary widely.

IEC 61800-7 defines a set of common drive control functions, parameters, and state machines or description of sequences of operation to be mapped to the drive profiles.

IEC 61800-7 provides a way to access functions and data of a drive that is independent of the used drive profile and communication interface. The objective is a common drive model with generic functions and objects suitable to be mapped on different communication interfaces. This makes it possible to provide common implementations of motion control (or velocity control or drive control applications) in controllers without any specific knowledge of the drive implementation.

There are several reasons to define a generic interface:

For a drive device manufacturer

- less effort to support system integrators;
- less effort to describe drive functions because of common terminology;
- the selection of drives does not depend on availability of specific support;

For a control device manufacturer

- no influence of bus technology;
- easy device integration;
- independent of a drive supplier;

For a system integrator

- less integration effort for devices;
- only one understandable way of modeling;
- independent of bus technology.

Much effort is needed to design a motion control application with several different drives and a specific control system. The tasks to implement the system software and to understand the functional description of the individual components may exhaust the project resources. In some cases, the drives do not share the same physical interface. Some control devices just support a single interface which will not be supported by a specific drive. On the other hand, the functions and

data structures are often specified with incompatibilities. This requires the system integrator to write special interfaces for the application software and this should not be his responsibility.

Some applications need device exchangeability or integration of new devices in an existing configuration. They are faced with different incompatible solutions. The efforts to adapt a solution to a drive profile and to manufacturer specific extensions may be unacceptable. This will reduce the degree of freedom to select a device best suited for this application to the selection of the unit which will be available for a specific physical interface and supported by the controller.

IEC 61800-7-1 is divided into a generic part and several annexes as shown in Figure 1. The drive profile types for CiA® 402¹, CIP Motion™², PROFIdrive³ and SERCOS®⁴ are mapped to the generic interface in the corresponding annex. The annexes have been submitted by open international network or fieldbus organizations which are responsible for the content of the related annex and use of the related trade marks.

The different profile types 1, 2, 3 and 4 are specified in IEC 61800-7-201, IEC 61800-7-202, IEC 61800-7-203 and IEC 61800-7-204.

This part of IEC 61800-7 specifies how the profile type 3 (PROFIdrive) is mapped to the network technologies PROFIBUS⁵ and PROFINET⁶.

-
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IEC 61800-7-301, IEC 61800-7-302 and IEC 61800-7-304 specify how the profile types 1, 2 and 4 are mapped to different network technologies (such as CANopen^{®7}, CC-Link IE[®] Field Network⁸, EPA^{™9}, EtherCAT^{®10}, Ethernet Powerlink^{™11}, DeviceNet^{™12}, ControlNet^{™13}, EtherNet/IP^{™14}, and SERCOS[®]).

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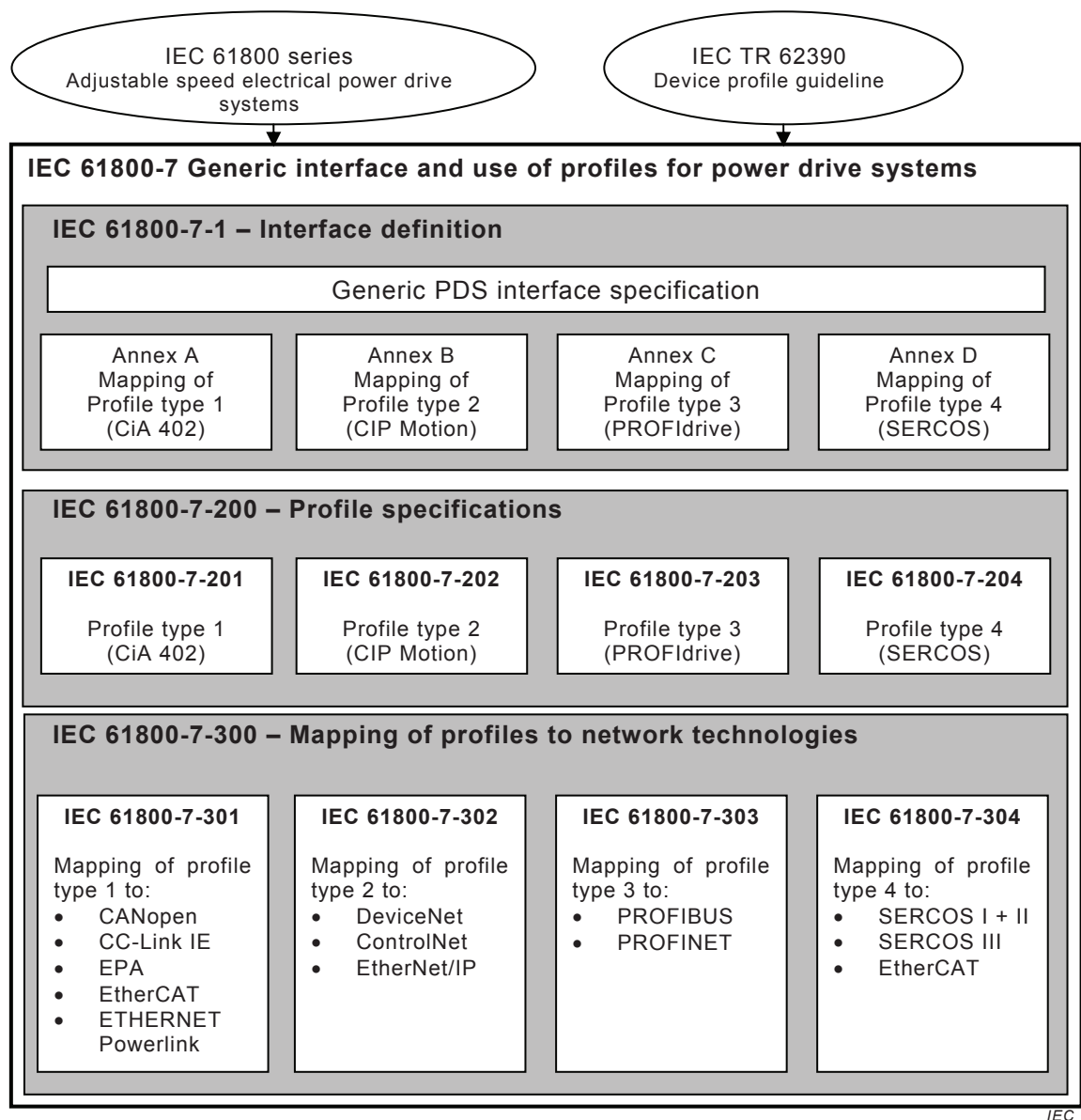


Figure 1 – Structure of IEC 61800-7

0.2 Patent declaration

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning the following.

Publication / Application serial number	Holder	Title	Derwent accession Number	Derwent publication
EP844542	[SI]	Numerical control method and control structure for controlling of movement of objects whereby speed control is effected at a higher rate than position control	1998-274369	EP844542-A1 27.05.1998; DE59603496-G 02.12.1999; EP844542-B1 27.10.1999

The IEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured the IEC that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from

[SI]	Siemens AG Corporate Intellectual Property Licensing & Transactions Otto-Hahn-Ring 6 81730 Munich Germany
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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. IEC shall not be held responsible for identifying any or all such patent rights.

ISO (www.iso.org/patents) and IEC (<http://patents.iec.ch>) maintain on-line data bases of patents relevant to their standards. Users are encouraged to consult the data bases for the most up to date information concerning patents.

ADJUSTABLE SPEED ELECTRICAL POWER DRIVE SYSTEMS –

Part 7-303: Generic interface and use of profiles for power drive systems – Mapping of profile type 3 to network technologies

1 Scope

This part of IEC 61800 specifies the mapping of the profile type 3 (PROFIdrive) specified in IEC 61800-7-203 onto different network technologies.

- PROFIBUS DP, see Clause 4,
- PROFINET IO, see Clause 5.

The functions specified in this part of IEC 61800-7 are not intended to ensure functional safety. This requires additional measures according to the relevant standards, agreements and laws.

2 Normative 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.

IEC 61158-5-3, *Industrial communication networks – Fieldbus specifications – Part 5-3: Application layer service definition – Type 3 elements*

IEC 61158-5-10, *Industrial communication networks – Fieldbus specifications – Part 5-10: Application layer service definition – Type 10 elements*

IEC 61158-6-3, *Industrial communication networks – Fieldbus specifications – Part 6-3: Application layer protocol specification – Type 3 elements*

IEC 61158-6-10, *Industrial communication networks – Fieldbus specifications – Part 6-10: Application layer protocol specification – Type 10 elements*

IEC 61784-1, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*

IEC 61784-2, *Industrial communication networks – Profiles – Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC 8802-3*

IEC 61800-7-203:2015, *Adjustable speed electrical power drive systems – Part 7-203: Generic interface and use of profiles for power drive systems – Profile type 3 specification*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

actual value

value of a variable quantity at a given instant

Note 1 to entry: Actual value is used in this document as input data of the application control program to monitor variables of the PDS (e.g. feedback variables).

[SOURCE: IEC 61800-7-1:2015, 3.3.1.1]

3.1.2
algorithm

completely determined finite sequence of operations by which the values of the output data can be calculated from the values of the input data

[SOURCE: IEC 61800-7-1:2015, 3.2.1]

3.1.3
application

software functional element specific to the solution of a problem in industrial-process measurement and control

Note 1 to entry: An application may be distributed among resources, and may communicate with other applications.

[SOURCE: IEC 61800-7-1:2015, 3.2.2]

3.1.4
attribute

property or characteristic of an entity

[SOURCE: IEC 61800-7-1:2015, 3.2.3]

3.1.5
axis

logical element inside an automation system (e.g. a motion control system) that represents some form of movement

Note 1 to entry: Axes can be rotary or linear, physical or virtual, controlled or simply observed.

Note 2 to entry: A physical axis may include one or more of the following components: a motion sensor, a motion control structure, a power amplifier, and a motion actuator.

[SOURCE: IEC 61800-7-1:2015, 3.2.4, modified – A note to entry is added.]

3.1.6
class

description of a set of objects that share the same attributes, operations, methods, relationships, and semantics

[SOURCE: IEC 61800-7-1:2015, 3.2.5]

3.1.7
clock cycle synchronous application

synchronisation of sampling and cycle times in the closed-loop control software in digital drives and control systems

3.1.8
commands

set of commands from the application control program to the PDS to control the behaviour of the PDS or functional elements of the PDS

Note 1 to entry: The behaviour is reflected by states or operating modes.

Note 2 to entry: The different commands may be represented by one bit each.

[SOURCE: IEC 61800-7-1:2015, 3.3.1.3]

3.1.9

control

purposeful action on or in a process to meet specified objectives

[SOURCE: IEC 61800-7-1:2015, 3.2.6]

3.1.10

control device

physical unit that contains – in a module/subassembly or device – an application program to control the PDS

[SOURCE: IEC 61800-7-1:2015, 3.2.7]

3.1.11

data type

set of values together with a set of permitted operations

[SOURCE: IEC 61800-7-1:2015, 3.2.8]

3.1.12

device

field device

<function blocks> networked independent physical entity of an industrial automation system capable of performing specified functions in a particular context and delimited by its interfaces

[SOURCE: IEC 61800-7-1:2015, 3.2.9]

3.1.13

device

field device

<system integration> entity that performs control, actuating and/or sensing functions and interfaces to other such entities within an automation system

[SOURCE: IEC 61800-7-1:2015, 3.2.10]

3.1.14

device profile

representation of a device in terms of its parameters, parameter assemblies and behaviour according to a device model that describes the data and behaviour of the device as viewed through a network, independent from any network technology

[SOURCE: IEC 61800-7-1:2015, 3.2.11]

3.1.15

DO IO Data

collection of all Input Data and Output Data (cyclic transmission) of a Drive Object (drive axis)

3.1.16

Drive Object

functional element of a Drive Unit

3.1.17

Drive to Drive communication

communication (cyclic) between drives from the user's perspective

3.1.18

Drive Unit

logical device which comprises all functional elements related to one central processing unit

3.1.19

functional element

entity of software or software combined with hardware, capable of accomplishing a specified function of a device

Note 1 to entry: A functional element has an interface, associations to other functional elements and functions.

Note 2 to entry: A functional element can be made out of function block(s), object(s) or parameter list(s).

[SOURCE: IEC 61800-7-1:2015, 3.2.13]

3.1.20

Input Data

data to be sent cyclically from the device to the controller

3.1.21

interface

shared boundary between two entities defined by functional characteristics, signal characteristics, or other characteristics as appropriate

[SOURCE: IEC 61800-7-1:2015, 3.2.15]

3.1.22

IO Data

Input Data and Output Data of a device

3.1.23

Isochronous Mode

communication system service for clock cycle synchronism which generates a constant (timing) bus cycle with a clock cycle signal at the start of the cycle

3.1.24

model

mathematical or physical representation of a system or a process, based with sufficient precision upon known laws, identification or specified suppositions

[SOURCE: IEC 61800-7-1:2015, 3.2.17]

3.1.25

operating mode

characterisation of the way and the extent to which the human operator intervenes in the control equipment

[SOURCE: IEC 61800-7-1:2015, 3.2.18]

3.1.26

Output Data

data to be sent cyclically from the controller to the device

3.1.27

parameter

data element that represents device information that can be read from or written to a device, for example through the network or a local HMI

Note 1 to entry: A parameter is typically characterized by a parameter name, data type and access direction.

[SOURCE: IEC 61800-7-1:2015, 3.2.20]

3.1.28

Process data

data related to the control process, for example gain factor and state variables, typically mapped to parameters

3.1.29

profile

representation of a PDS interface in terms of its parameters, parameter assemblies and behaviour according to a communication profile and a device profile

[SOURCE: IEC 61800-7-1:2015, 3.2.21, modified – Note 1 to entry is deleted]

3.1.30

setpoint

value or variable used as Output Data of the application control program to control the PDS

3.1.31

status

set of information from the PDS to the application control program reflecting the state or mode of the PDS or a functional element of the PDS

Note 1 to entry: The different status information may be coded with one bit each.

[SOURCE: IEC 61800-7-1:2015, 3.3.1.6]

3.1.32

technological functions

closed-loop controls and sequence controls for automation of application-specific processes

3.1.33

type

hardware or software element which specifies the common attributes shared by all instances of the type

[SOURCE: IEC 61800-7-1:2015, 3.2.23]

3.1.34

variable

software entity that may take different values, one at a time

Note 1 to entry: The values of a variable as well as of a parameter are usually restricted to a certain data type.

[SOURCE: IEC 61800-7-1:2015, 3.2.25]

3.2 Abbreviated terms

AC x	Application Class x, where x is the number of the AC
AP	Application Process

API	Application Process Identifier
AR	Application Relationship
ASE	Application Service Element
CM	Context Management
CO	Communication Object
CR	communication relationship
C-LS	Controller's Sign-Of-Life
DO	Drive Object
DO-LS	Drive Object Sign-Of-Life
DP	Decentralised (distributed) Periphery
DSC	Dynamic Servo Control
DU	Drive Unit
DX	Data_Exchange
DXB	Data-eXchange-Broadcast
f	frequency
FDL	Fieldbus Data Link (Layer 2)
GAP	Area between own station address and the next one (attempt to include new active stations)
GC	Global Control Telegram
GSD	General Station Description (device description, input for a bus configuring tool)
GSDML	GSD Markup Language
HW	hardware
ID	identifier
IO AR	IO Application Relationship
IOCS	IO Consumer Status
IOPS	IO Producer Status
IO Data	IO Data; is transmitted cyclically
IP	Internet Protocol
IRT	Isochronous Realtime Ethernet
I/O	input/output
LS	Sign-Of-Life
MAP	Module Access Point
MSG	acyclic services (message)
M CR	Multicast CR
MS0 AR	PROFIBUS MS0 AR (Cyclic Data Exchange between master (class1) and slave)
MS1 AR	PROFIBUS MS1 AR (Acyclic Data Exchange between master (class1) and slave)
MS2 AR	PROFIBUS MS2 AR (Acyclic Data Exchange between master (class2) and slave)
NAMUR	Standards Working Group for Instrumentation and Control in the Chemical Industry
NC	numerical control system with a numeric control command set
OP	operator panel

Pxxx	parameter (identified by number xxx)
PAP	Parameter Access Point
PC	personal computer
PDS	power drive system
P-Device	Peripheral Device (PROFIdrive Base Model)
PDU	Protocol Data Unit
PG	programming device
PLC	programmable logic controller without a motion control command set
PLL	phase locked loop (phase control loop)
PNO	PROFIBUS user organisation
PNU	parameter number
PROFIBUS	process fieldbus as defined in IEC 61158-5-3 and IEC 61158-6-3
PROFINET	process field bus as defined in IEC 61158-5-10 and IEC 61158-6-10
RES	reserve
RT	Realtime Ethernet
SAP	Service Access Point
SW	software
SYNC	synchronisation
SYNCH	synchronisation telegram (global control)
T_{BASE_DP}	time base of T_{DP}
T_{BASE_IO}	time base of T_I , T_O
t_{BIT}	bit-time
TCA_Min	lack time for the Controller application process
TCA_Valid	time for Input Data available
T_{DC} , T_{DC}	Data-Cycle-Time
T_{DP}	DP-Cycle-Time
T_{DP_MAX}	maximum of T_{DP}
T_{DP_MIN}	minimum of T_{DP}
T_{DX}	Data_Exchange-Time
T_J	Jitter-Time
T_I	Input-Time
T_{I_MIN}	Minimum of T_I
T_{ID1}	Idle-Time 1
T_{ID2}	Idle-Time 2
T_{input_valid}	lack time for the acquisition process
T_{IO_Input}	time for actual value acquisition
$T_{IO_InputMin}$	lack time for the acquisition process
T_{IO_Output}	time for setpoint transfer
$T_{IO_OutputMin}$	lack time for the setpoint transfer process
$T_{IO_OutputValid}$	time for Output Data available
T_M	Master-Time
T_{MAPC}	Master_Application_Cycle-Time

T_{MLS}	Master_Life_Sign-Time
T_O	Output-Time
T_{O_MIN}	Minimum of ($T_O - T_{DX}$)
T_{PLL_D}	PLL-Delay
T_{PLL_W}	PLL-Window
T_{SAPC}	Slave_Application_Cycle-Time
T_{SC}	Speed Controller Sampling Time
T_{SDR}	Station_Delay_Responder Time
T_{TR}	Target_Rotation-Time
T_{WD}	Watchdog-Time
UUID	Universal Unique Identifier
TOK	token passing
VIK	Association of the Industrial Customers and Industrial Power Producers
ZSW	status word

4 Mapping to PROFIBUS DP

4.1 General

This clause defines the mapping of the PROFIdrive Base Model on the PROFIBUS DP communication system (see IEC 61158-5-3, IEC 61158-6-3, IEC 61784-1).

4.2 Mapping to PROFIBUS data types

Table 1 shows the mapping of the PROFIdrive standard data types to the PROFIBUS DP specific data types.

Table 1 – Mapping of data types

Data types used in Profile PROFIdrive	Equivalent data types in PROFIBUS DP	Reference to the definition
Boolean	Boolean	IEC 61158-5-10
Integer8	Integer8	IEC 61158-5-10
Integer16	Integer16	IEC 61158-5-10
Integer32	Integer32	IEC 61158-5-10
Unsigned8	Unsigned8	IEC 61158-5-10
Unsigned16	Unsigned16	IEC 61158-5-10
Unsigned32	Unsigned32	IEC 61158-5-10
FloatingPoint	Float32	IEC 61158-5-10
VisibleString	VisibleString	IEC 61158-5-10
OctetString	OctetString	IEC 61158-5-10
TimeOfDay (with date indication)	TimeOfDay (with date indication)	IEC 61158-5-10
TimeDifference	TimeDifference	IEC 61158-5-10
Date	BinaryDate	IEC 61158-5-10
TimeOfDay without date indication	TimeOfDay without date indication	IEC 61158-5-10
TimeDifference with date indication	TimeDifference with date indication	IEC 61158-5-10
TimeDifference without date indication	TimeDifference without date indication	IEC 61158-5-10

4.3 Base Model at PROFIBUS DP

4.3.1 Communication devices

When using PROFIBUS DP as communication network, the PROFIdrive Devices are mapped to the following PROFIBUS DP objects:

Controller

The PROFIdrive Controller is represented by the PROFIBUS **DP-master (class 1)**. For example, this may be a PLC, NC or PC.

P-Device

The PROFIdrive P-Device is represented by the PROFIBUS **DP-slave**. The P-Device is related to one or more Axis of the automation system.

Supervisor

The PROFIdrive Supervisor is represented by the PROFIBUS **DP-master (class 2)**. For example this may be a PG or OP.

Figure 2 shows the topology of a typical PROFIdrive drive system using PROFIBUS DP as communication network.

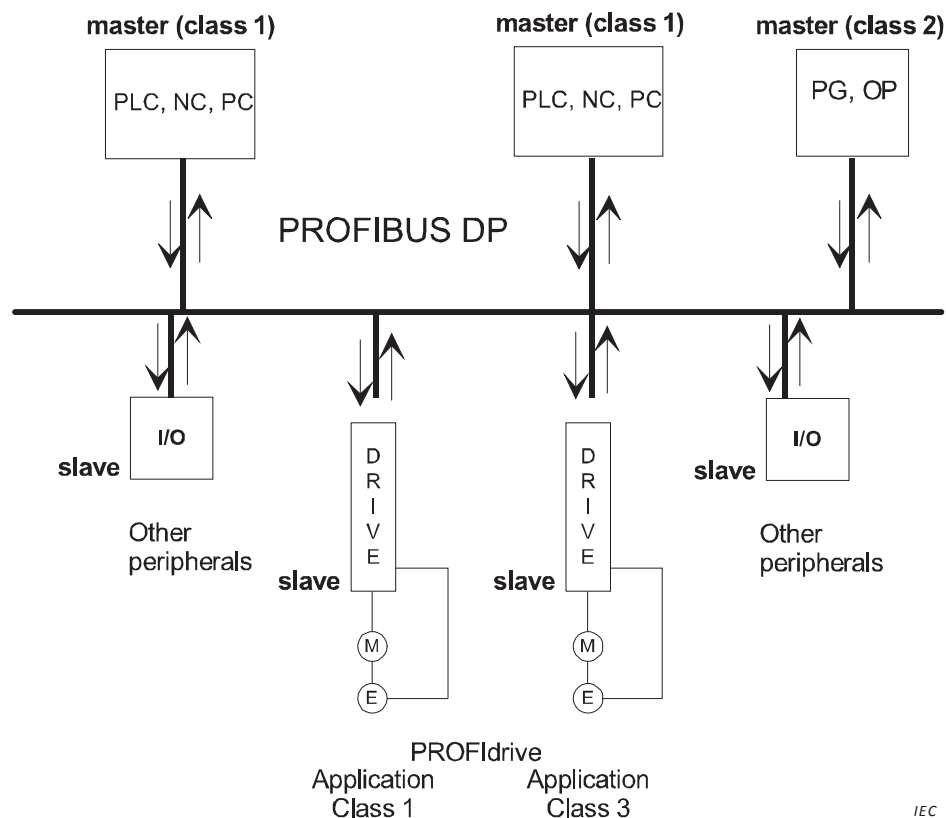


Figure 2 – PROFIBUS DP Devices in a PROFIdrive drive system

4.3.2 Communication relationship

The PROFIdrive communication relationships between the Devices are mapped to PROFIBUS DP in the following way:

Controller – P-Device

Relationship is represented by **MS0 AR** plus **MS1 AR**

Supervisor – P-Device
Relationship is represented by **MS2 AR**

P-Device – P-Device
Relationship is represented by **Cyclic Data Exchange between DP-slaves (DXB)**

Figure 3 shows the PROFIdrive Devices and their relationships on PROFIBUS DP.

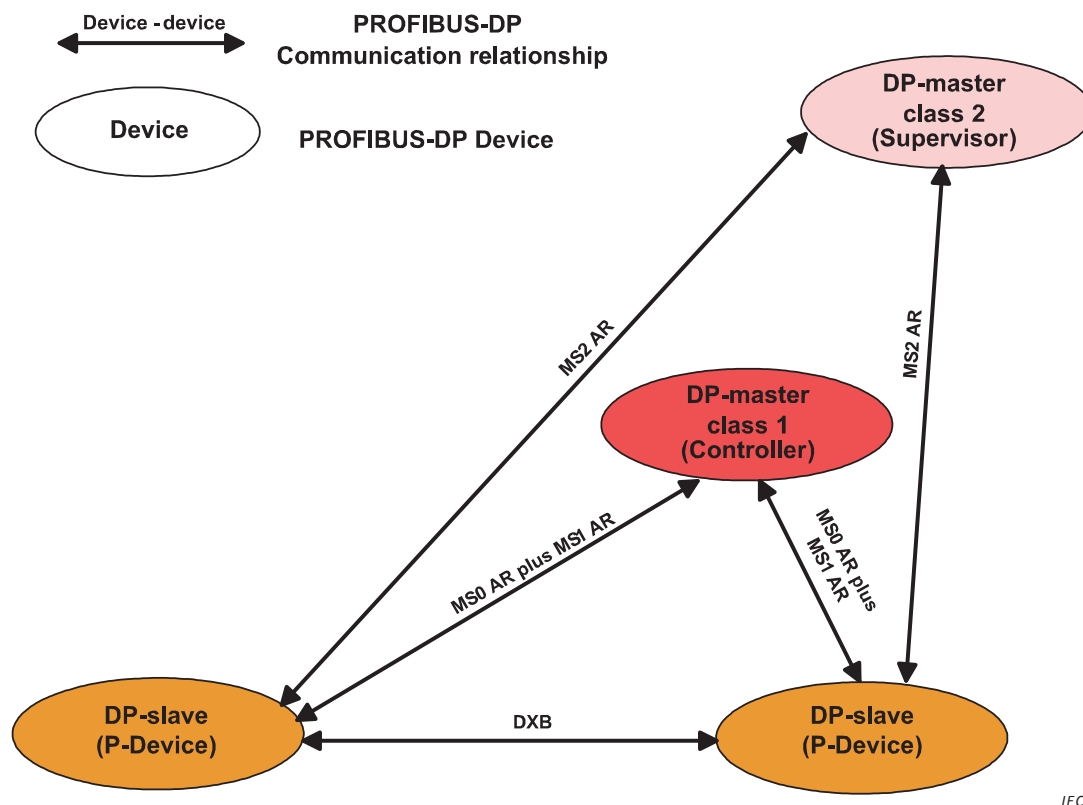


Figure 3 – PROFIdrive Devices and their relationship for PROFIBUS DP

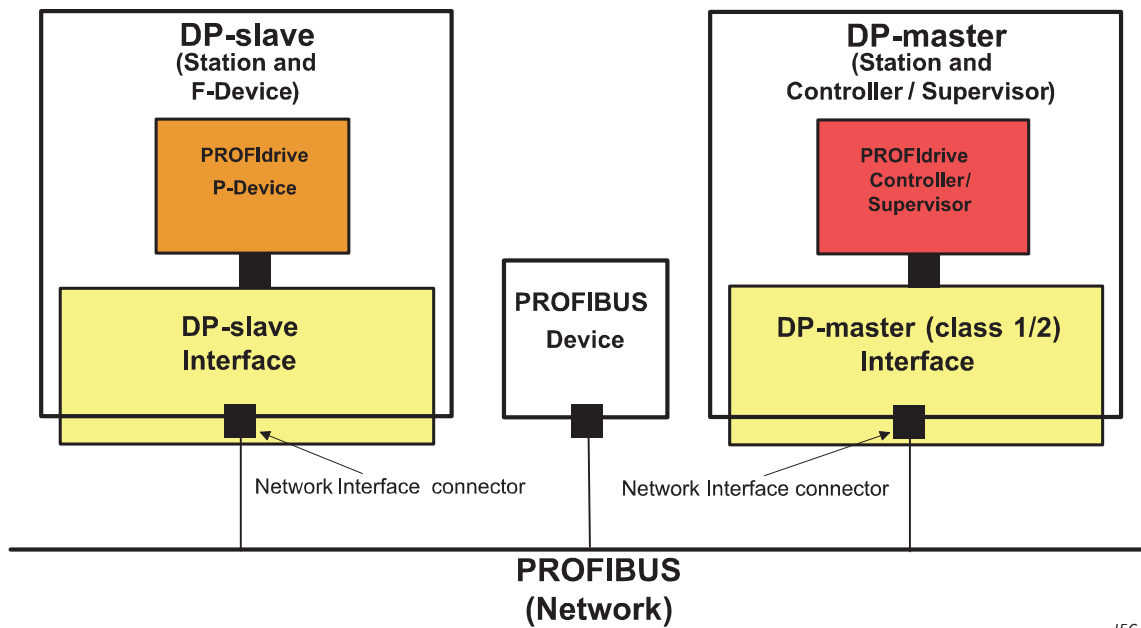
4.3.3 Communication network

For PROFIBUS DP as communication system for PROFIdrive, the PROFIdrive General Communication Model is shown in Figure 4. With PROFIBUS DP, having different Network Interfaces (master- or slave-interface) means also having different Stations. Therefore, the Station and Device objects in the General Communication Model are the same.

With PROFIBUS, a maximum of 126 devices – that is, masters or slaves – may be connected to one bus in single- or multi-master operation. Thus, PROFIdrive P-Devices with different Drive Objects as well as other peripherals (such as I/O) may be operated on one bus.

Therefore, the PROFIdrive Device at PROFIBUS DP is precisely defined by the following address information:

- Network (PROFIBUS bus/**domain**)
- Device (PROFIBUS **node address**)



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Figure 4 – General Communication Model for PROFIdrive at PROFIBUS DP

4.3.4 Communication services

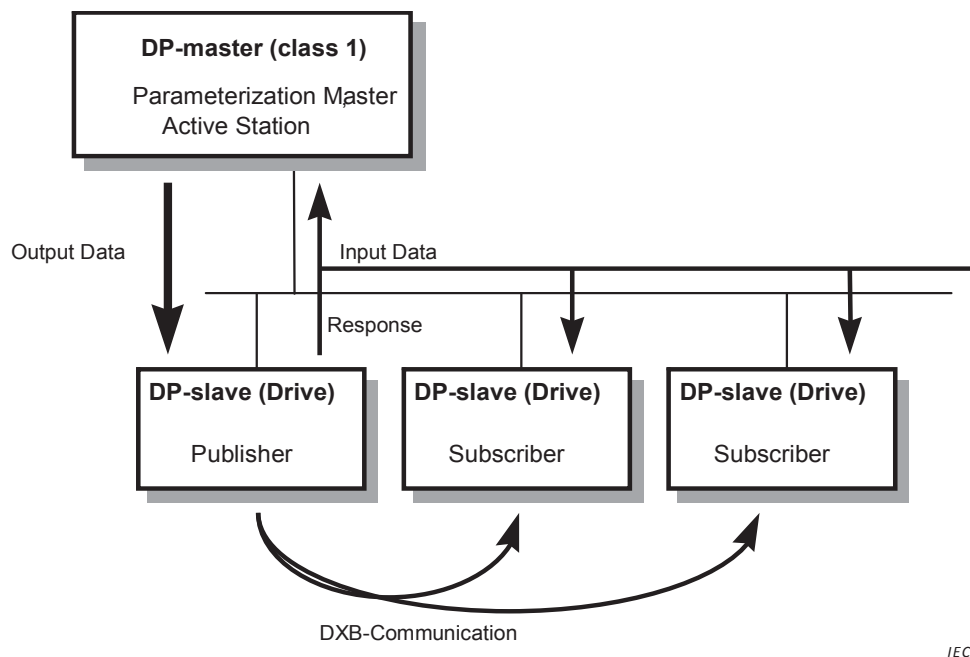
4.3.4.1 General

The PROFIdrive Base Model communication services are provided by the following PROFIBUS DP mechanisms:

4.3.4.2 Cyclic Data Exchange

The Cyclic Data Exchange service for PROFIBUS DP is realised by two different PROFIBUS DP communication mechanisms, depending on the communication relationship.

- For the master/slave (Controller/P-Device) relationship, the Cyclic Data Exchange is realised by use of simple transfer of user data via the Data_Exchange telegram (DX).
- For the slave/slave (P-Device/P-Device) relationship, the Cyclic Data Exchange is realised by use of the Cyclic Data Exchange between DP-slaves (DXB) mechanism. The so-called Publisher-Subscriber-Model is based on a publisher (passive station) which provides its actual values not only to the DP-master but also to all other stations (subscribers), so that the other slaves may access and process this data. Therefore, by the configuration of the PROFIBUS DP system, the DXB relationships between the DP-slaves are configured and contain the information on which subscriber accesses to which publisher data. The DXB communication is coupled to the cyclic user data exchange of DP. Figure 5 shows the mechanism of the DXB communication.



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Figure 5 – PROFIBUS DP DXB communication designations

4.3.4.3 Acyclic Data Exchange

The Acyclic Data Exchange service is realised by the MS1 AR or MS2 AR of PROFIBUS DP.

Acyclic communication uses the MS1 AR and MS2 AR mechanism READ and WRITE of data block.

This allows start-up tools to be connected as DP-master (class 2) on PROFIBUS DP and a series of functions, for example reading out the DO IO Data normalisation through the control.

4.3.4.4 Alarm Mechanism

With PROFIdrive on PROFIBUS DP, the Alarm Mechanism is not used. Diagnosis and Fault management is done by use of PROFIdrive mechanism based on standard Parameter Access and the cyclic PROFIdrive control and status words.

4.3.4.5 Clock Synchronous Operation

Clock Synchronous Operation at PROFIBUS DP is done by using the PROFIBUS DP-V2 Isochronous Mode. Clock cycle synchronous operation in the PROFIBUS DP Isochronous Mode is implemented by using an isochronous clock signal. This cyclic, isochronous clock signal is transmitted as Global Control telegram from the DP-master (class 1) to all PROFIBUS slaves. Thus, the slaves supporting isochronous operation may synchronise their applications (internal/Slave Clock) with the Master Clock (see IEC 61158-5-3, IEC 61158-6-3).

Special error mechanisms in each station make stable communication possible, even if there is a sporadic failure of the Master Clock.

For PROFIdrive, the PROFIBUS Isochronous Mode is the basis for drive synchronisation. Not only message interchange on the bus system is implemented in an isochronous time frame, but also the internal control algorithms – such as closed loop speed and current controllers in the drive, or the controller in the higher level automation system – are synchronised (see Figure 6).

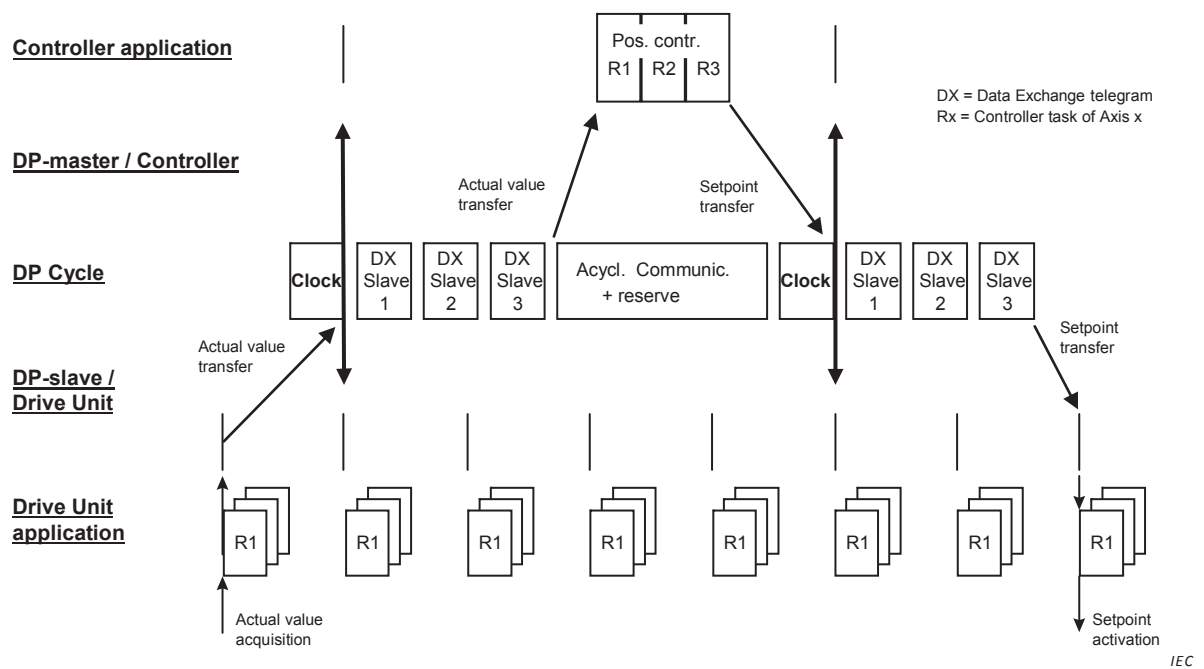


Figure 6 – Synchronous communication for PROFIdrive at PROFIBUS DP

4.3.5 P-Device communication model

Figure 7 shows the P-Device Communication Model when PROFIBUS DP is used as communication system.

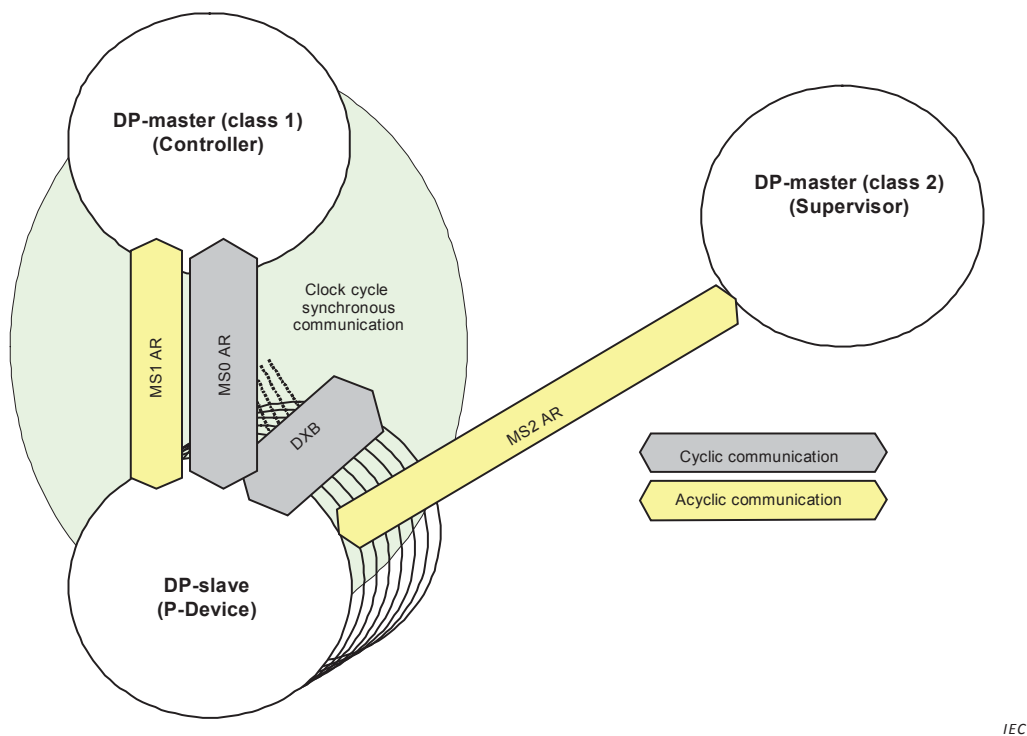


Figure 7 – Overview about the P-Device communication model on PROFIBUS