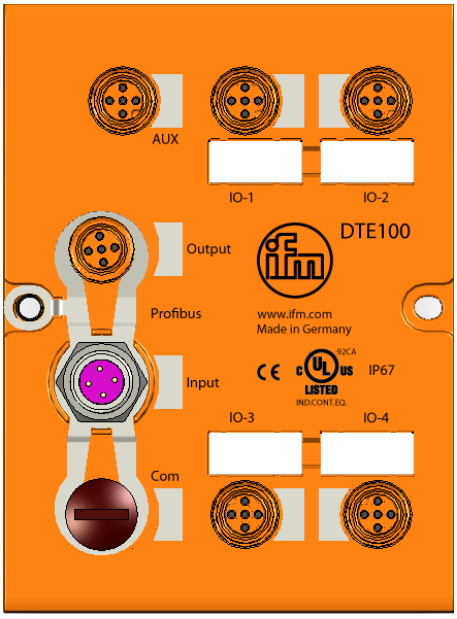
ifm electronic

Gerätehandbuch
RFID Auswerteeinheit

DE

efector190®

DTE100



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Contents

DE

1 Vorbemerkung

1.1 Verwendete Symbole

► Handlungsanweisung

> Reaktion, Ergebnis

[…] Bezeichnung von Tasten, Schaltflächen oder Anzeigen

→ Querverweis

Wichtiger Hinweis
Fehlfunktionen oder Störungen sind bei Nichtbeachtung möglich.

Information
Ergänzender Hinweis

2 Sicherheitshinweise

Lesen Sie vor der Inbetriebnahme des Gerätes die Bedienungsanleitung. Vergewissern Sie sich, dass sich das Gerät uneingeschränkt für die betreffende Applikation eignet.

Die Missachtung von Anwendungshinweisen oder technischen Angaben kann zu Personen- und/oder Sachschäden führen.

3 Bestimmungsgemäße Verwendung

Die RFID Auswerteeinheit DTE100 integriert eine Profibus DP Schnittstelle sowie 4 Kanäle zur Anbindung von Feldgeräten. Jeder Kanal lässt sich entweder zum Anschluss einer RFID-Antenne oder als Ein-/Ausgang nach IEC 61131 nutzen.

Das Gerät

- steuert den Datenaustausch zu den RFID-Antennen bzw. zur Sensor- / Aktuator-Ebene.
- kommuniziert mit der übergeordneten Steuerungsebene über Profibus.
- ermöglicht die Gerätekonfiguration über einen WEB-Server.

Einsatzbereiche sind z.B.:

- Materialflusssteuerung und -kontrolle in Fertigungslinien
- Lagermanagement durch automatische Lagerguterkennung
- Behältermanagement, Kommissionierung oder Warenverfolgung

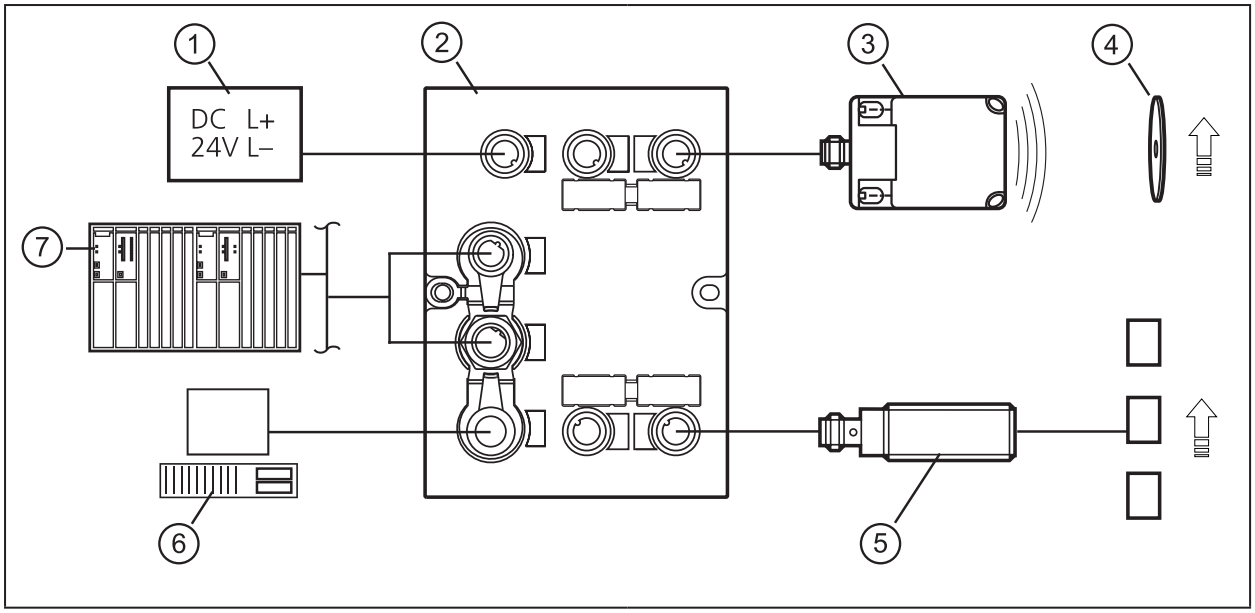
3.1 Anforderungen an den Profibus DP-Master

Profibus DP Master der Klasse 1 (DPM1) mit DPV0 Unterstützung oder

Profibus DP Master der Klasse 1 (DPM1) mit DPV1 Unterstützung (empfohlen)

Durch Nutzung der DPV1 Dienste wird die Datengröße innerhalb der zyklisch übertragenen Eingangs- / Ausgangsdaten des Profibus DP Masters erheblich reduziert.

4 Funktion



1: Spannungsversorgung
2: DTE100 RFID Auswerteeinheit
3: Schreib-/Lesekopf typ ANT51x
4: RFID Transponder
5: Sensor
6: PC (Konfigurationsschnittstelle)
7: Profibus DP-Master

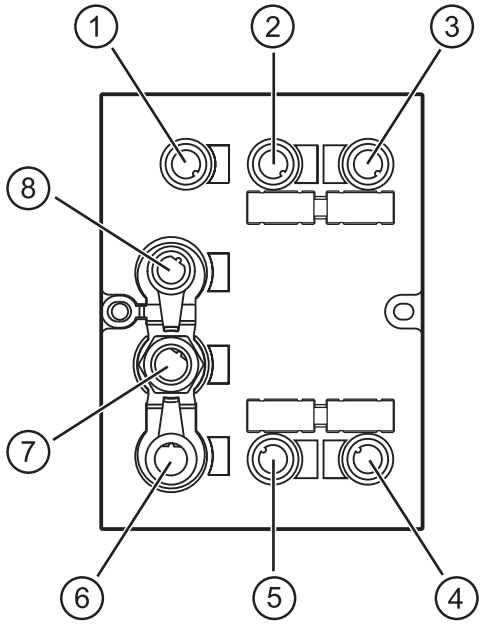
Die Auswerteeinheit DTE100 steuert die Datenübertragung von bis zu 4 RFID Schreib-/Leseköpfen (Typ ANT51x) oder IEC 61131 Ein-/Ausgängen. Zur Kommunikation mit einem Profibus DP-Master stehen die folgenden Übertragungsarten zur Verfügung:

– Zyklischer Datentransfer (MS0 Verbindung)

– Gemischter zyklischer / azyklischer Transfer (kombinierte MS0 / MS1 Verbindung)

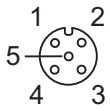
Weitere Informationen zu den Übertragungsarten finden Sie in (→ Kapitel 8)

4.1 Anschluss



1: AUX Spannungsversorgung
2: Prozessanschluss IO-1
3: Prozessanschluss IO-2
4: Prozessanschluss IO-4
5: Prozessanschluss IO-3
6: COM Konfigurationsschnittstelle
7: PROFIBUS IN Feldbusanschluss
8: PROFIBUS OUT Feldbusanschluss

4.1.1 Spannungsversorgung AUX

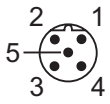


Pin	Belegung
1	24 V DC
2	nicht belegt
3	0 V
4	nicht belegt
5	nicht belegt

4.1.2 Feldbusanschluss "PROFIBUS IN" und "PROFIBUS OUT"

- Potenzialgetrennte Profibus DP-V0 / DP-V1 Schnittstelle
- Baudrate 9600 bis 12MBaud
- max. Entfernung zwischen Gateway und Host: abhängig von der Baudrate
- max. 127 Teilnehmer, 32 je Segment

PROFIBUS IN



Hinweis: Geschirmte Anschlussleitung notwendig

Pin	Belegung
1	nicht belegt
2	RxD/TxD-N (bus A)
3	nicht belegt
4	RxD/TxD-P (bus B)
5	nicht belegt

Profibus OUT

Hinweis: Geschirmte Anschlussleitung notwendig

Pin	Belegung
1	P5V
2	RxD/TxD-N (bus A)
3	DGND
4	RxD/TxD-P (bus B)

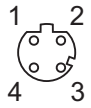
Profibus-Adresse

Profibus-Adresse im Auslieferungszustand:	126

Die Adresse kann über den integrierten Webserver (→ Kapitel 7.2) oder einen geeigneten Profibus DP-Master der Klasse 1 oder 2 angepasst werden.

4.1.3 Konfigurationsschnittstelle COM

- 10 Mbps und 100 Mbps
- TCP/IP - Transport Control Protocol / Internet Protocol
- UDP - User Datagram Protocol
- IT-Funktionalität: HTTP-Server
- M12, Twisted-Pair



Hinweis: Geschirmte Anschlussleitung notwendig

Pin	Belegung
1	TD+
2	RD+
3	TD-
4	RD-

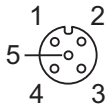
Werkseinstellungen der Ethernet-Parameter

Die folgenden Werte sind im Auslieferungszustand des Gerätes voreingestellt:

Parameter	Werkseinstellung
IP-Adresse	192.168.0.79
Gateway-Adresse	192.168.0.100
Subnetmaske	255.255.255.0
Autonegotiation	On

4.1.4 Prozessanschlüsse "IO-1 ... IO-4"

Jeder Prozessanschluss kann wahlweise als Ein-/Ausgang nach IEC 61131 oder zum Anschluss eines RFID Schreib-/Lesekopfs verwendet werden.



Pin	Belegung
1	L+
2	Schalteingang (I/Q)
3	L-
4	Schaltausgang (C/Qo) oder -eingang (C/Qi)
5	nicht belegt

Die Auswerteeinheit muss vor dem Anschließen von Feldgeräten spannungsfrei geschaltet sein.

Beachten Sie, dass die Gesamtstromaufnahme des Gerätes einen Wert von 3 A nicht überschreiten darf.

Informationen zu passenden Schreib- /Leseköpfen finden Sie im Internet unter:

www.ifm.com → Datenblatt-Suche → ANT51

5 Montage

Informationen zur Montage und zum elektrischen Anschluss finden Sie in der Bedienungsanleitung des Geräts unter:

www.ifm.com → Datemblattsuche → DTE100 → Betriebsanleitungen

6 Bedien- und Anzeigeelemente

6.1 Zurücksetzen auf Werkseinstellungen

Profibus-Adresse und Ethernet-Parameter lassen sich auf die Werkseinstellungen zurücksetzen. Führen Sie dazu die folgenden Schritte durch:

► Alle Kabelverbindungen vom Gerät trennen.

► Am Prozessanschluss IO-3 eine elektrisch leitende Brücke zwischen Pin 1 und Pin 3 anbringen.

► Gerät mit der Spannungsversorgung verbinden und warten, bis die gelbe LEDAnzeige an AUX und IO-3 mit ca. 8 Hz blinkt.

► Brücke von Prozessanschluss IO-3 entfernen.

► Gerät von der Spannungsversorgung trennen und erneut verbinden.

> Die Einstellungen sind zurückgesetzt.

6.2 LED-Anzeigen

Das Gerät zeigt über Status-LEDs den aktuellen Zustand der Schnittstellen an.

6.2.1 LED AUX

LED grün	LED gelb	Zustand	Hinweis
aus	aus	keine Spannungsversorgung	U_{AUX} < 5 V
ein	blinkt mit 2 Hz	Spannungsversorgung zu gering	5 V ≤ U_{AUX} ≤ 18 V
ein	aus	Spannungsversorgung in Ordnung	18 V ≤ U_{AUX} ≤ 36 V
ein	blinkt mit 8 Hz	Spannungsversorgung zu groß	U_{AUX} > 36 V

6.2.2 LED PROFIBUS

LED rot	LED gelb	Zustand	Hinweis
ein	aus	keine Verbindung zum Profibus DP-Master	Profibus DP Protokollstack im Gerät läuft nicht oder keine Verbindung zum DP-Master
ein	blinkt mit 2 Hz	Verbindung zum Profibus DP-Master besteht, kein zyklischer Datenaustausch	Gerät befindet sich im Zustand „WAIT_PRM“ oder „WAIT_CFG“
aus	ein	Verbindung zum Profibus DP-Master besteht, zyklischer Datenaustausch findet statt	Gerät befindet sich im Zustand „DATA_EXCH“

6.2.3 LED COM

LED grün	LED gelb	Zustand	Hinweis
aus	aus	Keine Verbindung zu einer anderen Ethernet-Gegenstelle	Link Status „No Link“
ein	aus	Verbindung zu Ethernet-Gegenstelle besteht, kein Datenaustausch	Link Status „Link“, „No traffic“
ein	blinkt sporadisch	Verbindung zu Ethernet-Gegenstelle besteht, Datenaustausch findet statt	Link Status „Link“, „Traffic“

6.2.4 LED IO1 ... IO4

Die LED-Anzeigen der Prozessanschlüsse unterscheiden sich für jede Anschlusskonfiguration.

Verwendung als Eingang nach IEC 61131

LED grün	LED gelb	Zustand	Hinweis
aus	aus	Schnittstelle deaktiviert	Schnittstelle im DP-Master nicht konfiguriert
ein	aus	Schnittstelle aktiviert, Eingang auf L-Pegel (0V)	-
ein	ein	Schnittstelle aktiviert, Eingang auf H-Pegel (24V)	-
blinkt mit 8 Hz	blinkt mit 8 Hz	Überlast oder Kurzschluss	-

Verwendung als Ausgang nach IEC 61131

LED grün	LED gelb	Zustand	Hinweis
aus	aus	Schnittstelle deaktiviert	Schnittstelle im DP-Master nicht konfiguriert
ein	aus	Schnittstelle aktiviert, Ausgang L-aktiv (0V)	-
ein	ein	Schnittstelle aktiviert, Ausgang H-aktiv (24V)	-
blinkt mit 8 Hz	blinkt mit 8 Hz	Überlast oder Kurzschluss	-

Verwendung mit RFID Schreib- /Leseköpfen

LED grün	LED gelb	Zustand	Hinweis
aus	aus	Schnittstelle deaktiviert	Schnittstelle im DP-Master nicht konfiguriert
blinkt mit 2 Hz	aus	Schnittstelle aktiviert, Antenne abgeschaltet	-
ein	aus	Schnittstelle aktiviert, Tag nicht im Feld	-
ein	ein	Schnittstelle aktiviert, Tag im Feld	-
blinkt mit 8 Hz	blinkt mit 8 Hz	Überlast, Kurzschluss oder Kommunikationsfehler	-

6.2.5 Spezielle Geräte-LED Anzeigen

LED	Zustand	Hinweis
AUX LED grün ein AUX LED gelb blinkt mit 8 Hz IO1...IO4 LEDs gelb blinken mit 8 Hz	Gerät befindet sich im Servicemodus „Notsystem gestartet“.	Ein Firmwareupdate ist notwendig und kann über den Webserver durchgeführt werden.
AUX LED grün ein AUX LED gelb blinkt mit 8 Hz IO1...IO4 LEDs grün blinken mit 8 Hz IO1...IO4 LEDs gelb blinken mit 8 Hz	Schwerwiegender Fehler, Gerät muss eingesandt werden.	Hardwarefehler oder permanente Daten im Gerät sind korrupt.
AUX LED grün ein AUX LED gelb blinkt mit 8 Hz IO3 LED gelb blinkt mit 8 Hz	Rücksetzen auf Werkseinstellungen	-

7 Inbetriebnahme

► Gerät gemäß Bedienungsanleitung anschließen.

> Nach Anschluss der Betriebsspannung ist das Gerät betriebsbereit.

Nach Aktivierung des entsprechenden Moduls in der Modulkonfiguration leuchten die LEDs der Schreib-/Leseköpfe auf.

7.1 Parametrierung

Die Parametrierung des Geräts erfolgt über die Hardwarekonfiguration des Profibus DP-Masters.

Die 4 Kanäle des DTE100 lassen sich je nach Anwendung modular auf die entsprechende Peripherie konfigurieren:

Anwendung	Modulname	Beschreibung	Hinweis
Unbenutzter Kanal	Channel deactivated	Deaktivierung des Kanals	-
Schaltausgänge von Sensoren, IEC61131 Eingangssignal	Input (1 Byte In)	Zyklisches Auslesen des Eingangs	Daten werden im Peripherieeingangsabbild der Steuerung gespeichert. Keine Bibliothekszugriffe notwendig.
Schalteingänge von Steuerungen, Ventilen, Aktoren mit 24V Spannungsversorgung	Output (1 Byte In/Out)	Zyklisches Schreiben des Ausgangs	Daten werden aus dem Peripherieausgangsabbild der Steuerung gelesen und zum Ausgang geschrieben. Keine Bibliothekszugriffe notwendig.
RFID-Antennen der Familie ANT51x	PIB State (2 Byte In/Out)	Azyklischer Kommandokanal (MS0/MS1)	Daten sind nur über Bibliothekszugriffe erreichbar.
RFID-Antennen der Familie ANT51x	RWH UID (11 Byte In/Out)	Zyklisches Auslesen der UID mit 64 Bit	Daten werden im Peripherieeingangsabbild der Steuerung gespeichert. Keine Bibliothekszugriffe notwendig.
	RWH UID (15 Byte In/Out)	Zyklisches Auslesen der UID mit 96 Bit	Daten werden im Peripherieeingangsabbild der Steuerung gespeichert. Keine Bibliothekszugriffe notwendig.
	RWH UID (19 Byte In/Out)	Zyklisches Auslesen der UID mit 128 Bit	Daten werden im Peripherieeingangsabbild der Steuerung gespeichert. Keine Bibliothekszugriffe notwendig
RFID-Antennen der Familie ANT51x	RWH STRG (26 Byte In/Out)	Zyklischer Kommandokanal (MS0)	Daten sind nur über Bibliothekszugriffe erreichbar.
	RWH STRG (34 Byte In/Out)	Zyklischer Kommandokanal (MS0)	Daten sind nur über Bibliothekszugriffe erreichbar.
	RWH STRG (42 Byte In/Out)	Zyklischer Kommandokanal (MS0)	Daten sind nur über Bibliothekszugriffe erreichbar.

Detaillierte Informationen finden Sie in der Ergänzung zum Gerätehandbuch unter:

www.ifm.com → Datenblattsuche → DTE100 → Betriebsanleitungen

7.2 Webserver

Das Gerät ist mit einem integrierten Webserver ausgestattet. Dieser erlaubt

- die Konfiguration der IP-Adresse des Geräts
- die Änderung der Profibus-Adresse des Geräts
- die Aktualisierung der Gerätefirmware

Die Einstellungen erfolgen über einen Webbrowser, z.B. Microsoft Internet Explorer® ab V7.0.

► Um Zugriff auf den Webserver zu erhalten, das Gerät mit einem geeigneten M12 Ethernet-Verbindungskabel an einen PC anschließen.

Bitte beachten Sie, dass Auswerteeinheit und PC auf den selben IP-Addressbereich eingestellt sein müssen. Werkseinstellung = 192.168.0.x

► Webbrowser am PC öffnen und IP-Adresse der Auswerteeinheit eingeben. (Werkseinstellung: 192.168.0.79)

> Die Web-Oberfläche wird angezeigt.

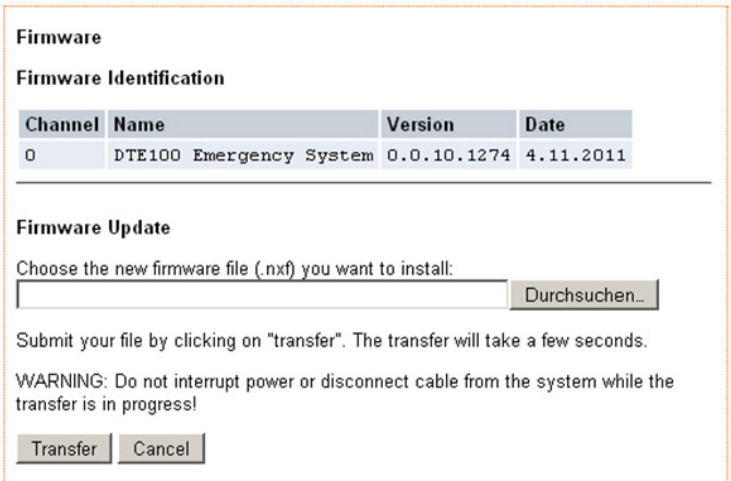
► Um IP-Einstellungen oder Profibus-Adresse zu ändern, mit der Maus zur entsprechenden Registerkarte wechseln und den Bildschirmanweisungen folgen.

7.2.1 Firmware aktualisieren

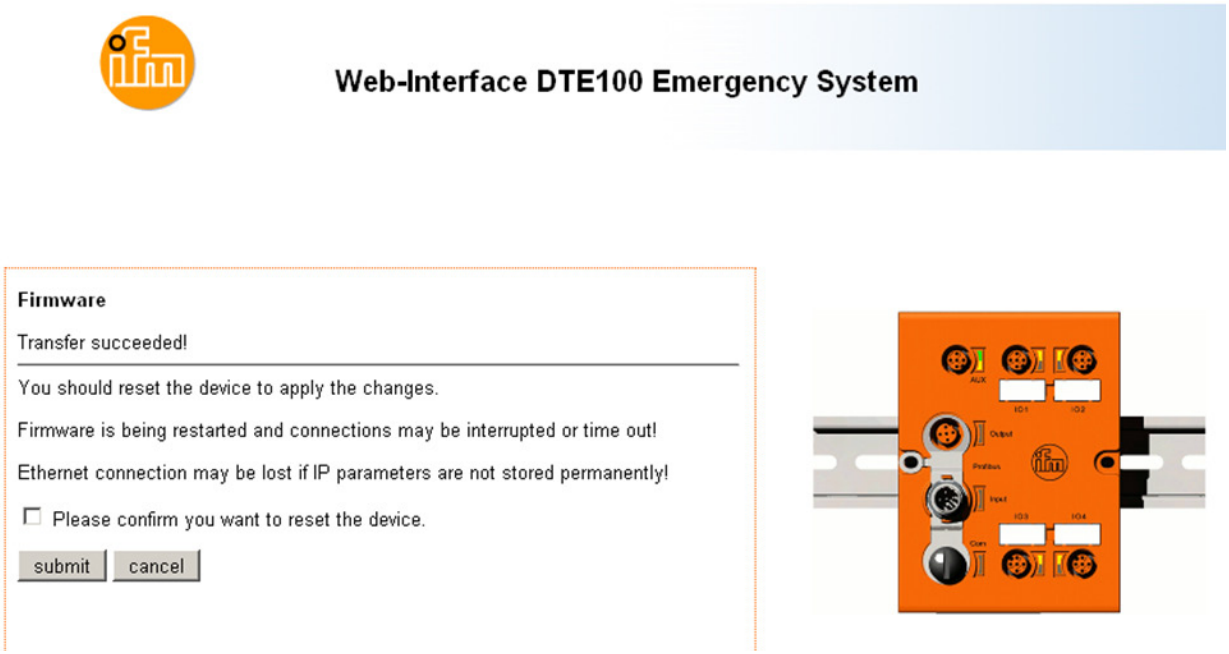
Während der Firmwareaktualisierung darf die Spannungsversorgung des Geräts nicht unterbrochen werden.

► Auf der Web-Oberfläche zur Registerkarte "Firmware" wechseln.

► Firmware-Datei DTE100.nxf auswählen und Aktualisierung mit [Transfer] starten.



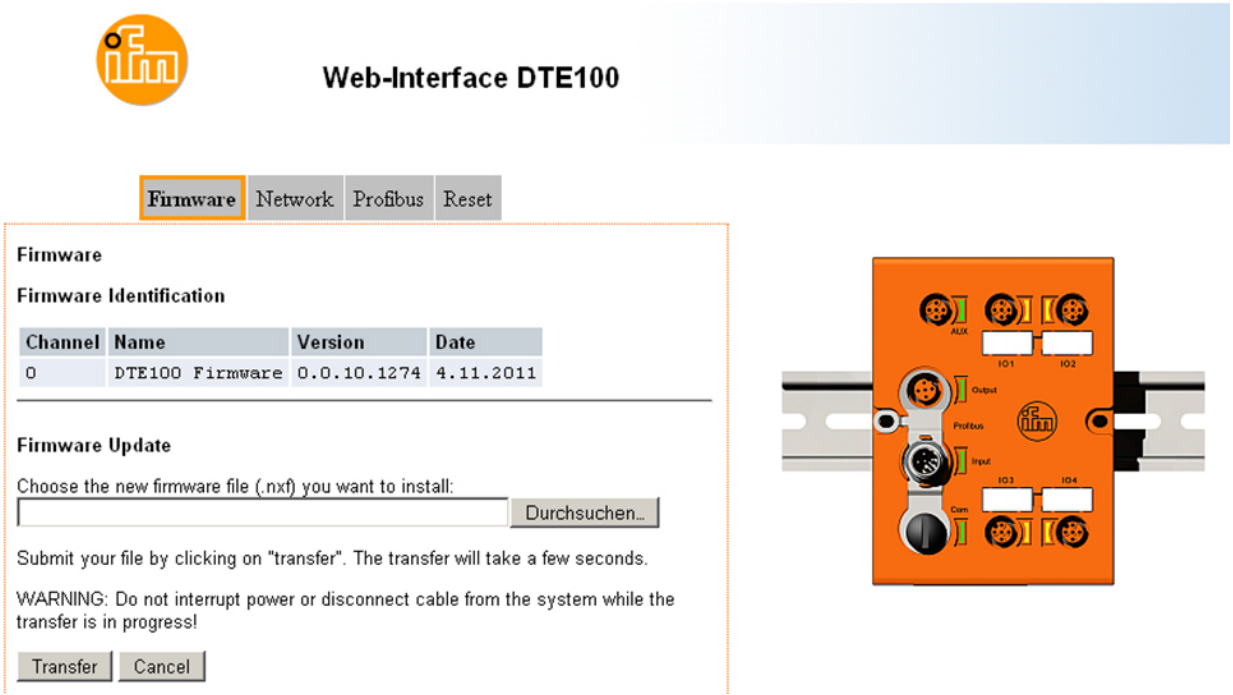
> Nach ca. 60 Sekunden erscheint die folgende Nachricht:



► Gerät von der Spannungsversorgung trennen.
Alternative:
Auswahlfeld „Please confirm you want to reset the device“ aktivieren und auf [submit] klicken.

► Gerät wieder mit der Spannungsversorgung verbinden.

> Die DTE100 startet mit der neuen Firmware.



8 Profibus Übertragungsverfahren

Die folgenden Kapitel beschreiben die Kommunikation zwischen der Auswerteeinheit DTE100 und übergeordneten Systemen (z.B. SPS) über ein Standard-Profibus DP System.

8.1 Legende

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	0	0	1	1	0	0	1	D0
2	1	0	D5	1	1	0	Res.	

Byte Nr.	Byte Reihenfolge
Bit	Bit Stellenwert
0 / 1	Statischer Signalzustand: 0 = Low level, 1 = High level
Res.	Reserviert, kann Low oder High level sein
Yellow	Vorgeschrieben für PIB Implementierung
Green	ifm-spezifische Definition

Datenformate:

0001b	Binär 0 0 0 1 (MSB -> LSB)
21h	Hex 0x21
31	Dezimal 31

8.2 Abkürzungen

PDU	Protocol data unit (frame)
IDU	Ident unit (hier die DTE100 Auswerteinheit)
PIB	Proxy Ident Block nach technischer Spezifikation für Profibus und Profinet Version 1.9 (PNO order 3.142)
IO-1	Prozessschnittstelle der Auswerteeinheit, Kanal 1
IO-2	Prozessschnittstelle der Auswerteeinheit, Kanal 2
IO-3	Prozessschnittstelle der Auswerteeinheit, Kanal 3
IO-4	Prozessschnittstelle der Auswerteeinheit, Kanal 4

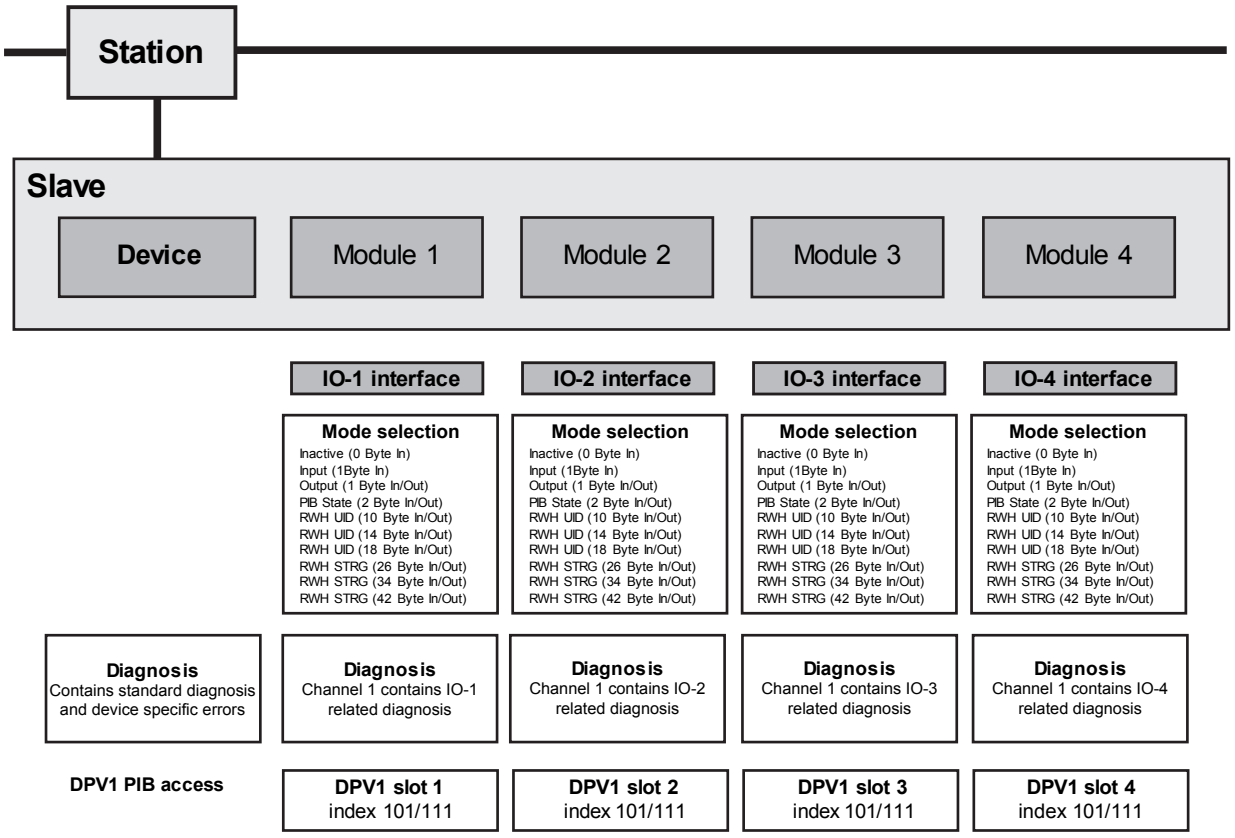
8.3 Allgemeine Informationen

Auf die Daten der Auswerteeinheit kann über vier unabhängige Kanäle zugegriffen werden.

Für jeden Kanal stehen folgende Modi zur Auswahl:

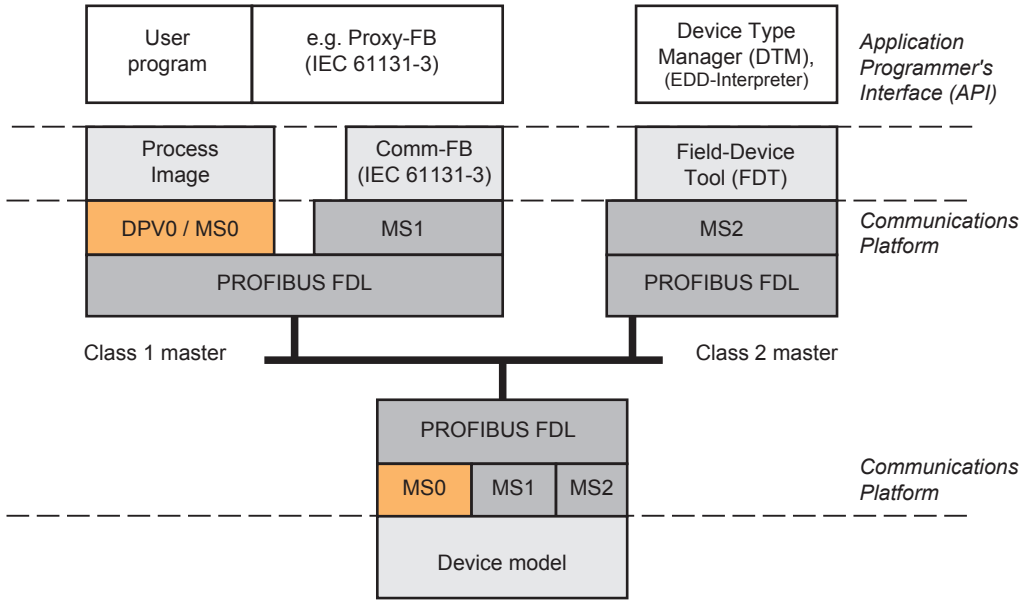
- Inaktiv
- IEC61131 Eingang
- IEC61131 Ausgang
- Lesen/Schreiben der UID eines Transponders mit einem RFID-Schreib-/Lesekopf
- Lesen/Schreiben von Daten auf einem Transponder mit einem RFID-Schreib-/Lesekopf

8.4 Profibus DP Modell der RFID Auswerteeinheit (MS0/MS1)

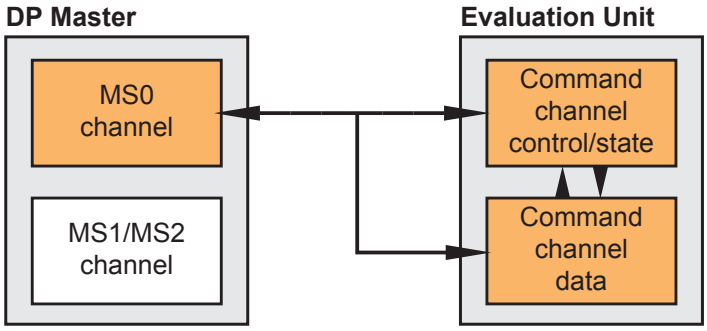


8.5 Kommunikation über MS0 Verbindung (Methode 1)

Die Daten der Auswerteeinheit werden zyklisch vom und zum DP Slave über eine MS0 Verbindung übertragen.



Diese Methode lässt sich über die entsprechende Modulkonfiguration auswählen.



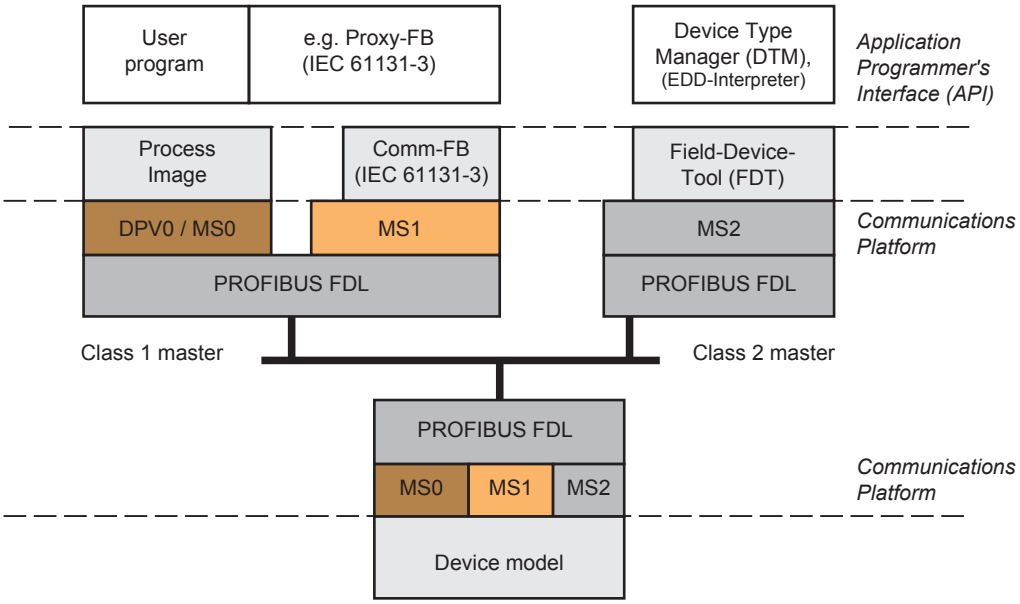
8.6 Kommunikation über MS0 / MS1 Verbindung (Methode 2)

Die Daten der Auswerteeinheit werden über eine kombinierte MS0 / MS1 Verbindung übertragen.

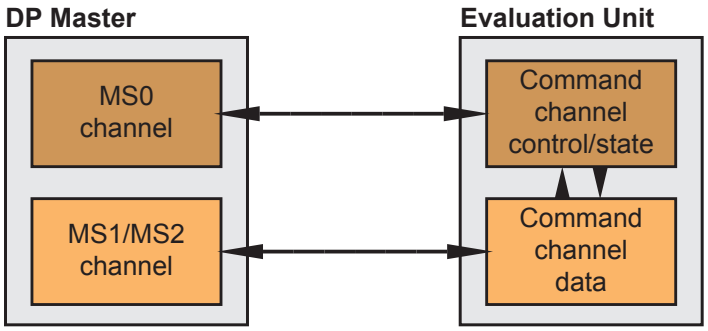
Die Kontroll- und Statusinformationen des Kommandos werden zyklisch über eine MS0 Verbindung übertragen, die Kommando-Daten werden azyklisch vom und zum DP Slave über eine MS1 Verbindung übertragen.

Diese Übertragungsart ist konform mit dem PNO Profil für Identifikationssysteme, Proxy Ident Function Block. [1]

Der Vorteil dieser Methode besteht darin, dass die MS0 Verbindung weniger Datenbytes beansprucht. Der Kommandokanal benötigt hier nur 2 Bytes für das Kontrollwort im Prozessdatenausgang und 2 Bytes für das Statuswort im Prozessdateneingang.



Diese Methode lässt sich über die entsprechende Modulkonfiguration auswählen.



8.7 Kommunikationsmechanismus für den Kommandokanal

Zur Synchronisation der Kommandoabfrage- mit den Antwortdaten wird ein zyklisches Kontrollwort und ein zyklisches Statuswort genutzt. Die Kommandoabfrage- und Antwortdaten können zyklisch über den MS0 Kanal oder azyklisch über den MS0/MS1 Kanal geschickt werden. Zusätzliche Parameter können über eine MS2 Verbindung ausgelesen werden.

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8.7.1 Kommunikationskanal MS0 oder MS0/MS1 auswählen

Die Übertragungsart MS0 oder MS0/MS1 wird über die Modulkonfiguration ausgewählt.

8.7.2 Zyklisches Kontrollwort (MS0 Abfrage)

Das zyklische Kontrollwort wird zur Synchronisation der Telegramme zwischen DP Master / IO Controller (SPS, das den PIB ausführt) und Slave / IO Device (Auswerteinheit) genutzt. Die Übertragung nichtzyklischer Kommando- und Bestätigungstelegramme über eine MS1 Verbindung darf nicht gestartet werden, bis dies vom zyklischen Statusword der Auswerteeinheit im Bestätigungszähler angezeigt wird.

Profibus DP Output (CCW):

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	IAR	Res	Res	Res	Res	Res.	Res	Res
2	SRR	RCR (2)	Res	Res	Res./ RD (1)	Res./ WR (1)	AO	Res

Beschreibung Byte 1:

Bit	Bit name	Bit = 1	Bit = 0
0	Res.	Reserved for manufacturer	
1	Res.	Reserved for future PIB functionality	
2	Res.	Reserved for future PIB functionality	
3	Res.	Reserved for future PIB functionality	
4	Res.	Reserved for future PIB functionality	
5	Res.	Reserved for future PIB functionality	
6	Res.	Reserved for future PIB functionality	
7	IAR	Startup procedure with initialization request	No startup procedure request

Beschreibung Byte 2:

Bit	Bit name	Bit = 1	Bit = 0
0	Res	Reserved for manufacturer	
1	AO	Antenna off request	Antenna on request
2	Res. / WR	Reserved for manufacturer **or** Ident command write request (0->1 edge) (1)	
3	Res. / RD	Reserved for manufacturer **or** Ident command read request (0->1 edge) (1)	
4	Res.	Reserved for future PIB functionality	
5	Res.	Reserved for future PIB functionality	
6	RCR (2)	Command repetition request	No command repetition requested
7	SRR	Command cancelling request	No command cancelling

(1) = Diese Bits werden nur für die Kommandoausführung über eine MS0 Verbindung genutzt.

(2) = Diese Funktion wird zur Zeit nicht unterstützt.

8.7.3 Zyklisches Statuswort (MS0 Antwort)

Das zyklische Statuswort wird zur Synchronisation von Befehlen verwendet. Eine Änderung des Kommandozählers durch die Auswerteeinheit signalisiert dem PIB, dass dieser das nächste Kommando absenden darf. Eine Änderung des Bestätigungszählers signalisiert, dass ein Kommando in der Auswerteeinheit abgeschlossen wurde und der PIB die Bestätigung der Auswerteeinheit auslesen kann.

Profibus DP Input (CSW):

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	IA	AC_H	AC_L	CC_H	CC_L	Res.	TPC	TP
2	SRA	RCA (2)	BSY	EF	ILL	BRY (1)	AI	ACP

Beschreibung Byte1:

Bit	Bit name	Bit = 1	Bit = 0
0	TP	Transponder present	Transponder not present
1	TPC	Transponder state changed	Transponder state steady
2	Res.	Reserved for manufacturer	Reserved for manufacturer
3	CC_L.	Command counter low (cyclic/acyclic sync.)	
4	CC_H	Command counter high (cyclic/acyclic sync.)	
5	AC_L	Acknowledge counter low (acyclic. sync.)	
6	AC_H	Acknowledge counter high (acyclic. sync.)	
7	IA	Startup procedure runs	Startup procedure finished

Beschreibung Byte2:

Bit	Bit name	Bit = 1	Bit = 0
0	ACP	Acyclic command processing	Cyclic command processing
1	AI	Antenna inactive	Antenna active
2	BRY	Block transfer ready (1)	Block transfer not ready (1)
3	ILL	Illegal command access. Exp: Acyclic command request while cyclic command runs or vice versa	Command access o.k.
4	EF	Fatal hardware error of the evaluation unit	Evaluation unit o.k.
5	BSY	Command in progress	Command processing finished
6	RCA (2)	Command repetition active	No command repetition active
7	SRA	Command cancelled by User	Command not cancelled

Eine Änderung des Kommandozählers (Command Counter, CC) durch die Auswerteeinheit signalisiert dem PIB, dass dieser den nächsten Block senden darf. Eine Änderung des Bestätigungszählers (Acknowledge Counter, AC) signalisiert, dass ein Kommando in der Auswerteeinheit abgeschlossen wurde und der PIB die Bestätigung der Auswerteeinheit auslesen kann.

(1) = Diese Bits werden nur für die Kommandoausführung über eine MS0 Verbindung genutzt.

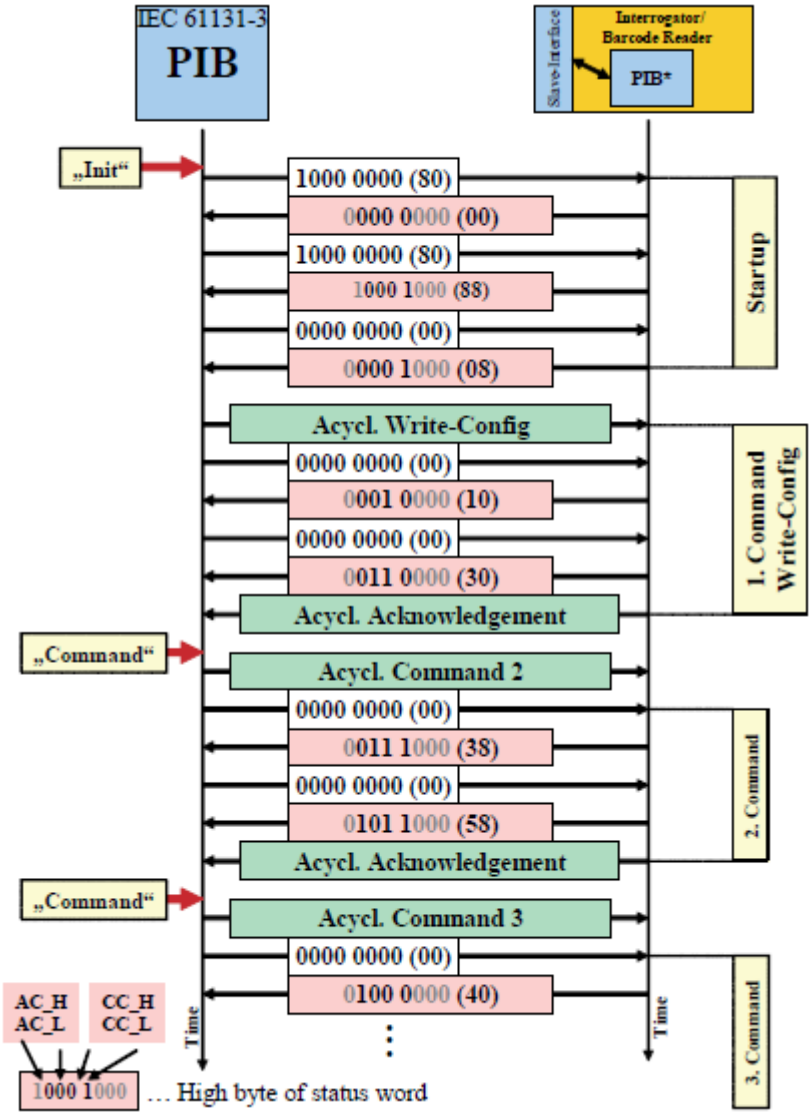
(2) = Diese Funktion wird zur Zeit nicht unterstützt.

8.7.4 Mechanismus zur Kommandosynchronisation für MS0 Verbindungen

Die Initiierung von Kommandos, die nur eine MS0 Verbindung nutzen, erfolgt über die Bits WR oder RD im zyklischen Kontrolllwort. Der Status des Kommandos wird über den Kommando- / Bestätigungszähler im zyklischen Statuswort ausgelesen.

8.7.5 Mechanismus zur Kommandosynchronisation für kombinierte MS0 / MS1 Verbindungen

Die Initiierung von Kommandos, die eine kombinierte MS0 / MS1 Verbindung nutzen, erfolgt wie im Dokument [01] beschrieben. (→ 13 Referenzierte Dokumente)



aus: “Profile Identification Systems”, PNO order 3.142, V1.9, 05/2010

8.7.6 Command request header (acyclic data transmission)

Byte No	Name	Description	Remark
1	Res.	Reserved	For future use.
2	Res.	Reserved	For future use.
3	SN	Sequence number high	Sequence Number is used as a command counter. The counter is incremented each time a new command is issued by the User. After “INIT” succeeded the sequence number is set to “0”. The “SN” takes the value of “1”
4	SN	Sequence number low	
5	CC	Command codex	Command Codex is used as an individual identifier for a command to be transmitted from the User to the evaluation unit and the corresponding acknowledgement.
6	CI	Command index	Command Index is set to “A=0x41” in case of a command telegram sent to the evaluation unit. Remark: CI = 0x42…0x48 (“B”...”H”) reserved CI = 0x49…0x56 (“I”…”U”) User specific CI = 0x57…0x5B (“V”…“Z”) reserved
7	TDB high	Total number of data blocks, High byte	Total Number of Data Blocks indicates the total number of individual data blocks to be transmitted in association with a single command. It is used for flow control of data split into several data packages.
8	TDB low	Total number of data blocks, Low byte	
9	DBN high	Current data block , High byte	Data Block Number is used to identify an individual data package within a sequence of data packages associated with a single command.
10	DBN low	Current data block , Low byte	
11	DBL	Data block length	DBL is used to indicate the number of bytes following within the user data area of the telegram. The max. DBL depends on the capabilities of the slave device (evaluation unit). The User must check the PDU length supported by the evaluation unit dynamically within the initialization phase (INIT). The evaluation unit sends the supported PDU length within the acknowledgement to the “Write-Config” command through the parameter “MaxPacketSize” (header + data). The User must adapt the internal algorithm for packaging data and align the PDU size.
12 … XX	Data 01 … nn	Command request data	user data area

8.7.7 Command response header with positive acknowledge

Byte No	Name	Description	Remark
1	Res.	Reserved	For future use.
2	Res.	Reserved	For future use.
3	SN high	Sequence number high	Sequence Number is incremented with every new acknowledgement telegram (except the first). In case a command contains a sequence of acknowledgements, all individual acknowledgements carry the same SN value. After “INIT” succeeded the sequence number is set to “0”. The “SN” takes the value of “1”
4	SN low	Sequence number low	
5	CC	Command codex	Command Codex is used as an individual identifier for acknowledgement of the command
6	Status	Status information XXXX XXX0	Within the Acknowledgement telegram Status is used to transfer status information. Bit D0 = 0 No Error Bit D2 = 0 RAM battery o.k. Bit D2 = 1 RAM battery poor or exhausted Bit D1, D3…D7 vendor specific
7	TDB high	Total number of data blocks, High byte	Total Number of Data Blocks indicates the total number of individual data blocks to be transmitted in association with a single command. It is used for flow control of data split into several data packages.
8	TDB low	Total number of data blocks, Low byte	
9	DBN high	Current data block , High byte	Data Block Number is used to identify an individual data package within a sequence of data packages associated with a single command.
10	DBN low	Current data block , Low byte	
11	DBL	Data block length	DBL is used to indicate the number of bytes following within the user data area of the telegram. The max. DBL depends on the capabilities of the slave device (evaluation unit). The User must check the PDU length supported by the evaluation unit dynamically within the initialization phase (INIT). The evaluation unit sends the supported PDU length within the acknowledgement to the “Write-Config” command through the parameter “MaxPacketSize” (header + data). The User must adapt the internal algorithm for packaging data and align the PDU size.
12 … XX	Data 01 …nn	Command response data	user data area

8.7.8 Command response header with negative acknowledge

Byte No	Name	Value [hex]	Description	Remark
1	Res.		Reserved	Response header
2	Res.		Reserved	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	XXh	Command codex	
6	Status	XXXX 0001b	Status information Bit D0 = 1: Command terminated with error. Data byte 12 .. .15 contains error Information.	
7	TDB [D15...D8]	**00h**	Total number of data blocks, high byte. Fix set to 00h	
8	TDB [D7…D0]	**01h**	Total number of data blocks, low byte. Fix set to 01h	
9	DBN [D15...D8]	**00h**	Current data block, high byte. Fix set to 00h.	
10	DBN [D7…D0]	**01h**	Current data block, low byte. Fix set to 01h.	
11	DBL	**04h**	Response data length [bytes] Fix set to 04h.	
12	Function_Num	XXh	The Function_Num byte definition is used for grouping of failures and warnings.	Response data
13	Error_Decode	FEh	The Error_Decode byte is used to define the meaning of Function_Num, Error_ Code_1 and Error_Code_2.	
14	Error_Code_1	XXh	The Error_Code_1 provides a number detailing the error or warning. Within the following table Error_Decode is fixed to 0xFE.	
15	Error_Code_2	Status	The Error_Code_2 provides either warning information (if Bit 4 of Function_Num is set “1”) or optional vendor specific numbers detailing the error (if Bit 4 of Function_Num is reset “0”). The warnings are mapped from the acyclic acknowledge telegram Byte 6 (Status).	

Status Information

Status **[Bit 7654 3210]**	**Source**	**Meaning**	**mandatory / optional**
XXXX XXX**n**	Evaluation unit	0 = Command terminated with no error 1 = Command terminated with error, user data byte 12..15 contains error information	M
XXXX XX**n**X	Evaluation unit	Vendor specific	O
XXXX X**n**XX	Evaluation unit	0 = Battery o.k. 1 = The RAM battery is poor or exhausted.	M
XXXX **n**XXX	Evaluation unit	Vendor specific	O
XXX**n** XXXX	Evaluation unit	Vendor specific	O
XX**n**X XXXX	Evaluation unit	Vendor specific	O
X**n**XX XXXX	Evaluation unit	Vendor specific	O
nXXX XXXX	Evaluation unit	Vendor specific	O

Command Error Codes

Error group	Function_ Num	Error Decode	Error Code 1	Error Code 2	Description	Triggered by Profibus command
Tag/Transponder	F1h	FEh	01h	00h	Tag memory error (e.g. CRC error)	Physical-Read, Physical-Write
	F1h	FEh	02h	00h	Presence error (indicated by evaluation unit), tag has left the transmission window.	Physical-Read, Physical-Write
	F1h	FEh	03h	00h	Address or command does not fit the tag characteristics (memory size), (indicated by evaluation unit).	Physical-Write
	F1h	FEh	04h	00h	Tag is defective. Replace tag or battery.	Physical-Read, Physical-Write
	F1h	FEh	05h	00h	Tag memory overflow.	Physical-Read, Physical-Write
	F1h	FEh	06h	00h	Unformatted tag.	Physical-Read, Physical-Write
	F1h	FEh	07h	00h	Inconsistent tag data structure. Reformat tag.	Physical-Read, Physical-Write
	F1h	FEh	0Ah	00h	Access violation (e.g. block locked) refer to ISO18000-x.	Physical-Write
Air interface	F2h	FEh	01h	00h	Communication timeout on air interface (indicated by evaluation unit)	Physical-Read, Physical-Write
	F4h	FEh	03h	00h	Antenna not operating; e.g. switched off or disconnected.	Physical-Read, Physical-Write
	F4h	FEh	04h	00h	Command buffer overflow.	All commands
	F4h	FEh	05h	00h	Data buffer overflow.	All commands
	F4h	FEh	06h	00h	Command in this mode not supported.	All commands
	F4h	FEh	07h	00h	Unspecific error. Indicated by the cyclic status word (e.g. antenna does not work.) This error is not related to a specific command.	All commands
	F4h	FEh	81h	00h	Channel mode not set (ifm code).	All commands
	F4h	FEh	82h	00h	Channel mode setting not allowed (ifm code).	Put -> Set_Channel_Mode
Communication User - Evaluation unit	F5h	FEh	01h	00h	Wrong sequence number (SN) indicated by evaluation unit.	All commands
	F5h	FEh	04h	00h	Invalid data block number DBN indicated by evaluation unit.	All commands
	F5h	FEh	06h	00h	Invalid data block length DBL indicated by evaluation unit.	All commands
	F5h	FEh	08h	00h	Command from another user being processed (indicated by evaluation unit).	All commands
Command error	F6h	FEh	01h	00h	Invalid CMD.	All unkown commands
	F6h	FEh	02h	00h	Invalid command index CI.	All commands
	F6h	FEh	03h	00h	Invalid command parameter (e.g. data range).	All commands
	F6h	FEh	04h	00h	Invalid command parameter (e.g. data range).	All commands
	F6h	FEh	05h	00h	Only Write-Config command permissible in this state.	All commands, when PIB* is in INIT state

9 Profibus DP Kommunikation (MS0)

Der DPV0 Modus der Auswerteeinheit DTE100 erlaubt die Konfiguration der 4 Prozessanschlüsse (IO-1... IO-4). Jeder Kanal kann inviduell konfiguriert werden, um die Anforderungen der jeweiligen Anwendung zu erfüllen.

Für jeden Kanal stehen die folgenden Modi zur Verfügung:

1. Kanal inaktiv
2. Kanal genutzt als Eingang nach IEC61131
3. Kanal genutzt als Eingang nach IEC61131
4. Ausführung von Kommandos über PIB wie in [01] beschrieben (→ 13 Referenzierte Dokumente)
5. Lesen und Schreiben der UID auf dem Transponder
6. Kanal zur Kommandoausführung

9.1 Übersicht Modulkonfiguration

Modus	Modulname	Beschreibung	Hinweis
1	Inactive	No data transmission	**High impedance**
2	Input (1 Byte In)	Cyclic transmission	**IEC61131 Input**
3	Output (1 Byte In/Out)	Cyclic transmission	**IEC61131 Output**
4	PIB State (2 Byte In/Out)	Acyclic command channel	**PIB control/state**
5	RWH UID (11 Byte In/Out)	Cyclic command channel/ Cyclic UID	**UID for 64 bit UID**
	RWH UID (15 Byte In/Out)	Cyclic command channel/ Cyclic UID	**UID for 96 bit UID**
	RWH UID (19 Byte In/Out)	Cyclic command channel/ Cyclic UID	**UID for 128 bit UID**
6	RWH STRG (26 Byte In/Out)	Cyclic command channel	**Command channel**
	RWH STRG (34 Byte In/Out)	Cyclic command channel	**Command channel**
	RWH STRG (42 Byte In/Out)	Cyclic command channel	**Command channel**

Hinweis:

XX Byte In: Länge pro Modul im Prozessdateneingang der SPS

XX Byte Out: Länge pro Modul im Prozessdatenausgang der SPS

9.1.1 Module identifier string (SAP62)

Module identifier	Modulname	Chk_Cfg telegramm string
0	Inactive	0x00
1	Input (1 Byte In)	0x41 0x80 0x01
2	Output (1 Byte In/Out)	0xC1 0x80 0x80 0x02
3	PIB State (2 Byte In/Out)	0xC1 0x81 0x81 0x03
4	RWH UID (11 Byte In/Out)	0xC1 0x8A 0x8A 0x04
5	RWH UID (15 Byte In/Out)	0xC1 0x8E 0x8E 0x05
6	RWH UID (19 Byte In/Out)	0xC1 0x92 0x92 0x06
7	RWH STRG (26 Byte In/Out)	0xC1 0x99 0x99 0x07
8	RWH STRG (34 Byte In/Out)	0xC1 0xA1 0xA1 0x08
9	RWH STRG (42 Byte In/Out)	0xC1 0xA9 0xA9 0x09

9.1.2 Modul “Input”

Dieses Modul ermöglicht dem Anwender

– die binären Eingänge der Prozessanschlüsse IO-1...IO-4 auszulesen

Profibus DP Output:

Nicht benutzt

Profibus DP Input:

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	OL	0	0	0	0	0	I/Q ([1])	C/Qi ([1])

Bit Bedeutung:

Bit Name	**Bit = 1**	**Bit = 0**
I/Q ([1])	Input I/Q > 11V	Input I/Q < 8V
OL	Überlast an L+	L+ o.k.
C/Qi ([1])	Input an C/Qi > 11V	Input an C/Qi < 8V

([1]) Die Spannungswerte von C/Qi und I/Q werden durch die Hardware ermittelt.

9.1.3 Modul “Output”

Dieses Modul ermöglicht dem Anwender

– die binären Eingänge der Prozessanschlüsse IO-1...IO-4 auszulesen

– die binären Ausgänge der Prozessanschlüsse IO-1...IO-4 anzusprechen.

Profibus DP Output:

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	0	HC ([1])	0	0	0	0	0	C/Qo

Beschreibung Byte 1:

Bit Name	Bit = 1	Bit = 0
C/Qo	Ausgang C/Qo high	Ausgang C/Qo low
HC ([1])	Max. high level Ausgangsstrom 1A an C/Qo	Max. high level Ausgangsstrom 0,5A an C/Qo

([1]) Das HC Bit ist nur auf Kanal IO-3 und Kanal IO-4 setzbar.

Profibus DP Input:

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	OL	HC	0	0	0	0	I/Q	C/Qi ([1])

Beschreibung Byte 1:

Bit name	Bit = 1	Bit = 0
C/Qi ([1])	Zustand an C/Qo = H	Zustand an C/Qo = L
OL	Überlast L+	L+ o.k.
I/Q	Input an I/Q > 11V	Input an I/Q < 8V
HC	Max. high level Ausgangsstrom 1A an C/Qo aktiviert	Max. high level Ausgangsstrom 0,5A an C/Qo aktiviert

([1]) Der Zustand von C/Qi wird nicht gemessen, stattdessen wird der Zustand des Ausgangs C/Qo übernommen.

9.1.4 Modul “PIB_STATE”

Dieses Modul ermöglicht dem Anwender

– das Kontrollwort der Auswerteeinheit zu schreiben und das Statuswort auszulesen

Die zu versendenden Kommandodaten müssen über einen DPV1 READ_REQ oder WR_REQ Aufruf übertragen werden.

DE

Hinweis:

Dieses Modul ermöglicht die Ausführung von Kommandos über PIB wie in [01] beschrieben (→ 13 Referenzierte Dokumente)

Es benötigt die geringsten Ressourcen innerhalb des zyklischen Ein-/Ausgabebereichs der SPS.

Profibus DP Output (PIB_STATE):

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	IAR	Res	Res	Res	Res	Res	Res	Res
2	SRR	RCR	Res	Res	Res	Res	AO	Res

Bescschreibung Byte 1…2 ”zyklisches Kontrollwort“:

Siehe Modul “PIB State (2 Byte In/Out)”, Profibus DP output. (→ Kapitel 8.7.2)

Profibus DP Input (PIB_STATE):

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	IA	AC_H	AC_L	CC_H	CC_L	Res	TPC	TP
2	SRA	RCA	BSY	EF	ILL	Res	AI	ACP

Description Byte 1, Byte 2 “zyklisches Statuswort”:

Siehe Modul “PIB State (2 Byte In/Out)”, Profibus DP input. (→ Kapitel 8.7.3)

9.1.5 Modul “RWH UID”

Dieses Modul ermöglicht dem Anwender

– die UID vom Transponder zu lesen oder einmal über eine MS0 Verbindung auf den Transponder zu schreiben

Profibus DP Output (RWH UID):

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	Res	Res	Res	Res	Res	Res	Res	Res
2	Res	RCR	Res	Res	RD	WR	AO	Res
3	UID data length write							
4	UID Byte 1 (MSBy)							
5	UID Byte 2							
6	UID Byte 3							
7	UID Byte 4							
8	UID Byte 5							
9	UID Byte 6							
10	UID Byte 7							
11	UID Byte 8							
...	...							
15/19	UID Byte 12/16							

Beschreibung Byte 1, Byte 2:

AO Bit siehe Modul “PIB State (2 Byte In/Out)”, Profibus DP output. (→ Kapitel 8.7.2)

Zusätzlich genutztes Byte 2, Bit WR und RD:

RD = 0: UID keine Leseanforderung.

RD = 1: UID Leseanforderung (steigende Flanke 0->1)

Das RD Bit wird nur ausgewertet wenn der Parameter “Read of UID edge controlled” gesetzt ist. Anderenfalls wird die UID kontinuierlich aufgefrischt, unabhängig von der Einstellung des RD Bits.

WR = 0: UID keine Schreibanforderung.

WR = 1: UID Schreibanforderung (steigende Flanke 0->1)

Hinweis:

RD und WR dürfen nicht gleichzeitig gesetzt werden.

Beschreibung UID Byte 3:

UID data length write: Anzahl der UID Bytes, die auf den Transponder geschrieben werden sollen. Nur gültig, wenn das WR Bit gesetzt ist.

Beschreibung UID Byte 4 ...11,15,19:

Für WR **=1 :**

UID Byte 1...nn: UID, die auf den Transponder geschrieben werden soll.

Für WR **=0 :**

UID Byte 1...nn: Daten werden ignoriert.

Profibus DP Input (RWH UID):

Byte Nr.	Bit							
	7	6	5	4	3	2	1	0
1	Res	Res	Res	Res	Res	Res.	TPC	TP
2	Res	Res	Res	Res	RD-RDY	WR-RDY	AI	Res
3	UID data length read							
4	UID Byte 1 (MSBy)							
5	UID Byte 2							
6	UID Byte 3							
7	UID Byte 4							
8	UID Byte 5							
9	UID Byte 6							
10	UID Byte 7							
11	UID Byte 8							
...	...							
15/19	UID Byte 13/17							

Beschreibung Byte 1, Byte 2:

TP, TPC, AI Bits siehe Modul “PIB State (2 Byte In/Out)”, Profibus DP Input. (→ Kapitel 8.7.3)

Zusätzlich genutztes Byte 2, Bit RD-RDY und WR-RDY

RD-RDY Bit:

0 = Bit RD in DP output wurde zurückgesetzt oder UID noch nicht gelesen.

1 = Lesen der UID abgeschlossen.

WR-RDY Bit:

0 = Bit WR in DP wurde zurückgesetzt oder UID noch nicht geschrieben.

1 = Schreiben der UID abgeschlossen

Beschreibung UID Byte 3:

UID data length read: Anzahl der UID Bytes, die vom Transponder gelesen werden sollen. Nur gültig, wenn das RD Bit gesetzt ist.

Beschreibung Byte 4 ..10/18:

64 Bit oder 96 Bit oder 128 Bit UID des von der Antenne erfassten Transponders.

Nicht genutzte Bits werden auf 0b gesetzt.

UID Byte 1...nn = 0: Kein Transponder von der Antenne erfasst oder Antenne nicht aktiv.

9.1.6 Modul “RWH STRG”

Dieses Modul ermöglicht dem Anwender

This module allows the user to

– write and read commands to the evaluation unit via MS0 connection.

Profibus DP Output (RWH STRG):

Byte Nr.	Byte Name	Bit							
		7	6	5	4	3	2	1	0
1	CCW high	IAR	Res	Res	Res	Res	Res.	Res	Res
2	CCW low	SRR	RCR	Res	Res	RD	WR	AO	Res
3	SN high	SN_D15	SN_D14	SN_D13	SN_D12	SN_D11	SN_D10	SN_D9	SN_D8
4	SN low	SN_D7	SN_D6	SN_D5	SN_D4	SN_D3	SN_D2	SN_D1	SN_D0
5	CC	CC_D7	CC_D6	CC_D5	CC_D4	CC_D3	CC_D2	CC_D1	CC_D0
6	CI	CI_D7	CI_D6	CI_D5	CI_D4	CI_D3	CI_D2	CI_D1	CI_D0
7	TDB high	D15	D14	D13	D12	D11	D10	D09	D08
8	TDB low	D07	D06	D05	D04	D03	D02	D01	D00
9	DBN high	D15	D14	D13	D12	D11	D10	D09	D08
10	DBN low	D07	D06	D05	D04	D03	D02	D01	D00
11	DBL	D07	D06	D05	D04	D03	D02	D01	D00
12 … 26/ 34/ 42	U_BY 1 … U_BY 15 / U_BY 23 / U_BY 31	Command request data							

Beschreibung Byte 1 … 2 ”Cyclic control word“

Siehe Modul “PIB State (2 Byte In/Out)”, Profibus DP output. (→ Kapitel 8.7.2)

Beschreibung Byte 3 ... 11 “Command header request”

Siehe Beschreibung des “command header request”. (→ Kapitel 8.7.6)

Beschreibung Byte 12...nn “Command request data”

Kommando, das zur Auswerteeinheit übertragen werden soll. Der Dateninhalt hängt von der Kommando-abfrage ab. Die Datengröße kann über die Modulkonfiguration ausgewählt werden.

(Siehe "Übersicht Modulkonfiguration", → Kapitel 9.1)

Profibus DP Input (RWH STRG):

Byte Nr.	Byte Name	Bit							
		7	6	5	4	3	2	1	0
1	CSW high	IA	AC_H	AC_L	CC_H	CC_L	Res.	TPC	TP
2	CSW low	SRA	RCA	BSY	EF	ILL	Res.	AI	ACP
3	SN high	SN_D15	SN_D14	SN_D13	SN_D12	SN_D11	SN_D10	SN_D9	SN_D8
4	SN low	SN_D7	SN_D6	SN_D5	SN_D4	SN_D3	SN_D2	SN_D1	SN_D0
5	RC	RC_D7	RC_D6	RC_D5	RC_D4	RC_D3	RC_D2	RC_D1	RC_D0
6	RS	RS_D7	RS_D6	RS_D5	RS_D4	RS_D3	RS_D2	RS_D1	RS_D0
7	TDB high	D15	D14	D13	D12	D11	D10	D09	D08
8	TDB low	D07	D06	D05	D04	D03	D02	D01	D00
9	DBN high	D15	D14	D13	D12	D11	D10	D09	D08
10	DBN low	D07	D06	D05	D04	D03	D02	D01	D00
11	DBL	D07	D06	D05	D04	D03	D02	D01	D00
12	U_BY 1	Command response data							
…	…								
26/	U_BY 15 /								
34/	U_BY 23 /								
42	U_BY 31								

Beschreibung Byte 1, Byte 2 „Cyclic status word“:

Siehe Modul “PIB State (2 Byte In/Out)”, Profibus DP Input. (→ Kapitel 8.7.3)

Beschreibung Byte 3…Byte 11 „Command header response“:

Im Fall einer positiven Kommandorückmeldung, siehe Beschreibung “command header response with positive acknowledge”. (→ Kapitel 8.7.7)

Bei einer negativen Rückmeldung, siehe Beschreibung “command header response with negative acknowledge”. (→ Kapitel 8.7.8)

Beschreibung Byte 12…nn “Command response data”:

Von der Auswerteeinheit erhaltene Kommandorückmeldung. Der Dateninhalt hängt von der Kommandorückmeldung ab. Die Datengröße kann über die Modulkonfiguration ausgewählt werden.

(Siehe "Übersicht Modulkonfiguration", → Kapitel 9.1)

9.2 Kommandos im Überblick (MS0 Verbindung)

Command Codex [char]	Command Codex [hex]	Name	Description
‘p’	70h	**Physical-Read**	Command to read data from a transponder using a physical start address and the length of data to be read.
‘b’	62h	**Get**	Command to read manufacturer specific data from the evaluation unit.
‘q’	71h	**Physical-Write**	Command to write data to a transponder using a physical start address and the length of data to be written.
‘e’	65h	**Put**	Command to write manufacturer specific data to the evaluation unit.
‘x’	78h	**Write-Config**	This service is used to modify operation of the evaluation unit except interruption of the communication. It is possible to send new parameters to the evaluation unit (ConfigData). Also a reset can be initiated requesting the evaluation unit to restart operation.
‘a’	61h	**Read-Config**	This service is used to read config data from the evaluation unit. The config data is manufacturer specific.
‘t’	74h	**Dev-Status**	This service is used to read the status of an evaluation unit. The RXBUF is used as a manufacturer specific area for status data. The status data is manufacturer specific. With this command the channel related I&M information is read out.

Hinweis:

Die zyklischen Kommandos werden über eine MS0 Verbindung übertragen.
Die Kommandos "Mem_Status" und "Inventory" werden zur Zeit nicht unterstützt.

9.2.1 Command Physical-Read (cyclic data transmission)

Command header request (Physical Read):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**70h**	Command codex	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	0Eh	User data block length. Always fixed to 14 bytes. (Byte 12...nn)	
12	UID 1 [D63...D56]	XXh	This parameter identifies a single transponder to be read. If UID = 0000h, the tag(s) currently present is (are) read.	Command prefix (14 bytes)
13	UID 2 [D55...D48]	XXh		
14	UID 3 [D47...D40]	XXh		
15	UID 4 [D39...D32]	XXh		
16	UID 5 [D31...D24]	XXh		
17	UID 6 [D23...D16]	XXh		
18	UID 7 [D15…D08]	XXh		
19	UID 8 [D07…D00]	XXh		
20	Read data length [D15...D8]	XXh	This parameter specifies the number of bytes to be read from the transponder starting at the address indicated by the parameter start address.	
21	Read data length [D7…D0]	XXh		
22	32 bit start address [D31...D24]	XXh	This parameter specifies a physical address within the transponder Memory. [0x00000000 … 0xFFFFFFFF]	
23	32 bit start Address [D23…D16]	XXh		
24	32 bit start Address [D15...D8]	XXh		
25	32 bit start Address [D7…D0]	XXh		
26 … nn	Unused data	00h	Only sent from the evaluation unit, if the selected MS0 module size is greater than 25 bytes. (*)	Unused data

(*) Wenn die gewählte MS0 Modulgröße die Größe von “Command header + Command prefix” übersteigt, werden die ungenutzten Bytes von der Auswerteeinheit ignoriert.

Command acknowledge response (Physical Read):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**70h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, high byte	
10	DBN [D7…D0]	01h	Current data block, low byte	
11	DBL	XXh	Current response data block length. (Byte 12...nn) [bytes] (*)	
12…nn	Data Byte 1..nn	XXh	Response data. Unused bytes are set to 00h by the evaluation unit.	Response data

(*) Die Auswerteeinheit setzt die Datenblocklänge auf die Länge der gültigen Daten im "Response data" Feld.

9.2.2 Command Physical-Write (cyclic data transmission)

Command header request (Physical Write):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**71h**	Command codex	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	XXh	Total number of data blocks, High byte	
8	TDB [D7…D0]	XXh	Total number of data blocks, Low byte	
9	DBN [D15...D8]	XXh	Current data block, High byte	
10	DBN [D7…D0]	XXh	Current data block, Low byte	
11	DBL	XXh	Current user data block length. (Byte 12...nn)	
12	UID 1 [D63...D56]	XXh	This parameter identifies a single transponder to be written. If UID = 0000h, the tag currently present is written.	Command prefix (14 bytes)
13	UID 2 [D55...D48]	XXh		
14	UID 3 [D47...D40]	XXh		
15	UID 4 [D39...D32]	XXh		
16	UID 5 [D31...D24]	XXh		
17	UID 6 [D23...D16]	XXh		
18	UID 7 [D15…D08]	XXh		
19	UID 8 [D07…D00]	XXh		
20	Write data length [D15...D8]	XXh	This parameter specifies the total number of User data bytes to be sent to the transponder starting at the address indicated by the parameter StartAddress.	
21	Write data length [D7…D0]	XXh		
22	32 bit start address [D31...D24]	XXh	This parameter specifies a physical address within the transponder memory. [0x00000000 … 0xFFFFFFFF]	
23	32 bit start Address [D23…D16]	XXh		
24	32 bit start Address [D15...D8]	XXh		
25	32 bit start Address [D7…D0]	XXh		
26…nn	Data Byte 1…nn	XXh	User data block to write to the transponder. (*)	Command data

(*) Wenn die aktuelle Datenblocklänge kleiner als die MS0 Modulkonfiguration "26 Bytes" ist, werden die ungenutzten Bytes von der Auswerteeinheit ignoriert.

Command acknowledge response (Physical Write):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**71h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, high byte	
10	DBN [D7…D0]	01h	Current data block, low byte.	
11	DBL	00h	Response data length, always 0 bytes.	
12 … nn	Unused data	00h	Unused data are filled with 0 (*)	Unused data

(*) Die Größe der "Unused data" hängt von der gewählten MS0 Modulkonfiguration ab.

9.2.3 Command Write-Config (cyclic data transmission)

Command header request (Write-Config):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**78h**	Command codex “Write-Config”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	**00h**	Current data block, High byte	
10	DBN [D7…D0]	**01h**	Current data block, Low byte	
11	DBL	**03h**	Current user data block length. (Byte 12 ..14)	
12	Config in	**00h**	00h = Config in request	Command data
13	Config data length, [D15...D8]	**00h**	This parameter specifies the number of optional data bytes to write to the evaluation unit. (Set to 0 bytes, if no optional data has to be written to the evaluation unit.)	
14	Config data length, [D7…D0]	**00h**		

Command acknowledge response (Write-Config with Config in = 00h):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte ([1])	Response header
2	CSW low	XXh	Cyclic status word, low byte ([1])	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**78h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	**00h**	Total number of data blocks, High byte	
8	TDB [D7…D0]	**01h**	Total number of data blocks, Low byte	
9	DBN [D15...D8]	**00h**	Current data block, high byte	
10	DBN [D7…D0]	**01h**	Current data block, low byte	
11	DBL	**01h**	Response data length [bytes]	
12	MaxPacketSize [D7… D0]	**XXh**	Max. length of the Ident PDU (Ident header + data) the Slave device is able to receive or send [bytes]. ([2]) (The value is set to the selected length of the MS0 module configuration.)	Response data
13 … nn	Unused data	00h	Unused data are filled with 0 (*)	Unused data

(*) Die Größe der "Unused data" hängt von der gewählten MS0 Modulkonfiguration ab.

([1]) In Abweichung zum azyklischen "Write-Config" Kommando wird die Datenblocklänge nicht in Byte 1 und Byte 2 übertragen.

([2]) Dieser Wert wird auf die in der MS0 Modulkonfiguration gewählte Länge gesetzt.

9.2.4 Command Read-Config (cyclic data transmission)

Command header request (Read-Config):

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high ([1])	Command header
2	Data block length [D7…D0]	23h	Data block length low ([1])	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**61h**	Command codex	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	**01h**	Total number of data blocks, Low byte	
9	DBN [D15...D8]	**00h**	Current data block, High byte	
10	DBN [D7…D0]	**01h**	Current data block, Low byte	
11	DBL	**00h**	Data block length, 35 bytes fix.	

Command acknowledge response (Read Config):

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high ([1])	Response header
2	Data block length [D7…D0]	01h	Data block length low ([1])	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**61h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	**00h**	Total number of data blocks, High byte	
8	TDB [D7…D0]	**01h**	Total number of data blocks, Low byte	
9	DBN [D15...D8]	**00h**	Current data block, High byte	
10	DBN [D7…D0]	**01h**	Current data block, Low byte	
11	DBL	**01h**	Fix response data length [bytes]	
12	MaxPacketSize [D7…D0]	XXh	Max. length of the Ident PDU (Ident header + data) the Slave device is able to receive or send 00h = (240 bytes) 01h … 3Fh = reserved 40h … F0h = max. permitted PDU size F1H … FFh = reserved	Response data
13 … nn	Unused data	00h	Unused data are filled with 0 (*)	Unused data

(*) Die Größe der "Unused data" hängt von der gewählten MS0 Modulkonfiguration ab.

([1]) In Abweichung zum azyklischen "Read-Config" Kommando wird die Datenblocklänge nicht in Byte 1 und Byte 2 übertragen.

9.2.5 Command Dev-Status (cyclic data transmission)

Command Dev-Status header request:

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**74h**	Command codex	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	23h	Data block length, 35 bytes fix.	
12	Cmd attribute	XXh	0x04: channel related I&M information (data record I&M0) 0x05: channel related I&M information (data record I&M1) 0x0…0x3, 0x6…0xFF: not supported	Command data

Command Dev-Status acknowledge response:

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**74h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	XXh	Total number of data blocks, High byte	
8	TDB [D7…D0]	XXh	Total number of data blocks, Low byte	
9	DBN [D15...D8]	XXh	Current data block, High byte	
10	DBN [D7…D0]	XXh	Current data block, Low byte	
11	DBL	XXh	Response data length (Byte 12 .. nn) [bytes]	
12	Response attribute	XXh	0x04: channel related I&M information (data record I&M0) 0x05: channel related I&M information (data record I&M1)	Response attribute
13…nn	I&M Record	XXh	I&M0 or I&M1 data record	Response data

9.2.6 Command Get (cyclic data transmission)

Command request data structure (GET)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	XXh	Total number of data blocks, High byte	
8	TDB [D7…D0]	XXh	Total number of data blocks, Low byte	
9	DBN [D15...D8]	XXh	Current data block, High byte	
10	DBN [D7…D0]	XXh	Current data block, Low byte	
11	DBL	**XXh**	User data block length (Byte 12 .. nn)	
12	SubCmd	**XXh**	SubCmd code	SubCmd request data
13 … nn	SubCmd data	**XXh**	SubCmd request data	structure

Command response data structure (GET) with positive acknowledge:

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	XXh	Total number of data blocks, High byte	
8	TDB [D7…D0]	XXh	Total number of data blocks, Low byte	
9	DBN [D15...D8]	XXh	Current data block, High byte	
10	DBN [D7…D0]	XXh	Current data block, Low byte	
11	DBL	**XXh**	Response data length (Byte 12...nn)	
12	SubCmd	**XXh**	Echo of the SubCmd code	SubCmd response data
13 … nn	SubCmd data	**XXh**	SubCmd response data	structure

Command response data structure (Get) with negative acknowledge:

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	01h	Status information Bit D0 = 1: Command terminated with error. Data byte 12...15 contains error Information.	
7	TDB [D15...D8]	**00h**	Total number of data blocks, high byte. Fix set to 00h	
8	TDB [D7…D0]	**01h**	Total number of data blocks, low byte. Fix set to 01h	
9	DBN [D15...D8]	**00h**	Current data block, high byte. Fix set to 00h.	
10	DBN [D7…D0]	**01h**	Current data block, low byte. Fix set to 01h.	
11	DBL	**04h**	Response data length [bytes] Fix set to 04h.	
12	Function_Num	XXh	Error_ Code _1 provides error information related to **evaluation unit.**	Response data
13	Error_Decode	FEh	Profile specific error	
14	Error_Code_1	XXh	Command specific error	
15	Error_Code_2	00h	Copy of Status	

9.2.7 SubCmd zu Get im Überblick (cyclic)

SubCmd	Name	Description
C1h	Get_Ethernet_Parameter	Reads Ethernet parameter of the evaluation unit
C2h	Get_Ident_Unit_Parameter	Read settings of the evaluation unit
C3h	Get _Clock	Read the clock settings of the evaluation unit
C4h	reserved	-
C5h	Get_Ant_Type	Read out the properties of the antenna
C6h	Get_Block_Parameter	Read out the block parameter of the antenna
C7h	Get_Transponder_Type	Read out the data of the Tag
C8h	Get_Ident_Diagnosis	Read out diagnosis of the evaluation unit
C9h	Get_MAC_Address	Read out Ethernet MAC address
CAh	Get_Ant_Diagnosis	Read out diagnosis of the antenna
CBh	Get_Channel_Mode	Read out the operation mode of the channel IO-1…IO-4
CCh	reserved	-
CDh	Get_UID	Read out UID of transponder

Subcommand Get_Ethernet_Parameter (cyclic data transmission)

Command request (Get_Ethernet_Parameter)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 4 bytes (Byte 12)	
12	SubCmd	**C1h**	Subcmd Get_Ethernet_Parameter	Subcmd code

Command acknowledge response (Get_Ethernet_Parameter)

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, high byte	
10	DBN [D7…D0]	01h	Current data block, low byte	
11	DBL	**15h**	Response data length 21 bytes	
12	SubCmd	**C1h**	Sub Cmd echo	Subcmd echo

13	DHCP	0000 00XXh	DHCP off = 00h DHCP on = 01h	Subcmd data
14	ANEG	0000 00XXh	Autonegotiation on: FFh Autonegotiation off: 100MB/Duplex: 00h 100MB/Simplex: 01h (Default) 10MB/Duplex: 02h 10MB/Simplex: 03h	
15	IP [Octet 1]	XXh	IP address of evaluation unit Exp: 192.168.0.10	
16	IP [Octet 2]	XXh		
17	IP [Octet 3]	XXh		
18	IP [Octet 4]	XXh		
19	GW [Octet 1]	XXh	Gateway address Exp: 192.168.0.100	
20	GW [Octet 2]	XXh		
21	GW [Octet 3]	XXh		
22	GW [Octet 4]	XXh		
23	SN [Octet 1]	XXh	Subnet mask Exp: 255.255.255.0	
24	SN [Octet 2]	XXh		
25	SN [Octet 3]	XXh		
26	SN [Octet 4]	XXh		

Hinweis: Dieses Kommando kann über alle 4 Kanäle gesendet werden.

Subcommand Get_MAC_Address (cyclic data transmission)

Command request (Get_MAC_Address)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 4 bytes (Byte 12)	
12	SubCmd	**C9h**	SubCmd Get_MAC_Parameter	SubCmd code

Command acknowledge response (Get_MAC_Address)

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**07h**	Response data length 07 bytes	
12	SubCmd	**C9h**	SubCmd echo Get_MAC_Parameter	SubCmd echo
13	MAC address [Octet 1]	XXh	Ethernet Media access control register	SubCmd data
14	MAC address [Octet 2]	XXh		
15	MAC address [Octet 3]	XXh		
16	MAC address [Octet 4]	XXh		
17	MAC address [Octet 5]	XXh		
18	MAC address [Octet 6]	XXh		

Subcommand Get_Ident_Unit_Parameter (cyclic data transmission)

Command request (Get_Ident_Unit_Parameter):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**C2h**	SubCmd Get_Ident_Unit_Parameter	SubCmd code

Command acknowledge response (Get_Ident_Unit_Parameter):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Put”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**04h**	Response data length [bytes]	
12	SubCmd	**C2h**	SubCmd response Get_Ident_Unit_Parameter	Response data

13	UDF	0Xh	State of the user data format of the Profibus interface 00h = Big Endian format. (Default) 01h = Little Endian format.	SubCmd data
14	OVL	0Xh	State of the overload protection flags of IO-n channel 0000 0000b = Overload protection IO-n off 0000 0001b = Overload protection IO-n on (Default value)	
15	HIGH_CUR	0Xh	State of the “High current enable” flags of IO-n channel: 0000 0000b = High current IO-n off (Default value) 0000 0001b = High current IO-n on	
16	ID_CR1	XXh	Phy control register 1 of channel IO-n	
17	ID_CR2	XXh	Phy control register 2 of channel IO-n	

Subcommand Get_Clock (cyclic data transmission)

Command request (Get_Clock):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**C3h**	SubCmd Get _Clock	SubCmd code

Command acknowledge response (Get_Clock):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**08h**	Response data length 8 bytes	
12	SubCmd	**C3h**	SubCmd response Get _Clock	SubCmd echo
13	YY	XXh	XXh = Year, ex. 0xA = 2010	SubCmd data
14	MM	XXh	XXh = Month, ex 0x3 = March	
15	DD	XXh	XXh = Day, ex. 0xF = 15 th.	
16	HH	XXh	XXh = Hour, ex. 0xD = 1.00 p.m.	
17	MM	XXh	XXh = Minutes, ex. 0x11 = 17 min.	
18	SS	XXh	XXh = Seconds, ex. 0x24 = 36 sec.	
19	HS	XXh	XXh = Hundredths of a second, ex. 0x20 = 0.32 sec.	

Subcommand Get_Ant_Type (cyclic data transmission)

Command request (Get_Ant_Type):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**C5h**	SubCmd Get _Ant_Type	SubCmd code

Command acknowledge response (Get_Ant_Type):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**0Eh**	Response data length 14 bytes	
12	SubCmd	**C5h**	SubCmd response Get _Ant_Type	SubCmd echo
13	ANO1	XXh	Article number exp.: “ANT512“	SubCmd data
14	ANO2	XXh		
15	ANO3	XXh		
16	ANO4	XXh		
17	ANO5	XXh		
18	ANO6	XXh		
19	DT	XXh	Device Type of antenna	
20	DHW	XXh	Device type hardware revision	
21	DSW	XXh	Device type software revision	
22	IDSW	XXh	ID-Link stack revision	
23	PD_YY	XXh	Production date year	
24	PD_MM	XXh	Production date month	
25	PD_DD	XXh	Production date day	

Subcommand Get_Block_Parameter (cyclic data transmission)

Command request (Get_Block_Parameter):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**C6h**	SubCmd Get _Block_Parameter	SubCmd code

Command acknowledge response (Get_Block_Parameter):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**05h**	Response data length 5 bytes	
12	SubCmd	**C6h**	SubCmd response Get_Block_Parameter	SubCmd echo
13	BL_No high	XXh	Max. Block number set in evaluation unit ([1]) (Default value : 28)	SubCmd data
14	BL_No low	XXh		
15	BL_SZ high	XXh	Block size set in evaluation unit ([2]) Ex.: 4 = 4 bytes (default) 8 = 8 bytes	
16	BL_SZ low	XXh		

([1]) = Maximale Zahl von Blöcken, die von der Auswerteeinheit unterstützt wird. Dieser Wert wird genutzt, um die größte erlaubte lineare Adresse zu prüfen.

([2]) = Größe eines Blocks. Dieser Wert legt den kleinsten Bereich, auf den in der Antenne zugegriffen werden kann, fest.

Umrechnung des linearen Adressmappings des Transponders in das blockorientierte Adressmodell:

Blocknummer = (lineare Adresse / BL_SZ)

Umrechnung des blockorientierten Adressmodells in das lineare Adressmapping des Tranponders:

Lineare Adresse = (Blocknummer * BL_SZ)

Hinweis: Die Auswerteeinheit berechnet die Zahl der Blöcke und die Blocknummer aus den in den Kommandos "Physical-Read" und "Physical-Write" gegebenen linearen Adressen.

Subcommand Get_Transponder_Type (cyclic data transmission)

Command request (Get_Transponder_Type):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**C7h**	SubCmd Get _Tansponder_Type	SubCmd code

Command acknowledge response (Get_Transponder_Type):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**05h**	Response data length 5 bytes	
12	SubCmd	**C7h**	SubCmd response Get _Transponder_Type	SubCmd echo
13	TR_BL_No high	XXh	Max. Block number of the Transponder detected by the antenna ([1])	SubCmd data
14	TR_BL_No low	XXh		
15	TR_BL_SZ high	XXh	Block size of the Transponder detected by the antenna ([2]) Ex.: 4 = 4 bytes 8 = 8 bytes	
16	TR_BL_SZ low	XXh		

Subcommand Get_Ident_Diagnosis (cyclic data transmission)

Command request (Get_Ident_Diagnosis):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**C8h**	SubCmd Get _Ident_DIagnosis	SubCmd code

Command acknowledge response (Get_Ident_Diagnosis):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**05h**	Response data length 5 bytes	
12	SubCmd	**C8h**	SubCmd response Get_Transponder_Type	SubCmd echo
13	IU_Diag	XXh	Evaluation unit diagnose register	SubCmd data
14	PH_ST	XXh	Phy status register ID-n → see "Evaluation unit diagnose register"	
15	TEC_IDn high	XXh	Telegram error Counter ID-n, high byte	
16	TEC_IDn low	XXh	Telegram error Counter ID-n, low byte	

Evaluation unit diagnose register:

D7	D6	D5	D4	D3	D2	D1	D0	Description
X	X	X	X	X	X	X	**ATE**	Allowed temperature exceeded
X	X	X	X	X	X	**PFA**	X	Power fail at AUX
X	X	X	X	X	**HWF**	X	X	Hardware failure

Phy status register:

D7	D6	D5	D4	D3	D2	D1	D0	Description
X	X	X	X	X	X	X	**PE**	Parity check error
X	X	X	X	X	X	**REG_LN**	X	Under voltage Linear Regulator
X	X	X	X	**LOL**	X	X	X	L+ overload
X	X	X	**CQOL**	X	X	X	X	C/Q overload
X	X	**OVT**	X	X	X	X	X	Overtemperature
PO	X	X	X	X	X	X	X	Power On L+ low

X = Do not care

Bit=0 = No fault

Bit=1 = Fault detected

Subcommand Get_Ant_Diagnosis (cyclic data transmission)

Command request (Get_Ant_Diagnosis):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**02h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**CAh**	SubCmd Get _Ant_Diagnosis	SubCmd code
13	DiagObject	**XXh**	Diagnosis object to be read out	

Diag_Object codes:

Name	Value [hex]	Description
DiagObject	E0h	Errors on the air interface (e.g. CRC Error, Framing Error).
DiagObject	E1h	Errors on air interface, when a command is send to the tag, but the tags does not answer.
DiagObject	E2h	Gives the number of retries of the last command (executed on air interface).
DiagObject	F0h	CRC Error Counter of the ID-Link interface.
DiagObject	F1h	Unknown Object Counter of the ID-Link interface.
DiagObject	F2h	Timeout Counter of the ID-Link interface.
DiagObject	F3h	Physical Error Counter of the ID-Link interface. (Frame, Start/Stop bit, Baudrate)

Command acknowledge response (Get_Ant_Diagnosis):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**03h**	Response data length 4 bytes	
12	SubCmd	**CAh**	SubCmd response Get_Ant_Diagnosis	SubCmd echo
13	DiagObject	**XXh**	DiagObject code	SubCmd data
14	DiagInfo	**XXh**	DiagObject counter value. Overflows at 255. Reset at startup.	

Subcommand Get_Channel_Mode (cyclic data transmission)

Command request (Get_Channel_Mode):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**CBh**	SubCmd Get _Channel_Mode	SubCmd code

Command acknowledge response (Get_Channel_Mode):

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**02h**	Response data length 2 bytes	
12	SubCmd	**CBh**	SubCmd response Get_Channel_Mode	SubCmd echo
13	ModuleConfig	XXh	Module configuration (→ 10.2.7)	SubCmd data

Subcommand Get_UID (cyclic data transmission)

Command request (Get_UID)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**01h**	Current user data block length 1 byte (Byte 12)	
12	SubCmd	**CDh**	SubCmd Get_UID	SubCmd code

Command acknowledge response (Get_UID)

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command response “Get”	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	0Xh	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	0Xh	Current data block, Low byte	
11	DBL	**XXh**	Response data length 2 bytes. (Byte 12…21/25/29)	
12	SubCmd	**CDh**	SubCmd response Get_UID	SubCmd echo
13	UID data length	XXh	Number of UID bytes read from transponder.	SubCmd data
14	UID Byte 1 (MSBy)	XXh	UID of transponder. 64 bit or 96 bit or 128 bit UID of transponder which is detected by the antenna. Unused bits are set to 0b.	
15	UID Byte 2	XXh		
16	UID Byte 3	XXh		
17	UID Byte 4	XXh		
18	UID Byte 5	XXh		
19	UID Byte 6	XXh		
20	UID Byte 7	XXh		
21	UID Byte 8	XXh		
…	...			
25/29	UID Byte 12/16	XXh		

Hinweis:

Wenn kein Transponder gefunden wird, ist der Inhalt der "UID data length" 0x0, gleiches gilt für die UID Bytes 1...8/12/16.

9.2.8 Command Put (cyclic data transmission)

Mit dem Kommando PUT werden die Identifikationskommandos zur Auswerteeinheit übertragen.

Command request data structure (PUT):

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header data structure
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command codex “Put”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	XXh	Total number of data blocks, High byte	
8	TDB [D7…D0]	XXh	Total number of data blocks, Low byte	
9	DBN [D15...D8]	XXh	Current data block, High byte	
10	DBN [D7…D0]	XXh	Current data block, Low byte	
11	DBL	**XXh**	User data block length (Byte 12...nn)	
12	SubCmd	**XXh**	SubCmd code	SubCmd request data structure
13 … nn	SubCmd data	**XXh**	SubCmd request data	

Command response data structure (PUT) with positive acknowledge:

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header data structure
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command response “Put”	
6	Status	X0h	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**00h**	Response data length	

Command response data structure (PUT) with negative acknowledge:

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command response “Put”	
6	Status	01h	Status information Bit D0 = 1: Command terminated with error. Data byte 12...15 contains error Information.	
7	TDB [D15...D8]	**00h**	Total number of data blocks, high byte. Fix set to 00h	
8	TDB [D7…D0]	**01h**	Total number of data blocks, low byte. Fix set to 01h	
9	DBN [D15...D8]	**00h**	Current data block ,high byte. Fix set to 00h.	
10	DBN [D7…D0]	**01h**	Current data block ,low byte. Fix set to 01h.	
11	DBL	**04h**	Response data length [bytes] Fix set to 04h.	
12	Function_Num	XXh	Error_Code_1 provides error information related to **evaluation unit.**	Response data
13	Error_Decode	FEh	Profile specific error	
14	Error_Code_1	XXh	Command specific error	
15	Error_Code_2	00h	Copy of Status	

SubCmd overview over Put (cyclic)

SubCmd	Name	Description
D1h	Set_Ethernet_Parameter	Sets Ethernet parameter of the evaluation unit
D2h	Set_Ident_Unit_Parameter	Sets the parameter data of the evaluation unit
D3h	Set _Clock	Sets the clock of the evaluation unit
D4h	reserved	-
D5h	Set _Defaults	Set the default state of the AWE (factory reset)

Subcommand Set_Ethernet_Parameter (cyclic data transmission)

Command request (Set_Ethernet_Parameter)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command codex “Put”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**15h**	Current user data block length 21 bytes (Byte 12..32)	
12	SubCmd	**D1h**	SubCmd Set_Ethernet_Parameter	SubCmd code
13	DHCP	0Xh	DHCP off = 00h (1) (Default) DHCP on = 01h (2)	SubCmd data
14	ANEG	XXh	Autonegotiation on: FFh Autonegotiation off: 100MB/Duplex: 00h 100MB/Simplex: 01h (Default) 10MB/Duplex: 02h 10MB/Simplex: 03h	
15	IP [Octet 1]	XXh	Requested IP address of evaluation unit Ex: 192.168.0.10	
16	IP [Octet 2]	XXh		
17	IP [Octet 3]	XXh		
18	IP [Octet 4]	XXh		
19	GW [Octet 1]	XXh	Requested Gateway address Ex: 192.168.0.100	
20	GW [Octet 2]	XXh		
21	GW [Octet 3]	XXh		
22	GW [Octet 4]	XXh		
23	SN [Octet 1]	XXh	Requested Subnet mask of evaluation unit Ex: 255.255.255.0	
24	SN [Octet 2]	XXh		
25	SN [Octet 3]	XXh		
26	SN [Octet 4]	XXh		

(1) Wenn der Parameter DHCP = off gesetzt ist, müssen die Parameter IP, GW und SN gesetzt werden.

(2) Wenn der Parameter DHCP = on gesetzt ist, werden die Parameter IP, GW und SN ignoriert.

Command response “Set_Ethernet_Parameter” with positive acknowledge siehe
(→ Kapitel 9.2.8: Command response data structure (PUT) with positive acknowledge).

Command response “Set_Ethernet_Parameter” with negative acknowledge siehe
(→ Kapitel 9.2.8 Command response data structure (PUT) with negative acknowledge).

Hinweis: Wenn über das Subkommando Set_IdentUnit_Parameter (0xC3) das Passwort aktiviert wird und die Auswerteeinheit nicht die korrekte Passwort-Zeichenfolge empfangen hat, wird das Kommando mit einem Fehler quittiert.

Subcommand Set_Ident_Unit_Parameter (cyclic data transmission)

Command request (Set_Ident_Unit_Parameter)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command codex “Put”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**04h / 06h**	Current user data block length 4 / 6 bytes (Byte 12...15 / 17)	
12	SubCmd	**D2h**	SubCmd Set_Ident_Unit_Parameter	SubCmd code
13	UDF	00h	User data format Profibus DP interface: 00h = Big Endian format. (Default) 01h = Little Endian format. ([1])	SubCmd data
14	OVL	0Xh	Overload protection channel IO-n off ([2]) Default value: 0000 0000b = Overload IO-n on 0000 XXX1b = Overload protection off	
15	HIGH_CUR	0Xh	High current enable channel ([3]) Default value: 0000 0000b = High current IO-n off 0000 XXX1b = High current IO-n on	

Optional, only for development:

16	ID_CR1		Phy Control register 1 of IO-n channel [not changeable by User]	SubCmd data
17	ID_CR2		Phy Control register 2 of IO-n channel [not changeable by User]	

([1]) Die Byte-Reihenfolge des Profibus DP data frames wird geswapt (D1,D0,D3,D2,D5,D4…)

([2]) Der Überlastschutz der Kanäle IO-1...IO-4 wird über diese Parameter gesteuert. Standardmäßig werden die Kanäle auf Überlast und Einschaltstrom an L+ and C/Qo überwacht. Mit diesem Parameter kann die Überwachung abgeschaltet werden.

Hinweis: Die Endstufe ist zusätzlich durch eine Temperaturüberwachung vor Zerstörung geschützt.

([3]) Über diesen Parameter lässt sich der Ausgangsstrom an C/Qo der Kanäle IO-3 und IO-4 auf 1 A erhöhen. Standardmäßig liefern die Kanäle IO-1 .. IO-4 einen Ausgangsstrom von 0,5 A an C/Qo.

Command response “Set_Ident_Unit_Parameter” with positive acknowledge siehe
(→ Kapitel 9.2.8: Command response data structure (PUT) with positive acknowledge).

Command response “Set_Ident_Unit_Parameter” with negative acknowledge siehe
(→ Kapitel 9.2.8 Command response data structure (PUT) with negative acknowledge).

Subcommand Set_Clock (cyclic data transmission)

Command request (Set_Clock)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command codex “Put”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	**08h**	Current user data block length 8 bytes (Byte 12...19)	
12	SubCmd	**D3h**	SubCmd Set_Clock	SubCmd code
13	YY	XXh11	XXh = Year, ex. 0xA = 2010	SubCmd data
14	MM	XXh	XXh = Month, ex 0x3 = March	
15	DD	XXh	XXh = Day, ex. 0xF = 15 th.	
16	HH	XXh	XXh = Hour, ex. 0xD = 1.00 p.m.	
17	MM	XXh	XXh = Minutes, ex. 0x11 = 17 min.	
18	SS	XXh	XXh = Seconds, ex. 0x24 = 36 sec.	
19	HS	XXh	XXh = Hundredths of a second, ex. 0x20 = 0.32 sec.	

Command response “Set_Clock” with positive acknowledge siehe
(→ Kapitel 9.2.8: Command response data structure (PUT) with positive acknowledge).

Command response “Set_Clock” with negative acknowledge siehe
(→ Kapitel 9.2.8 Command response data structure (PUT) with negative acknowledge).

Subcommand Set_Defaults (cyclic data transmission)

Command request (Set_Defaults)

Byte No	Name	Value [hex]	Description	Remark
1	CCW high	XXh	Cyclic control word, high byte	Command header
2	CCW low	XXh	Cyclic control word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command codex “Put”	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	01h	Current user data block length 01byte (Byte 12)	
12	SubCmd	**D5h**	SubCmd Set_Defaults ([1])	SubCmd code

([1]) Auswerteeinheit auf Werkseinstellungen zurücksetzen. Die Einstellungen werden nach Trennen und Wiederherstellen der Spannungsversorgung übernommen.

Hinweis: Die Profibus-spezifischen Parameter werden nicht zurückgesetzt, da diese Werte immer über das Set_Prm Telegramm im DP State "WAIT_PRM" übertragen werden.

Parameter	Value	Section
Language of web interface	English	Web interface
Data hold time of tag data of channels IO-1… IO-4	100 milliseconds	Interface IO-1 … IO-4
Delay time channels IO-1…IO-4, signal C/Qi.	100 milliseconds	
DHCP	Off	Communication interface “COM”
IP address	192.168.0.79	
Gateway mask	192.168.0.100	
Subnet mask	255.255.255.0	
Autonegotiation	On	
Password protection	Off	
Data format communication interface	Big-Endian	
Date and time of internal clock.	YY = 0xA (2010) MM = 0xC (Dec.) DD = 0x1F (31th) HH = 0x17 (11 p.m.) MM = 0x3B (59 min.) SS = 0x3B (59 sec.) HS = 0x63 (0.99 sec)	Internal clock
ID-Link Error counter	0	ID-Link
ID-Link error trigger value	3	
Profibus DP address	126	Profibus DP slave settings
Profibus „No_Address_Change“	FALSE	

Hinweis: Die Feldbus-Einstellungen und die Konfiguration der Schnittstellen IO-1 … IO-4 werden nicht zurückgesetzt, da diese nicht fest abgespeichert sind oder durch zusätzliche Kommandos geändert werden können.

Command response “Set_Defaults” with positive acknowledge siehe
(→ Kapitel 9.2.8: Command response data structure (PUT) with positive acknowledge).

Command response “Set_Defaults” with negative acknowledge see
(→ Kapitel 9.2.8 Command response data structure (PUT) with negative acknowledge).

10 Profibus DP Kommunikation (MS1 / MS2)

Der DPV1 Modus der RFID Auswerteeinheit erlaubt den Zuriff auf die 4 Kanäle über Slot- und Index-Adressierung

10.1 Adressmodell der Auswerteeinheit (MS1 / MS2 Verbindung)

Die MS1 Verbindung ermöglicht dem Anwender, über das Slot / Index-Adressmodell auf die folgenden Daten zuzugreifen:

Slot (1)	**Index**	**Description**	**Remark**
nn	0 … 100	reserved	Not supported
1…4	101	Parameterization channel 1…4	Only acyclic command Write-Config allowed
Nn	102 … 110	reserved	Not supported
1…4	111	Data transfer channel 1…4	All acyclic commands, except Write-Config, allowed
Nn	112 … 196	reserved	Not supported
nn	197	PROFILE_ID	**Optional** Profile ID, for RFID = 5B00h
nn	198	PROFILE_VER	**Optional** PIB profile version, here 1.60
nn	199	WRITE_CODE	**Optional** Password assign for write protection to parameters Indices 120 ... 254
nn	200	WRITE_PROTECT	**Optional** Password for write protection to parameters Indices 120 … 254
nn	201 … 253	Manufacturer specific	Not supported (2)
nn	254	Manufacturer specific, here I&M1 data record	I&M1 data record supported (3)
nn	255	I&M functions	I&M0 data record supported (4)

(1) Über Slot 1…4 werden die Kanäle IO-1…IO-4 ausgewählt. Die MS2 Verbindung darf keinen Zugriff auf die Indizes 101...108 und 111...118 haben, da dies die Synchronisation des PIB mit der Auswerteeinheit beeinflussen würde.

(2) Schreib-/Leseaufrufe an nicht unterstützte Slots und Indizes werden mit negativen Ergebniscodes der entsprechenden Profibus-Funktionsnummer quittiert.

(3) Auf den Index 254 kann auch über eine MS2 Verbindung zugegriffen werden, um den I&M1 data record der Auswerteeinheit zu lesen/schreiben.

(4) Auf den Index 255 kann auch über eine MS2 Verbindung zugegriffen werden, um den I&M0 data record zu lesen. Der Zugriff auf den I&M1 data record wird momentan nicht unterstützt.

10.1.1 Auswahl des Prozessanschlusses IO-1, IO-2, IO-3, IO-4

Die Auswahl, an welchen Prozessanschluss die Kommandos transferiert werden, erfolgt über Schreib-/Leseaufrufe an Slot 1...4 über Index 101/111.

10.1.2 I&M data access

Data unit frame

FN (Function_Number)	Slot	Index	Length	IM_Index	Content
5Eh, 5Fh	**1..n**	FFh	XXh	65000	I&M0 data record
5Eh, 5Fh	**1..n**	FFh	XXh	65001	I&M1 data record

Zugriff über Profibus Function_Number:

– Write-REQ, Write-RES (FN = 5Eh)

– Read-REQ, Read-RES (FN = 5Fh)

I&M0 data record

Byte	Name	Description	Value	Remark
1..10	Header	Manufacturer specific	00h , … , 00h	10 bytes filled with 00h (currently not used)
11..12	MANUFACTURER_ID	assigned by the PNO business office	136h (310d)	2 bytes 310d = ifm
13..32	ORDER_ID	order number that allows unambiguous identification of the device	“DTE100AA”	8 characters order number. Unused filled with 00h
33..48	SERIAL_NUMBER		“001213000004“	12 characters MAC-ID. Unused filled with 00h
49..50	HARDWARE_REVISION		“AA”	2 character device release
51..54	SOFTWARE_REVISION		“V” 01h 02h 03h	1 character release type 1 byte major version 1 byte minor version 1 byte build version
55..56	REVISION_COUNTER		1h	1 word revision counter Currently fixed to 1
57..58	PROFILE_ID		5B00h	1 word RFID profile
59..60	PROFILE_SPECIFIC_TYPE		0000h	1 word “No specific profile type”
61..62	IM_VERSION		01h,00h	2 byte I&M version
63..64	IM_SUPPORTED		0000h	1 word (I&M0 only supported)

I&M1 data record

Byte	Name	Description	Value	Remark
1..10	Header	Manufacturer specific	00h	Only for Profibus
11..42	TAG_FUNCTION	Unique label within a plant for the identification of its function or task	Filled with 20h	Settable by user (string)
43..64	TAG_LOCATION	Unique label within a plant for the identification of its location.	Filled with 20h	Settable by user (string)

10.2 Kommandos im Überblick (kombinierte MS0 / MS1 Verbindung, MS2 Verbindung)

Command Codex [char]	Command Codex [hex]	Name	Description
‘p’	70h	**Physical-Read**	Command to read data from a transponder using a physical start address and the length of data to be read.
‘b’	62h	**Get**	Command to read manufacturer specific data from the evaluation unit.
‘q’	71h	**Physical-Write**	Command to write data to a transponder using a physical start address and the length of data to be written.
‘e’	65h	**Put**	Command to write manufacturer specific data to the evaluation unit.
‘x’	78h	**Write-Config**	This service is used to modify operation of the evaluation unit except interruption of the communication. It is possible to send new parameters to the evaluation unit (ConfigData). Also a reset can be initiated requesting the evaluation unit to restart operation.
‘a’	61h	**Read-Config**	This service is used to read config data out of the evaluation unit. Config data ais manufacturer specific.
‘t’	74h	**Dev-Status**	This service is used to read the status of an evaluation unit. The RXBUF is used as a manufacturer specific area for status data. Status data is manufacturer specific. With this command the channel related I&M information are read out.

Hinweis:

Um die azyklische Kommandoübertragung zu nutzen, muss das Modul PIB_State eingerichtet werden.

Die azyklischen Kommandos werden über MS1/MS2 Telegramme übertragen, durch Nutzung der DS_ Write und DS_Read Anfrage.

Die Kommandos "Mem_Status" und "Inventory" werden zur Zeit nicht unterstützt.

Wenn kein Kanalmodus eingerichtet ist, wir in der Kommandorückmeldung der Fehlercode "Channel mode not set" gesendet.

10.2.1 Command Physical-Read (acyclic data transmission)

Command header request:

Byte No	Name	Value [hex]	Description	Remark
1	Res.		Reserved	Command header
2	Res.		Reserved	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**70h**	Command codex	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	23h	Data block length, 35 bytes fix.	
12	Fill byte	00h		Command parameter
13 .. 20	UID [D63...D0]	XXh	This parameter identifies a single transponder to be read. If UID = 0000h, the tag currently present is read.	
21…32	Fill byte	00h	Always fix.	
33	Read data length [D15...D8]	XXh	This parameter specifies the number of bytes to be read from the transponder starting at the address indicated by the parameter start address.	
34	Read data length [D7…D0]	XXh		
35	32 bit start address [D31...D24]	XXh	This parameter specifies a physical address within the transponder memory.	
36	32 bit start Address [D23…D16]	XXh		
37	32 bit start Address [D15...D8]	XXh		
38	32 bit start Address [D7…D0]	XXh		
39…46	Fill byte	00h	Always fix.	

Command acknowledge response:

Byte No	Name	Value [hex]	Description	Remark
1	Res.		Reserved	Response header
2	Res.		Reserved	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**70h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	XXh	Total number of data blocks, High byte	
8	TDB [D7…D0]	XXh	Total number of data blocks, Low byte	
9	DBN [D15...D8]	XXh	Current data block, High byte	
10	DBN [D7…D0]	XXh	Current data block, Low byte	
11	DBL	XXh	Response data length [bytes]	
12…240	Data Byte 1..229	XXh	Response data 1 up to max. 229 bytes per data block	Response data

10.2.2 Command Physical-Write (acyclic data transmission)

Command header request:

Byte No	Name	Value [hex]	Description	Remark
1	Res.		Reserved	Command header
2	Res.		Reserved	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**71h**	Command codex	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	XXh	Data block length, byte 12 … nn	
12	Fill byte	00h	Always fix.	Command parameter
13 .. 20	UID [D63...D0]	XXh	This parameter identifies a single transponder to be read. If UID = 0000h, the tag currently present is read.	
21…32	Fill byte	00h	Always fix.	
33	Write data length [D15...D8]	XXh	This parameter specifies the number of bytes to be sent to the transponder starting at the address indicated by the parameter start address.	
34	Write data length [D7…D0]	XXh		
35	32 bit start address [D31...D24]	XXh	This parameter specifies a physical address within the transponder memory.	
36	32 bit start Address [D23…D16]	XXh		
37	32 bit start Address [D15...D8]	XXh		
38	32 bit start Address [D7…D0]	XXh		
39…46	Fill byte	00h	Always fix.	
47…nn (240 max.)	Data Byte 1… nn (194 max.)	XXh	Data to write to tag	Command data

Command acknowledge response:

Byte No	Name	Value [hex]	Description	Remark
1	Res.		Reserved	Response header
2	Res.		Reserved	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**71h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	00h	Response data length [bytes]	

10.2.3 Command Write-Config (acyclic data transmission)

Command header request:

Byte No	Name	Value [hex]	Description	Remark
1	Res.		Reserved	Command header
2	Res.		Reserved	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	78h	Command codex Write-Config	
6	CI	41h	Command index (fix)	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	XXh	Data block length. (Set to 35 bytes, if no optional data has to be written to the evaluation unit.)	
12	Config		Config in request: 00h = Used for negotiation of packet size, MaxPacketSize shall be used for packet size negotiation	Command parameter
13…32	Fill byte	00h	Always fix.	
33	Config data length, [D15...D8]	XXh	This parameter specifies the number of optional data bytes to write to the evaluation unit. (Set to 0 bytes, if no optional data has to be written to the evaluation unit.)	
34	Config data length, [D7…D0]	XXh		
35 … 46	Fill byte	00h	Always fix.	
47… 240	Data Byte 1…194	XXh	Optional data to write to the evaluation unit.	Command data

Command Write-Config acknowledge response (Config in request = 04h):

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Response header
2	Data block length [D7…D0]	02h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	78h	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	02h	Response data length [bytes]	
12	MaxPacketSize [D15...D8]	XXh	Max. length of the Ident PDU (Ident header + data) the Slave device is able to receive or send: 0000h = default (240 bytes) 0001h…003Fh = reserved 0040h…00F0h = max. permitted PDU size	Response data
13	MaxPacketSize [D7…D0]	XXh		

Command Write Config acknowledge response (Config in request = 00h):

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Response header
2	Data block length [D7…D0]	XXh	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	78h	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, high byte	
10	DBN [D7…D0]	01h	Current data block, low byte	
11	DBL	01h	Response data length [bytes]	
12	MaxPacketSize [D7…D0]	XXh	Max. length of the Ident PDU (Ident header + data) the Slave device is able to receive or send [bytes].	Response data

(*) Frühere Versionen des PNO Indentifikationsprofils (<= V1.20) nutzen Byte 11 als den einzigen Zähler für die Datenblocklänge.

Gemäß der aktuellen Version des Profils haben Byte 11 und Byte 1 den gleichen Wert für den Fall Max-PacketSize <= 240 (überprüft durch die Write-Config während des Systemstarts)

Im Fall MaxPacketSize > 240 werden nur Byte 1 und Byte 0 für die Datenblocklänge (DBL) genutzt.

10.2.4 Command Read-Config (acyclic data transmission)

Command Read-Config header request:

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Command header
2	Data block length [D7…D0]	23h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**61h**	Command codex	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	23h	Data block length, 35 bytes fix.	
12…46	Fill byte	00h	Always fix.	Command parameter

Command Read Config acknowledge response:

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Response header
2	Data block length [D7…D0]	01h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**61h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	01h	Fix response data length [bytes]	
12	MaxPacketSize [D7…D0]	XXh	Max. length of the Ident PDU (Ident header + data) the Slave device is able to receive or send 00h = (240 bytes) 01h … 3Fh = reserved 40h … F0h = max. permitted PDU size F1H … FFh = reserved	Response data

(*) Frühere Versionen des PNO Indentifikationsprofils (<= V1.20) nutzen Byte 11 als den einzigen Zähler für die Datenblocklänge.

Gemäß der aktuellen Version des Profils haben Byte 11 und Byte 1 den gleichen Wert für den Fall Max-PacketSize <= 240 (überprüft durch die Write-Config während des Systemstarts)

Im Fall MaxPacketSize > 240 werden nur Byte 1 und Byte 0 für die Datenblocklänge (DBL) genutzt.

10.2.5 Command Dev-Status (acyclic data transmission)

Command Dev-Status header request:

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Command header
2	Data block length [D7…D0]	23h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**74h**	Command codex	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	23h	Data block length, 35 bytes fix.	
12…38	Fill byte	00h	Always fix.	Command parameter
39	Cmd attribute	XXh	0x04: channel related I&M information (data record I&M0) 0x05: channel related I&M information (data record I&M1) 0x0…0x3, 0x6…0xFF: not supported	Command attribute
40…46	Fill byte	00h	Always fix.	Command parameter

Command Dev-Status acknowledge response:

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Response header
2	Data block length [D7…D0]	01h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**74h**	Command codex	
6	Status	XXh	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	XXh	Data length, bytes 12 .. nn [bytes]	
12	Response attribute	XXh	0x04: channel related I&M information (data record I&M0) 0x05: channel related I&M information (data record I&M1)	Response attribute
13…nn	I&M Record	XXh	I&M0 or I&M1 data record	Response data

10.2.6 Command Get (acyclic data transmission)

Command Get header request:

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Command header
2	Data block length [D7…D0]	23h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	XXh	Data block length, bytes 12 … nn	
12…32	Fill byte	00h	Always fix.	Command parameter
33	Write data length [D15...D8]	XXh	Data length Byte 47… 240	
34	Write data length [D7…D0]	XXh		
35…46	Fill byte	00h	Always fix.	
47	SubCmd	XXh	See SubCmd overview over GET	SubCmd code
48 … nn	SubCmd data 1…nn	XXh	See SubCmd overview over GET	SubCmd data

Command Get acknowledge response:

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Response header
2	Data block length [D7…D0]	01h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**62h**	Command codex “Get”	
6	Status	X0h	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	XXh	Response data length byte 12…nn [bytes]	
12	SubCmd	XXh	See → SubCmd overview over GET	SubCmd echo
13… nn	Data Byte 1…228	XXh	See → SubCmd overview over GET	SubCmd data

SubCmd overview over Get (acyclic)

SubCmd	Name	Description
C1h	Get_Ethernet_Parameter	Reads Ethernet parameter of the evaluation unit
C2h	Get_Ident_Unit_Parameter	Read settings of the evaluation unit
C3h	Get _Clock	Read the clock settings of the evaluation unit
C4h	reserved	-
C5h	Get_Ant_Type	Read out the properties of the antenna
C6h	Get_Block_Parameter	Read out the block parameter of the antenna
C7h	Get_Transponder_Type	Read out the data of the tag
C8h	Get_Ident_Diagnosis	Read out diagnosis of the evaluation unit
C9h	Get_MAC_Address	Read out Ethernet MAC address
CAh	Get_Ant_Diagnosis	Read out diagnosis of the antenna
CBh	Get_Channel_Mode	Read out operation mode of the channel IO-1 … IO-4
CCh	reserved	-
CDh	Get_UID	Read out UID of transponder

Hinweis:

Die Subkommandos besitzen, abgesehen von den Füllbytes, eine vergleichbare Datenstruktur wie im Abschnitt zu den zyklischen Kommandos beschrieben.

10.2.7 Command Put (acyclic data transmission)

Mit dem Kommando PUT werden die Identifikationskommandos zur Auswerteeinheit übertragen.

Command request data structure (PUT):

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Command header
2	Data block length [D7…D0]	23h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command codex “Put”	
6	CI	41h	Command index	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	XXh	Data block length, bytes 12 … nn.	
12…32	Fill byte	00h	Always fix.	Command parameter
33	Write data length [D15...D8]	XXh	Data length Byte 47… nn	
34	Write data length [D7…D0]	XXh		
35…46	Fill byte	00h		
47	SubCmd	XXh	SubCmd code, see → SubCmd overview over PUT	SubCmd code
48…nn	Data Byte 1…nn	XXh	SubCmd data, see → SubCmd overview over PUT	SubCmd data

Hinweis:

Die Datenstrukturen der Kommandoabfrage-Header unterscheiden sich bei MS1 und MS0 Datenübertragungen. Zusätzliche Füll-Bytes sind nötig, um die Konformität zum PNO Profil [01] zu gewährleisten.

Die Datenstruktur des SubCmd request, die bei Byte 48 beginnt, besitzt die selbe Struktur wie unter MS0 data transmission, Byte 12, "SubCmd code" festgelegt.

Command response data structure (PUT) with positive acknowledge:

Byte No	Name	Value [hex]	Description	Remark
1	Data block length [D15...D8]	00h	Data block length high (*)	Response header
2	Data block length [D7…D0]	01h	Data block length low (*)	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command codex	
6	Status	X0h	Status information	
7	TDB [D15...D8]	00h	Total number of data blocks, High byte	
8	TDB [D7…D0]	01h	Total number of data blocks, Low byte	
9	DBN [D15...D8]	00h	Current data block, High byte	
10	DBN [D7…D0]	01h	Current data block, Low byte	
11	DBL	00h	Data block length, bytes 12 … nn.]	

Hinweis:

Die Datenstrukturen der Kommandorückmeldungs-Header sind bei MS0 und MS1 Datenübertragungen identisch.

Command response data structure (PUT) with negative acknowledge

Byte No	Name	Value [hex]	Description	Remark
1	CSW high	XXh	Cyclic status word, high byte	Response header
2	CSW low	XXh	Cyclic status word, low byte	
3	SN high	XXh	Sequence number high	
4	SN low	XXh	Sequence number low	
5	CC	**65h**	Command response “Put”	
6	Status	01h	Status information Bit D0 = 1: Command terminated with error. Data byte 12...15 contains error Information.	
7	TDB [D15...D8]	**00h**	Total number of data blocks, high byte. Fix set to 00h	
8	TDB [D7…D0]	**01h**	Total number of data blocks, low byte. Fix set to 01h	
9	DBN [D15...D8]	**00h**	Current data block, high byte. Fix set to 00h.	
10	DBN [D7…D0]	**01h**	Current data block, low byte. Fix set to 01h.	
11	DBL	**04h**	Response data length [bytes] Fix set to 04h.	
12	Function_Num	XXh	Error_Code_1 provides error information related to **evaluation unit.**	Response data
13	Error_Decode	FEh	Profile specific error	
14	Error_Code_1	XXh	Command specific error	
15	Error_Code_2	00h	Copy of Status	

SubCmd overview over Put (acyclic)

SubCmd	Name	Description
D1h	Set_Ethernet_Parameter (1)	Sets Ethernet parameter of the evaluation unit
D2h	Set_Ident_Unit_Parameter (1)	Sets the parameter data of the evaluation unit
D3h	Set_Clock (1)	Sets the clock of the evaluation unit
D4h	reserved	-
D5h	Set_Defaults (1)	Set the default state of the AWE (factory reset)

(1) Die Subkommandos besitzen, abgesehen von den Füllbytes, eine vergleichbare Datenstruktur wie im Abschnitt zu den zyklischen Kommandos beschrieben.

Modulkonfiguration:

Group	Module identifier	IO-n hardware mode	Communication mode
Inactive	01h	Off (Hi-Z C/Qo, C/Qi and I/Q)	None
Input (1 Byte In)	02h	Input (Input C/Qi and I/Q active)	MS0 input data
Output (1 Byte In/Out)	03h	Output (Output C/Qo and Input I/Q active)	MS0 input and output data
PIB State (2 Byte In/Out)	04h	UART (Communication mode ID-Link)	MS0: control word, status word MS1: command data
RWH UID (11 Byte In/Out)	05h	UART (Communication mode ID-Link)	MS0: control word, status word, command data
RWH UID (15 Byte In/Out)	06h	UART (Communication mode ID-Link)	MS0: control word, status word, command data
RWH UID (19 Byte In/Out)	07h	UART (Communication mode ID-Link)	MS0: control word, status word, command data
RWH STRG (26 Byte In/Out)	08h	UART (Communication mode ID-Link)	MS0: control word, status word, command data
RWH STRG (34 Byte In/Out)	09h	UART (Communication mode ID-Link)	MS0: control word, status word, command data
RWH STRG (42 Byte In/Out)	0Ah	UART (Communication mode ID-Link)	MS0: control word, status word, command data

11 Profibus-Parameter

11.1 Parametrierung der Auswerteeinheit

Section	Octet	Content	Remark
DPV0 norm. parameter	01	DP slave mode	Not settable by user (GSD def.)
	02	WD_Fact_1	Not settable by user (GSD def.)
	03	WD_Fact_2	Not settable by user (GSD def.)
	04	TSDR	Not settable by user (GSD def.)
	05	Ident number (high byte)	Not settable by user (GSD def.)
	06	Ident number (low byte)	Not settable by user (GSD def.)
	07	Group Ident number	Not settable by user (GSD def.)
DPV1 Parameter	08	DPV1 status 1	Not settable by user (GSD def.)
	09	DPV1 status 2	Not settable by user (GSD def.)
	10	DPV1 status 3	Not settable by user (GSD def.)
User parameter: Header	11	ifm user parameter header: A1h fix	
User parameter: DP configuration	12.0	Failsafe mode [on/off] Default: off	OFF = secure state ON= keep outputs
	12.1	Extended Profibus DP diagnosis [on/off] Default: off	OFF = Standard diag. only
	12.2	Diagnosis interrupt via “Diag.Ext.” [on/off] Default: on	OFF = Ext.Diag bit is not set, only state message
User parameter: Evaluation unit configuration	13.0	Profibus DP data format [Motorola/Intel] Default: Motorola	
	13.1	Tracebuffer read out enable [on/off] Default: on	
	13.2	Communication interface enable [on/off] Default: on	
	13.3 – 13.7	Reserved for future use	
User parameter: Communication interface configuration	14.0	DHCP [on/off] Default: off	
	14.1	Autonegotiation [on/off] Default: on	
	14.2 – 14.7	Reserved for future use	
User Parameter: IO-Interface configuration	15	Phy 1 control register 1: Fix value: F9h	Not settable by user (GSD def.)
	16	Phy 1 control register 2: Fix value: A3h	Not settable by user (GSD def.)
	17	Phy 2 control register 1: Fix value: F9h	Not settable by user (GSD def.)
	18	Phy 2 control register 2: Fix value: A3h	Not settable by user (GSD def.)
	19	Phy 3 control register 1: Fix value: F9h	Not settable by user (GSD def.)
	20	Phy 3 control register 2: Fix value: A3h	Not settable by user (GSD def.)
	21	Phy 4 control register 1: Fix value: F9h	Not settable by user (GSD def.)
	22	Phy 4 control register 2: Fix value: A3h	Not settable by user (GSD def.)
Module parameters	23 … 42	See module parameterization (→ 11.2)	

11.2 Parametrierung der Module

11.2.1 Modul „Inactive“:

Section	Octet	Content	Remark
User parameter: Module ID 0	N	Module number [1…4]	depends on user selection
	N+1	Module identifier, fix value 00h	
	N+2	Fix value 00h	
	N+3	Fix value 00h	
	N+4	Fix value 00h	

11.2.2 Modul „Input“:

Section	Octet	Content	Remark
User parameter: Module ID 1	N	Module number [1…4]	depends on user selection
	N+1	Module identifier, fix value 01h	
	N+2	Data hold time [0…2 s] Default: 0 ms	Hold time C/Qi and I/Q
	N+3	Fix value 00h	
	N+4.0	Overload detection [on/off] Default : on	Overload on output L+ > 500mA
	N+4.1- N+4.7	Reserved for future use	

11.2.3 Modul „Output“:

Section	Octet	Content	Remark
User parameter: Module ID 2	N	Module number [1…4]	depends on user selection
	N+1	Module identifier, fix value 02h	
	N+2	Data hold time [0 … 2 s] Default: 0 ms	Hold time I/Q
	N+3	Fix value 00h	
	N+4.0	Overload detection [on/off] Default : on	Overload on output L+ > 500mA
	N+4.1	Overcurrent detection [on/off] Default : on	Overcurrent on output C/Qo > 500mA
	N+4.2	High current 1A enable [on/off] Default : off	Output current enable on output C/Qo = 1A. Only valid for channel I/Q3 and channel I/Q4
	N+4.3- N+4.7	Reserved for future use	

11.2.4 Modul „PIB State“:

Section	Octet	Content	Remark
User parameter: Module ID 3	N	Module number [1…4]	depends on user selection
	N+1	Module identifier, fix value 03h	
	N+2	Data hold time [0 … 2 s] Default: 0 ms	Hold time I/Q
	N+3	Fix value 00h	
	N+4.0	Overload detection [on/off] Default : on	Overload on output L+ > 500 mA
	N+4.1	Overcurrent detection [on/off] Default : on	Overcurrent on output C/Qo > 100mA
	N+4.2- N+4.7	Reserved for future use	

11.2.5 Module „RWH UID“:

Section	Octet	Content	Remark
User parameter: Module ID 4…6	N	Module number [1…4]	depends on user selection
	N+1	Module identifier, fix value 04h for RWH UID (11Bytes In/Out) 05h for RWH UID (15Bytes In/Out) 06h for RWH UID (19Bytes In/Out)	
	N+2	Data hold time [0 … 2 s] Default: 0 ms	Hold time I/Q
	N+3	Transponder data block length [1,2,4,8,16,32,64,128,255] Default: 4 bytes	
	N+4.0	Overload detection [on/off] Default : on	Overload on output L+ > 500 mA
	N+4.1	Overcurrent detection [on/off] Default : on	Overcurrent on output C/Qo > 100mA
	N+4.2	Read of UID edge controlled [on/off] Default : off	Read of UID controlled via Bit RD.
	N+4.3- N+4.7	Reserved for future use	

11.2.6 Module „RWH STRG“:

Section	Octet	Content	Remark
User parameter: Module ID 7…9	N	Module number [1…4]	depends on user selection
	N+1	Module identifier, fix value 07h for RWH UID (24Bytes In/Out) 08h for RWH UID (32Bytes In/Out) 09h for RWH UID (40Bytes In/Out)	
	N+2	Data hold time [0 … 2 s] Default: 0 ms	Hold time I/Q
	N+3	Transponder data block length [1,2,4,8,16,32,64,128,255] Default: 4 bytes	
	N+4.0	Overload detection [on/off] Default : on	Overload on output L+ > 500 mA
	N+4.1	Overcurrent detection [on/off] Default : on	Overcurrent on output C/Qo > 100mA
	N+4.2- N+4.7	Reserved for future use	

12 Erweiterte Profibus-Diagnose

Die Profibus DP Diagnose nutzt die folgenden Übertragungswege: Standard Diagnosis, Identifier related Diagnosis, Module Status und Channel related Diagnosis.

12.1 Standard, Identifier related, Device related und Channel related Diagnosis

DE

	Byte	Content								Remark
Standard diagnosis	01	station status 1								
	02	station status 2								
	03	station status 3								
	04	Station number of DP Master								Default: 0FFh
	05	Manufacturer ID (High byte)								Fix: 0Dh
	06	Manufacturer ID (Low byte)								Fix: 33h
Device related Diagnosis:	07	Device related diagnosis header + length								Fix: 07h
	08	Status type: Status message								Fix: 81h (Bit 07..00)
	09	Slot Number								Fix: 00h (Bit 15..08)
Status message	10	0	0	0	0	0	0	0	0	Status specifier ([1]) 00b = no further differentiation 01b = Status appeared 10b = Status disappeared 11b = reserved (Bit 23..16)
	11	Module identifier IO-2				Module identifier IO-1				Coding see module identifier (Bit 31..24) (→ 10.2.7)
	12	Module identifier IO-4				Module identifier IO-3				Coding see module identifier (Bit 39..32) (→ 10.2.7)
	13	res	res	res	res	res	HWF	PFA	ATE	Device error flags ([1]) see definition (Bit 47…40) (→ 9.2.7)

([1]) „Status Appeared“ wird gesetzt, wenn eines der Device Error Flags aktiv ist, DRD Länge immer 13 Bytes

Identifier related diagnosis:

Identfier related diagnosis ([1])	14	Identifier Related Diagnosis header + length							Fix: 42h
	15	0	0	0	0	Mod4	Mod3	Mod2	Mod1	**Module identifier:** 0 = Module has no diagnosis data 1= Module has diagnosis data

Device related diagnosis:

Device related Diagnosis: Module status ([1])	16	Device related diagnosis header + length							Fix: 05h
	17	Status type: Module							Fix: 82h (Bit 07..00)
	18	Slot Number							Fix: 00h (Bit 15..08)
	19	0	0	0	0	0	0	ST1	ST0	Status specifier (ST) 00b = no further differentiation 01b = Status appeared 10b = Status disappeared 11b = reserved (Bit 23..16)
	20	Module 4 state		Module 3 state		Module 2 state		Module 1 state		**Module state:** 00 = OK 01 = Data invalid cause fault 02 = wrong module 03 = module in use (Bit 31..24)

Channel related diagnosis:

Channel related diagnosis ([1])	21	1	0	Module number (DPV0 slot)		**Module number:** 0 = slot 1 1 = slot 2 2 = slot 3 3 = slot 4
	22	S1	S0	Channel number		**Channel type S1/S0:** 0 = reserved 1 = Input 2 = Output 3 = Input / Output **Channel number:** 1 = channel 1 contains IO-n specific errors
	23	DT2	DT1	DT0	Error Type	Data Type + Error Type
…	…	…				-
Channel related diagnosis ([1])	N	Channel related diagnosis header + DPV0 slot number				Optional diagnosis information
	N+1					
	N+2	DT2	DT1	DT0	Error Type	

([1]) Die erweiterte Profibus DP Diagnose wird durch Setzen des Profibus DP Parameters Byte 12, Bit 1 aktiviert.

Channel related diagnosis, data type and error type

Byte	Data Type			Error Type	Remark
N	DT2	DT1	DT0	X X X X X b	data type + error type

Data type coding:

Data Type			Description	Remark
DT2	DT1	DT0		
0	0	0	unspecified type	Used for data arrays
0	0	1	1 bit	Not used
0	1	0	2 bit	Not used
0	1	1	4 bit	Not used
1	0	0	octet	Not used
1	0	1	word	Not used
1	1	0	2 words	Used for PIB
1	1	1	reserved	Not used

Error type coding:

Error type					Description	Remark
ET4	ET3	ET2	ET1	ET0		Possible reason
0	0	0	0	0	Reserved	Not used
0	0	0	0	1	Module error: Short circuit	**IO-n** (1) **:** L6360 Short circuit C/Qo (CQOL)
0	0	0	1	0	Module error: Undervoltage	**IO-n** (1) **:** L6360 Undervoltage L+ (PO)
0	0	0	1	1	-	Not used
0	0	1	0	0	Module error: Overload	**IO-n** (1) **:** L6360 Overcurrent L+ (LOL)
0	0	1	0	1	Module error: Overtemperature	**IO-n** (1) **:** L6360 Overtemperature (OVT)
0	0	1	1	0	Module error: Line break	**IO-n** (1) **:** Timeout communication with antenna (no response)
0	0	1	1	1	Module error: Upper limit reached	Not used
0	1	0	0	0	Module error: Lower limit reached	**IO-n** (1) **:** L6360 Under voltage fault (REG LIN)
0	1	0	0	1	Module error: Error	**IO-n** (1) **:** Antenna failure (Buffer overrun, General Error, Frontend Error)
0	1	0	1	0	Reserved 1	Not used
..	..	..	..	..	….	Not used
0	1	1	1	1	Reserved 6	Not used
1	0	0	0	0	Module error: Antenna communication	**IO-n** (1) **:** Communication error with antenna (Ident-Unit UART + Antenna IDLINK Error)
1	0	0	0	1	Module error: Internal communication I²C	**IO-n** (1) **:** L6360 interrupt without error source

1	0	0	1	0	Module error: I²C parity check fault	**IO-n** [1] **:** L6360 Parity check fault (PE)
..	..	..	..	..	Reserved for device errors	..
1	1	1	1	1	User specific error 15	Reserved for future use

Hinweis:

[1] Modulfehler werden über Kanal 1 des entsprechenden Moduls übertragen.

13 Referenzierte Dokumente

[01] “Profile Identification Systems”, PNO order 3.142, V1.9, 05/2010